

Antarctica

The continent of Antarctica is warming. This could have dramatic impact on sea levels around the world. Scientists are learning much more about Antarctica. Recent discoveries have revealed mountain ranges and valleys that are hundreds of miles long beneath its vast ice region. There are three valleys linking the two major ice regions (the Western Antarctic Ice Sheet and the far bigger Eastern Antarctic Ice Sheet). As the ice sheets thin due to warming temperatures, there could be an unprecedented increase in the speed and rate at which the ice flows out from the center of Antarctica to the edges. The biggest valley discovered is 217 miles long and more than 20 miles wide.

Antarctica is a continent and has no government. It is twice the size of Australia. The only governing system for the continent is a 10-person office with a small sign on the door in Buenos Aires, Argentina that reads "Secretariat of the Antarctic Treaty." The Antarctic Treaty, signed in 1959, states that countries should set aside their territorial claims and use the continent for peaceful purposes. In a human lifetime, Antarctica has seen an increase of its coastal waters, the retreat of its glaciers, and the endangerment of the wildlife on the continent.

Evidence suggests that the reason for the Antarctic warming may be increased carbon dioxide emissions. Although there is not a large melting at the surface, research indicates that it is the inflow of warm water from the deep ocean that is contributing to the warming of the continent. Such warming and melting will result in higher sea levels which could dramatically affect coastal communities around the world, possibly within the next fifty years.

The number of visitors to Antarctica have increased dramatically. More than 51,000 visitors, many on large cruise ships, appeared in the region last year. Tourism has increased 17 percent from the previous year. It is becoming an adventure playground and it is unregulated. China is building research labs and seeking a ground station to increase the accuracy of global satellite navigation systems. The current water crisis in Cape Town, South Africa has resulted in plans to extract an iceberg from Antarctica and towing it to South Africa to ease the water crisis there. In addition, nations are beginning to explore the possibility of extracting minerals and other commodities from beneath the Antarctic ice sheet.

Corporate Responsibility to the Environment

National Public Radio has reported that Chief Executive Officers who invest in corporate social responsibility initiatives put themselves at risk of losing their jobs. The reason, quite simply, is that the people who are hired to increase profits for the shareholders of the company are not expected to forego that responsibility to help their communities.

The question is often whether corporate social responsibility applies in the current competitive marketplace. It is argued that investments in the community, such as safety, things that help the environment, or diversity do not have a direct relationship with the profit of a company. Tim Hubbards, a management professor at Notre Dame University, says that these corporate matters may endear the companies to workers and to its communities, but not to the shareholders, who would prefer a more traditional investment, such as research and development or marketing that would enhance the profit of a company.

However, there are some companies that have gone in a different direction. Apple Computer, for example, has built two solar panel farms in the Maiden, North Carolina region that power their data center and stretch across about 100 acres. It utilizes fuel cells to generate electricity from hydrogen, and is a non-polluting silent power source. Apple is planning to build a third solar farm. These represent the largest privately owned clean energy facilities in the United States and also represent an entirely new way for an internet company to source and think about power. Apple is also building clean energy resources in Nevada to power its data center there.

Whirlpool Corporation is also using wind energy to provide power to its manufacturing plants in Findlay, Ohio. These plants produce dishwashers and the company plans to install wind turbines at its manufacturing facility in Greenville, Ohio, where it will offset approximately 70% of the plant's electricity consumption, eliminating the equivalent of more than nine thousand annual tons of carbon dioxide.

Deforestation of the Amazon Rain Forest

The Amazon River Basin is one of Earth's most exotic natural realms and the largest rainforest ecosystem in the world. The longest navigable river in the world, the Amazon, winds more than 4000 miles from its source in the Andes Mountains to the Atlantic Ocean. Its tributaries extend for millions of square miles and sustains lush flora and extraordinary fauna. It is a fragile environment.

It includes a diversity of nature's offerings, including delicate orchids, transparent glass frogs, pink river dolphins and a large array of birds. It is home to more plant and animal species than anywhere else in the world. It includes the largest wetlands refuge in the world. The region in Brazil is home to about 2.5 million species of insects, tens of thousands of plants and about 2,000 species of birds and mammals. The Amazon Rain Forest is also known as "the lung of the planet."

