WORLD SAVVY

MONITOR




Sustainability: From Local to Global

World Savvy

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World Savvy
World Savvy staff edit and produce the World Savvy Monitor. Our mission is to educate and engage youth in community and world affairs by providing educational programs and services. World Savvy's vision for the future is one in which all members of society are well informed about contemporary global affairs and act as responsible global citizens. We believe that change will occur if the public has an enhanced understanding of international affairs and is given the tools to think critically about such issues.

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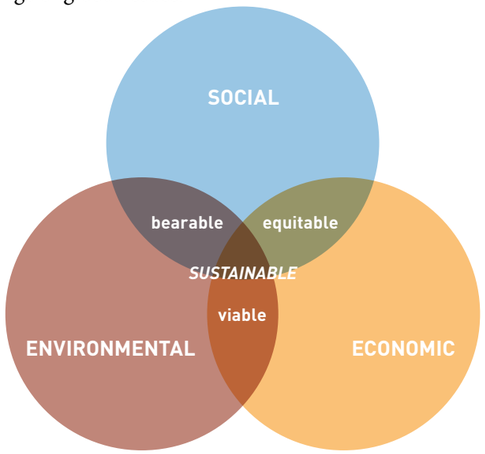
Introduction

Sustainability is defined as the capacity to endure. In ecology, the word describes how biological systems remain diverse and productive over time. Long-lived and healthy wetlands and forests are examples of sustainable biological systems. For humans, sustainability is the potential for long-term maintenance of well being, which has environmental, economic, and social dimensions. This edition of the World Savvy Monitor is intended to provide readers with the tools to understand the complex nature of sustainability and its connections to a wide range of global issues.



Adapted from University of Kansas, Center for Sustainability

This edition is broken down into three primary sections corresponding to three facets of human life. The first section addresses sustainability issues as they relate to basic necessities: food, water, and shelter. The second section discusses the impact of human activity on the natural environment, with a focus on energy, waste and climate change. Finally, the third section examines the ways in which we seek to better the lives of our fellow citizens and the world through international development, education, and political participation.

Within each of these sections, this guide will examine factors of economic, social and environmental sustainability. It is beyond the scope of the Monitor to provide a comprehensive analysis of the many issues relating to each of these sub-topics; rather, this guide will highlight key issues and provide case studies and promising practices in the area of sustainably related to each topic. Each section of the guide also includes a *Classroom Companion* with lesson ideas for middle and high school educators to bring content from the guide into the classroom in a meaningful and engaging way. Finally, this guide also includes a sampling of United Nations conventions that seek to create a sustainable world at the international level.

After reading through this edition of the Monitor, it should be clear that sustainability is a complex concept and that none of the issues discussed can be addressed in isolation. For example, problems of food and water sustainability are instrumental to questions of international development. Communities cannot address important issues of climate change without proper education and political power. Energy concerns cannot be tackled without also considering issues of waste production and population patterns. Our goal is to provide readers with the tools to be able to analyze issues of sustainability from multiple perspectives, taking note of potential problems and engaging in the critical analysis necessary to create sustainable change.

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Time Line

The following is a sampling of key events related to the nine topic areas discussed in this edition of the Monitor. Each event has had a significant effect on sustainability.

Year	Event
500 BCE–1000 AD	Democratic principles appear in Greece, Rome, and modern-day India
	Water wheels are developed by ancient Greeks and used widely by Greeks and Romans Use of water wheels continues for the next several centuries until development of the steam engine in the 1700s during the Industrial Revolution Greek engineer Heron of Alexandria develops the windwheeel, the earliest known predecessor of the windmill Prayer wheels, another predecessor of the windmill, used to power ancient Tibet and China beginning in the 4th Century The first practical windmill developed in 9th Century Persia
	Famine follows the fall of Rome; the plague and famine are believed to have reduced the population of Rome by 90%
1000–1700s	Magna Carta limits the power of the English king over the aristocracy Many indigenous communities in the Americas develop political After declaring independence from England, the United States
	Age of Exploration followed by colonization of the Americas, Africa, and Asia
	Famine in Russia kills as many as two million people from 1601–1603

Year	Event
1800s–early 1900s	English system of constitutional democracy spread throughout Europe and the British colonies Suffrage in United States extended to women and non-landowners; African Americans are systematically disenfranchised Industrial Revolution democratizes economy by creating non-land based wealth and expanding European and American middle classes Paris Peace Treaty ends WWI and emphasizes national self-determination Industrial Revolution brings about first wave of urbanization in Europe and the United States; population pressures are relieved as city-dwellers immigrate to the United States Irish "Potato Famine" caused by potato plight results in an estimated one million deaths and the emigration of another one million people, reducing Ireland's population by nearly a quarter Russian famine of 1921 kills an estimated 10 million people; famine caused in part by disruptions caused by WWI and the Russian Revolution of 1917 Wind turbines developed, enabling humans to turn wind energy into electricity First hydroelectric power scheme developed in 1878 in England First geothermal power plant built in Italy in 1911 By 1920, 40% of power in the United States is produced by hydroelectric power via the Hoover Dam and Grand Coulee Dam built in 1936 and 1942, respectively
1940s	Holocaust decimates Jewish and other minority populations Bracero program in United States brings millions of provisional immigrants from Mexico who are deported as "wetbacks" in later decades Shortly after nuclear fission discovered, Manhattan Project established to create the first nuclear bomb
1945–1960s	The United Nations formed in 1945 with the goal of preventing war and promoting international cooperation; a year earlier, delegates at the Bretton Woods Conference decide to set of what would later become the International Monetary Fund (IMF), the World Bank, and the predecessor to the World Trade Organization (WTO). The Republic of Biafra declares independence from Nigeria and the ensuing civil war launches the aid industry The United Nations Declaration of Human Right (UDHR) includes compulsory, free education as a basic human right. Germany and Japan become democracies following WWII Colonies gain independence throughout Asia and Africa United Nations formed and Universal Declaration of Human Rights issued Civil Rights Movement in the United States establishes social and political freedoms for African Americans United States Marshall Plan provides aid to European countries and Japan in aftermath of WWII

Year	Event
	Twenty million people are displaced at the end of WWII Mass migration of to the new Jewish state of Israel displaces many Palestinians United Nations High Commission for Refugees formed Nuclear technology applied to energy production with Russia completing the world's first nuclear power plant in 1954 Nearly forty million people die in China in a famine resulting from policies associated with the government's "Great Leap Forward" In post-WWII United States, food production becomes increasingly industrialized and consolidated in large companies
1965–1970s	Totalitarian governments thrive in USSR, China, and many post-colonial military governments in Asia and Africa In the United States, free speech is repressed under McCarthyism In 1974, only 39 of 165 countries are democracies Economic decline and restructuring in Europe and North American leads to tightening of immigration laws Following Vietnam War, influx of refugees from Southeast Asia to the United States One Child Policy Instituted in China Schools and universities in China closed as Mao institutes the Great Proletarian Cultural Revolution; urban youth sent to re-education camps 1973 oil crisis sparked by OPEC export embargo instituted by many major Arab oil-producing states in response to Western support of Israel during Yom Kippur War 1979 oil crisis caused by Iranian Revolution Texaco begins drilling for oil in the Ecuadorian Amazon; over the next 30 years, the company dumps an alleged 16 million gallons of oil waste, destroying the environmental resources local indigenous groups depend on for survival Famine devastates Ethiopia in 1973; Emperor Haile Selassie deposed the following year Muhammad Yunus begins the research that eventually creates Grameen Bank, one of the world's first microfinance programs
1980s–1990s	Massive proliferation of democratic governments; by 1995, 117 of 165 are democracies The USSR disintegrates and Tiananmen Square shakes China Populist authoritarian governments come to power in Latin America, Asia, and Africa World Bank's Structural Adjustment Programs (SAPs) proliferate in the 1980s–90s; SAPs tie development aid to adoption of policies that stress market liberalization and the elimination of social safety nets; despite some macroeconomic gains, SAPs result in extreme hardships In 1994, Heavily Indebted Poor Countries (HIPC) debt initiative approved, providing debt relief to poor countries with good policy performance

Year	Event
	1994 Ethiopian famine kills an estimated one million people Genetically Modified (GM) food enters into the markets
	Iron Curtain falls, sending huge influx of immigrants to Central and Western Europe War in Afghanistan creates massive flow of migrants and refugees, primarily to Iran and Pakistan Second wave of urbanization occurs as developing countries, particularly China, industrialize
	Explosion and fire at Chernobyl Nuclear Power Plant in USSR (present-day Ukraine) in 1986 causes worst nuclear disaster in history, releasing large quantities of radioactive contamination in the atmosphere and costing an estimated 18 billion rubles
	Central Asia energy crisis caused by abnormally cold temperatures and low water levels in areas dependent upon hydroelectric power
	Kyoto Protocol adopted in 1997 with aim of reducing greenhouse gases in order to prevent climate change; the United States is the only developed country to not sign treaty
2000s	By 2008, 121 of 193 countries are democracies In 2011, democratic uprisings successfully topple dictators first in Tunisia (Zine El Abidine Ben Ali) and then in Egypt (Hosni Mubarak) Following uprisings in Egypt and Tunisia, protests against totalitarian regimes spread throughout Arab World and Libya becomes engulfed in civil war with NATO supporting rebels against dictator Muammar Gaddafi
	Half of the world's population lives in cities; one-third of city-dwellers live in slums Following natural disasters, including Hurricane Katrina in the United States, earthquakes in Pakistan and China, a massive tsunami in Southeast Asia, and flooding and droughts throughout the world, the concept of environmental refugees gains traction
	Between 1999 and 2008, great gains are made in primary school education, but in 2008, 67 million children are still out of school Worldwide, 17% of people lack basic literacy; two-thirds are women
	Three Gorges Dam, spanning the Yangtze River in China, becomes the largest dam in the world in 2008; it reduced China's reliance on other non-renewable forms of energy, but displaced nearly 1.3 million people
	2006 Sino-African Summit demonstrates Chinese dedication to continue high rates of investment in Africa in its search of energy resources; much of the West is dismayed by China's continued investment and policy of non-intervention in war-torn nations such as the Democratic Republic of Congo and Sudan

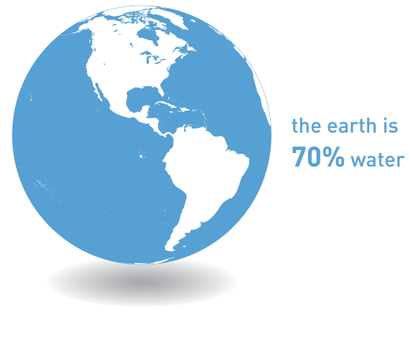
Year	Event
	2007 world food price crisis leads to political and economic instability and social unrest, especially in developing nations
	Cholera outbreak in Zimbabwe results from lack of access to safe water in urban areas
	Bottled water consumption rates rise significantly; the bottles used cause contribute to waste problems
	The Basel Convention enters into force in 1992 and seeks to regulate the generation and disposal of e-waste; the United Nations estimates that the world produces between 20 and 50 million tons of e-waste, much of which is dumped in developing nations
	Following a 9.0 magnitude earthquake and tsunami, Fukushima I Nuclear Power Plant suffers a series of fires and equipment failures releasing unknown quantities of nuclear contamination into the atmosphere
	The Millennium Development Goals outline 8 goals for eradicating poverty, to be completed by 2015

The Basics of Human Life: Water, Food & Shelter

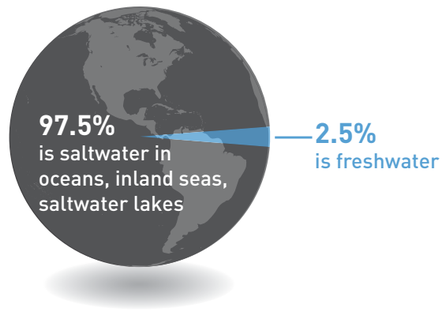
Water

Water is a basic component of life, sustaining humans and all forms of animal and plant life. All of the water that exists today existed at the birth of our planet. In this system, known as a **closed system**, no new water is created. Although water covers 70% of the earth's surface, 97% of this water is seawater. Of the remaining freshwater, over two-thirds is trapped in ice caps or glaciers and 30% is in the form of aquifers, deep underground. This leaves just 0.4% of the earth's water in a form that is easily accessible and usable by humans.

See the Water Around the World edition of the World Savvy Monitor

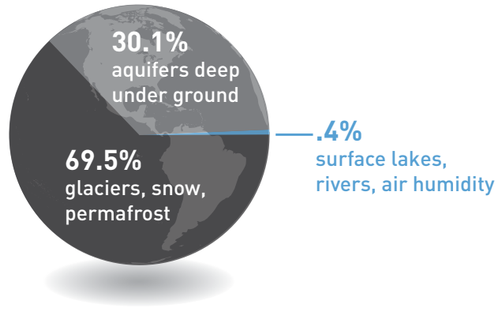


Although 13.2 gallons of water per day is sufficient for one person's drinking, sanitation, bathing, and cooking needs, Americans use an average of 150 gallons per day. In contrast, nearly 20% of the world's population lacks access to **potable water**, water that is safe to drink. Because water is so important to human survival, yet so limited in supply, it is an essential element to any discussion of sustainable communities.



Economic Sustainability

The economy and water are closely intertwined. Water is an integral part of both the production and transportation of goods (economists refer to this as **virtual water**), and access to clean water is required for a healthy workforce that has time to invest in economic activity. For example, women in developing nations must spend an average of six hours per day finding and transporting water and, as a consequence, have little time to devote to other economic endeavors.



Product	Virtual Water Content Per Unit
1 glass of milk	200 liters
1 potato	25 liters
1 cotton t-shirt	2,000 liters
1 egg	135 liters
1 hamburger	2,400 liters
1 pair of leather shoes	8,000 liters
1 microchip	32 liters

Data from U.S. Geological Survey, Estimated Use of Water in the United States in 2005

In an attempt to more efficiently and sustainably distribute water, some nations have turned to **privatization**. This policy became popular in the late 20th Century when the World Bank and International Monetary Fund (IMF) began requiring nations to adopt Structural Adjustment Plans (SAPs) in order to receive loans. Privatization was a central component of many SAPs, which often required public utilities like water to be transferred into the control of private companies. Supporters of this strategy believe that privatization will eliminate the corruption that plagues many developing nations. From the perspective of sustainability, many also argue that private companies can build and improve infrastructure, such as pipes and water sanitation systems, for water delivery more cost-effectively than governments. Finally, many believe that people will use less water if required to pay a higher price for it.

Privatization is a system in which water becomes a commodity that is sold to consumers for a profit. In this type of system, private companies are responsible for distributing water. People pay the company based on the amount of water they use.

While there are many possible benefits to privatization, critics of this approach believe it has disproportionately negative effects on poor communities. Those against water privatization maintain that because private companies are motivated by profit, they have little incentive to provide water at a lower price to poor communities. In some instances private water companies do not provide any services at all to less lucrative markets such as poor neighborhoods and rural areas. And when multinational companies control water supply systems, local communities tend not to have as much control over the decision-making process of water distribution.

The debate over water privatization offers an excellent example of the complex nature of sustainability. While some believe it is more sustainable to rely on market forces to improve efficiency and reduce consumption, others believe that sustainability requires equal access, community control, and environmental regulation that only governments can provide.

One response to this debate has been to form a public-private partnership to address water management in communities. For example, until recently residents of Berbera, a coastal town in north-west Somalia, relied upon a run-down urban water system that provided low-quality and insufficient supplies of water. To address this problem, UNICEF and the European Union introduced a public-private partnership in 1997, which included the local community, the government Water Authority, and the private sector in ensuring sustainable service delivery. The water board, which was established specifically for this project, represents the various stakeholders and helps monitor and improve the water management system. For more information on this approach, visit http://www.unicef.org/infobycountry/somalia_51232.html.

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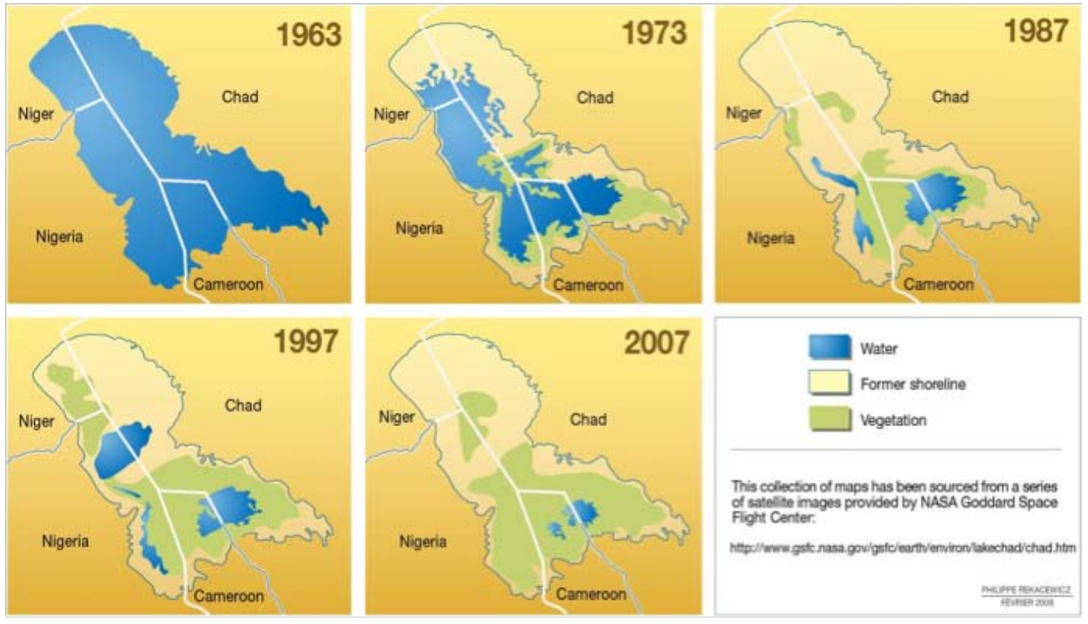
Social Sustainability

The importance of water means that when supplies are limited, conflict can become a serious concern. Regardless of whether the conflict is political or violent in nature, it is imperative that societies find sustainable ways to work together to plan for the use of and access to water.

Lake Chad, which is bordered by Chad, Cameroon, Nigeria, and Niger, provides a striking example of what happens when neighboring countries fail to create a joint water management plan. Despite the formation of the Lake Chad Basin Commission in 1964, the lake has shrunk by nearly 95%, from approximately 25,000 square kilometers to just 1,350 square kilometers. Though experts believe climate change accounts for approximately half of the lake's disappearance, direct human use, such as irrigation and overgrazing, account for the other half of the loss. Surrounding communities have been heavily impacted and have experienced increased poverty, crop failures, livestock deaths, and collapsed fisheries. While many efforts to develop a sustainable management system for the lake have been attempted, a clear solution has yet to emerge; this again highlights the complexity of sustainable water management, particularly when waterways cross boundaries.

