



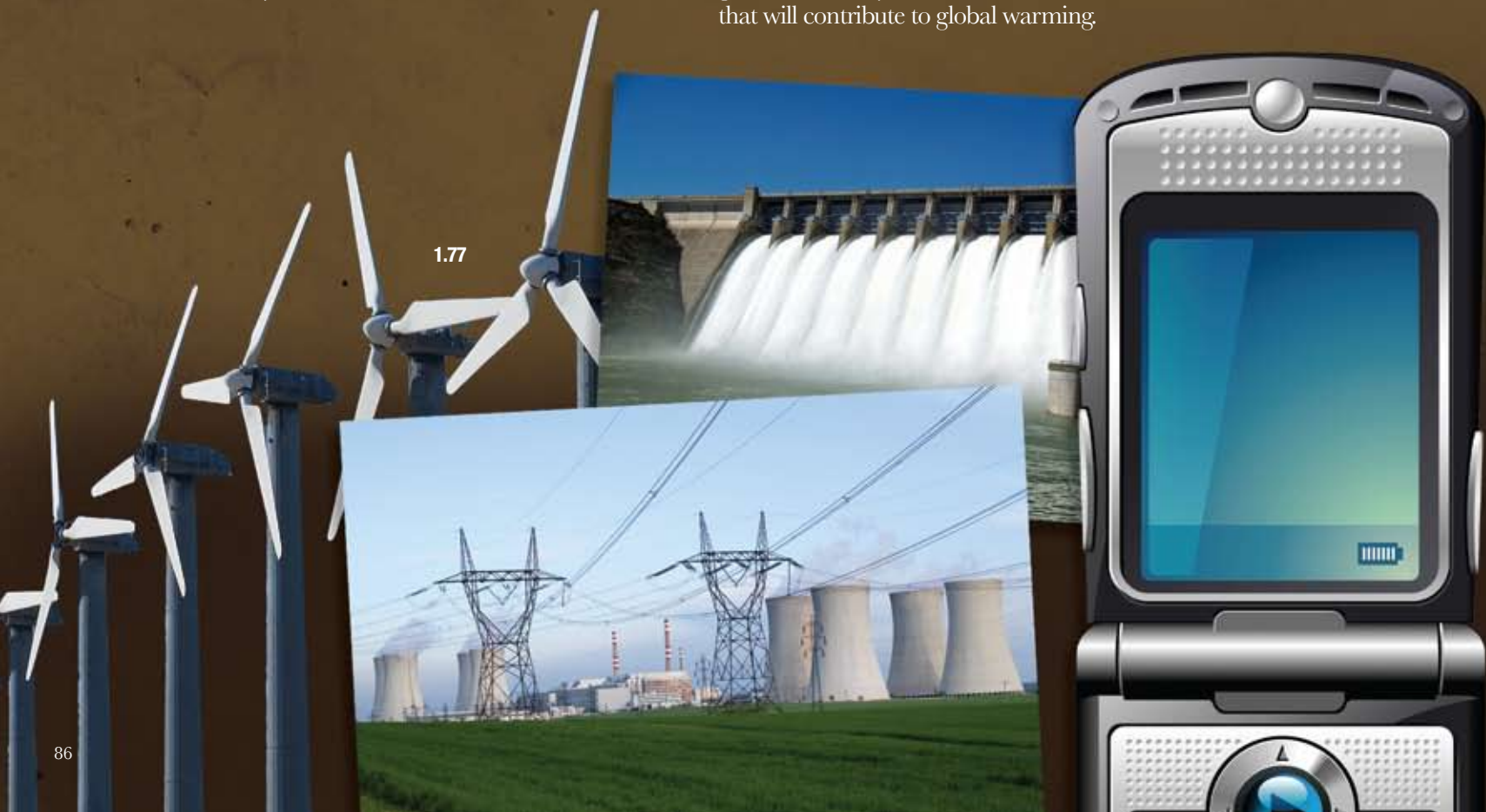
AT ISSUE

Culture, Change, and Sustainability

Over the past number of decades there has been a growing awareness that our way of life has a direct impact on Earth. Some of those consequences, such as global warming, are negative. In response to this, many people have tried to adjust their lifestyle to live in a sustainable manner. For instance, recycling, composting, using public transit, and using energy-efficient appliances are becoming more popular. The question is: Are these changes in our culture enough to reduce our negative impact on our planet?

