

Green Technologies and Their Impact on the Modern World

M-Kh. R. Umarchadzhiev¹^a and R. R. Suleymanova²

¹Kadyrov Chechen State University, Grozny, Russia

²Chechen State Pedagogical University, Grozny, Russia

Keywords: Biological waste, ocean pollution, recycling, nature pollution, green technology, nature cleanup.

Abstract: Thanks to a huge breakthrough in the field of information technology and in the pursuit of improving human life. We can observe that every person has several gadgets to improve their life. But it is our inventions that have a very detrimental effect on the planet. The most promising measure to combat pollution is to change the attitude of consumers towards the environment. This is what will be discussed in this scientific work.

1 INTRODUCTION

Today, we see how far humanity has advanced with its technologies and how much further it will go. Most people have mobile phones and computers as they become more affordable and reliable than they were in the last century.

Nowadays, people are working on quantum computers, unmanned technologies, nanotechnology, alternative fuel sources, virtual reality, and many others.

Perhaps one of the important pieces of technology today will be the Large Hadron Collider, which is used to discover Bazon's dark matter. Higgs . Mankind has been sent to Mars by robots, one of which is constantly transmitting data to NASA. Plans are under way to send humans to Mars, which until recently was considered a one-way trip due to solar radiation, but NASA and others are working to improve space suits and spacecraft to protect the humans they carry from said solar radiation. NASA has scheduled a manned mission to Mars by 2030, 61 years after the first moon landing.

Unfortunately, coal is still used today to generate 44% of the world's electricity despite being the worst pollutant (Adharanand, 2008).


Green technology is a newer concept, so it is not widely used. The goal of green technologies is the practice of environmentally sustainable computing. The goal of green computing is to minimize the negative environmental impact of IT operations by

creating and disposing of computers and related products in an environmentally friendly manner.

Not all of these past inventions may seem relevant, especially if they are no longer in use. In fact, all of these inventions served a purpose. What are their goals, you ask? Think of them well as stairs, each step may seem insignificant, but in the end it leads to something, to the end result. Green technologies and other environmentally friendly products are still a new concept for many. Technology has made more rapid progress over time, but many have not stopped thinking about the consequences and it may affect the environment. It wasn't until 1992 that the EPA launched Energy Star (Environmental Protection Agency) in the United States of America. They created a voluntary program that helps organizations save money as well as reduce their emissions when they successfully identify products that have superior energy efficiency. These products typically use 20% to 30% less energy than required by federal standards. The list below shows some of the major green initiatives. There are many more, but here are the most famous ones:

The Save the Climate Computing Initiative (CSCI), which aims to reduce the power consumption of all personal computers in active/inactive state (Case, 2010).

The Electronic Product Environmental Evaluation Tool (EPEAT) can assist in the purchase of environmentally friendly computing systems. The Council assesses computing technology against 51 criteria - 23 mandatory and 28 optional to measure the

 <https://orcid.org/0000-0001-9141-3668>

effectiveness and sustainability of the product. Products rated Gold, Silver or Bronze.

Green Grid is a global association dedicated to improving energy efficiency in data centres and business computing ecosystems. Companies such as AMD, APC, Dell, HP, IBM, Intel, Microsoft are responsible for its creation.

The Energy star is an association founded by the Environmental Protection Agency (EPA) in 1992 that labels products that use 20% to 30% less energy than required by the federal standard. As of 2006, over 40,000 Energy Star products are available.

TCO certification contributes to the promotion of sustainable IT products. Certified products comply a wide range of criteria, including requirements for socially responsible production of the environment, as well as health and safety throughout the product life cycle (Cartridge World, 2016).

2 MATERIALS AND METHODS

There are many problems that we face today as a result of the advancement of technology. Technology has definitely helped push our species further than we ever imagined. Technology has greatly improved life from many on Earth. For example, it has also saved countless human lives; installation of disposable robots to harm instead of people. However, progress came at a high price.

Excessive e-waste, also known as environmental waste. Many are unaware of how bad these conditions are. A lot of people don't know how to use technology. Many are wary of recycling their old technology because of privacy concerns. The device still contains sensitive information that can be easily recovered, and simply removing it does not actually remove it from the hard drive. If the user is concerned, the hard drive should be safely removed and physically destroyed in a safe location. If this is not possible, look for recycling centers that sign an NDA.