Even if nations are initially able to agree upon a common plan for shared waterways, maintaining cooperation can be challenging. In 1977, Hungary and Czechoslovakia agreed to build a series of dams on the Danube River in order to provide electricity and prevent flooding. Though they had signed a treaty formalizing their joint plan, Hungary abandoned the project 12 years later, citing environmental concerns. Three years later, in 1992, Czechoslovakia (and later Slovakia, once the country split) began unilaterally completing the project against the wishes of Hungary. Military forces from both nations soon arrived at the Slovak-Hungarian border and the issue was only resolved when taken to the International Court of Justice.



Source: United Nations Environmental Program, Vital Water Graphics: Lake Chad: Almost Gone (2008).

Water scarcity can also bring violence or the threat of violence when societies compete with each other for control and use of water. In 1975, water levels on the Euphrates River brought Syria and Iraq to the brink of war. Syria had recently completed the Tabqa Dam and had an agreement with Iraq that they would keep a certain amount of water flowing downstream. However, water levels in the Euphrates became very low, and while upstream dams in Syria were filled, Iraq became worried because they were receiving much less water than in previous years. Blaming Syria for their lack of water, Iraq threatened to bomb the Tabqa Dam. Both nations sent troops to their shared border and conflict was averted only when Saudi Arabia was able to successfully mediate between the two countries.

As each of these examples demonstrates, when water becomes scarce or where beliefs about how best to use water diverge, conflict can quickly arise. Because so many waterways are shared (there are currently 263 river basins that cross political boundaries), cooperation among communities and nations is a key element of any sustainable system of water use and distribution.

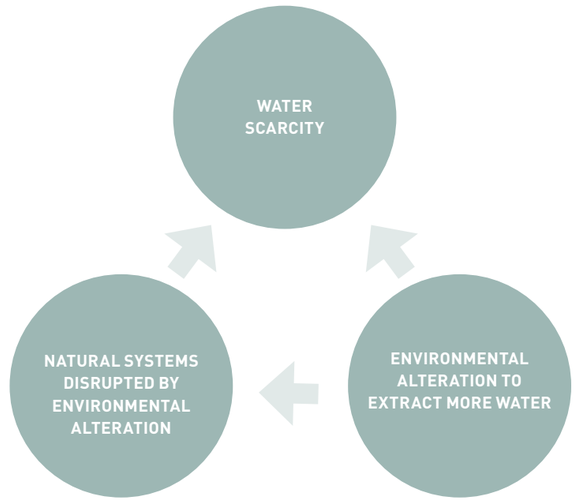
Environmental Sustainability

The accessibility of clean water is greatly impacted by environmental factors. In what is known as a **feedback loop** (see figure at right), humans attempt to combat the effects of water scarcity by altering their environment; however, these alterations disrupt natural systems and cause greater water scarcity and require more environmental alterations to maintain sufficient amounts of water.

Humans currently disrupt natural water systems in a variety of ways. Pollution harms the quality of water in each of its three forms: liquid (water), gas (vapor), and solid (snow and ice). Humans drain **aquifers** through over-extraction and drilling for freshwater. Dams impede water flow, reducing the efficiency of the water recycling process and harming fish and marine life. Cities and towns replace porous soil with concrete, reduce tree and plant life (both of which control **water run-off**), and concentrate human activity, thereby stressing local water systems. Finally, evidence suggests that human activity has caused the climate to change, altering global environmental and water systems and resulting in disrupted water patterns that cause, among other things, both desertification and flooding.

Aquifers are underground pools of water. Wells are often used to extract groundwater from these sources.

Water run-off is water that flows over land and into rivers, lakes and streams. In natural environments, much of this water is absorbed into the soil.



Many of these issues are present in the production, transportation, and consumption of bottled water. In regions where clean water is unavailable, bottled water can be an important source of sanitary drinking water. Even in areas with sufficient clean water, bottled water is a convenient substitute for tap water. However, a closer look at bottled water shows that in the long-term it both causes environmental degradation and increases water scarcity. Plastic water bottles are created through a process requiring a great deal of water-intensive energy.

The water that goes into these bottles is often mined from aquifers and springs in an unsustainable way, thus draining these valuable resources. The water is then filtered in a process that uses nine times more water than actually ends up in the water bottle. At the end of the cycle, despite the fact that bottles are usually recyclable, most water bottles still end up in landfills. Thus, though bottled water may increase access to water in the short term, the long-term environmental impact of bottled water may ultimately reduce the amount of clean water available to future generations.

Promising Practice: Sustainable Water in Uruguay

Uruguay, like many nations, experimented with water privatization in the late 20th Century. Prior to privatization many Uruguayans who did not have piped water relied upon community **standpipes**, which had been built by the public water and sanitation ministry, for potable water. However, many of the private companies who took over provision of water services soon cut off the water supply to these standpipes. Instead, they encouraged households to install water pipe connections, which required a large fee. As a result, many poor people were left without access to potable water.

A standpipe is a freestanding outdoor tap. Photo courtesy Doris Antony. Creative Commons Attribution Share-Alike.

In 2004, the Uruguayan government took over the country's water management and passed a constitutional amendment that prohibited private companies from participating in the water sector. In addition, legislation was passed to encourage widespread participation in the planning, management, and control of the water sector. As a result of these changes, Uruguayans can hold the public water company accountable for their needs, hopefully ensuring a sustainable balance between efficiently allocating water and meeting the needs of consumers. Uruguay has been able to provide nearly universal access to safe drinking water and adequate sanitation services through these measures.

United Nations Conventions

Many argue that water should be viewed as a human right and not as a commodity; several human rights documents echo this understanding:

- The Constitution of the World Health Organization (WHO) states that "the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being." Access to clean water is necessary to achieve even basic levels of health and is therefore integral to this right.
- Article 25 of the Universal Declaration of Human Rights includes the right to a "standard of living adequate for [their] health and well-being." Once again, access to clean water is integral to this right.
- Article 24 of the Convention on the Rights of the Child requires nations to fulfill children's right "to the enjoyment of the highest attainable standard of health." Included within this convention is the requirement that nations provide "clean drinking-water."
- Articles 11 and 12 of the Covenant on Economic, Social and Cultural Rights requires nations to recognize their citizens' rights to "an adequate standard of living" and the "highest attainable" standards of health. In General Comment 15, relating to the implementation of this covenant, the Committee emphasizes the vital role access to clean water plays in upholding the rights guaranteed by Articles 11 and 12.
- The Millennium Development Goals (MDGs), a global anti-poverty agenda in which eight objectives related to international development were adopted, require sustainable access to clean water for their fulfillment as indicated in the chart on the following page.

MDG	Role of Water
1 Eradicate extreme poverty & hunger	• Preventing disease and loss of productivity, freeing up women and girls to go to school and work • Growing nutritious and adequate food • Averting prohibitive costs of purchasing water • Contributing to industry
2 Achieve universal primary education	• Eliminating time-consuming water procurement to allow children to attend school and parents to pay attention to their schooling • Sanitation facilities for girls that encourage school attendance • Better health for better school attendance
3 Promote gender equality & empower women	• Reliable, convenient water supplies mean that generations of women are freed from onerous water procurement and can pursue education, training, and employment in numbers commensurate to men • Less water-related disease means less time spent caring for the sick • Separate quality sanitation facilities enhance sense of personal dignity • More sanitary conditions and less disease leads to lower rates of maternal mortality
4 Reduce child mortality	• Most diarrheal deaths are preventable with improved water access and quality • Other water-borne and water-related diseases can be reduced with better access to clean and adequate supplies
5 Improve maternal health	• Drastically reduced water-related diseases • Less diversion of health care dollars for preventable water-related illnesses • Better childbirth conditions
6 Combat HIV/AIDS, malaria & other diseases	• Less incidence of disease and better outcomes for the sick • Water for making formula for the babies of HIV-positive mothers to prevent transmission • Less dirty standing water means fewer mosquito breeding grounds
7 Ensure environmental sustainability & reverse the loss of environmental resources	• Protection and preservation of water supplies is key to supporting ecosystem health and combating climate change
8 Develop a global partnership for development	• See all of the above. Global development and progress on global inequalities are not possible without attention to water

CLASSROOM COMPANION

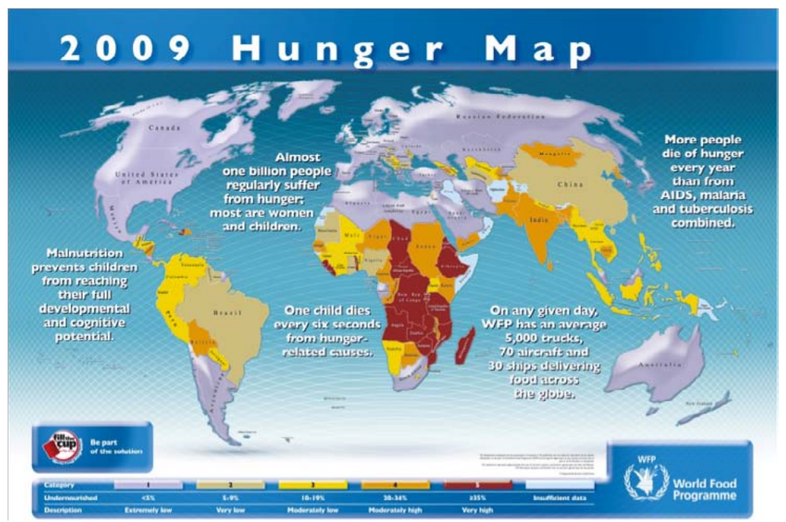
The following lessons can be used to explore the issue of water with your students. All lessons can be found in our online database (http://worldsavvy.org/resources/gep-resource-library.php) or in the Sustainable Communities Collaborator's Guide:

- Water Words: In this workshop, students will use art to explore the multiple forms, uses, and symbols of water. (SC Collaborator's Guide, pg. 143)
- Water Around The World: In this workshop students will explore water stories of 4 people from around the world. In small groups, students will learn about their cultures, families, how they get water every day and how much they use. Then each group will act out a different water story for the class and reflect on water access and usage. (SC Collaborator's Guide, pg. 145)
- Media Literacy and the Story of Bottled Water, Part 1 & 2: Students will participate in a partner drawing activity to examine one and two-way communication in the media. Then students will look at contemporary advertisements and explore the purpose behind the ads' images and messages. Next, students will watch the short film, "The Story of Bottled Water", and design an education advertising campaign for bottle water based on what they learn from the film and lesson. (SC Collaborator's Guide, pg. 47)

Food

Much like water, food is vital to human survival and access to sufficient amounts of healthy and nutritious food varies greatly by region and by socioeconomic level. Worldwide, an estimated one in six people do not get enough food to be healthy. This statistic translates into 40 million deaths each year attributable to hunger or hunger-related diseases. The average poor person spends about 80% of his or her income on food. At the opposite end of the spectrum, many people in developed nations suffer from the effects of an overabundance of too much unhealthy food. In the United States, 30% of adults over the age of 40 are obese. These high obesity rates lead to a variety of serious health problems such as diabetes, high blood pressure, and heart disease.

Beyond the importance of nutrition, food also has economic, social, and environmental dimensions. Efforts at the local, national, and global levels are underway to promote a more sustainable food system, and communities and organizations around the world are producing and distributing food through means that ensure the overall health of communities, support the economy and prevent environmental degradation. Yet the statistics above remind us that there is still a long way to go to achieve a truly sustainable food system around the world.



Economic Sustainability

As a vital necessity of human existence, food production is tightly intertwined with local and global economies. Currently, food is most frequently bought and sold as a **commodity**, playing a direct economic role. However, even in times when most people practiced **subsistence farming** food production significantly impacted economies. Time spent producing food was time spent away from a cash economy.

A commodity is any good that is widely bought or sold.

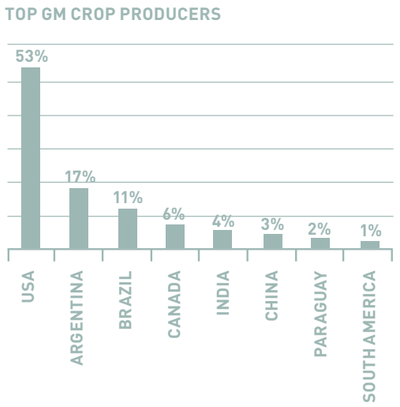
Subsistence farming is a form of farming in which the farmer and his or her family use all food produced on the farm.

Since World War II, technological innovations such as mechanization and advances in chemicals used to treat crops have led to large increases in the number of industrial farms, a trend that has been met with mixed reviews from individuals both inside and outside the food industry. The vast majority of these farms tend to be monocultures, meaning that they contain only a single crop. Monocultures are often seen as economically advantageous because they allow farmers to specialize farm equipment and labor and maximize profit by growing higher grossing crops. However, because monocultures tend to use single crop strains, if a disease strikes to which crops have no resistance, it can destroy entire populations of crops leading to significant losses in profits and, in worst case scenarios, widespread famine.

In the last decade, agribusinesses have made attempts to produce crops that are resistant to diseases, can travel greater distances without spoiling, and produce higher yields through **genetically modified food** (GM food).

The primary benefit of agribusiness and GM food is the ability to produce more food and provide it to people at a lower cost. For example, scientists at Monsanto Company were able to place genes from a soil bacterium into the genome of potato plants. The resulting potatoes were resistant to the Colorado Potato Beetle, eliminating the need to treat them with the pesticide used to combat these beetles. In 2006, 252 million acres of GM crops were planted in 22 countries, with the United States leading the way. Because these farms are so large and efficient, they have the economies of scale in their favor, meaning they can sell the product for less and still make a profit.

Agribusiness refers to large scale farms and supporting businesses that work together to produce food for commercial consumption. Genetically modified food is food that has been genetically altered to enhance certain characteristics.



Data from: Human Genome Project Information, Genetically Modified Foods and Organisms, http://www.ornl.gov/sci/techresources/Human_Genome/elsi/gmfood.shtml

While very efficient in the short term, many argue that industrial agriculture is not sustainable at either the community or the environmental level. Large scale agribusinesses such as Monsanto control the intellectual property that makes production of GM crops possible, meaning that small farmers must pay a higher price for access to certain seeds. Because of the cost of purchasing seeds and the difficulty of competing with the low prices of some industrial farms, many small farms have closed down. The result is that much of the world's food is controlled by agribusinesses, which has had serious effects on local communities around the world. Areas that were once able to sustain themselves with locally produced food are now dependent on imports. Should something prevent the food from reaching its intended market (as we saw after the earthquake in Haiti) or should global prices increase (as we saw in 2008 and 2011), people's access to food is severely limited.

Further complicating matters are questions of the safety of GM food, the use of GM crops, and the environmental impacts of large-scale farming. Europe in particular has been resistant to GM foods due to safety concerns, such as allergic reactions and possible unintended effects, such as increased resistance to certain antibiotics. Environmentally, some fear that the introduction and spread of GM crops will alter the ecosystem and decrease **biodiversity**, both of which are detrimental to agricultural sustainability. The combination of all these factors – fewer farmers, increased reliance on agribusiness, and potential health and environmental risks – means that despite the benefits of agribusiness and GM crops, many fear that these practices will not be sustainable in the long-term.

Biodiversity refers to how many different species of plants and animals exist in a certain ecosystem. Generally, scientists believe that ecosystems with greater variety are healthier.

Social Sustainability

In addition to sustaining our bodies, food sustains our hearts and minds. Across cultures and centuries, food has been central to how we connect with one another. In Japan, the phrase "one who eats rice from the same bowl" is used to indicate an intimate companion. The word "companion" itself is derived from the Latin "panis," which means bread. What and how we eat is often heavily influenced by culture, and customs and attitudes relating to food vary greatly from place to place. For example, in Sierra Leone, rice is the staple food (a common saying, "If I haven't had my rice, I haven't eaten today," emphasizes its importance) and is generally eaten with the hands by squeezing or rolling it into a ball and then dipping it into a sauce or stew. In a traditional meal, men and women eat separately, with each group gathering in a circle around a single large dish of food, emphasizing the importance of sharing. Proper etiquette includes allowing the oldest males to have the first choice of the best pieces of meat or fish and refraining from talking during a meal, which is often interpreted as showing a lack of respect for the food. While foods, tastes, and customs may differ, the cultural importance of food can be found the world over.

Globalization has played an important role in transforming how culture and food interact. As people and ideas travel throughout the world with ever-greater frequency, culture and food follow. In most large American cities, one can find representatives of numerous cultures, such as Mexican, Chinese, Italian, Indian, and Japanese cuisine. While many applaud this development as providing greater diversity and choice to consumers, others worry that the mass dissemination and spread of cultural foods will weaken and change these cultures in the long-term. Benjamin Barber, a political theorist and author of *Jihad vs. McWorld*, describes the phenomenon through the example of French crepes:

Globalization is the increasing unification of national economies into one world economy. The term often refers to the expansion of free trade and the cultural, political, technological, and other consequences that result from the transfer of ideas.

> Increasingly, [globalization] takes a toll on that authentic origin, as when an American crepe maker ends up back in Paris selling the American version of crepes to people in Paris who don't make them anymore because there's a much cheaper global product they can get in place of what they've had.

Policy Forum: Globalization and Culture, Cato Policy Report 9 (May/June 2003).

The proliferation of fast food restaurants and products such as McDonald's and Coke and Pepsi Company products (which include Frito-Lay brand chips, Gatorade and Quaker Oats) is a further concern of many who fear that such products will weaken cultural food traditions around the world.

Unlike many other issues of sustainability, it is difficult to place a quantitative value on culture. Further, not all cultural change is necessarily bad. For example, technological advances in the kitchen changed American culture in ways that many consider positive. In particular, many attribute greater participation of American women in the workforce at least in part to advancement in food preparation techniques, such as microwaves, that allowed women who were often required to take on the majority of household chores to prepare food more quickly. Thus, maintaining all cultural traditions regarding food may not always be desirable. Yet, any attempt to create a more sustainable food system will require balancing the benefits of globalization with the preservation of cultural traditions that promote sustainability.