Modern technologies have increased the ability of humans to communicate — whether face-to-face or virtually. This increased capacity has resulted in the rapid spread of artifacts, sociofacts, and mentifacts around the globe. As ideas and technologies become diffused, many of them are being integrated into people's lifestyles. As most countries are experiencing the effects of globalization, the way of life of Earth's citizens is changing more rapidly than ever before in human history.

Some of the effects of these lifestyle changes are positive. For example, many people would argue the spread of new knowledge and technologies that improve health care is good. Likewise, the spread of communications technologies, such as the Internet and cell phones, has been mostly positive. At the same time, this popularization of some cultural elements has created problems. For instance, an increase in the demand for consumer goods means that more energy is being required to produce and power these goods. This may result in an increased use of fossil fuels that will contribute to global warming.



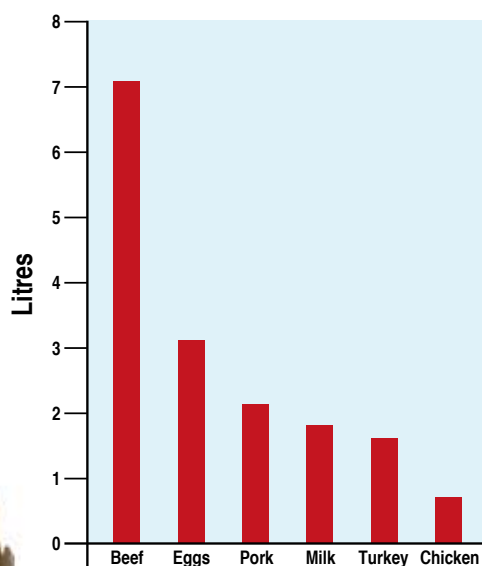
Similarly, the globalization of fast foods is contributing to changes in people's dietary practices. In China, for example, easier access to fast-food meals such as beef burgers in chain restaurants has contributed to an increased demand for beef. At first, this may not seem all that significant until you consider the consequences. It takes approximately six

kilograms of plant protein to produce one kilogram of beef. China has well over one billion people. If more of the population starts to consume beef on a regular basis, it will result in an increased demand on agricultural production. This may lead to food shortages, higher prices, and possibly greater global warming.

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

— World Commission on Environment and Development in the report *Our Common Future*

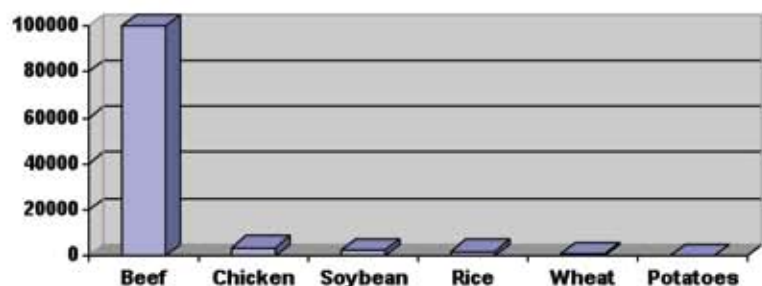
ENERGY REQUIRED
to produce food protein



The amount of oil required to produce 1000 kcal of animal protein

1.78 FOOD CHOICES: HOW THEY IMPACT THE PLANET

Estimated Amount of Water Required
to produce food items (in litres per kilogram)



Based on information from *Livestock Production: Energy Inputs and the Environment* by Dr. David Pimental, Cornell University

“Our personal consumer choices have ecological, social, and spiritual consequences. It is time to re-examine some of our deeply held notions that underlie our lifestyles.”