From time to time you may see electronic recycling centers or trash cans, and maybe even discs. It is recommended that you bring any electronic products or printer cartridges in to be safely recycled, but unfortunately, the Silicon Valley Toxics coalition estimates that 80% of e-waste is sent overseas to developing countries. Many companies that claim to recycle electronics safely actually don't. Many uses Third World countries as landfills because it is cheaper than proper disposal with professionally trained workers. Then the inhabitants of these developing countries are left with no choice but to salvage valuable materials (like copper) in their cars

or try to recover the technology. Few affected countries have managed to repair equipment and have even turned profitable businesses from selling the equipment they repair. This already shows a big difference in attitude towards technology, the first world country is abandoning the "old technology" that is useless to them (despite the fact that it may not be so old), and the third world countries are trying to repair it (NASA Global Climate Change, 2007).

Even though these countries are trying to make the most of the current situation, the impact on the environment is still lingering. The average computer contains 8 pounds of lead. Lead jar cause nervous disorders and joint pain in adults. High lead levels in children have been linked to brain damage and anemia, according to the Centers for Disease Control and Prevention. Cars are also harmful, and can leak liquids such as oil, which can contaminate food and water, or even kill people and wildlife.



Figure 1: Recycling e-waste.

Figure 1 shows which countries receive e-waste (or e-waste) and how it is distributed. E-waste comes from all over the world, with North America and Europe being the main contributors to this problem. It is terrible to see that not one country is to blame, but many countries. Many deny their involvement, how universal this problem is. As you can see, China and India are the main recipients of waste (Vincent, 2014).

One of the technologies that has completely changed the world is the endless search for oil, which has led to a decline in the population of some animal

species and even complete extinction. For example, there are only 880 mountain gorillas left in the world, 200 of them live in the Virunga National Park in the Democratic Republic of the Congo (DRC). The mountain gorilla is a species of gorilla that is slowly increasing in numbers due to several conservation efforts. The Park is also home to 218 mammal species, 706 bird species, 109 reptile species, 78 amphibian species, and over 2,000 plant species.

Unfortunately, with oil concessions, 85% of the park is allocated for it. "Habitat loss and degradation, exploitation and climate change are major threats to the world's biodiversity. And this has contributed to a 52% decline in the Living Planet Index since 1970, in other words, the number of mammals, birds, reptiles, amphibians and fish with which we share our planet has been halved."

It was said that in order to keep up with our energy and resource needs, we would need 1.5 lands as we are already over the supply. The population is also growing rapidly, as expected. The population by 2050 will be 9.6 billion people. With this growing population, not only comes more energy and resource requirements, but more space. Most of the population lives in cities, and cities will have to expand to keep up with the growing population. How can we place these people in cities when we are already fighting for survival? Nearly a billion people go hungry, 760 million live without fresh, clean water, and more than 1.4 billion people lack access to reliable electricity.

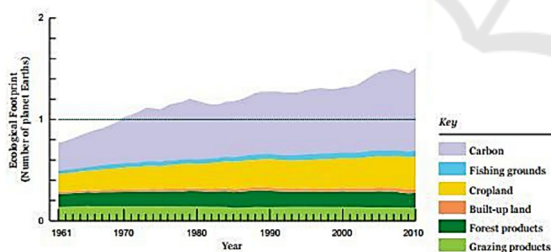


Figure 2: Human Ecological Footprint.

Figure 2 shows the ecological footprint of humanity. You can see that carbon was the main ingredient. Carbon comes from fossil fuels, which are becoming more and more popular.

Humans have been living in predictable as well as stable environmental conditions for the past 10,000 years. period known as the Holocene. This period provided an opportunity for sedentary human communities to develop and eventually evolve into today's modern as well as complex societies. We are now on the threshold of a new period called the

Anthropocene. During this period, human activities are the biggest drivers of change on a planetary scale. This critical change could change all life on earth as we know it.



Figure 3: Debris decomposition time.