Environmental Sustainability

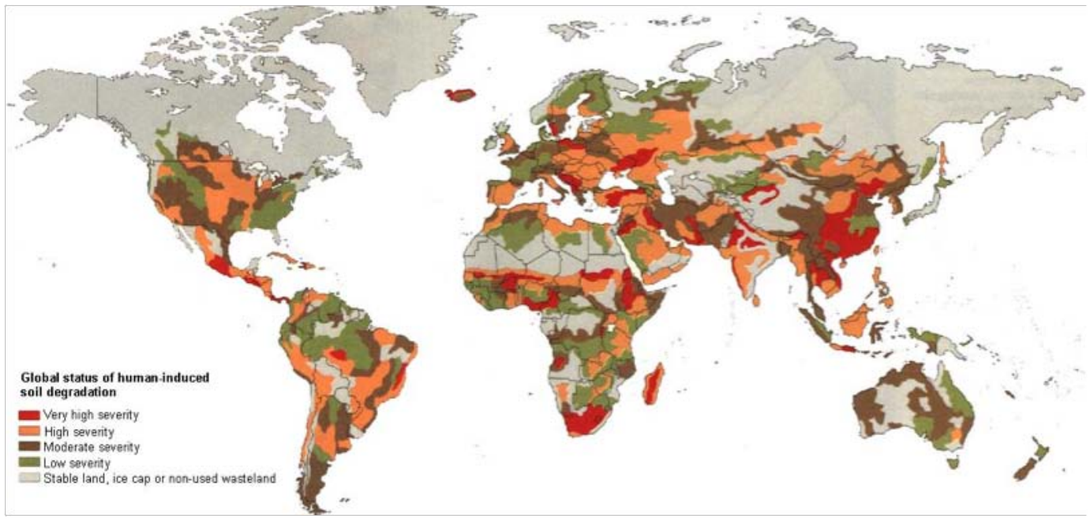
A healthy environment is essential to producing sufficient food to sustain the world's population. About 11% of the earth's surface is suitable for agriculture and 38% of this land has become degraded as a result of poor natural resource management practices. Chemicals used in agriculture – which often run off into rivers, lakes and oceans – and the destruction of rainforests in order to provide enough land for agriculture and cattle are among the leading contributors to environmental degradation.

In recent decades, the production of meat has been a growing factor in the disruption of the world's ecosystems. In 1961, world meat consumption was estimated at 71 million tons. By 2007, this number had risen to an estimated 284 million tons (Americans, who eat about 8 ounces of meat a day, eat about twice as much meat as the global average). Like crop production, raising livestock has been increasingly industrialized and much of the meat that the world consumes is now produced in assembly-line factories, a reality that has negative impacts on both food security and the environment.

The environmental effects of this industry have been hugely detrimental. In all, the industry is believed to produce nearly one fifth of the world's greenhouse gases. Further, concentrated, large-scale meat production is a major source of water pollution. Whereas smaller-scale and diversified farming allows for the use of manure as fertilizer, livestock factory-farms result in incredibly dense concentrations of livestock, which produce high quantities of manure that are frequently held in manure "lagoons." These "lagoons" often pollute groundwater and streams.

In addition to the environmental impacts, meat production causes land that might otherwise be used to grow food for human consumption to be devoted to corn, soy, and other grains for feeding livestock. All together, about 30% of earth's ice-free land is estimated to be involved either directly or indirectly in the production of livestock; this is a significant portion of the land available for agriculture. Meat production can also negatively affect food prices since increased demand may result in higher prices for such foods as corn and soy.

As the percentage of people who eat meat grows, the current factory-style production of meat will be difficult to sustain. Furthermore, as large-scale meat production further damages the environment, the cost of production will rise and producers will no longer be able maintain the low meat prices that have fueled the industry's growth. Many believe that in order to make meat production more sustainable, consumers will need to cut back on the amount of meat they eat.



Promising Practice: Sustainable Agriculture

In recent years, popular movements in the developed world have sought to make food production and distribution more sustainable. The broad concept of sustainable agriculture often includes organic farming, locally-sourced food, and fair trade agriculture. Sustainable farms seek to minimize their impact on the environment by creating a self-sustaining ecosystem within the farm (i.e., a balance between animal and crop production that enables sustainable farmers to use animal waste to fertilize crops). Sustainable farmers also allow their animals to naturally graze on the land, rather than feeding livestock grains that require intensive growing practices and tend to degrade the soil. These farmers frequently plant a variety of crops and employ strategies like crop rotation, which cause soil to be naturally replenished with nutrients, thus reducing or eliminating the need for chemical fertilizers.

In addition to reducing their impact on the environment, many farmers who practice sustainable agriculture actively engage in community development. By selling their goods locally via farmers markets, local food cooperatives and grocery stores, and **community-supported agriculture (CSAs)**, they not only reduce the pollution associated with transportation, but they also ensure that their community has access to healthy food. Another way in which farmers can help their community is by furthering the well-being of their workers by providing a safe working environment and paying fair, livable wages. However, many believe that paying fair wages will result in an increase in food prices and a decrease in the diversity of foods that are widely available. In addition, the recent economic growth experienced in some of the world's poorest countries, particularly in Africa, has resulted from the ability of these countries to export their agricultural crops to European markets. To the extent that Europeans begin to increasingly stress the value of locally-grown produce, negative economic effects may be felt among poor African farmers who depend on the European market to sell their produce.

CSAs are programs that allow individuals to purchase a "share" of a farm and receive a box of harvested crops at set increments of time.

A truly sustainable system of agriculture and food production will need to balance each element of food production to create a self-sustaining system that will provide sufficient food, strengthen the economy, and preserve the environment.

United Nations Conventions

Providing adequate, sustainable sources of food is at the heart of many United Nations conventions. The following is a sampling of documents related to food security and production:

- **The Convention on Fishing and Conservation of the Living Resources of the High Seas** entered into force in 1966 and encourages international cooperation in the prevention of overfishing, especially as new technologies contribute to over-exploitation.
- **The International Covenant on Economic, Social and Cultural Rights** entered into force in 1976. Article 11 requires states to recognize the right to "adequate food," to "improve methods of production, conservation and distribution of food," and to "ensure an equitable distribution of world food supplies in relation to need."
- **The Convention on Biological Diversity** entered into force in 1993 and, recognizing that "biological diversity is being significantly reduced by certain human activities," and is important "for evolution and for maintaining life sustaining systems of the biosphere," seeks to enhance international cooperation so as to "conserve and sustainably use biological diversity for the benefit of present and future generations."
- **The International Treaty on Plant Genetic Resources for Food and Agriculture** works in tandem with the above treaty and entered into force in 2004. It seeks to encourage "the conservation and sustainable use of plant genetic resources for food agriculture and the fair and equitable sharing of the benefits arising out of their use . . . ."
- **The United Nations Convention to Combat Desertification** entered into force in 1996 and was enacted because "desertification and drought affect sustainable development through their

interrelationships with important social problems such as poverty, poor health and nutrition, lack of food security . . . .” The Convention requires states to address the “physical, biological and socio-economic aspects of the processes of desertification and drought.”

CLASSROOM COMPANION:

The following lessons can be used to explore food issues with your students. All lessons can be found in our online database (http://worldsavvy.org/resources/gep-resource-library.php) or in the Sustainable Communities Collaborator’s Guide:

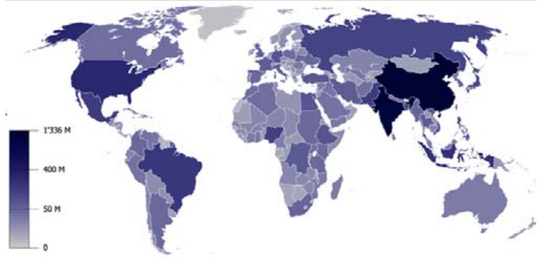
- You Are What You Eat: In this workshop, students will examine the impact of the food we eat on our culture and identity. They will initially look at their own eating habits and traditions and then widen the focus to examine how food defines culture and communities. Finally, students will create and share spoken word poems about a favorite food. (SC Collaborator’s Guide pg. 124)
- Feeling Good: Students will explore health and wellness by focusing on nutrition. They will do a taste test of whole grain break and processed white bread, and distinguish between whole and processed foods. Finally, students will create a business-card media campaign and distribute their “food facts” to students, teachers, or community members. (SC Collaborator’s Guide pg. 128)
- Cultivating the Concrete Jungle: In this two-part workshop, student will explore the concept of small-scale and urban agriculture and will create their own models of a small-scale farm or urban agriculture project. (SC Collaborator’s Guide pg. 136)
- Crooked Corn: In this workshop, students will discover the prevalence of corn in common foods (especially processed food). Through exploring the history of U.S. corn production, students will learn about contemporary industrial agriculture. (SC Collaborator’s Guide pg. 141)
- Just Food, Food Justice: In this workshop, students will explore issues of food justice and injustice by reflecting on their own values and examining the case study of West Oakland’s food justice movement by viewing and discussing a short film. (SC Collaborator’s Guide, pg. 151)

Where We Live: Population and Migration

See the Human Migration edition of the World Savvy Monitor.

There are currently nearly 7 billion people in the world, a number that continues to grow. At the heart of sustainability is supporting this huge population without consuming the world’s resources faster than the earth can replenish them. Aside from the sheer volume of the world population, patterns of human settlement and migration have a huge impact on the environmental, cultural, and economic health of communities.

The World’s Population, by Country



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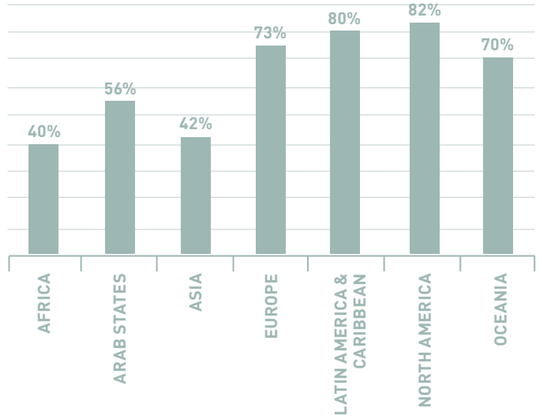
The world is currently experiencing two important migratory trends. The first is the movement of people from towns and rural areas to cities, or **urbanization**. The second is travel from the developing to the developed world. Of the approximately 200 million people living outside the country in which they were born, about 120 million left less developed countries, and roughly half of those people traveled to developed nations. In addition to voluntary migration, about 67 million people have been displaced by war, conflict, or environmental disasters. Fifty-one million of these people are **internally displaced persons (IDPs)**, while the remaining 16 million are **refugees** and were forced to flee beyond their borders.

Population and migration patterns have numerous consequences at the local, national, and global level, and it is imperative that communities and organizations find ways to accommodate population trends in a way that is economically, culturally, and environmentally sustainable.

IDPs are people who have travelled within their own country to avoid conflict or natural disaster. Though many people use the term “refugee” to refer to any person forced to flee his or her home country, the United Nations Refugee Convention defines the term more specifically. Under this official definition, a refugee is any person who is outside of his or her country of origin and who has a well-founded fear of persecution on the basis of race, religion, nationality, membership in a particular social group or political opinion. This person must be unable or unwilling to avail him or herself of the protection of his or her home country.

PERCENTAGE OF URBAN POPULATION, BY REGION



Data from United Nations Population Fund, *The State of World Population* 2010

Economic Sustainability

Today, half of the world’s population – about 3.3 billion people – live in urban areas, with about one billion living in slum areas surrounding many urban centers. Though more developed regions of the world tend to have a larger portion of their population living in urban areas, lesser developed areas are experiencing higher rates of urbanization – people moving from rural into urban areas. Experts refer to the recent trend toward urbanization in less developed regions as the **second wave** of urbanization.

The first wave of urbanization was spurred by the Industrial Revolution. It occurred from about 1750–1950 and affected much of Europe and North America.

Economic sustainability is closely intertwined within the phenomenon of urbanization. As economic activity becomes increasingly concentrated in urban areas, people migrate to cities in search of jobs. However, few cities in the developing world produce enough jobs to employ their growing populations. At a deeper level, many growing cities are unable to keep up with the infrastructure demands of their rapidly expanding population. The very visible result is a proliferation of slums. One in three city dwellers live in a household fitting the United Nations–Habitat description of “**slum household**” and over 90% of these people live in the developing world.

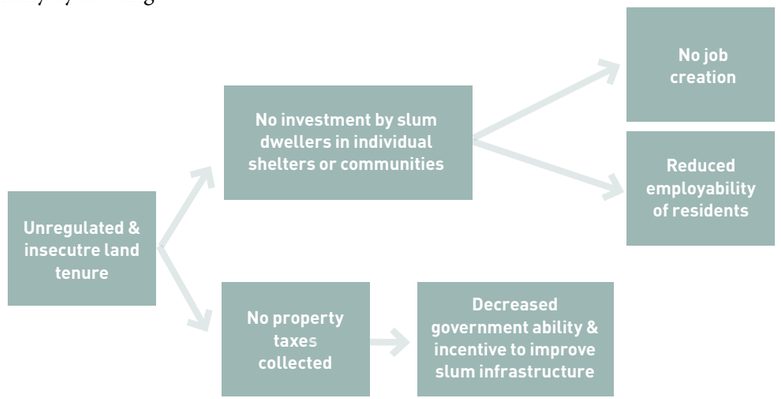
UN–Habitat defines a “slum household” as “a group of individuals living under the same roof in an urban area who lack one or more of the following: durable housing, sufficient living area, access to improved water, access to sanitation and secure tenure.”

The proliferation of slums has repercussions for both microeconomic and macroeconomic sustainability. [Sidebar: Microeconomic refers to individual units (consumers, companies) while macroeconomic refers to the economic system as a whole.] For example, most slum-dwellers reside in shelters that are either illegal or rented through informal and often exploitative markets. Under these conditions, residents know that they may be kicked off their land or have their shelter destroyed at any moment. As a result, there is little incentive to make more than

	Total Pop. (millions)	Average Pop. Growth Rate (2005–10)	% Urban Pop.	Urban Growth Rate (2005–10)
World Total	6,908.7	1.2%	50%	1.9%
More Developed Regions	1,237.2	0.3%	75%	0.7%
Less Developed Regions	5,671.5	1.4%	45%	2.4%
Least Developed Countries	854.7	2.3%	29%	4.0%

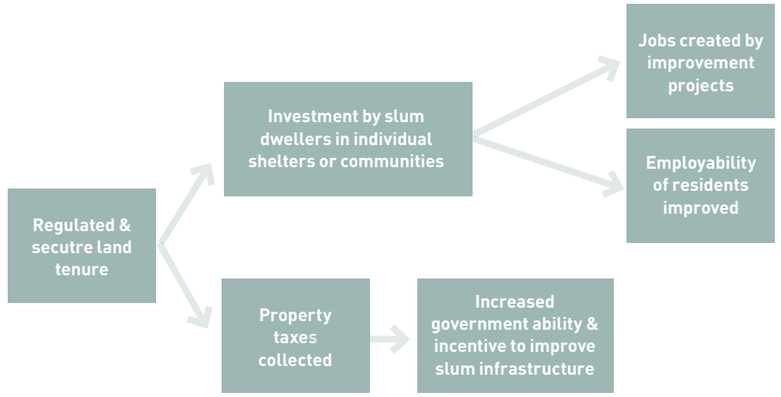
Data from United Nations Population Fund, *The State of World Population* 2010

basic improvements to their living environment, a process that could spur the economy by creating jobs. Further, because most slums are unregulated, the government does not collect property taxes. This means less revenue for already cash-strapped governments and, more specifically, less money and incentive for improving infrastructure – such as roads, water, and sanitation – within slums. Both factors lead to insecure, unhealthy, and inaccessible shelters, all of which reduce slum-dwellers' ultimate employability. As shown in the below figure, the result is a negative feedback loop in which the conditions created by insecure and unregulated land tenure worsen slum communities, which weakens the economy on both a small and large scale. The ailing economy in turn exacerbates slum conditions and the cycle continues.



Flowchart created from factors highlighted in United Nations Population Fund, *State of the World Population* 2007.

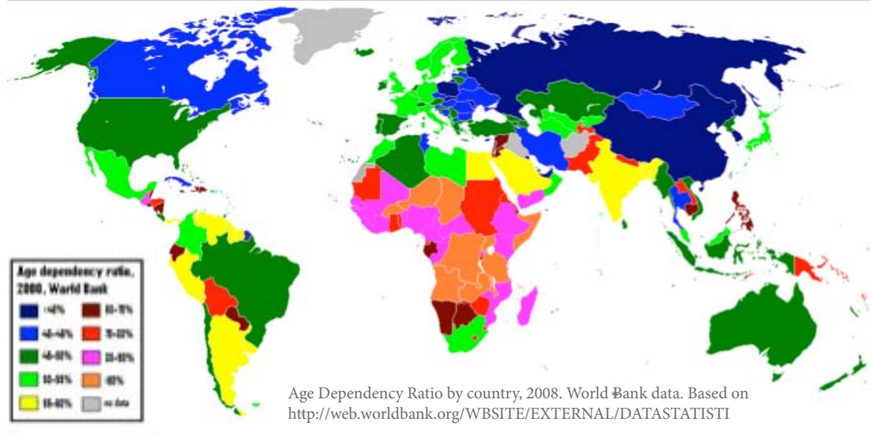
Thus, the economic sustainability of the developing world's quickly growing cities is largely dependent upon providing adequate and secure shelter to the urban poor. Although there are many factors necessary to achieve this goal, regulated and secure land tenure can have a dramatic impact. As illustrated below, providing regulated, secure land reverses the negative feedback loop, creating conditions under which jobs are created and slum conditions are improved.



Flowchart created from factors highlighted in United Nations Population Fund, *State of the World Population* 2007.

Social Sustainability

Population patterns are also intrinsically related to societies' survival and well-being. In general, fertility rates inversely correlate to wealth, with wealthier populations generally exhibiting lower fertility rates than poorer populations. In developed nations, fertility rates have fallen to an average of 1.6 children per woman. These lowered fertility rates, when paired with the medical advances that have increased average lifespans, lead to a demographic imbalance in which the proportion of older to younger people is ever-increasing. The least developed countries (LDCs) have the opposite problem. With shorter average lifespans and an average fertility rate of 4.7 children per woman, there is a surplus in the working age population. These countries also typically have fewer jobs, meaning that large portions of the population are under- or unemployed.



Age Dependency Ratio by country, 2008. World Bank data. Based on http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTI

Dependency Ratio, by Country

Either imbalance leads to **dependency ratios**, which compare the number of working aged people (15–64 year olds) to the number of younger and older people. A significant imbalance in these two groups can pose serious societal problems. For example, the United States experienced higher fertility rates in the years just after World War II. As these people have aged, more of the country's resource, both personal and societal, will be devoted to caring for this aging population. Government-administered programs such as social security and Medicare will become strained as payments to people claiming benefits exceeds the amount paid in by the current workforce. In some nations, analysts worry that there will simply be too few workers to fill necessary jobs. Though immigration from developing nations can help mitigate many of these issues, given the sheer number of immigrants necessary to balance dependency ratios coupled with the social resistance to immigration, experts believe this alone is not enough.