Within the past few decades, there has been an increasing interest in using deforestation techniques to extract lumber and other raw materials to support the economy of Brazil. In 2017, over a twelve-month period, deforestation in Brazil increased by almost 30 percent. Between 2015 and 2016, about 3000 square miles of the rain forest went up in smoke so that Brazil could become the world's top exporter of meat products. Similarly, in Bolivia and Chile, forests have been cut down to support mining activities so that gold, silver, iron and other minerals could be taken to enhance exports and industrial production around the world. Brazil has suffered with unstable governments for many years. Dilma Rousseff, president of Brazil at the time of the Olympics, has been impeached. The steady expansion of the country's farming borders is being stimulated by an increase of cattle prices. Brazil is a very poor country economically and is the largest country area-wise in South America.

Fracking

Hydraulic fracturing, also known as fracking, is a process by which drillers blast water, sand, and hazardous chemicals at high pressure into sub-surface rock formations to create fractures that facilitate the flow of recoverable oil or gas. The technique is so effective at reaching hard-to-access reserves that it has resulted in a boom in oil and natural gas production in the United States.

The owners of the leases where fracking occurs along with oil and gas companies make significant profit from the greatly increased supply and sale of oil and gas. Fracking also has made the United States energy self-sufficient, and for the first time in decades, the United States is able to export oil and natural gas. Home heating costs have decreased and many jobs have been created. Fracking has also led to the closure of coal plants across the country.

Opponents argue that fracking pollutes the groundwater and the air and poisons communities. They contend that it would be more prudent to develop clean, renewable energy sources. These clean energy sources are expensive, and even with government assistance, many such companies have gone out of business during the past ten years. Renewable energy sources would limit the profits of the oil and gas companies.

The issue has been at the center of political debate during the past several election cycles and in the halls of Congress. The debate has become emotional: oil producing advocates say "Drill, baby, drill" while environmentalists say "Stop the drilling."

Fracking also has been seen as a local issue, with states and counties at the forefront of approving or disapproving such techniques.

How Dry We Are - Cape Town, South Africa

The metro area of the City of Cape Town, South Africa is facing the possibility of running out of drinking water within the next year because of a substantial decrease in rainfall during the past decade, its growing wine industry and the rapid rise of its population. The problem, however, is not limited to Cape Town. Other cities throughout the world are facing similar problems in the future.

Cape Town is the second largest city in South Africa and has grown from 2.4 million people in 1995 to almost 4.3 million people by 2018. During that time, the dam water storage increased by only 15 percent. It experiences a Mediterranean climate with warm dry summers and winter rainfall. Six major dams supply most of the water supply. During the past five years, the city has experienced a drought.

One of Cape Town's major industries is wine exporting, which is a major contributor to its economy. In 2016, Cape Town exported 113 million gallons of wine to Europe and to the United States.

California has recently imposed strict water usage limitations on its citizens, including limits on when and how often residents can use washing machines and showers. The state has experienced a significant drought and its economy is based on farming and wine-producing, both of which use large amounts of water.

Climatologists predict that other parts of the world will be facing clean water shortages in the future if the temperature of the earth continues to rise.

The Keystone Pipeline

One of the most contentious environmental issues in the past decades has been whether to permit oil pipelines that transport oil from Alaska and Canada to refineries in the United States.

The Alaska pipeline was built in the 1970s from the North Slope of Alaska to refineries in Texas. Alaska harbors a huge amount of oil that could make the United States self-sufficient. Opponents said that the drilling in Alaska would forever harm the ecosystem. In addition, they cite the Exxon-Valdez oil spill as evidence that an oil leak or other disaster would impact the salmon-rich waters of Alaska as well as the ecosystem. On the other hand, proponents of the pipeline assert that the fears of loss of animal life and species are overblown and argue that since the Alaska pipeline has been in operation (1975), the animal population has actually thrived where the pipeline was built. Drilling in Alaska and the pipelines has helped the United States become the world leader in energy production and refinement. Many jobs have been created.

The TransCanada Corporation proposed the Keystone Pipeline project in 2000 to run from Hardisty, Alberta, Canada to Patoka, Illinois. It became operational in June 2010. The Keystone XL extension was proposed in 2008 and would run through Baker, Montana where American-produced light crude oil from the Bakken formation of Montana and North Dakota access would be added to synthetic crude oil from the oil sands of Canada.