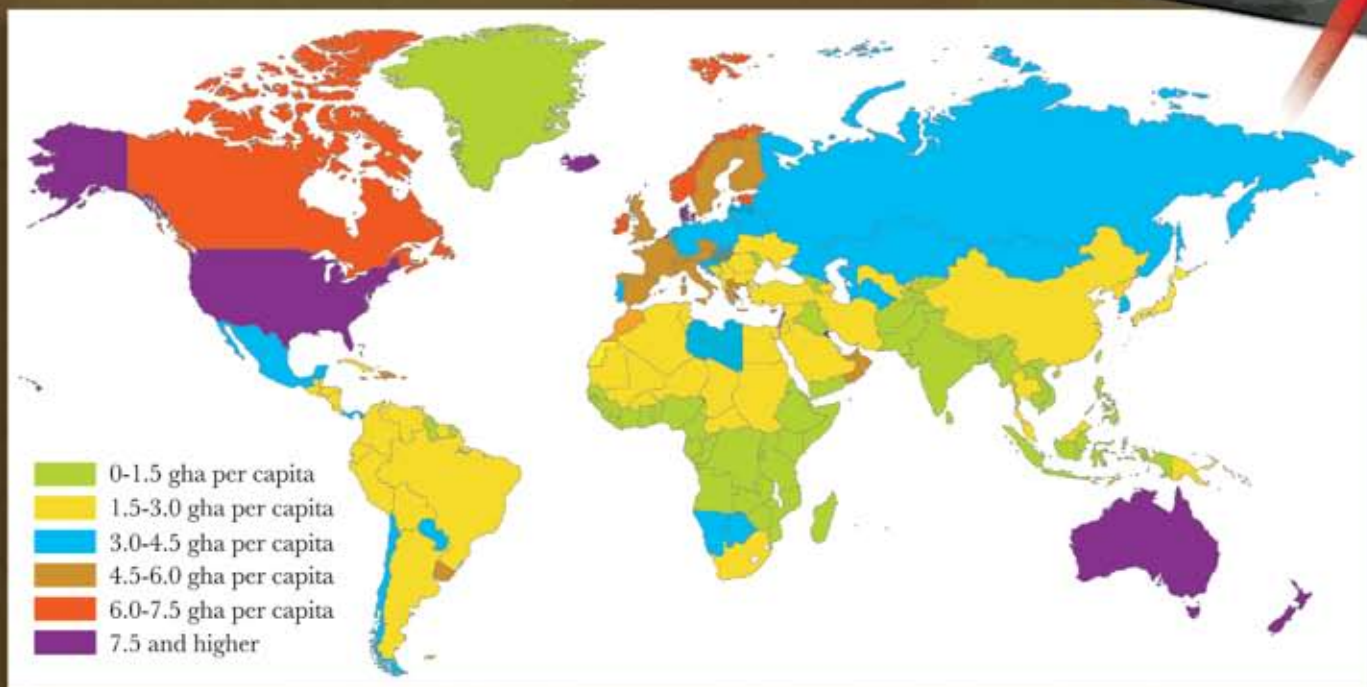
— Dr. David Suzuki, Canadian science broadcaster and environmental activist

The collective consequences of individual actions can have dramatic results. If we are to live in a sustainable manner as citizens of this planet, we need to consider the consequences of our individual choices.

One measure that has been developed to assess the degree to which lifestyles are sustainable is referred to as an **ecological footprint**. An ecological footprint is a way to measure the area of land and water a person or population requires to (i) produce the resources they consume and (ii) absorb their wastes.

Today, humanity’s **ecological footprint** is almost 50 per cent larger than what the planet can regenerate.

In other words, it now takes about one year and five months for Earth to regenerate what we use in a single year. By using more than what the planet’s ecological resources can sustain, we are depleting the ability of future generations to meet their needs. This is similar to someone maxing out his or her credit and then not being able to pay back what he or she has borrowed.



1.79 Ecological Footprint by country, 2005 This map shows the global hectares for countries throughout the world. The Global Footprint Network defines global hectare as a productivity weighted area used to report both the biocapacity of Earth, and the demand on biocapacity (the ecological footprint). Biocapacity refers to the capacity of a given biologically productive area to generate an on-going supply of renewable resources and to absorb its spillover wastes. Based on information from *The Ecological Footprint Atlas*, 2008, Global Footprint Network.