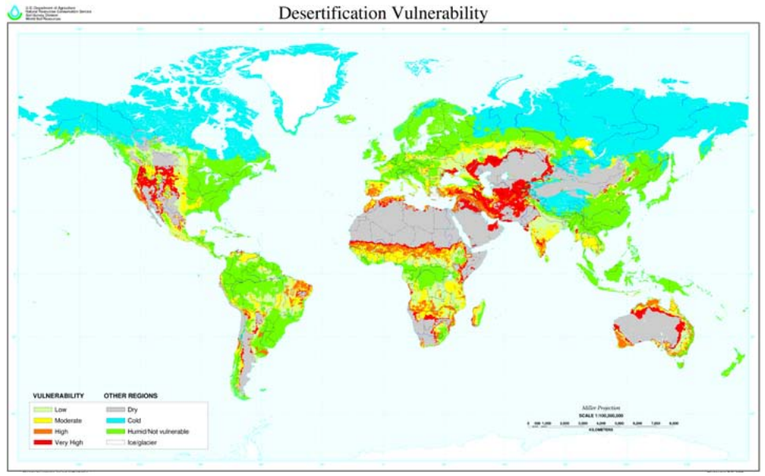
Developing nations are seeing different effects from their skewed dependency ratio. First, high unemployment rates often lead to social unrest. Second, this form of skewed dependency ratio serves as a "push" factor, incentivizing emigration. Those individuals with the motivation and financial means to emigrate are often the same individuals who are most valuable to a nation. The resulting movement of skilled workers from developing to developed nations, a phenomenon referred to as **brain drain**, can produce acute shortages in vital sectors such as medicine and technology.

Hence, both forms of unbalanced dependency ratios produce challenges to social stability and unsustainable outcomes. There are a variety of policy approaches that have been proposed to address population growth (or decline) to better align a country's demographics with its economy and capacity. For example, access to maternal and reproductive health resources has been shown to reduce fertility rates while some believe more generous maternity leave and childcare benefits could help boost fertility rates. More broadly, immigration policies that reflect the needs of a nation can help redirect populations to relieve pressure created by both forms of a skewed dependency ratio (pressure from the first wave of urbanization, discussed above, was partly relieved by immigration to the Americas).

Environmental Sustainability

Many of the factors that motivate people to move within and beyond their borders are related to natural resource scarcity and abundance. Likewise, peoples' movements in turn affect the earth's environment, leading to a cyclical effect.

Environmental factors are often at the forefront of an individual's decision to move. In addition to fleeing from conflicts that arise over resource scarcity, many environmental migrants leave their homes in response to droughts or floods, poor water or land quality, or other natural disasters. By some estimates there 20-30 million environmental refugees each year, more than twice the number of people forced to flee conflict. The United Nations estimates that 100 million of the world's most vulnerable people live below sea level or in places subject to the tidal surges and flooding that are thought to accompany global warming. The United Nations projects that by the year 2050, 50 million people will lose their houses and become climate-related refugees or internally displaced persons. Some experts believe this is a conservative estimate in that it does not include environmental migrants, such as those displaced by desertification, pollution, or the degradation of water sources.



US Department of Agriculture, 2003.

Just as climate change poses a danger for humans, migration poses a danger to the environment. Settlement practices contribute to deforestation, coastal depletion, soil degradation, overfishing and increased pollution and carbon emissions. As people migrate and concentrate, especially as the trend toward urbanization continues, the environment absorbs much of the stress. These migration patterns may be causing irreversible damage to the earth's surface and atmosphere. Part of establishing sustainable population and migration patterns is recognizing how these patterns can accommodate humans' basic economic and cultural needs as well as the earth's needs.

Promising Practice: Ouagadougou, Burkina Faso

The capital city of the country of Burkina Faso, Ouagadougou, is already home to more than one million people and continues to grow at a rapid pace. With a third of the population currently living in shantytowns on the edges of the city it was clear that steps needed to be taken to address the city's growing population.

The government, in partnership with the French Agency for Development, has taken numerous steps to increase the well-being and sustainability of the city's poorest residents. First, it established a roadway system both within the shantytowns and between the shantytowns and other parts of the city to reduce the costs of transportation. Next, the government installed shared water delivery points and implemented new models for water and sanitation services. Finally, public spaces like pedestrian pathways and sidewalks, street lighting, and playgrounds are being improved to further better the living conditions of those in shantytowns. Local residents have taken a role in the project, thus ensuring not only that their needs and priorities are incorporated into the plans, but also that they feel a sense of ownership and responsibility for the changes that are being made. The progress in Ouagadougou demonstrates that even as economic forces continue to drive rapid urbanization, governments can adopt strategies to mitigate at least some of the unsustainable aspects of rapid, unplanned urbanization.

United Nations Conventions

Managing population growth and migratory trends is key to many United Nations conventions. The following is a sampling of documents related to population and migration:

- The Universal Declaration of Human Rights grants every person the right to leave his or her home country for any reason; there is no corresponding right to enter another nation.
- The Convention Relating to the Status of Refugees and the Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment contain non-refoulement provisions. The Convention Relating to the Status of Refugees prevents nations from forcing a person to return to a country where his or her "life or freedom would be threatened on account of his race, religion, nationality, membership of a particular social or political opinion," while the Convention Against Torture prevents the return of individuals if "there are substantial grounds for believing that he [or she] would be in danger of being subjected to torture."
- The Millennium Development Goals (MDGs), a global anti-poverty agenda in which eight objectives related to international development were adopted, are interrelated to sustainable migration and population growth patterns in the following ways:

MDG	Role of Population/Migration
1 Eradicate extreme poverty & hunger	Access to reproductive health services generally results in lower fertility rates, which enables: • households to increase their savings and achieve greater upward social mobility; • resources to be spread more efficiently throughout society, especially as related to education, health, and job creation; and • women to gain greater opportunity to participate in the workforce.
2 Achieve universal primary education	It is often difficult for large families to afford sending all their children to school. • Costs include direct school fees, transportation costs, and the loss of children's labor (both in and outside the home). • Girls are often the most disadvantaged.
3 Promote gender equality & empower women	Women's equality is strengthened when women are able to determine the number, timing, and spacing of their children.
4 Reduce child mortality	Greater time between births greatly reduces infant mortality; access to reproductive health services is essential to achieving adequate child spacing.
5 Improve maternal health	According to the United Nation Population Fund (UNFP), meeting family planning services needs and expanding maternal and newborn health services could reduce maternal mortality by over 70% and child mortality by over 40%. • The investments necessary to achieve this service coverage – about twice what is currently spent –would "more than pay for themselves in saved later resource needs," according to the UNFP.
6 Combat HIV/AIDS, malaria & other diseases	HIV/AIDS can have a devastating impact on populations, which adversely affects society and the economy. In nations like Botswana, Lesotho, and Swaziland, all of which have adult prevalence rates of about 25%, the workforce is devastated and thousands of children are left orphaned.
7 Ensure environmental sustainability & reverse the loss of environmental resources	• Smaller family sizes can reduce environmental strain, which in turn can slow climate change and reduce resource conflicts. • Smaller family sizes can also slow unplanned urban growth, thus creating greater stability and enable more efficient planning for use of land and other resources.
8 Develop a global partnership for development	• Developed nations' investment in other nations' development can help reduce the "push" factors that spur much immigration. • These investments can also help make population growth and migration patterns more sustainable.

CLASSROOM COMPANION:

- Explore these issues with your students using the following lessons, which can be found in our online database (http://worldsavvy.org/resources/gep-resource-library.php) or in the Sustainable Communities Collaborator's Guide (page numbers are noted below). From Quantity to Quality: Students will examine the factors that contribute to their quality of life and design a map of their ideal community. (pg. 19)
- Understanding our Environment: Students will use local, national, and world maps to brainstorm and the diverse elements of our environment and explore the relationship between these elements. (pg. 25)
- Who Gets What: Students will participate in a brief simulation to explore resource distribution and consumption around the world. (pg. 29)
- Climate Refugees: Students will examine the challenges climate change refugees face by watching a short film about refugees in the south Pacific, making connections to their own lives, and building empathy for climate refugees. (pg. 165)

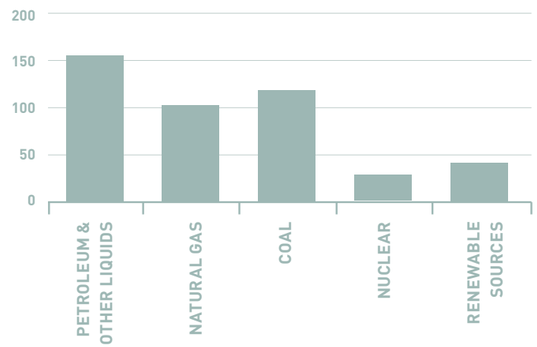
WORLD SAVVY MONITOR

The Effects of Human Life: Energy, Waste & Climate Change

Energy

Energy has become an increasingly vital part of most people's lives. We use energy for transportation, for cooking, to create heat, and to power the many electronic devices that have become an everyday part of life. Petroleum, natural gas, and coal, the three most common forms of energy used in the world, are also the most damaging to our natural environment. As energy demands rise rapidly around the world communities are increasingly seeking innovative ways to address the economic, social, and environmental aspects of energy usage so that they can develop more sustainable strategies for supplying and conserving energy.

WORLD ENERGY CONSUMPTION



Data from U.S. Energy Information Administration.

Economic Sustainability

China provides an informative example of the close relationship between the economy and energy and the need for sustainable models that fuel economic growth without damaging the environment.

See the Modern China edition of the World Savvy Monitor

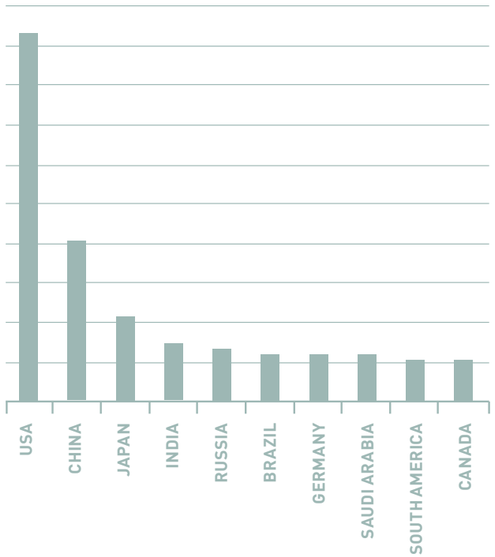
In the past two decades China's economy has grown at an astonishing rate, and with that, so has its energy usage. Construction in China accounts for *nearly half* of new construction *in the entire world*; China adds 2 billion square meters of new buildings every year, a rate that would produce the equivalent of a second China in 20 years. This growth is not limited to their infrastructure. China's middle class is quickly expanding – in recent years it has grown by approximately 300 million people, a number about equal to the population of the United States. This growing middle class is consuming more and more energy-intensive products (there are an estimated 14,000 new cars on the road every day in China). This intense economic growth has required huge amounts of energy; between 1995 and 2005, China's energy consumption rose 80%. Although China has made great strides toward using alternative and renewable resources, it still depends on inefficient and "dirty" forms of electricity generation, chiefly coal-fired power plants and furnaces. As Peter Navarro, a professor of economics and public policy, warns, "[T]he world does not have the resources to cater to 1.3 billion Chinese behaving like Americans."

As China's economy continues to expand, it will need to find ways to fuel its economy in a sustainable manner. Oil, of which China is the world's second largest consumer, is a limited resource and cannot be relied on indefinitely. Further, China has extremely high pollution rates, which are harming not only the land and water it relies on for economic growth, but also its people. Sixteen of the world's 20 most polluted cities are located in China. In the years since China's rapid industrialization, cancer rates have risen dramatically, in what many believe is an effect of high levels of pollution. The importance of finding alternative energy sources has not gone unrecognized by the Chinese government. Between 2006 and 2009, energy consumption per unit of gross domestic product (GDP) fell by more than 14%, and in 2009 the government announced its desire to reduce carbon dioxide emissions by 40–45% below 2005 levels by 2020. As China's population and economy continue to grow, finding sustainable energy policies will remain a critical issue.

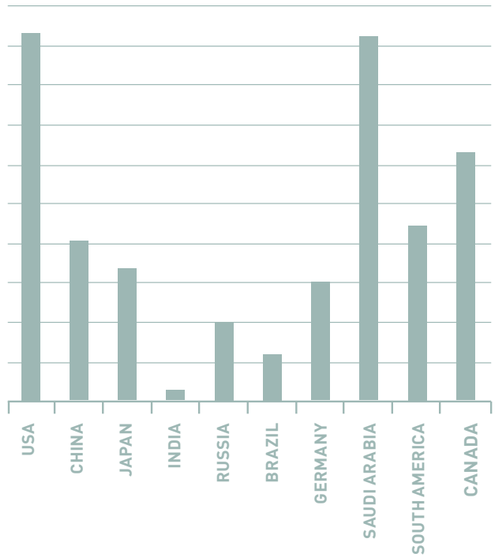
Social Sustainability

Energy use is also closely tied to societal patterns. As populations become wealthier, they tend to use more energy. The United States is perhaps the most extreme example. In 2008, the nation consumed a total of 7.14 billion barrels of oil, or nearly 25% of the world's consumption, despite the fact that Americans make up only 4.5% of the world's population (by comparison, China, the next largest oil user, consumed 8% of the world's oil, although it makes up 20% of the world's population). In addition to being used for gasoline, oil is integral to a diverse range of products central to the United States' culture. These include ink, crayons, bubble gum, dishwashing liquids, deodorant, eyeglasses, CDs and DVDs, tires, artificial heart valves, and anything with plastic in it. Given that oil is not a renewable energy source, and that some predict it will only last for the next 40 to 100 years (estimates vary greatly and depend on predictions of how much oil will be found and the rate at which it will be consumed), energy use in the United States is not sustainable.

OIL CONSUMPTION BY COUNTRY



OIL CONSUMPTION PER PERSON



Suburban America offers an example of just how intertwined oil consumption has become with American culture. By 2000, suburban populations in the United States outnumbered the populations of the cities and countryside combined. Not only is public transportation often severely limited or lacking in these areas, but road systems and neighborhood design frequently prevent easy access by pedestrians or bicyclists. Further, many of those residing in suburbs work in nearby cities or suburbs, which often results in long commutes and contributes to pollution and increased oil consumption. Ultimately, the very lifestyle of what many consider to be "the American dream" is a large contributor to unsustainable levels of oil consumption. Thus, modifying the cultural factors that lead to unsustainable energy use will likely require changes not just in individual behaviors to reduce energy consumption, but also more systemic changes to the way that we build our communities.

Environmental Sustainability

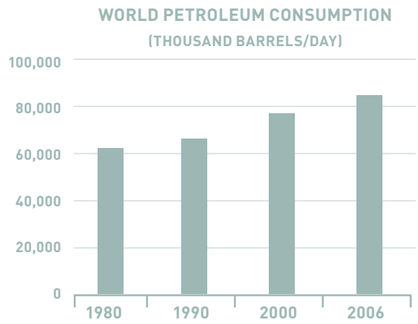
There are two types of energy sources: non-renewable and renewable. The majority of energy sources used in the world today are non-renewable energy sources. **Non-renewable energy** comes from sources that are finite, meaning that supply will one day run out. Coal and oil are two widely used energy sources that are considered non-renewable. **Renewable energy** is energy that can be naturally restocked by the earth at the same rate at which it is being used. Examples include energy derived from the sun, wind, and ocean tides. To create sustainable energy systems, the methods used to obtain and produce energy must not harm or use up natural resources and must also leave adequate amounts of energy sources for future generations.

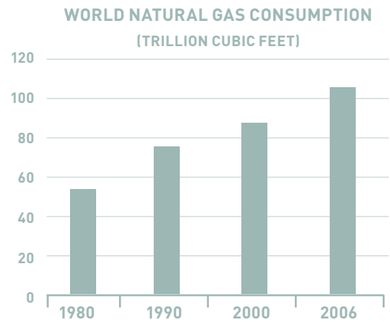
Coal is the cheapest form of energy and can produce electricity at one third of the cost of other fuels such as oil, natural gas, or nuclear energy. Though there is an abundance of coal and some predict coal supplies could last for the next 300 years, it is not considered renewable because it takes millions of years to create. Coal also has many negative environmental effects. Mining coal is disrupts ecosystems and pollutes water. Burning coal is the most polluting method of energy production and, when unregulated, causes smog, soot, acid rain, global warming, and toxic air emissions. Although the United States and other developed countries have imposed increasingly stringent environmental controls on the coal industry to reduce these environmentally detrimental effects, particularly older coal-fired power plants remain significant polluters. For more information about Coal, check out the "Coal Fact Sheet" in World Savvy's *Sustainable Communities Collaborator's Guide*.

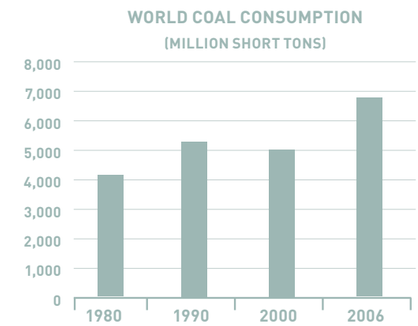
Oil, while it has truly changed the world and the way we live, is also a non-renewable energy source and experts predict that supplies that are economical to extract will last anywhere between 40 and 100 more years. Like coal, oil also has many severe environmental impacts. Drilling for oil produces contamination that can kill animals and plants and pollute drinking water. Refineries produce huge amounts of air pollution and dangerous waste products. When put to use, oil is one of the largest causes of pollution (gas used in cars is the single biggest polluter).

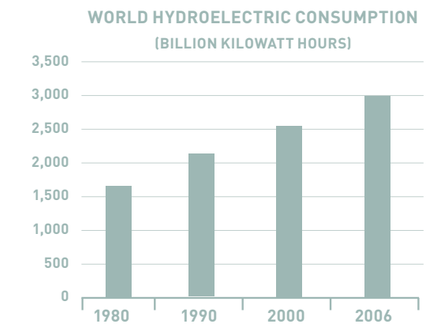
Nuclear Power is seen by many to be the only viable alternative to oil or coal; however the environmental impact of nuclear power remains a topic of significant debate. While producing nuclear energy emits virtually no air pollution, nuclear waste is highly toxic and its disposal continues to be a significant concern. While proponents of nuclear energy believe it may be the only way for developed countries to reduce dependence on non-renewable energy sources, opponents believe the environmental and health-related risks of this energy source outweigh the benefits. Most critics of nuclear power believe investment in other renewable energy sources such as wind, solar, hydroelectric, or geothermal energy is a much safer and more sustainable solution to the energy needs of our growing world population.

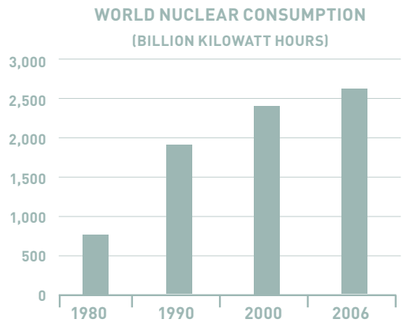
As the graphs on the next page illustrate, energy consumption of all forms of energy is steadily increasing over time. Thus, in order for the earth to continuing fueling the world's energy needs, energy production methods that are both renewable *and* clean will need to be developed and widely used. Without such change, the earth will simply not be able to produce enough energy to continue supporting its human population.