The Keystone proposal faced criticism from environmentalists and from some members of Congress based on the potential for oil spills, the potential for increased carbon emissions, conflicts of interest and political issues. After a six year review process of the Keystone project, the Nebraska Supreme Court cleared the way for its construction in January 2015. The Senate then passed a bill authorizing it by a vote of 62-36 on January 29, 2015 and the House of Representatives approved it by 266-153 the following month.

In November 2015, Secretary of State John Kerry issued a determination that the project was not in the public interest because there was a perception among foreigners that the project would increase greenhouse gas emissions and that it would undercut the credibility and influence of the United States in climate-change related negotiations. President Obama then rejected the pipeline. After being a major issue in the 2016 Presidential campaign, President Trump reversed that decision by signing a memorandum approving the Keystone pipeline in January 2017.

Nuclear Energy

Nuclear power has been touted as one of the cleanest forms of energy. However, there are risks to the use of such energy - a leak of radiation into the atmosphere, groundwater, or soil could result in catastrophic circumstances. Examples of those risks include the Chernobyl Nuclear Power Plant incident near Pripyat, Russia, and the outcomes of the recent earthquake and tsunami at the Fukushima Daiichi Nuclear Power Plant in Japan.

In Europe, approximately 15% of energy is powered by nuclear energy. About a dozen European countries are planning additional nuclear plants, but Switzerland has stopped building nuclear plants and committed to eliminate nuclear power and Germany decided to shutter its nuclear power plants following the accident at Fukushima, but this decision may undermine the country's progress to reduce CO2 emissions

In the United States, about 20% of energy is powered by nuclear plants, and the U.S. is the world's largest producer of commercial nuclear power. In 2014, the United States generated 33% of the world's nuclear electricity. About one-third of North Carolina's electricity generation comes from nuclear power.

In the coming year, work will begin on the Jaitapur Nuclear Power Project in Maharashtra, India. It will be the largest nuclear plant in the world by net electrical power rating. It is a joint project between India and France, costing about \$15 billion. In ancient and medieval times, Jaitapur was one of the most important ports in the region.

Anti-nuclear activists have raised environmental concerns about the Jaitapur project. The area is at a moderate risk for earthquakes. Nuclear waste disposal issues have not been decided. Fishermen are concerned that their fisheries will be destroyed. Those supporting the project assert that it is safe, environmentally benign, and an economically viable source of energy. Many local people are opposed to the proposed nuclear power plant. They have protested since 2010, and some protests have been violent. Trade unions and social organizations are raising doubts about the validity of the Environmental Assessment report.

The population of India is growing, and the country is being industrialized very rapidly. The economy of India may soon rival China. The government seeks to employ its 1.3 billion people. About 300 million people in India lack access to power and the country has fourteen of the world's most polluted cities, despite the fact that it has more than twenty nuclear reactors.

One Earth

There has been a dramatic increase in world population, from 600 million people in 1700 to more than 7 billion people in 2012. The industrialization of the world in the 19th and 20th centuries has resulted in a significant strain on the world's resources and the environment. Today, as the world grows at an increasingly faster pace, industrialized developed countries are entering a new machine age based on technology while many emerging and developing countries, such as India and China, are becoming industrialized very rapidly.

For most of human history, attitudes to animals, plants and the natural world have been exploitative. The view of conquering the environment was supported by the ancient Greeks, who believed that humans stood at the end of the chain of being and that it was the function of lower animals to serve those in higher authority.

During the past fifty years, there has been an awareness of the fragile state of the earth. In the United States, an environmental movement began in the 1960s in part because of Rachel Carson's best-selling book, "Silent Spring" in 1962. The Clean Air Act of 1963, the Clean Water Act of 1972 and the Resource Conservation and Recovery Act (Solid Waste) in 1976 led to major changes in the United States, such as eliminating lead from automotive gasoline, cleaning polluted air in our cities and cleaning polluted rivers. The United States Environmental Protection Agency was established in 1970 to write regulations and to enhance research to promote environmentally friendly policies. Some think that the regulations are too strict; others say that they are not strict enough.