There are currently several large areas of debris floating in the Pacific Ocean. This is the result of the mixing of the tides. A mass the size of a "continent" is composed of mixed debris. Figure 3 shows how long it will take for various items to decompose in the ocean. The most shocking thing is the fishing line from 600 years old and the glass bottles are not identified. This spot is huge, many aquatic animals get stuck in it, as well as birds that take it for solid ground and then get entangled in it. As these various items decompose, they release various toxins into the ocean, sometimes even rendering the ocean incapable of supporting life. One of the most widely known toxin is Bisphenol A (BPA) associated with health and environmental issues. The patches stretch from Japan to the west coast of the states, they are called the Western and Eastern garbage patches. The two sites are somewhat related to each other due to the northern Pacific Subtropical Convergence Zone, a few kilometres north of Hawaii. In this zone, warm water mixes and mixes with cooler water, creating a bond between the two sites. Another key factor contributing to the formation of these patches are whirlpools, which are circular ocean currents that form due to the Earth's varying winds as well as the planet's rotation. The cycle is like a tornado, the center is calm and stable. The hands of the whirlpool pull the debris into the silence center, where it forms together and is eventually trapped (Whitman, 2016).

The reason so much trash is left behind is because virtually none of it is biodegradable and can simply break into smaller pieces. What makes this clean-up job impossible is due to the many of the plastics being destroyed, the island is mostly made up of

microplastics, which can be small enough to not be visible to the naked eye. Smaller pieces are, of course, interspersed with larger items such as water bottles, fishing lines or clothing items.

This patch of debris was discovered by boat racing captain Charles Moore in 1997 while racing from Hawaii to California. During the races, he noticed more and more pieces of plastic surrounding his ship. Unfortunately, little is known about it as it is too dangerous to explore. Most of the debris is below the surface, so it's impossible to even measure.

It is estimated that 80% of the garbage comes from North America and Asia, and 20% comes from boaters, oil rigs and cargo ships that are dumped into the ocean. Most of the garbage is fishing nets. These nets are often discarded if they break due to low cost. The nets are a huge problem as animals get tangled in them or turtles mix up their jellyfish food with plastic bags. Because animals cannot digest waste, it usually remains in their stomach or causes them to die. Plankton and algae are also at risk, as the plastic on the surface blocks light from reaching them. If they die out, it will lead to the extinction of other animals due to a decrease in the amount of food (Soltan, 2016).

Things like the Pacific Garbage Patch make you wonder how this could have happened. Garbage is a direct result of our consumer culture. It's no surprise that most trash is various bits of plastic because plastic is so widely used. Plastic is used to package just about everything, and most bottles are even plastic. Plastic bags were also found. Scientists have been able to collect 750,000 pieces of microplastic in one kilometre, which is a staggering 1.9 million per square mile. Because of its remote location, no country will take the responsibility of trying to clean up this site, or even raise funding for it. Charles Moore said it would "bankrupt any country" that tried to do so. However, several organizations are trying to stop the spread of the stain. The program estimated that it would take 67 ships a year to clean up less than one percent of the ocean.

In addition to the clean-up efforts, David de Rothschild created a catamaran out of plastic bottles and named it Plastics. He successfully sailed it from San Francisco, California to Sydney, Australia. The purpose of this expedition was to show the durability of plastic and the possibility of its reuse. Scientists strongly believe that producing more biodegradable options would be the most effective way to reduce stain size. There are now several campaigns that are ready to move away from harmful single-use plastic and move towards reusable or biodegradable materials.

Unfortunately, it doesn't seem like a big solution, but progress on this is slow, the main problem being the sheer size of the patch, which makes it seem like a difficult task that will never be completed.

Technology has been around for so long that many of us have not thought about the detrimental effects on the environment. Many people buy appliances simply out of boredom or simply because they want the latest edition. Global warming has been discovered, as well as a hole in our ozone layer. The scary thing is that some of the things we've been warned about, if we don't change our lifestyle, are already starting to happen. If you want to know what's going on in the world, you just turn on the news. You may be shocked at all the bad news, increasing droughts, floods, hurricanes, melting glaciers, intense heat waves and rising sea levels. Scientists have been warning us about these effects of global warming for decades, but now that they've started happening, it's a different story. It's not exactly what the future will be, but it will get worse if we don't change our ways. In the next century, global temperatures will rise by 2.5 to 10 degrees Fahrenheit. This may be good for some regions, but bad for many. Rainfall will increase and the number of regions will decrease, which will lead to flooding of some areas, while other areas will go through severe droughts. Heatwaves will be stronger and last longer, and hurricanes will be more frequent but also more severe. Winters will be colder and last longer. All of these facts are pretty scary, but of all, this may be the most devastating of all; that by 2100 the sea level will rise by 1-4 feet, some cities will be completely under water. This is the result of polar ice. It will only get worse over the years if the previous ones weren't scary enough. No one knows for sure what will happen, but it will eventually lead to mass extinctions and, probably, the end of all life on earth.