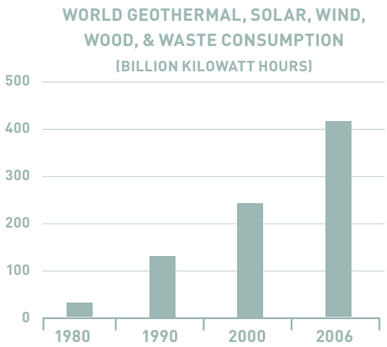












Data from U.S. Energy Information Administration.

Promising Practice: The Phillips Eco-Enterprise Center
Minneapolis, Minnesota is home to the Phillips Eco-Enterprise Center (PEEC), a 64,000 square foot building that is both sustainable and functional. The builders of PEEC achieved energy efficiency both during and after the construction process. First, 26,000 square feet of ceiling tile and aluminum support structures and 80 gallons of paint were saved by eliminating dropped ceilings and drywall walls; this strategy indirectly reduced energy consumption by avoiding the energy needed to produce those materials. Similarly, the builders reused many materials, such as stair treads and bathroom sinks, and used recycled-content materials, such as bathroom tiles and countertops. Where new materials were needed, builders opted for low-impact materials like low-emission adhesive and wood. In all, the construction process produced a 45% energy savings as compared to conventional construction.

The building continues to be energy efficient. The heating and cooling systems of the building are powered through **geothermal energy** and an energy recovery unit and electricity is generated using solar panels. Native plants have been planted on the roof, which serve as insulation and lower the amount of energy needed to heat and cool the building. The building also uses solar tracking skylights, which use mirrors to reflect light into the building so that electric lights do not have to be used as often.

Geothermal energy is energy generated from the earth's interior heat. Hot springs are an example of a naturally occurring form of geothermal energy. Today, we are able to convert this heat energy into electricity.

Even the businesses that use the building for their offices use business models that reduce energy consumption. One such tenant is Peace Coffee, a company that sells organic fair trade coffee. All of the coffee sold locally is delivered by bicycle. When the company must deliver its coffee outside the city, it uses vans fueled by biodiesel sold by a local coop. In this way, sustainable businesses throughout the area are able to magnify the effect of their policies by supporting one another in their efforts.

United Nations Conventions
Developing sustainable sources of energy is integral to many United Nations Conventions. Below is a sampling of these documents:

- The **Kyoto Protocol** is an international agreement associated with the **United Nations Framework Convention on Climate Change** and was adopted in 1997 (but did not enter into force until 2005). It sets binding targets for 37 industrialized countries for reducing greenhouse gas emissions. Though 187 nations have signed and ratified the agreement, the United States has not.
- The **Millennium Development Goals (MDGs)**, a global anti-poverty agenda in which eight objectives related to international development were adopted, are interrelated to sustainable energy use in many ways. As the United Nations Development Program explains, "None of the Millennium Development Goals (MDGs) can be met without major improvements in the quality and quantity of energy services in developing countries."

MDG	Role of Population/Migration
1 Eradicate extreme poverty & hunger	Sustainable sources of energy are vital to economic development and therefore poverty and hunger eradication.
2 Achieve universal primary education AND **3** Promote gender equality & empower women	With the development and expansion of clean, modern energy sources, women and girls are freed from the time-consuming tasks like searching for biomass fuel. This allows women to participate more actively in the workforce and enables children, especially girls, to attend school.
4 Reduce child mortality AND **5** Improve maternal health	Clean modern energy improves health conditions by eliminating the indoor pollution that causes an estimated two million deaths each year.
7 Ensure environmental sustainability & reverse the loss of environmental resources	Clean and sustainable energy allows for economic growth with minimal damage to the environment.
8 Develop a global partnership for development	Partnerships between the developed and developing world are essential to spreading the technology of clean, renewable energy.

CLASSROOM COMPANION:

Explore these issues with your students using the following lessons, which can be found in our online database or in the Sustainable Communities Collaborator's Guide (page numbers are noted below).

- Energy: Making and Moving: Students will examine their own daily uses of energy, with a particular focus on their own modes of transportation and those used throughout the world. (pg. 58)
- Figuring Out Fossil Fuels: Students work in small groups to learn about various types of energy and fuel and create pieces of art that "sell" respective types of energy. Students will share their projects with the class and teach others about what they learned. Students will also view a film that depicts the harmful effect of oil extraction in one Ecuadorian community. (pg. 62)
- Electric Personalities: In this workshop, students adopt the personal perspective of someone involved in or affected by the coal industry. After reading personal narratives, students explore this perspective in small groups and debate with other energy stakeholders. (pg. 70)
- Energy Detectives: In this four-part workshop, students will map their school, interview school administrators and facilities managers about the building, and tour the building to document energy use, waste, and savings. Each will create a list of recommendations to share with the administration and a poster design targeted at the school community. Students will vote on a poster project and carry out an Energy Awareness Campaign as a group. (pg. 73)
- Solar Campfire: Students will learn about solar energy and how it can be harnessed for human needs. Students will then build simple solar ovens and use them to heat s'mores or another simple treat. (pg. 81)

Waste

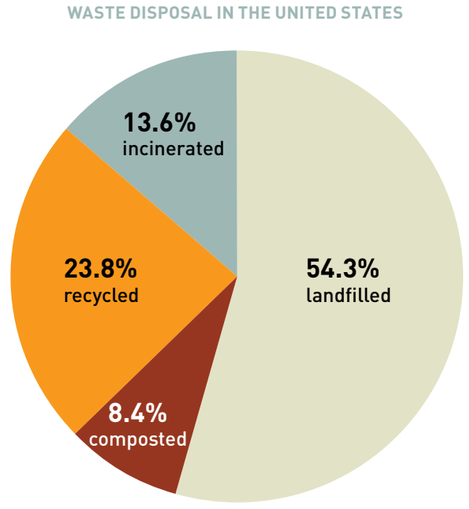
There are only two human-made structures visible from space: the Great Wall of China and the Fresh Kills Landfill, in Staten Island, New York that, when it closed in 2001, was 82 feet taller than the Statute of Liberty. In 2005, the United States produced 222,863,000 tons of **municipal waste**, more than any other country, including China, which was the second largest producer at 157,340,000 tons. It is clear the world has a lot of waste with which to deal, so the big question is: What can be done with it?

Municipal waste is waste that originates from households, commerce and trade, small business, office buildings and institutions like schools, hospitals and government buildings.

There are various ways of disposing of waste, some more sustainable than others. **Landfills**, **incineration**, **composting**, and **recycling** are four of the most common methods.

Landfills are sites where waste is placed into or onto land. Incineration is a process by which waste is disposed of through a controlled combustion process. Composting is a biological process in which biodegradable waste decomposes to create a product that increases soil fertility. Recycling includes any form of reprocessing other than for fuel.

With a global population that continues to grow, coupled with an increase in consumerism, sustainable communities will need to find new ways to deal with waste that are economically, culturally, and environmentally sustainable. While in many ways more challenging, waste reduction is also likely to be an increasingly important component of sustainability if population rates continue to increase.



Data from the United Nations Statistics Division

Economic Sustainability

As Lynn Landes, the founder and director of Zero Waste America, explains, "We are living in a false economy where the price of goods and services does not include the cost of waste and pollution." As wealth and urbanization increase, so generally does waste. And as landfills and the accompanying adverse environmental effects intensify, so generally do efforts to recycle; however, recycling comes with costs as well. First, the energy required to transport and repurpose materials is sometimes very high. Glass, for example, is very heavy and thus expensive to transport. Grinding glass to make roads often uses more energy than leaving glass in landfills, while using glass to make bottles usually produces an energy savings. Second, the more thoroughly materials are sorted, the easier they are to process and the more profitable they are. For example, bottles made from a single kind of plastic are more valuable than those made from a mixture of plastics. However, sorting materials meticulously generally requires manual sorting, which, especially in the developed world where labor costs are higher, can be prohibitively expensive. Thus the economic sustainability of recycling can vary greatly depending on the circumstances.

Recycling in the United States

Recycling schemes vary greatly throughout the world, with San Francisco and Mumbai offering two sharply contrasting models. San Francisco keeps nearly 70% of its waste out of landfills. A huge part of this success is attributable to recycling efforts. The city contracts with Norcal, a private waste disposal company, and pays the company more money the more it recycles. Despite state of the art recycling facilities, the only material that is consistently profitable for Norcal to salvage is metal. To remain profitable, it charges customers about $25 a month for its waste pickup and disposal services. Thus, San Franciscans suffer a net economic loss when they recycle (however city ordinances and environmental concerns are presumably enough to tip incentives in the other direction).

	Municipal Waste Generate (tons)	Percentage Recycled
1990	269,000,000	8%
1992	280,675,000	14%
1994	306,866,000	19%
1996	326,709,000	27%
1998	340,466,000	30%
2000	382,594,000	33%

Systems in Mumbai are much more informal and low tech than in San Francisco, but, even though the precise recycling rate in Mumbai is not known, some experts believe it may exceed San Francisco's rates. Traveling traders called *kabari-wallahs* visit most urban households at regular intervals and buy unwanted paper, plastic, and metal. Recyclable materials that are not sold are thrown out into garbage containers and then transported to dumps. At each of these locations, people called rag-pickers search through the waste to remove and sort (into very narrow categories) recyclable materials. These materials are then sold, often for a small profit; one woman reported she usually made less than 100 rupees a day – the rough equivalent of $2.25. Thus, recycling is profitable, even if only marginally so, at each level in Mumbai. However, as India continues to develop, labor costs will presumably also begin to rise, ultimately making the current system economically unviable. For more information on the San Francisco and Mumbai recycling systems, see "Round and Round It Goes: Recycling Is Good for the Environment, But It Costs. Is It Worth It?" from *The Economist* (Feb. 26, 2009).

Many believe that the only way to make recycling truly economically sustainable is to incorporate the costs of environmental degradation into the cost of non-recycled goods. By so doing, business and environmental goals would align, creating incentives to make recycling processes more efficient. Further, this could ultimately lower the price of recycling as compared to producing goods from non-recycled materials.

Social Sustainability: Oil Waste in the Amazon

The severe environmental effects caused by oil waste not only harm the environment, but often also the culture of groups that rely on the land for their livelihoods. The indigenous groups of Ecuador have lived in the rainforest for hundreds of years. Though they do not have much material wealth, they do have rich cultural history and traditions. Instead of sinks and showers, they use local rivers for bathing, washing, drinking, and fishing. In addition to relying on their natural surroundings for survival, for many of these groups nature forms a central part of their faith and spiritual beliefs. When the Texaco Petroleum Company began drilling for oil in the Ecuadorian Amazon it had a severe impact on these communities' health, way of life, and value and belief systems.

Beginning in the 1960s, Texaco Petroleum Company drilled more than 300 wells and built a network of pipelines, separation plants and more than 600 pits to discard wastewater. Over the course of the next 30 years, Texaco, in partnership with the state oil company, produced 1.5 billion barrels of crude oil. Over 30,000 indigenous people are now suing Texaco, claiming that it systematically dumped oil-contaminated waste in the Amazon. Instead of re-injecting the wastewater and sludge deep into the ground—a process that is expensive but prevents contamination—those who live in the Amazon claim Texaco disposed of this waste material by dumping it into rivers or leaving it in more than 1000 unlined, open pits scattered throughout the Amazon. In all, the groups allege Texaco dumped 16 million gallons of oil in the ground, rivers, and estuaries.

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Crude oil in an open toxic oil waste pit in the Ecuadorian Amazon. Courtesy Caroline Bennett, Rainforest Action Network. Creative Commons Attribution-NonCommercial 2.0.

The lawsuit filed against Texaco (which was later bought by Chevron) was filed in 1993. In February of 2011, Judge Nicolás Zambrano issued a ruling in favor of the indigenous groups, ordering Chevron to pay more than $9 billion in damage; however, the court battle continues as Chevron is now appealing the decision. Regardless of whether Chevron is ultimately forced to compensate these indigenous groups for the environmental damage, the health and cultural damage already inflicted upon these groups cannot be undone.

Environmental Sustainability: Environmental Injustice & E-waste

Environmental justice is the idea that all people deserve to live in an area that is safe, clean and healthy regardless of their income, education level, or race/ethnicity. **Environmental injustice** occurs when any policy or practice negatively impacts the environment of one group of people, usually low-income or racial minority communities, over another. On a global scale, this often plays out when hazardous waste produced in developed countries is disposed of in developing countries, which then suffer the environmental consequences.

E-waste is trash that comes from electronics and technology, like old computers and cell phones. It is very toxic for both humans and the environment, and some cannot be recycled.

The United States exports 80% of its **e-waste** overseas to nations such as India, Pakistan, China, and Ghana. As technological devices proliferate, more and more e-waste is generated. The United Nations estimates that the world produces between 20 and 50 million tons of e-waste each year. Despite international laws prohibiting the export of computer waste, many people are able to evade such laws by labeling computer waste shipments as "usable second-hand goods." The incentive to dump such waste in other countries is high as it costs much more to safely dispose of these hazardous materials in most developed countries, where regulations are more strict.

Two men dismantle e-waste in New Delhi, India. Courtesy Matthias Feilhauer. Creative Commons Attribution-Share Alike 2.0

The Agbobgoshie dump in Accra, Ghana provides an example of the dangers of e-waste. After computers and other electronics are dumped at the site, Ghanaians, many of them children, dismantle the electronics in search of any reusable parts – like the lenses from disc drives – that can be sold for profit. Soil and water samples taken at the dump reveal high concentrations of leads, phthalates, and dioxins that are known to cause cancer. High levels of lead can be especially dangerous for children as it can stunt still developing brains. In addition to exposing those who scavenge within the dumps to high levels of toxic waste, chemicals from the dump contaminate the ground water, surface water, rivers and streams, and ultimately the ocean.

Because hazardous waste is cheaply exported to developing countries, companies are able to produce and sell new electronic goods at a lower price, which has created unsustainable patterns of use. In 2010 the Consumer Electronic Association reported that the average American household had 25 electronic devices. This high rate of ownership paired with the short life spans of many products (see chart above) and the rapid pace of development – consider how often new "generations" of iPods are release – results in massive amounts of e-waste. If consumption patterns continue to increase, more environmentally friendly means of e-waste disposal will need to be developed. As safe disposal is likely to be more expensive than the hazardous practices common today, market pressures are likely to either raise the price of goods, thus curtailing consumption, or pressure manufacturers into creating more environmentally friendly products.

Appliance	Lifetime	Weight
PC + Monitor	5–8 yrs	55 lbs.
Laptop	5–8 yrs	11 lbs.
Printer	5 yrs	18 lbs.
Mobile Phone	4 yrs	.2 lbs.
TV	8 yrs	66 lbs.
Refrigerator	10 yrs	99 lbs.

Data from United Nations Environmental Program, *Recycling: From E-waste to Resources* (2009)

Promising Practice: Up-Cycling Around the World
One method that seems to be a promising way to deal with waste more sustainably is up-cycling. Up-cycling is a process by which trash or other useless products are used to create new goods, like a "new" dress made from an old sheet or a fence made out of old bicycle gears welded together. By repurposing waste materials, up-cyclers add value to the former waste product and increase the economic efficiency of recycling, all while turning a profit.

TerraCycle is a business that makes eco-friendly products from a wide range of garbage that cannot be recycled. The company, which was founded by 20 year old Princeton student Tom Szaky in 2001, takes materials like vinyl billboard signs and uses them to create a variety of products such as bags, backpacks, wallets, and garbage cans. TerraCycle also partners with large companies that make non-recyclable packaging to organize free programs that pay everyday people (about 2 cents a package) to help collect the packaging, which is then used in TerraCycle's products.

Conserve India, another upcycling organization, began by focusing on one form of waste: plastic bags. The organization trains and employs rag-pickers (see the Economic Sustainability section above) to collect plastic bags (and now other materials), up-cycle them, and sell the high-fashion end product for a profit. The plastic bags are up-cycled through a process called Handmade Recycled Plastic (HRP) in which the bags are sorted, washed, dried and then pressed into sheets. The company has now expanded and uses a similar process to upcycle other waste materials, like rubber tube, denim, and seat belts. In addition to providing a better working environment for rag-pickers and enabling them to earn a livable wage, the HRP process is much less energy-intensive than other forms of recycling.

A handbag sold by Conserve India.

United Nations Conventions
Safely and sustainably managing waste is essential to many United Nations conventions. The following is a sampling of these documents:

- The **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal** came into force in 1992. It is the most comprehensive agreement concerning the generation, management, and disposal of hazardous and other waste and seeks to protect both humans and the environment from the risks presented by hazardous waste.
- The **Convention Concerning Indigenous and Tribal Peoples in Independent Countries** entered into force in 1991 and recognizes the importance of environmental preservation for many indigenous populations. Proper and sustainable waste management is essential to upholding this right.

CLASSROOM COMPANION:

Explore these issues with your students using the following lessons, which can be found in our online database (http://worldsavvy.org/resources/gep-resource-library.php) or in the Sustainable Communities Collaborator's Guide (page numbers are noted below).

- Holding On To What You're Tossing Out: Students will categorize and analyze the garbage that they produce as a class every day or week. Based on this quantity, students will then tally the amount of trash produced by the school annually. In an extension activity, students will have the opportunity to create puppets out of the trash they collect, as well as other recycled materials, and will host a puppet show to teach other students and teachers about the state of the school's waste and recycling efforts. (pg. 89)
- Trash Trails: In this two-part workshop, students will explore where their school garbage goes through interviews and online research. Students will then map out their results by making a creative "Rubbish Map". (pg. 93)
- Environmental Injustices: Students will define "environmental injustice" and explore case studies of the ways in which environmental injustice impacts communities around the world. Students will also reflect on the meaning of environmental injustice, as well as their experiences with issues of race and racism. (pg. 98)
- Packaging Problems: Students will examine the role of packaging and compare similar products with different packaging styles. Then in small groups, students will explore an overly-packaged product and create an environmentally friendly re-design. (pg. 104)
- Up-Cycling: In this two-part workshop students will learn about up-cycling by examining a few distinct up-cycling projects and creating their own fabulous up-cycling crafts and art pieces. (pg. 108)
- Creepy Crawly Compost (aka Worm Bin!): Students will learn about red wiggler worms and composting, and will set up their own class vermin-composting bin. (pg. 113)
- The Stuff Cycle: Students will learn about the life cycle of products (from extraction to disposal), watch a short film on waste and consumption, and create their own short comic strips in response. (pg. 116)

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Climate Change

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, and wind) lasting for an extended period of time (decades or longer), and can occur from a variety of causes, both natural and human induced. Although the earth's average surface temperature only rose by about 1.08°F in the 20th Century, this likely represents a much more rapid pace of change when compared with natural changes in temperature that occurred in the previous 10,000 years. Scientists believe that **greenhouse gases**, gases that hold in heat from the sun, are largely responsible for these recent changes and for damaging the ozone layer, a colorless, odorless gas that protects the earth from harmful rays from the sun. Carbon dioxide is the biggest culprit and results from the burning of biomass and fossil fuels, the respiration of humans and animals, and the decomposition of plants and other organic matter. Though it can be absorbed by plants, there is a limit to the amount plants are able to absorb. Fossil fuels burned to produce electricity contribute to about two-thirds of the greenhouse gases in the atmosphere.