These policies have provided a vigorous debate about environmentalism and the role of human beings with respect to the environment. Environmental virtue ethics in the 1980s emerged as a way that humans should see themselves with respect to the environment. The World Commission on Environment and Development, in 1987, focused on ecological consciousness. Deep ecology has promoted the idea that non-human animals, plants and other components of the environment are intrinsically valuable and should be protected from destruction. Others, however, emphasize the extrinsic value of natural resources and believe that they should be used to improve the quality of life for human beings, guarantee national sovereignty, and create capital.

The Paris Climate Agreement

The Paris Climate Agreement is an agreement within the United Nations Framework Convention on Climate Change that deals with greenhouse gas emissions. It becomes effective in 2020. As of May 2018, 195 member nations have signed the agreement and 177 have become party to it. The purpose of the agreement is to keep the increase in global average temperature to well below two degrees centigrade above pre-industrial levels, and to pursue efforts to limit the increase to 1.5 degrees centigrade, since this would significantly reduce risks and impacts of climate change.

The Paris Climate Agreement emphasizes consensus-building. Under the agreement, each country determines, plans, and regularly reports its own contribution that it should make to mitigate global warming. There is no mechanism to force a country to set a specific target, but each target should go beyond previously set targets. Each country may withdraw from the agreement, and the earliest effective date of withdrawal for the United States is November 2020. President Trump has announced his intention to withdraw from the agreement because he considers it a “bad deal” for the United States and because he believes that the United States will shoulder much of the burden for reducing greenhouse gas emissions.

The agreement has come under criticism because there is an assumption that member states of the United Nations (China, the United States, India, Japan, Brazil, Canada, Russia, Indonesia and Australia), which generate more than half of the world’s greenhouse gases, will all somehow drive down carbon pollution voluntarily and assiduously without any enforcement mechanism. According to the United Nations, the emission cut targets will result in a temperature rise of three degrees above preindustrial levels. Current country pledges are insufficient to meet the Paris Climate Agreement goals.

No country’s contributions are binding as a matter of international law and they do not set any obligatory language. There is no enforcement provision. The only remedy for not meeting a country’s goal is a “name and shame” system. However, a trickle of nations exiting the agreement may encourage other withdrawals. Its predecessor, the Kyoto Protocol (which the United States never signed) set commitment targets that have legal enforcement and differentiates between developed and developing countries. However, the Paris agreement builds on consensus building and encourages the limits, rather than having them legally bound. Since it is categorized as an executive agreement and not a treaty, it does not require Senate approval.

Sunscreen and the Environment

In May 2018, Hawaii took the unprecedented step of passing a law that will prohibit the sale of over-the-counter sunscreens containing chemicals that are said to be contributing to the destruction of the state's coral reef and other ocean life. Hawaii is the first state in the United States to pass such a law and it will take effect on January 1, 2021. The reason for the law is that much of the inner reef at Oahu's Hanauma Bay is dead after decades of tourism. Mexico has passed similar legislation banning sunscreen because of its impact on that country's coral reefs. The Great Barrier Reef in Australia is also under severe threat and may be extinct by the end of the century.

Coral reefs occupy less than .1% of the world's ocean surface yet they provide a home for more than 25% of all marine species. They deliver ecosystem services to tourism, fisheries and shoreline protection. They are sensitive to water temperature and are under threat from climate change, oceanic acidification, blast fishing, cyanide fishing, sunscreen use and overuse of reef resources.

Environmentalists contend that the chemicals oxybenzone and octinoxate are causing the destruction of the reef. These chemicals are found in more than 3,500 of the world's most popular sunscreen products. However, under the law, prescription sunscreen containing these chemicals would still be permitted.

NPR reported in 2015 that a study of coral reefs in Hawaii, the US Virgin Islands and Israel determined oxybenzone to leach the coral of its nutrients and bleaches it white. There are estimated about 14,000 tons of sunscreen lotions ending up in coral reefs around the world each year.

There has been much opposition to the law coming from the manufacturers of these sunscreens. In addition, a major group of medical doctors has opposed the law because they want the issue studied more thoroughly and because of the lack of peer-reviewed evidence that such chemicals are a cause of coral bleaching. There is overwhelming evidence that not wearing sunscreen increases cancer rates in humans.