1.81 Humanity's Ecological Footprint and Biocapacity Through Time (in billion global hectares)

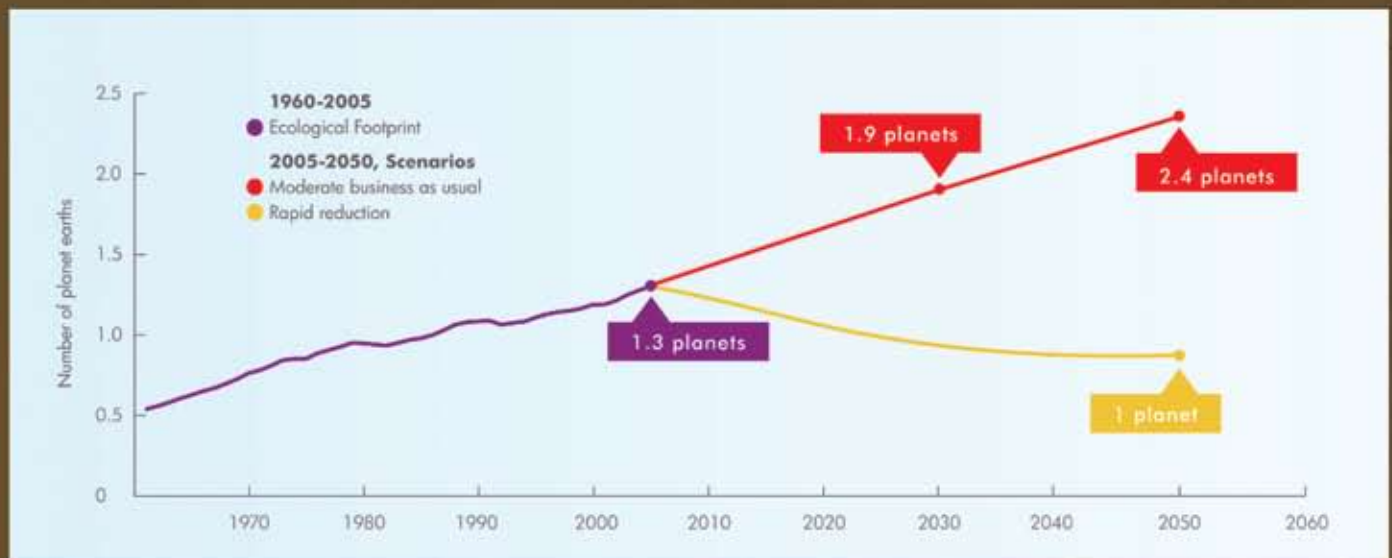
In order to live, we consume what nature offers. Every action impacts the planet's ecosystems. This is of little concern as long as human use of resources does not exceed what Earth can renew. But are we taking more than Earth can afford? The concept of the ecological footprint helps us to figure this out.

	1961	1965	1970	1975	1980	1985	1990	1995	2000	2005
Global Population (billion)	3.1	3.3	3.7	4.1	4.5	4.9	5.3	5.7	6.1	6.5
Total Biocapacity	13.0	13.0	13.1	13.1	13.1	13.2	13.4	13.4	13.4	13.4
Cropland Footprint	3.4	3.5	3.6	3.6	3.7	3.8	3.8	4.1	4.1	4.1
Grazing Land Footprint	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.7	1.6	1.7
Forest Footprint	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.4	1.5	1.5
Fishing Ground Footprint	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6
Carbon Footprint	0.8	1.7	3.2	4.2	5.3	5.6	6.8	6.9	7.9	9.1
Built-up Land	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Total Ecological Footprint	7.0	8.1	10.0	11.2	12.5	12.9	14.5	14.9	16.0	17.4
Ecological Footprint to Biocapacity Ratio	0.54	0.63	0.76	0.85	0.95	0.98	1.09	1.11	1.19	1.31

Based on information from the Global Footprint Network

By measuring the ecological footprint of a population (an individual, a city, a nation, or all of humanity) we can assess our overshoot, which helps us to manage our ecological assets more carefully. Knowing how large our

ecological footprints are can motivate us to take personal and collective actions to create a world where humanity lives within the means of one planet.



1.82 Number of "Earths" required to meet humanity's needs

According to this data from the Global Footprint Network, humanity's use of resources began to exceed Earth's capacity to regenerate them sometime in the 1980s.

“We’re in a giant car heading towards a brick wall and everyone’s arguing over where they’re going to sit.”