Climate Change OR Global Warming?

According to the Environmental Protection Agency (EPA), the term climate change is often used interchangeably with the term global warming, but according to the National Academy of Sciences, "the phrase 'climate change' is growing in preferred use to 'global warming' because it helps convey that there are [other] changes in addition to rising temperatures.'

Scientists predict that as temperatures continue to rise and ice caps continue to melt, sea levels will rise and there will be an increase in the frequency and intensity of heat waves, droughts, and floods. Because large amounts of greenhouse gases stay in the atmosphere for centuries (emissions from the beginning of the Industrial Revolution are still in the atmosphere today) climate change would continue to affect the earth even if all emissions were significantly reduced or eliminated.

The debate over Climate Change

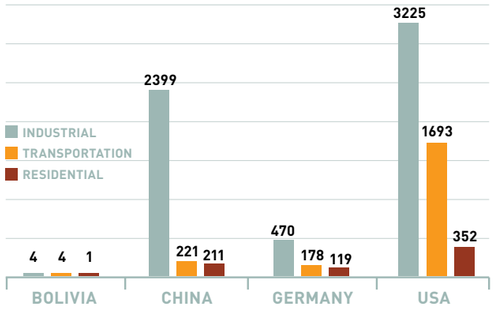
In 2005, the Joint Science Academies issued a statement that "climate change is real" and that "it is likely that most of the warming in recent decades can be attributed to human activities." Several studies have also indicated a strong scientific consensus on climate change. Despite this consensus, a 2008 Gallup poll indicates that awareness and opinions about global warming vary a great deal worldwide. For more information about global opinions about global warming, visit http://www.gallup.com/poll/117772/Awareness-Opinions-Global-Warming-Vary-Worldwide.aspx#2

Economic Sustainability

The effects of climate change on economic sustainability can be viewed from two angles: the causes of climate change and the *effects* of climate change. Now that scientists understand what causes climate change – the release of greenhouse gases – many communities and businesses are attempting to reduce their emissions. Because reducing emissions means either installing more efficient, yet often expensive, technology or reducing overall production, mitigation efforts often have an initially negative economic impact. However, the long-term negative economic consequences of increased natural disasters, such as droughts and floods caused by climate change, are such that communities will ultimately pay a higher economic price if they do not act.

One of the largest questions facing the international community is the degree of responsibility that various nations have to reduce their emissions rates. Because the developed world industrialized long before other nations it is responsible for a larger portion of the greenhouse gases currently in the atmosphere. Many believe that these nations should play a greater role in responding to climate change and reducing emissions. However, as nations like China industrialize and contribute increasing amounts of greenhouse gases they often argue that, like the developed world, they should be allowed to industrialize without instituting costly "green" technologies.

CARBON DIOXIDE EMISSIONS (MILLION METRIC TONS/YEAR)



Data from World Resources Institute, *Earth Trends: Environmental Information* (2007)

Aside from the potential economic impacts of mitigation, climate change is likely to disproportionately affect the world's poorest people. Poorer communities often rely heavily on local resources for basic necessities. If these resources are damaged by climate change, these communities often have a reduced ability to access substitute resources elsewhere and otherwise adapt to the changes caused by global warming. The World Health Organization estimates that 150,000 deaths per year can be attributed to climate change. Changes in weather caused by climate change, such as desertification, flooding, and storms, also negatively affect the economic well-being of nations. In addition to disrupting food production, flooding and storms can damage infrastructure and industry. As the chart below illustrates, some predict the costs of climate change in the United States will be $271 billion in 2025 and will reach $1873 billion by 2100.

CLIMATE CHANGE COSTS IN THE UNITED STATES
(IN BILLIONS OF DOLLARS)

	2025	2050	2075	2100	U.S. Region Most at Risk
Hurricane Damage	$10	$43	$142	$422	Atlantic & Gulf Coast states
Real Estate Losses	$34	$80	$173	$360	Atlantic & Gulf Coast states
Energy-Sector Costs	$28	$47	$82	$141	Southeast & Southwest
Water Costs	$200	$336	$565	$950	Western States
Total Costs	$271	$506	$961	$1873	

Data from Natural Resources Defense Council, The Costs of Climate Change (2008).

Social Sustainability

The effects of climate change on cultural sustainability are well-illustrated through the story of the Inuit in Greenland. Greenland is the world's largest island and is approximately 81% ice capped. However, that number could be quickly declining, as Greenland has been especially hard hit by global warming. Some experts believe the island is losing more than 80 cubic miles of ice each year, an amount equal to three times the volume of all the glaciers in the Alps. One of the many effects of this glacial melt is that many believe Greenland is the single largest contributor to rising sea levels around the world. As glaciers along the coast melt, the coastline of the island changes and new islands are created. Sea ice, which used to last for eight months of the year, now disappears or is much thinner during many of these months.

The effects of these changes on the culture of the Inuit, who make up 89% of the population, have been devastating. The thinning and disappearance of sea ice makes transportation much more difficult as the ice can no longer support dogsleds or snowmobiles. Consequently, communities are more isolated during large parts of the year and hunting, which is traditionally done by dogsled, is much more difficult. In one town called Qaanaaq, the sea ice was so thin that hunters were barely able to bring in enough food for their families and had nothing left over for their dogs. In other communities, Inuit women noted that dogsledding had become a sport rather than a way of life, as there was only sufficient sea ice for hunting for about one week a year.

For many, particularly indigenous communities like the Inuit of Greenland, land is an integral part of culture. Thus, the survival of cultural traditions like those of the Inuit depends on addressing the changes that accompany climate change. For more information on global warming in Greenland see John Collins Rudolf, *The Warming of Greenland*, New York Times (Jan. 16, 2007). For more examples of the connection between indigenous culture and climate change, see the Society for Ecological Restoration's Indigenous Peoples' Restoration Network at http://www.ser.org/iprn/.

Environmental Sustainability

Climate change is an increasingly central aspect of environmental sustainability. All life forms – including microbes, plants, animals, and humans – fuel carbon cycles. Each of these life forms can change the chemical makeup of the atmosphere and, in the process, influence the earth's climate. Changes in climate can, in turn, have a significant impact on the health of these organisms, many of which can only survive under specific temperature, precipitation, humidity, and/or sunlight conditions. When these conditions are disrupted on a large scale, entire species become extinct. Over 99% of all species that have existed on earth are now extinct. Many of these extinctions occurred during what are known as **mass extinctions**. There have been five major mass extinctions, and some believe the earth may be in the midst of a sixth mass extinction, brought about by human activity. A 2010 poll of biologists conducted by New York's American Museum of Natural History revealed that seven out of ten believed a mass extinction is under way. And while climate change is by no means the only reason for this mass extinction, many scientists believe it is a contributing factor.

Mass extinctions are instances when large numbers of species became extinct during a relative short period of time.

Much of the human activity that contributes to climate change also plays a role in endangering species, both directly and indirectly. Deforestation not only destroys the habitats of many species, but also reduces the earth's ability to cope with rising carbon dioxide levels by removing carbon dioxide absorbing trees. The increase in carbon dioxide levels is a major contributor to global warming and many species cannot survive the resulting changes in temperature and climate. See show 3, Extinction! of the PBS series Evolution for more information on this topic (http://www.pbs.org/wgbh/evolution/).

Promising Practice: Bogotá, Colombia

Antanas Mockus was a former mathematics and philosophy professor with no political experience prior to running for mayor of Bogotà, Colombia. His background in teaching often influenced his policies and he has noted, "What really moves me to do things that other people consider original is my passion to teach." But despite his political inexperience, during his two terms as mayor, Antanas Mockus was able to transform Bogotá through unconventional means.

See the "Eyes on Bogotà" workshop of the World Savvy Sustainable Communities Collaborator's Guide.

Mockus instituted many environmental reforms during his tenure. To reduce traffic congestion, he created pedestrian zones and dedicated bike paths as well as revamping the transit system. He also instituted car free days to encourage use of these alternative forms of transportation. In response to a water shortage, he persuaded citizens to conserve water by taking a shower on television and turning off the water as he soaped. Within two months, the city was using 14% less water. As people reduced their water use, they began to notice the positive economic effects of reduced water consumption. By the end of Mockus' second term, water use was down by 40%.

In addition to these initiatives, Mockus instituted many other social experiments that turned out to be very effective. After he hired mimes to follow and mimic pedestrians who did not follow crossing rules and to poke fun at reckless drivers, and had stars painted at the site of pedestrian fatalities, traffic fatalities were reduced by half. Another well-known example of Mockus' unconventional initiatives was Bogotá's "Night for Women." On this night, men were asked to stay home and take care of the children while 700,000 women, nearly a quarter of the female population, enjoyed a night out in a city that many women were often afraid to explore during the evenings.

United Nations Conventions & Documents
Mitigating the effects of climate change is key to many United Nations conventions. The following is a sampling of documents related to this issue:

- The **Kyoto Protocol** is an international agreement associated with the **United Nations Framework Convention on Climate Change** and was adopted in 1997 (but did not enter into force until 2005). It sets binding targets for 37 industrialized countries for reducing greenhouse gas emissions. Though 187 nations have signed and ratified the agreement, the United States has not.
- The **Bali Action Plan** is a document that came out of the **United Nations Climate Change Conference** that took place in Bali, Indonesia in December 2007. The Plan calls for a two-year formal negotiation process to develop ways to adapt to the consequences of climate change, devise ways to reduce greenhouse gas emissions, and find ways to deploy climate-friendly technology, while also financing these adaptation and mitigation efforts.

CLASSROOM COMPANION:

Explore these issues with your students using the following lessons, which can be found in our online database or in the Sustainable Communities Collaborator's Guide (page numbers are noted below).

- Climate Comprehension: Students will learn about climate change by defining key words and terms and sharing questions on the subject. Students will also watch two short video animations about climate change and create a climate change comic for a group of younger students. (pg. 159)
- Carbon Footsteps: Students will explore the meaning of carbon footprints and the ways in which the issues they have studied (energy, food, water, and waste) contribute to the size of this footprint. In small groups, students will examine one area in depth, and create and perform a theatrical awareness campaign. (pg. 162)
- Climate Refugees: Students will examine the challenges climate refugees face by watching a short film about refugees in the South Pacific, making connections to their own lives, and building empathy for climate refugees. (pg. 165)
- Confronting Katrina: After watching and commenting on the film Trouble the Water, directed and produced by Tia Lessin and Carl Deal, students will debate the role of climate change and environmental racism in the lives of the characters. Finally, students will write letters, poems, or songs to the main characters and send them on. (pg. 169)
- CommUniTOPIA: Students will learn about urban planning and explore unconventional green planning Bogota, Columbia. Then students will turn their attention to their own school neighborhood and work in small groups to create solutions to local urban problems that benefit people and the environment. (pg. 173)
- Making Change On Climate Change: Students will identify key climate change stakeholders and determine who has the greatest capacity or responsibility to have a positive impact on climate change. Then they will align themselves with various stakeholder groups, research and create Power Point presentations of their stakeholder perspective, and debate the shape and merits of a national carbon tax. (pg. 177)

The Future of Human Life: Development, Education & Politics

Reducing Disparities through International Development

See the Global Poverty and International Development edition of the World Savvy Monitor

The global economy resembles a pyramid, with the wealthiest 1.2 billion people living in developed countries at the top of the pyramid and the remaining 5.7 billion people living in developing countries at the bottom of the pyramid. The lowest 1.44 billion live on less than $1.25 a day (the 2008 economic crisis alone caused 64 million people to fall below the $1.25 a day poverty threshold). Global poverty rates have fallen significantly in the past three decades, with poverty being reduced by about 25% between 1981 and 2005. The economic emergence of China accounts for the majority of this reduction; excluding China, poverty rates fell by only about 10%.

The United Nations uses a unit of measurement called the Human Development Index (HDI) to provide a more comprehensive understanding of a country's development. Instead of just measuring a nation's economic wealth, the HDI incorporates three dimensions of human development: life expectancy, education, and gross national income per capita. Another important way that international organizations classify a nation's developmental progress is through the designation of least developed countries (LDCs). These countries experienced little or no economic growth during the post-WWII era, a time during which the global economy as a whole has greatly expanded. Forty-eight countries are currently classified as LDCs, with 33 in Africa, 14 in Asia and one – Haiti – in Latin America and the Caribbean.

Ten Most Highly Developed Nations	
Country	**HDI**
Norway	.938
Australia	.937
New Zealand	.907
United States	.902
Ireland	.895
Liechtenstein	.891
Netherlands	.890
Canada	.888
Sweden	.885
Germany	.885

Ten Least Highly Developed Nations	
Country	**HDI**
Mali	.309
Burkina Faso	.305
Liberia	.300
Chad	.295
Guinea-Bissau	.289
Mozambique	.284
Burundi	.282
Niger	.261
Democratic Republic of Congo	.239
Zimbabwe	.140

Data from United Nations *Human Development Report* 2010

International development assistance is a term encompassing all measures that are used to address the causes of stagnant or declining economic growth among developing countries. In contrast to humanitarian or emergency aid, developmental assistance seeks to help countries break out of the cycle of poverty, most commonly in the form of special projects, services, or cash or budget support for governments or non-governmental organizations operating in developing nations. Some aid is tied to the interests of the donor country and often conditional upon the recipient country meeting certain requirements. Assistance with economic policy and governance reform constitutes another broad category of assistance. Other development efforts focus more directly on invigorating the economies of developing nations. **Foreign direct investment (FDI)** involves international investment in the businesses of developing nations and has been instrumental in lifting hundreds of millions of people out of poverty in China and India. While emergency aid is necessary in certain circumstances, in most cases it is not a sustainable solution because it means that communities are dependent on outside assistance. **Microfinance** is a relatively new approach that provides small credit and loans to the poorest population so that these people can establish or expand small businesses. Broader economic support can also come in the form of international trade policies that allow LDCs to exploit their own comparative market advantages. Finally, help with climate change mitigation is now often viewed as an important form of development assistance.

Economic Sustainability

There is significant debate over whether or not direct aid to developing nations "works" because there are differing opinions on the ultimate goals of aid. Should it be used to raise the minimum standard of living and improve the quality of life for the poorest, or should it also generate the preconditions necessary for more sustainable economic growth?

Modern foreign aid has its roots in the success of the Marshall Plan, a bold and generous effort on the part of the United States to reconstruct Western Europe after the devastation of WWII. Encompassing 3.2% of the United States' Gross National Product (GNP), the United States made large grants and loans on the assumption that putting war-torn countries back on their feet and stimulating their economic growth was the best hedge against the spread of Communism. Similar efforts were made to reconstruct former enemy Japan for the same reasons. Overall, the initiatives are considered a huge success; today, most of the world's developed nations were once recipients of Marshall Plan aid or other post-war assistance from the United States.

Modern aid to LDCs has generally not been considered as successful. Though theories abound about why aid is not always effective, one prominent hypothesis is that despite the good intentions behind aid, it has the unintended consequence of making governments reliant on outside support to provide for their people. Those critical of direct aid argue that unless aid is conditioned on some measure of in-country development efforts, it can become a barrier to reform. In such scenarios, aid tends to subvert the laws of natural consequences and is haunted by a legacy that includes propping up unsavory leaders when their own wrongdoings and ineptitude would have otherwise spelled their demise.

Some theorists argue that while development aid may cause LDCs to appear to be making progress, these nations are in fact locked in an extreme form of dependency on the development community to perform basic state functions. For example, in Afghanistan 80% of services are delivered by **Non-Governmental Organization (NGOs)** and there is little expectation that the Afghan government will be able to receive and distribute aid itself, much less independently provide for the welfare of its citizens. Within the context of dependency theory, the NGOs have essentially become too effective. When NGOs can efficiently and effectively provide services, there is little incentive to hand off these responsibilities to the government. Some argue that there may actually be a disincentive for NGOs to reduce and ultimately eliminate their role because the aid community has an interest in its own survival, which is assured by continuing with projects that are successful.

WORLD SAVVY MONITOR

As World Bank official Robert Calderisi explains, the result of aid is "the weakening of governments by creating islands of well-paid specialists in seas of mediocrity." In Calderisi's view "neo-colonialism" veers into "neo-imperialism," a phenomenon in which external powers not only control the economies of LDCs, but use aid arrangements to their own financial benefit. Some experts suggest that one hundred years from now, it is possible that aid will have been as beneficial to LDCs as was colonialism and imperialism.

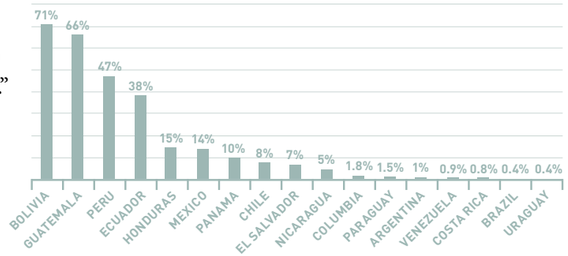
Foreign aid highlights an important struggle facing communities around the world between meeting short-term needs and promoting long-term sustainable development.

Social Sustainability: Development, Globalization, & Culture

In recent years the development community has increasingly recognized the important role that culture plays in sustainable development. As the 2004 United Nations Human Development Report explains, "struggles over cultural identity, if left unmanaged or managed poorly, can quickly become one of the greatest sources of instability within states and between them – and in so doing trigger conflict that takes development backwards." Further, freedom of cultural identity is a fundamental part of human rights. There are approximately 5,000 ethnic groups living in the world's nearly 200 nations, and two-thirds of these countries have at least one substantial minority.

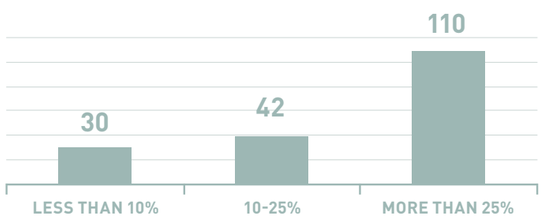
Globalization is a frequent companion to economic development and many indigenous groups view globalization as a threat to their cultural identities, to their control over land, and to their ability to maintain traditions. In particular, development can sometimes come into direct conflict with indigenous traditions, often hindering the ability of these traditions to endure. For example, many indigenous populations reside on land rich in minerals and oil and gas deposits. History has clearly shown that when countries seek to cultivate extractive industries in order to exploit these resources and fuel their economic development, the cultural survival of these indigenous populations is often endangered. In such scenarios, those in the development community have frequently given inadequate recognition to the cultural significance of the land that indigenous populations inhabit. Further, mineral extraction often leads to displacement, as experienced by many Lihirians, an indigenous group in Papua New Guinea that was displaced when the Lihir Gold Mine destroyed sacred sites and reduced Lihirians' ability to subsist by hunting. Finally, indigenous populations are often left out of the decision-making processes that determine whether and how extractive industries will be supported, which inhibits their ability to mitigate and perhaps prevent potential conflicts. It also increases the likelihood that any compensation owed in exchange for the land will be misappropriated, as is the case in Ecuador, where oil companies pay about $30 million in taxes to a special Amazon development fund, but indigenous communities have received little of this money.