3 RESULTS AND DISCUSSION

All of this suggests that our world is definitely heading in a bad direction if people don't just change their behavior. This includes many things, the main ones are shopping habits and the way we live from day to day. Small changes can make a big difference, for example, if every Russian office worker used one less brace per day, we would save 120 tons of steel. Every year, more than 6 billion kilograms of garbage is thrown into the ocean in the world. Much of this plastic is toxic to marine life. The decline in the health of our environment is a direct result of millions of decisions made without considering the impact on the world.

You can always make the best choice, even if it's not necessarily the easy one. These facts are definitely shocking, but people have the opportunity to change the world for the better, because about 75% of the contents of landfills are actually recyclable.

Consumers are the only ones who have the power to truly change the world, even though it may not seem like it, consumers are basically in control of how companies operate.

Life changes may seem difficult, but it's actually easiest to start at home to see how things go. After successfully making green lifestyle changes in your home, you can suggest ideas for your workplace (Schmidt, 1899).

If each consumer makes the following changes in his life, then the indicators will change dramatically.

- Do not litter, collect garbage in or around the territory.
- Try not to buy things in a plastic case.
- Buy only what you need, no impulse buying.
- Buy clothes made from natural fibers (for example, fleece releases plastic particles when washed).
- Try driving to work or school.
- Use cloth napkins instead of paper ones.
- Reuse of waste paper
- Buy only officially certified organic products.
- Buy only organic and fair trade products.
- Try repairing or altering old clothes or donate.
- Give up meat one or two days a week.
- Open curtains for natural light instead of using electricity.
- Buy a dishwasher.
- Start a home garden.
- Swap non-stick pans for more durable cast iron pans.
- Use reusable containers and bags.
- Improve home insulation.
- Recycle, sell or give away old devices/components.
- Buy LED, CFL, or other long-life bulbs.
- Try to repurpose old technology
- Turn on the heating and air conditioning when needed, make sure they don't run non-stop.
- Virtualization and cloud computing
- Invest in rechargeable batteries
- Get rid of screensavers and allow products to go to sleep.
- Try repairing the technology rather than replacing it entirely.
- Buy a hybrid / electric car.

4 CONCLUSIONS

Green technology is an important concept that every person should be familiar with. Understanding past technologies in addition to green technologies is critical to understanding the potential future of green technologies. The direct results of our consumer lifestyle are often hidden from the public eye because it is not a pleasant topic to think about, but it is important to know the truth in order to find solutions to pollution, planned obsolescence, e-waste and sweatshops. Since these things are often swept

The public may not know much about these topics until it is too late to fix something that is permanently damaged. Modular technology offers a solution that satisfies both parties. Manufacturers save money by specializing in certain parts instead of being responsible for creating entire divisions. The other side, the consumer receives the savings transferred to him. Modular technology offers customizable and even replaceable components that can be easily replaced. While modular technology is not a complete solution because it still creates more e-waste, it is an important step in the right direction. Modular technology is a stepping stone to other solutions that can be even better. For example, technology can become biodegradable in 5-10 years, depending on the device. One of the greatest aspects of green technology is that it allows people to live their lives in a greener and more environmentally friendly way. Because green technology covers a lot of home appliances, allowing you to be more environmentally friendly in your daily life.

REFERENCES

- Adharanand, F., 2008. *Big green ideas for the workplace*.
- Case, S., 2010. *President Bush Requires Federal Agencies to Buy EPEAT Registered Green Electronic Products*.
- Cartridge World, 2016. *Cartridge world's fight against 350 million printer cartridges ending up in landfills*.
- NASA Global Climate Change, 2007. The consequences of climate change. *Journal of Global climate change*. <https://climate.nasa.gov/effects/>.
- Vincent, J., 2014. *Are your gadgets built by slave labour? Big tech firms ignorant of supply Chains*.
- Whitman, M., 2016. Should becoming carbon neutral be part of your carbon management strategy? *Sustainable business toolkit*. <https://www.sustainablebusiness toolkit.com/becoming-carbon-neutral-carbon-management>.
- Soltan, L., 2016. Technology depleting resources and pollution. *Digital responsibility*.
- Schmidt, W., 1899. *Herons von Alexandria. Druckwerke und Automatentheater*. Lipsae, Teubner. pp. 230-231.