– Dr. David Suzuki, Canadian science broadcaster and environmental activist

How is Your Ecological Footprint Calculated?

Scientists are working to develop a standardized way of calculating ecological footprints. This will enable people around the world to make consistent and reliable calculations. Currently, there are four main areas used to examine people's lifestyles to calculate their ecological

footprint. Below are some of the questions that are considered in each of these areas when calculating ecological footprints. (Questions vary slightly among the different calculators.)

Food

How often do you eat animal-based food, including beef, pork, chicken, fish, eggs, and dairy products?
How much of your food is processed, packaged, or imported?

Goods & Services

Compared to others in your neighbourhood, how much garbage do you produce?

Mobility

On average, how far do you travel using public transportation?
How far do you travel by car in an average week?
How often do you travel in a car with someone else?
How much fuel does your vehicle consume?
How many hours do you spend flying each year?

Shelter

How many people live in your household?
How big is your home?
What type of home do you live in?
How much energy does your home use per year?



For Discussion:

1. Why do we need to reduce our ecological footprint? Is it more important today than in the past? Explain.
2. Should it be legislated that people reduce their ecological footprint? Why or why not?
3. How should we deal with the fact that some countries have a larger ecological footprint than others? Explain.
4. We have become used to eating fresh produce imported from places like South America or California all year long. What impact is our food preference having on the environment?
5. Is it possible for a person who lives in an area without access to public transportation to reduce his or her ecological footprint? Explain.
6. Identify three things that you can do in each area (food, goods and services, mobility, shelter) to reduce your ecological footprint.
7. Develop a group or class project where you involve your (a) school and/or (b) community in a challenge to reduce its ecological footprint.



1.84 Between 1250 and 1500 CE, the people of Rapa Nui (Easter Island) built hundreds of large statues called mo'ai.

When a Footprint Is Too Large

Easter Island (or Rapa Nui), in the South Pacific, is one of the world's great archaeological sites, and also one of the most remote. Its isolation is one of the key factors affecting the culture that evolved there.

From what we know of the material culture, language, and customs, it seems that the original settlers arrived around 400-600 CE. They brought tools and food, and plants and animals to begin a new life.

The islanders, once settled, gradually spread across the island, occupying nearly all the available areas. In order to plant their crops, they resorted to slash and burn agriculture to remove the forest cover. Eventually this caused topsoil to erode during storms and, over time, the productivity of the land declined.

The supplies of timber and rope gradually became scarce. The lack of trees meant that canoes could no longer be built, restricting offshore fishing. Without canoes, they could not set off for another island. The Rapanui found themselves trapped in a degrading environment.

The size of the population at its peak is controversial; some put it at 7000, while others suggest a higher number. Whatever the population number, when combined with environmental degradation, it was more than this small island could sustain.

Experiencing The Arts

In this section you have examined the idea of **sustainability** and your ecological footprint. This may have raised questions about the degree to which aspects of our lifestyles are sustainable.

In this chapter you have been asked to photograph artifacts. Artists also portray sociofacts and mentifacts. How would you photograph the idea of sustainability?

What artifacts would show the sociofacts of your ecological footprint?

In this assignment you are asked to produce and present (in one minute) an animated viewbook which explores an aspect of sustainability. Your viewbook should contain 10 images, text, and an audio track. Continue to pay attention to the use of positive and negative space.

Questions:

1. Based on the information provided in Fig. 1.79, which countries have:
 - a. The highest ecological footprint?
 - b. The lowest ecological footprint?
 - c. What can you infer about the distribution of countries that have high ecological footprints and low ecological footprints? What might account for this pattern?
2. Based on your ecological footprint ...
 - a. What changes do you need to make to your lifestyle in order to live sustainably?
 - b. Assuming that many people in your community have an ecological footprint similar to yours, how does your community need to change in order to live sustainably?
 - c. Given the four areas used in calculating an ecological footprint, create a sketch or diagram illustrating how an ideal community might be organized in order to minimize its ecological footprint. Be sure to consider the areas of: (i) food, (ii) goods and services, (iii) shelter, and (iv) mobility.
3. If globalization continues, what do you think will be the most significant change that might occur that will have long-term positive effects? What would be an area of concern where the change could have profound long-term negative consequences? Support your claims.