PERCENTAGE OF INDIGENOUS POPULATIONS IN LATIN AMERICAN NATIONS



Data from United Nations *Human Development Report* 2004

NUMBER OF COUNTRIES BY SHARE OF ETHNIC OR RELIGIOUS GROUPS, 2003



Data from United Nations *Human Development Report* 2004

Environmental Sustainability:
Climate Change Mitigation

Many in the development field are beginning to include climate change considerations in their analyses of what the developed world can do to help mitigate the challenges faced by the LDCs. Global warming is thought to contribute to many of the ills facing the developing world, from droughts and extreme temperatures in already harsh climates, to floods and damaging storms. This appears to be especially true in places such as Sub-Saharan Africa where most LDCs are located. Desertification is destroying arable land throughout the Sahel region in Africa, eliminating crop-bearing soils, and bringing groups into conflict over increasingly scarce quality land. Similarly, debilitating tropical storms and other natural disasters linked to global warming are disproportionately destructive to poor areas, and many poor areas seem to lie in their paths. LDCs in a storm's trajectory lack both early warning systems and a system for insuring against potential losses. Further, the negative effects of climate change often hurt the poor and geographically disadvantaged in much more dramatic ways than they do those in the developed world. Even small alterations in natural temperatures, glacial melting and river flows, rainfall patterns, and ecosystems have huge impacts on the very people who can least afford more hardship. So while the world's poor, by virtue of their relative lack of modernization and industrialization, contribute the least to the problem of carbon emissions that is driving global warming, they are often the hardest hit by the effects. This reality has led to the concept of climate justice entering into the development lexicon.

For these reasons, many experts believe that reversing climate change should be a priority in any development assistance for LDCs. For example, more sustainable strategies that are now available in the developed world, like driving a hybrid car and or using solar panels, can become a development tool for the world's poorest populations elsewhere. Engineering and technology that are aimed at finding alternative energy sources serve the same function. Many believe distributing these innovations to wealthy countries, as well as (and especially) to emerging economies and LDCs, will be key. In the meantime, while solutions to climate change are being developed, many believe a carbon credit trading systems is another useful method of providing funds to LDCs. In this model, each country would have a limit on their carbon emissions, but could purchase carbon credits from other countries if they were going to exceed that limit. Because developing countries do not emit as much carbon as developed countries, they would have plenty of carbon credits to sell.

As LDCs develop and grow, efforts are underway not just to help them adapt to the climate change that is already happening, but prevent their own contribution to the problem. Assisting in the development of less water-intensive crops, new irrigation technologies, and alternatives to timber-made buildings are all ways in which the global community can help developing nations sustain themselves both economically and environmentally.

Urgency is also an issue. In December 2007, *The New York Times* quoted a UN Human Development Report stating that "an additional 600 million would be hungry, 200 million more displaced by floods, and 400 million more exposed to diseases such as malaria and dengue if the world's temperature were to rise just 2 degrees Celsius," which many predict will occur over the course of this century.

Promising Practice: Grameen Bank & Microfinance

The Grameen Bank is the "grandfather" of the microfinance movement, and many microfinance institutions around the world have used it as a model. Grameen began as a 1976 action research project led by Muhammad Yunus, then Head of the Rural Economics Program at the University of Chittagong in Bangladesh. After visiting the neighboring village of Jobra, Yunus discovered that many women were forced to borrow money from lenders in order to buy raw materials needed to produce their goods (in this case, bamboo stools); because the profit the women made on the finished product was so low, the cycle began again the next day and the women were never able to make a profit of more than 50 poysha, or about two US cents per day.

Yunus compiled a list of women working under these arrangements and realized that with US $27, he could provide enough capital to 42 women to allow them to purchase raw materials independently and at a lower cost, and sell their finished products in markets, making a profit and breaking the cycle. Yunus continued to fine tune and expand his microcredit experiment, and in 1983, legislation was adopted to give the Grameen Bank Project independent bank status.

Since its inception, Grameen made the case that microfinance cannot only help people sustain themselves, but is a successful business model. According to Grameen, since 2008 its borrowers owned 94% of the bank's shares, while the government owned the other 6%. There were 7.56 million total borrowers and of these 97% were women. Grameen has disbursed US $7.28 billion since its creation, and in 2008, the monthly average aggregate loan disbursement was US $69.7 million. Furthermore, Grameen Bank is profitable: it had a loan recovery rate of 98.08% in 2008, and since 1998 it has received no donor funds or loans from external sources.

Grameen Bank targets women, traditionally underserved in the financial area, as its primary loan recipients. In order to join the Grameen Bank women go through a rigorous application and approval process in which they must memorize the bank's rules and submit to a test. This is meant to ensure that Grameen members are truly committed to the process, while also providing an important confidence-building step for many rural Bangladeshi women who, often for the first time, must speak assertively to a person in a position of power – the usually male bank employee. And instead of requiring collateral, Grameen requires women to work as members of a five person team. Before receiving a loan, a woman must develop a clear proposal for how she will use the loan, and her proposal must win the approval of the women in her group and the bank managers. If she does not pay back her loan, the other women in her group may become ineligible for larger loans in later years. This incentivizes the members of the group to support each other during the entire borrowing process, as their individual prospects are intrinsically tied to the rest of the group's success.

When a loan is dispersed, no legal instrument is used to legally force the borrower to repay. Instead, Grameen assumes the borrower will do everything she can to repay her loan in full. In the case that a woman does not pay on schedule, the loan repayment is rescheduled in what is called a flexi-loan and the maximum that she is eligible to borrow is lowered. Grameen uses a weekly repayment schedule and simple interest rates (as opposed to compound interest). Rates vary according to the purpose of the loan: 20% for income generating loans, 8% for housing loans, 5% for student loans, and 0% for "Struggling Members" or beggars. If a borrower dies, a loan insurance program covers any remaining debt. In addition to microcredit, Grameen offers saving accounts, pension plans, and loan insurance.

There has recently been much controversy over the actual results achieved by the Grameen Bank and other microfinance institutions in the developing world. There have also been questions raised about the reliability of information provided by these lenders, including information regarding actual interest rates and borrower performance. The high hopes that were initially raised by this form of finance may not have been realized, but it has served to broaden the financial options available to the poor, and has expanded the world's understanding of the ways in which international resources can be marshaled to aid the working poor in LDC's.

United Nations Conventions & Documents

The primary United Nations instruments relating to development are the **Millennium Development Goals (MDGs)**. The MDGs are a set of eight key objectives related to development that provide a comprehensive framework through which to address the most pressing issues of poverty. The **Millennium Declaration** was signed in 2000 by 189 of the world's leaders and established 2015 as the deadline by which the MDGs should be achieved. The eight objectives are summarized below:

1. **Eradicate extreme poverty and hunger** by halving the proportion of people living on less than $1 a day and halving the proportion of people suffering from hunger.

2. **Achieve universal primary education** by ensuring that children everywhere are able to complete a full course of primary schooling.
3. **Promote gender equality and empower women** by eliminating gender disparity in primary and secondary education by 2005 and at all levels of education by 2015.
4. **Reduce child mortality** by reducing by two-thirds the under-five mortality rate.
5. **Improve maternal health** by reducing by three-quarters the maternal mortality rate.
6. **Combat HIV/AIDS, malaria, and other diseases** by halting and beginning to reverse the spread of HIV/AIDS and the incidence of malaria and other major diseases.
7. **Ensure environmental sustainability** by: integrating the principles of sustainable development into countries' policies and programs and reversing the loss of environmental resources; halving the proportion of the population without sustainable access to safe drinking water and basic sanitation; and improving the lives of at least 100 million slum dwellers by 2020.
8. **Develop a global partnership for development** by: addressing the special needs of LDCs, landlocked countries, and small island developing states; developing further an open, rule-based, predictable non-discriminatory trading and financial system; dealing comprehensively with developing countries' debt; developing and implementing strategies for decent and productive work for youth in cooperation with developing countries; and making available the benefits of new technologies, especially in information and communications, in cooperation with the private sector.

CLASSROOM COMPANION:

Explore these issues with your students using the following lessons, which can be found in our online database or in the Sustainable Communities Collaborator's Guide (page numbers are indicated below).

- Dilemmas of Foreign Aid: Debating US Priorities, Policies and Practices: Based on the Choices curriculum model—looks at several policy options for the U.S. in how to handle foreign aid—goes through a bit of the history of the debate over foreign aid, brief case studies on HIV/AIDS, Colombia, Sudan, Asian economic crisis. Both the teacher and student text are available in the World Savvy Resource Library.
- Global Environmental Problems: A Unit by the 'Choices Program' that invites students to weigh the significance of global environmental problems in the formulation of U.S. foreign policy. Unit traces the entry of global warming, population pressures, and other worldwide environmental threats in the sphere of public policy. World Savvy Library includes teacher resource booklet and student book.
- Globalization: Students will consider the effects of globalization on modern culture in "developed" countries and on indigenous cultures. They will use the Internet to get information on this topic, and list the ways in which globalization has affected various cultures. Students will conclude by writing paragraphs assessing whether globalization is positive, negative, or a combination of positive and negative.
- Microcredit: Exploring The Fight Against Poverty: Students will discuss the basic principles of microcredit, including the benefits and disadvantages of the system. Students have the opportunity to debate whether microcredit should be one of the cornerstones in the fight against poverty.
- The Business of Doing Good: Students will explore global economics and the potential of micro-businesses to impact community development. Utilizing statistical information to investigate root causes of poverty, students will develop ideas to effect change at the community level.
- Rich, Poor, or Somewhere in the Middle: This lesson offers students an opportunity to use economic and social indicators to identify the connection between a country's access to resources and its economic development. Great way to incorporate both geography and economics into a lesson.

The Power of Education

Evidence shows that education has the power to lift people out of poverty, reduce and eliminate prejudice, and give people the tools they need to change society to better reflect their vision of how the world should be. This critical nature of education is reflected in its explicit inclusion in the Millennium Development Goals (MDGs), which include achieving universal primary school education and closing the educational gender gap. Though the world is not on track to meet these goals, it has made significant progress. Between 1999 and 2008, an additional 52 million children enrolled in primary school and the number of children out of school was reduced by half in South and West Asia. Sub-Saharan Africa saw a large bulge in the primary school age population (see the Where We Live section above), but was still able to increase enrollment ratios by one-third. Those regions which had the largest gender parity gaps in 1999 made significant progress toward closing that gap.

Despite these gains, progress has slowed. In 2008, 67 million children were still out of school and if current enrollment trends continue, there will be more children out of school in 2015 than there are in 2011. Many children who enter primary school are forced to drop out before completing even this basic level of education. In Sub-Saharan Africa, 10 million students drop out of primary school each year. These educational failings are reflected in global literacy rates which show that worldwide 17% of adults lack basic literacy skills; two-thirds of these people are women. These gender disparities have significant health effects as studies show that women who have achieved higher levels of education generally have healthier children. It is estimated that if the average child mortality rates in Sub-Saharan Africa were aligned with the child mortality rates associated with women who have at least some secondary education, 1.8 million lives would be saved.

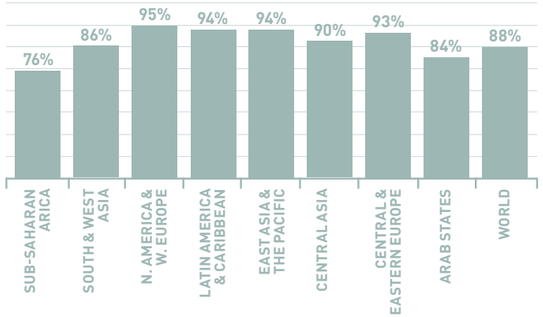
Economic Sustainability

There is an increasing amount of evidence that education is an important foundation for achieving economic sustainability. A recent background paper prepared for the Education for All Global Monitoring Reports explored the ways in which literacy in particular can contribute to economic sustainability at the household level. Using what is known as a **livelihoods framework** the authors explain how literacy can improve microeconomic sustainability by enhancing various forms of wealth, which in turn develops or enhances a different form of wealth. The categories of wealth are defined as follows:

- **Human wealth** refers to people's skills;
- **Natural wealth** involves modifications to the physical environment;
- **Produced wealth** includes physical things like cooking utensils that have a productive use beyond immediate human consumption;
- **Financial wealth** includes not only money, but things like jewelry that are easily traded or sold and can serve a similar function to money;
- **Social wealth** involves societies' collective histories of building trust, confidence, and mutual security into relationships.

Because literacy can improve each of these aspects of wealth, the result is that literacy creates a self-sustaining cycle of wealth production. For example, when it comes to Human and Natural wealth, literacy can provide individuals with the skills to secure their rights to natural assets and improve the ability to understand health threats present in the physical environment. Also, in the case of Natural wealth, literacy develops knowledge of how to improve agricultural fertility and decrease environmental degradation, which leads to greater environmental sustainability. For a more detailed list, please see the Appendix.

PERCENTAGE OF PRIMARY SCHOOL AGECHILDREN IN SCHOOL



Data from UNESCO *Education for All Global Monitoring Report* 2011

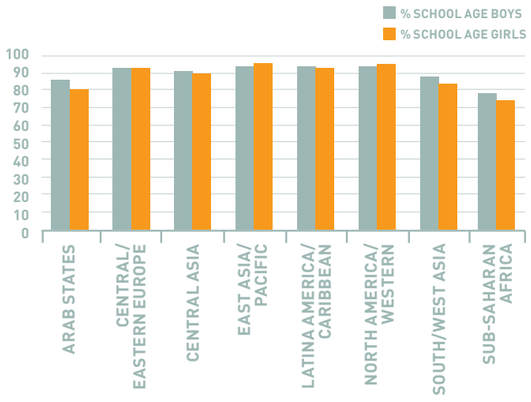
Social Sustainability:
Using Education to Close the Gender Gap

Worldwide, policymakers and community leaders have recognized that women are the key to improving and maintaining any nation's development. Educating women helps create greater gender equality while also resolving chronic impediments in health and the economy. Gender disparities in education are significant and self-perpetuating: more school age girls than boys do not attend school; more girls than boys fail to finish school; and more women than men are illiterate. Policymakers have outlined two key goals for closing this gender gap in education.

Development experts have found that focusing on women can have broad impacts. The United Nations Educational, Scientific and Cultural Organization's (UNESCO) Education for All Global Monitoring Report 2011 reported that a child's chance of survival increased as his or her mother's level of education rose. Many microfinance organizations, like Grameen Bank, focus on women with the understanding that women are more likely than men to develop businesses that will positively impact the entire family and community.

- **Gender parity**, or equalizing the number of girls and boys attending school, is one part of the solution. Gender parity has been reached in many regions, including much of Latin America and the Caribbean, some Arab states, and the Asia/Pacific region. In some countries, girls outnumber boys in school due to factors such as the traditional roles of minding livestock, but the overwhelming numbers still favor boys.

GENDER PARITY IN PRIMARY SCHOOL EDUCATION

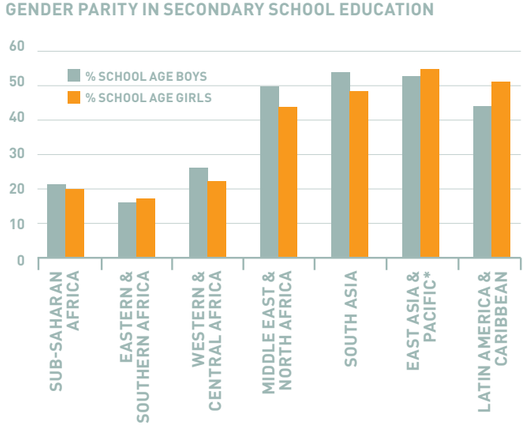


Data from UNESCO *Education for All Global Monitoring Report* 2011

- **Gender equality** means ensuring that once in school, girls and young women experience an environment that is conducive to their success and ability to achieve equality in society. This requires schools to set and implement curricular goals that do not favor boys' achievement over that of girls, and that focus on meeting the needs of both genders equally.

Between primary school and secondary school, there is a significant drop in enrollment rates, estimated at about 60% globally. Gender gaps that exist in primary school typically widen in secondary and tertiary education, but in countries where gender parity has been achieved in primary school enrollment, girls actually attend and finish secondary school in numbers equal to (and even higher than) boys. The same 2004 UNICEF report provides the following data:

GENDER PARITY IN SECONDARY SCHOOL EDUCATION



*Does not include China.
Data from UNICEF, *State of the World's Children* (2004)

Evidence also suggests that special attention needs to be focused on adolescent children, as the transition from primary to secondary school occurs at a critical juncture in human development. Adolescents drop out of school because of numerous social and economic pressures, but adolescent girls are particularly affected and become more vulnerable to physical, sexual, and emotional abuse, along with economic exploitation. Keeping adolescent girls on track through formal education translates into their increased health, safety, and well-being. They are less likely to be trafficked or disappear, and more likely to live empowered lives, productively participating in their communities.

Higher education is another key battleground in the fight to promote gender equality. Although only 25% of all women attend institutions of higher education worldwide, significant gains have been made over the last several decades. The regional disparity is dramatic and is related to overall economic development trends. Of underlying importance is overall literacy for women. Basic literacy is often the window for empowering women on a variety of levels, such as improving quality of life and health. Women make up *two-thirds of all illiterate adults* in the world, a figure that is virtually unchanged from 1985. This translates to 320 million women being unable to read. Education is perhaps one of the most powerful ways to sustainably close the gender gap.

Environmental Sustainability

There is an increasing recognition that achieving environmental sustainability and mitigating the effects of climate change will require a population that understands the causes and consequences of global warming and other environmental phenomena. As indicated previously, awareness and attitudes about climate change vary greatly around the world. Groups working to educate the public about climate change hope that a more informed public will encourage changes in attitudes and behaviors, thus enabling the global population to adapt to climate change and adopt mitigating strategies. Indeed, a study by Ipsos/MORI in 2012 indicated that people who have learned about global issues are more than twice as likely to see the point of personally undertaking social action.

To this end, the United Nations Education, Scientific and Cultural Organization (UNESCO) has developed the Climate Change Education for Sustainable Development (CCESD), a program that seeks to inform the general public about issues surrounding climate change. The program has three objectives. The first goal is to strengthen the capacity of Member States to provide quality climate change education for sustainable development at primary and secondary school levels. To achieve this objective, CCESD focuses on: improving education policy, analysis, research and planning; providing teacher education; and supplying training on curriculum review and reform. CCESD has also developed a guidebook for educators – the Climate Change and Lifestyles Guidebook – that explains how youth lifestyles and consumption behaviors contribute to climate change (the guidebook can be accessed at www.youthxchange.net). CCESD's second goal is to encourage and enhance new teaching approaches that integrate climate change education into schools by means of interdisciplinary practices, science education, whole school approaches, technical and vocational education and training, and education on disaster risk reduction. The final objective is to raise awareness about climate change and enhance informal education programs through media, networking and partnerships. To learn more about achieving environmental sustainability through education, see CCESD, The UNESCO Climate Change Initiative (2010) at http://unesdoc.unesco.org/images/0019/001901/190101E.pdf.

Promising Practice: Literacy in Pakistan

A combination of poverty, labor demands, and cultural practices and attitudes has made Pakistan home to some of the world's largest educational gender disparities, a reality that **Developments in Literacy (DIL)** is working to change. Founded 13 years ago with the support of the Pakistani diaspora in Canada, the United Kingdom, and the United States, this non-governmental organization (NGO) concentrates on underdeveloped regions of Pakistan and focuses on gender equality and community participation. It currently runs 147 schools, located in each of Pakistan's four provinces. Through these schools, operated in partnership with local NGOs, it is able to provide education to over 16,000 students, 60% to 70% of whom are girls.

In addition to providing educational opportunities, DIL also works to improve the quality of teaching instruction. To ensure that all students receive both the support and skills necessary for success, DIL established its own teacher education center, which focuses on student-centered methods of teaching. The training is mandatory for all DIL teachers, 96% of whom are women, and includes reading materials developed by DIL in both English and

Urdu that are designed to challenge gender stereotypes. The reading materials portray girls fulfilling non-traditional roles, pursuing occupations usually reserved for men, and participating in leadership positions.

Through its experiences running the schools, DIL realized that girls often had trouble transitioning from primary school to secondary school or work. In recognition of this, the organization provides financial support to girls when they graduate, thus enabling many of these girls to continue their education at government secondary schools. In fact, in most schools over 80% of students progress on to grade 9. Many of the girls educated in DIL schools have gone on to attend university and pursue careers. Some of these girls are now entering the teaching profession, in the hope that they can provide other girls with the same educational opportunities that they themselves received.

United Nations Conventions & Documents

Providing quality education to all children, and especially girls, is connected to economic, social, and environmental sustainability. The following is a sampling of United Nations documents that recognize the importance of education:

- The **United Nations Declaration of Human Rights (UDHR)** was adopted in 1948, just after the founding of the United Nations. Article 26 reads:
  - —Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.
  - —Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.
  - —Parents have a prior right to choose the kind of education that shall be given to their children.
- The **International Covenant on Economic, Social and Cultural Rights** came into force in 1976 and secures basic individual rights. Articles 13 and 14 concern education. Article 13 echoes the rights established in the UDHR, as discussed above. Article 14 commits party states who sign the Covenant, but who have not yet secured free, compulsory primary education, to establishing a plan within two years of signing for the "progressive implementation, within a reasonable number of years . . . of the principle of compulsory education free of charge for all."
- The **Millennium Development Goals (MDGs)** are a set of eight key objectives related to development that provide a comprehensive framework through which to address the most pressing issues of poverty. Though education affects all of the goals, two speak specifically to the importance of education. The second MDG is to ensure that "children everywhere, boys and girls alike, will be able to complete a full course of primary schooling." The third MDG seeks to "[e]liminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015." Though progress has been made, neither goal is likely to be met.

CLASSROOM COMPANION:

Explore these issues with your students using the following lessons, which can be found in one our online database or in the Sustainable Communities Guide (page numbers are listed below).

- Money in Pakistan: Lesson plan with different activities and discussion questions. Objectives: To discover how illiteracy, financial disadvantage and lack of opportunity can result in a tremendous feeling of injustice.
- Global Women and Poverty: Students will explore case studies of women in Senegal and Thailand and examine the connection between education and poverty.
- Learning Matters: Making A Difference: Through video, students will visit three different countries and investigate the connections between government, childhood, education and the development of a country. They will also participate in a service learning activity to help in the local community.
- On the Brink: Students will examine the connection between environmental degradation and poverty, disease and hunger, analyze data for various countries, and consider the political, social and environmental repercussions of these trends.

Democracy as a Tool of Sustainability

A country's political system can have a powerful effect on the ability of communities to promote and protect their rights. While there remains some debate as to the benefits and drawbacks of different political systems, democracy is currently the most effective system for allowing citizens to meaningfully engage in the political process and thus influence the ways in which government resources will be allocated and any number of other governmental decisions that are made every day. Over the past several decades, there has been a trend toward democratization: in 1974, 39 of the world's 165 countries were democracies; in 1990, 76 countries were democracies; and in 1995, 117 of 191 countries were democratic. Currently, there are 115 democratic countries in the world, though this number is in flux with the successful popular revolutions in Tunisia and Egypt and ongoing uprisings in Libya and Syria.

Terms used to describe political and economic systems are frequently used interchangeably. Capitalism, free market systems, communism, and socialism all refer to economic systems. In a capitalist, free market economy, prices, production and distribution of goods are determined by market forces; in a communist economic system, there is no private property and the government makes all decisions regarding the price, production, and distribution of goods. Socialism, which is sometimes understood as a less severe form of communism, refers to a system in which the means of production are publicly owned. Democracy and fascism are political systems that are often associated with capitalist or communist political systems, respectively. The simplest definition of democracy is "government by the people"— all citizens have an equal say in decisions in the purest form of democracy. At the other end of the spectrum, fascism is a system that often emphasizes nationalism or race above the individual and includes a totalitarian, single party state.

The definition of democracy is often understood to contain two principal components: **electoral democracy** requires that free and fair elections are held and **liberal democracy** requires that the government protect the civil liberties of its citizens. In 2008, fewer than 50% of countries satisfied both facets of this definition. Thus, although the number of countries with democratic governance has risen, some argue that many of these nations are not truly democratic. In 2008, one-third of the world's population lived in a country that provided neither electoral nor liberal democracy, with China leading the way.

It is becoming increasingly difficult for powerful rulers to govern while disempowering their people, as demonstrated most recently by the rash of pro-democracy movements in the Middle East in 2011. Governing systems that are forced upon a group of people are equally unsustainable. For more information on democracy's past present and future, see the World Savvy Monitor "Democracy Around the World" from August 2008.

Economic Sustainability

One of the most discussed debates within the democracy field is the relationship between free market capitalism (and the economic growth that frequently follows) and the development of democratic governance, with empirical and anecdotal research revealing a strong correlation between the two. Although there is some controversy over which comes first, democracy or free market growth, evidence links the two in both theory and practice. Many believe the motivators that cause people to pursue democracy and develop their capacity for self-governance are the same motivators that drive people to pursue capitalism and develop their capacity to succeed in a free market. However, while linked, democracy and capitalism are also fundamentally in conflict with each other. True free market capitalism inevitably results in unequal distributions of wealth, which can produce tensions that are destabilizing to democratic regimes.

The "**modernization theory**," which was first developed by Seymour Martin Lipset, proposes that a country's democratic success is directly linked to the economic success of its citizens. In Lipset's view, economic success brought on by a transition to industrial, free market capitalism breeds, sustains, and consolidates democracy.

To support this view, two researchers, Adam Przeworski and Fernando Lemongi, reviewed historical data with the purpose of constructing a scale that can predict the life expectancy of a democratic government based on per capita GDP (measured in 1985 US dollars). In their analysis, the democracies of countries with $1500 per capita GDP will last eight years while those with a per capita GDP of $1500 to $3000 can expect to last 18 years. Once countries get to a $6000 per capita level, there is a good chance of regime permanence. Later research by Fareed Zakaria, an economist, noted author and editor of Newsweek International, supports this correlation. Of the 32 democratic regimes with a per capita GDP of $9000 or above (measured in 2000 purchasing power levels), not one has failed. By contrast, of the 69 poorer democracies, 39 have failed (a failure rate of over 50%).

At the heart of the modernization theory is that the democratization of wealth leads to the democratization of governance. When countries transition from feudal or state-controlled economies, wealth is transferred into the hands of individuals in the private sector who are outside the control of the state. The expanded distribution of wealth acts as, what Lipset calls, "a powerful solvent of authoritarian regimes." As private property comes to exist in many different forms and diverse global markets develop, a vibrant middle class is created with access to education and exposure to a world of ideas gained through global trade and travel. Ownership of private property and engagement in the marketplace create a skill set similar to the one required for participation in democratic government, such as transparency, accountability, and trust. The tools necessary for economic success are also key building blocks of democracy.

Beyond the capacity-building function of the market, there is an important motivation factor behind the capitalism-democracy link. As economic growth occurs and prosperity spreads, more individuals come to have a stake in the system that governs them. This increased stake leads individuals to value the rule of law, and incentivizes them to participate in government. At the same time, their wealth creates the leisure time necessary for them to do so. Several experts have made parallels here to Abraham Maslow's hierarchy of needs framework related to human emotional development. In his classic psychosocial model, individuals can only move onto pursuing more complex relationship needs after they have satisfied their basic survival needs for food, shelter, and safety. Similarly, once communities achieve a measure of economic prosperity that provides for their basic human survival needs, they are both able and motivated to move on to more complex concerns such as the pursuit of political and civil liberties and the building of institutions that promote these.

Overall, this theory can be summed up in the following way: momentum generated by the expansion of economic rights extends to a demand for political and civil rights. As capitalism produces prosperity and comes to be associated with democracy, democracy in turn becomes associated with prosperity, and democratically governed countries come to serve as powerful models for other countries seeking economic growth.

What about China? Despite China's increasingly liberalized and successful economy, it remains a strong authoritarian government. Some experts argue that in China's case, the move toward free markets is actually strengthening China's authoritarian government by creating enough wealth and prosperity to satisfy people and prevent them from advocating for political change. However, other experts believe that China will eventually move toward democracy and support the theory that economic success breeds democratic governance.

Social Sustainability

The ability and willingness of the electorate to actively participate in the political process and make informed decisions has a significant impact on the sustainability and health of democratic institutions. While economic success can help to indicate the success of democracy, another vital measure is the presence of democratic ideals. Populations that have been subjected to generations of authoritarian rule often do not develop a commitment to the protection of liberty and the rule of law, ideals with which they have had no experience.

These electorates have a low threshold of tolerance for the messiness of democracy and become more likely to experience authoritarian backsliding. Most scholars of democracy contend that this system should be cultivated over time and the people must be willing to be both inconvenienced by the process and disappointed in the outcomes without losing faith in the system. Democracy is yet another example where a long-term vision is likely to prove more sustainable than short-term efforts to reduce tensions by repressing free speech.

Suffrage, or the composition of the electorate (those who are eligible to vote or are said to be enfranchised) is a major consideration for democracies. In most Western democracies, suffrage was extended incrementally over time, often over centuries. It began with landowning males, then extended to former slaves, and finally stretched to women. Further, throughout this time and even today, **de jure** (legal) enfranchisement has not always translated into **de facto** (real) suffrage. For example, though African Americans were legally given the right to vote by amendments to the US Constitution in the 1860s, their access to the ballot box was restricted through arcane registration procedures, special disqualifications, poll taxes, discriminatory testing, intimidation, and other barriers. It was not until subsequent legislation outlawed these logistical hurdles nearly a century later that African Americans achieved de facto suffrage.

Even in the absence of policies specifically designed to limit suffrage, poverty can be damaging to democratic participation. In Bangladesh, voter turnout as a percentage of those of voting age was 64.6% in 1996, up from 48.5% in 1988, and these numbers have been steadily increasing. Many experts point to low literacy rates (43.1% in 2003) and high levels of poverty (45% below the poverty line in 2004) as an explanation for low turnouts.

Other barriers to voting can come from something as simple as requiring a government-issued photo identification card (the equivalent of a poll tax to some voters) to inadequate numbers of voting machines, long lines, inconvenient precinct hours, failure to adequately protect the secret nature of the ballot (and thus indirectly intimidating the voter), to blatant vote rigging.

Finally, how offices are awarded based on votes matters. Proportional systems generally encourage the existence of multiple parties, are often seen as more reflective of the voters' will and can be more protective of minority interests. In contrast, a winner-take-all, or first past the post (FPP) system, generally discourages the participation of multiple parties. This type of system exists in the United States where two established parties, Democrats and Republicans, dominate the political process. Similarly, the use of the Electoral College in the United States Presidential Elections has become a flashpoint of debate over the way the will of the electorate is interpreted. The contested Election of 2000 where the popular vote differed from the electoral count marked the fourth time in US history that this discrepancy has occurred (previous times were in 1824, 1876, and 1888). Many people advocate changing the system to do away with the Electoral College and allow the outcome of presidential elections to reflect the popular vote. Some believe this would require a Constitutional Amendment (not an easy achievement); others believe it could be accomplished by reform at the state level.

Democratic outcomes or a deepening of democracy are not ensured by universal suffrage, and, popular sovereignty does not, by itself, guarantee liberty. Like so many of the issues addressed in this guide, sustainable political systems are complex and composed of a variety of factors that must be taken into account when working to build more sustainable communities.

Environmental Sustainability

Environmental and democratic sustainability are deeply intertwined. A growing body of research supports the idea that strong democracies lead to greater environmental sustainability. One such study found an association between levels of political and civil liberties and improvements in air and water quality. In another example, many Central and Eastern European countries that suffered intense levels of environmental degradation

under the Soviet Union enacted strict environmental legislation soon after transitioning to democracy.

A variety of factors contribute to the phenomenon. First, citizens have greater power to affect decision-making processes in democracies. Where environmental degradation is a serious problem and directly impacts citizens' lives, they are more likely to advocate for reform and hold politicians accountable for failures to adequately protect the environment. Further, the transparency that often comes with democracies provides the electorate with access to planning documents and pollution records and environmental reports, enabling them to more effectively advocate for change.

The correlation between democracy and environmental protection has largely been limited to localized environmental problems that have an immediate effect on the citizenry. As a result, longer term problems such as overfishing and climate change have not been as effectively addressed through citizens' political participation. Thus, the power of democracy to advance environmental sustainability ultimately depends on a community's commitment to take action on environmental problems whose impacts would not be felt immediately, and whose repercussions are much broader than the local community.

Promising Practice:
Using Democracy to Make a Difference
Citizens who live in countries with strong electoral and liberal democracies are often able to influence their government officials to adopt issues of sustainability, as evidenced by Erica Fernandez, a resident of Oxnard, California.

In 2007, Erica – then 16 years old – found out that a liquefied natural gas facility had been proposed along the coast of Oxnard and Malibu and the project involved installing a 36-inch pipeline through low-income neighborhoods. Outraged, Erica partnered with the Sierra Club and the Latino No on LNG group to mobilize youths and Latinos to participate in public meetings and protest against the pipeline. In addition to organizing weekly protests at the natural gas company's offices in Oxnard, she regularly met with community members, marched through the neighborhoods that would be most impacted, got the media involved, and persuaded more than 250 high school students to attend a critical rally.

When the California State Lands Commission met, Erica provided passionate testimony against the proposed pipeline and was even quoted in news articles. Ultimately, she was able to help convince the Commission to vote 12–0 against the project. After this victory, Erica helped convince community members to write letters to and call the Governor asking him to veto the project. In the end, Erica's community organizing and dogged determination played a critical role in helping her community resist a multinational billion-dollar corporation. Further, by actively participating in the political process, and encouraging others to do the same, Erika strengthened the political institutions in both her city and state.

For more information, visit www.broweryouthawards.org/userdata_display.php?modin=508&uid=146.

United Nations Conventions & Documents
Two of the three documents forming the International Bill of Human Rights protect democratic participation as a core right:

- The **United Nations Declaration of Human Rights** was adopted in 1948 and is one of the core documents of the United Nations. Article 21 states, "Everyone has the right to take part in the government of his country, directly or through freely chosen representatives," and "The will of the people shall be the basis of the authority of government; this will shall be expressed in periodic and genuine elections which shall be by universal and equal suffrage and shall be held by secrete vote or by equivalent free voting procedures."
- The **International Covenant on Civil and Political Rights** was adopted by the United Nations General Assembly in 1966 and entered into force ten years later. It requires countries to respect the civil and political rights of individuals, including the rights to freedom of speech and assembly and the right to vote.

WORLD SAVVY MONITOR

CLASSROOM COMPANION

Explore these issues with your students using the following lessons, which can be found in our online database or the Sustainable Communities Collaborator's Guide (page numbers are listed below).

- Protests, Revolution, and Democratic Change: Students will analyze the potential effects of protests on democracy and stability in the Middle East and North Africa.
- What Is Democracy?: Students will attempt to define for themselves what democracy is and what it means, and learn how people around the world view democracy and what democracy looks like in other countries.
- Democracy Around The World: Students examine what democracy looks like and how it plays out in countries with different political, ideological and cultural histories and backgrounds.
- See the World Savvy Monitor entitled Democracy Around the World.

Appendix: The Connections Between Literacy and Economic Sustainability

- **Human and human wealth:** Literacy improves people's potential for productivity in the income-generating activities in which they currently participate. This in turn opens up people's ability to pursue new income-generating activities.
- **Human and natural wealth:** Literacy can provide individuals with the skills to secure their rights to natural assets and improve the ability to understand health threats present in the physical environment.
- **Human and produced wealth:** Literacy enables people to use equipment more safely and efficiently.
- **Human and financial wealth:** Literacy provides people with easier access to things like insurance, which help sustain financial wealth in times of crisis.
- **Human and social wealth:** Literacy strengthens relationships by reducing individuals' feelings of being cheated when they enter into transaction that involve written documents.
- **Natural and natural wealth:** Literacy develops knowledge of how to improve agricultural fertility and decrease environmental degradation, which leads to greater environmental sustainability.
- N**atural and produced wealth:** Literacy can help people choose efficient technologies that will improve environmental sustainability.
- N**atural and financial wealth:** Literacy may improve people's ability to make good contracts to manage their natural wealth, such as negotiating for mortgages that result in less indebtedness.
- N**atural and social wealth:** Literacy can improve the effectiveness of groups that are formed to facilitate cooperative use of natural wealth, like forests or water.
- **Produced and produced wealth:** Literacy allow people to record experiments in technological innovation and specify more accurately requirements for new technology.
- P**roduced and financial wealth:** Literacy can enable individuals to pursue new financing methods for their productive investments.
- **Produced and social wealth:** Literacy may encourage collective approaches to investing, such as group leasing and hiring arrangements.
- **Financial and financial wealth:** Literacy can help household members take advantage of new savings opportunities and implement improved cash flow management systems.
- F**inancial and social wealth:** Literacy improves group micro-credit programs.
- S**ocial and social wealth:** Literacy increases social cooperation, leading to improved advocacy and participation in markets.

For more information, see Dr. John Cameron and Stuart Cameron, *The Economic Benefits of Increased Literacy: Background Paper Prepared for the Education for All Global Monitoring Report 2006*.

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