10 Ways Humans Impact the Environment

Written by Maverick Baker
April, 06th 2016

We as humans have become dependent on luxuries such as cars, houses, and even our cellphones. But what does our love for manufactured metallic and plastic goods do to the environment? Human activity can be directly attributed to the cause of hundreds of extinctions in the last two centuries, verses the millions of years that extinctions naturally occur. As we progress through the 21st century, humans have changed the world in unprecedented ways.
Here are 10 ways that humans have impacted the environment, and what that could mean for the future.

1. Overpopulation
Survival used to mean repopulating. That however, is quickly becoming true for the opposite as we reach the maximum carrying capacity that our planet can sustain. Overpopulation has grown into an epidemic since mortality rates have decreased, medicine has improved, and methods of industrial farming were introduced, thus keeping humans alive for much longer and increasing the total population. The effects of overpopulation are quite severe, with one of the most severe being the degradation of the environment. Humans require space, and lots of it whether it is for farmland, or industries which also takes up tons of space. An increased population results in more clear-cutting, resulting in severely damaged ecosystems. Without enough trees to filter the air, CO_2 levels increase which carries the potential to damage every single organism on Earth. Another issue is our dependency on coal and fossil fuels for energy, the larger the population, the more fossil fuels will be used. The use of fossil fuels (such as oil and coal) results in copious amounts of carbon dioxide into the air- threatening the extinction of thousands of species which adds to the effect that forest depletion ***already*** has. Humanity continuously requires more space, which devastates ecosystems and increases CO_2 levels, further devastating the delicate environment. The planet can only sustain so much damage until it will begin to damage us.

2. Pollution
Pollution is everywhere. From the trash thrown out on the freeway, to the millions of metric tons of pollution pumped into the atmosphere every year- it's obvious, pollution is inescapable. Pollution is so bad that to date, 2.4 billion people do not have access to clean water sources. Humanity is continuously polluting indispensable resources like air, water, and soil which requires millions of years to replenish. Air is arguably the most polluted with the US producing **147 million metric tons** of air pollution each year alone. In 1950, smog was so bad in LA that the ground level ozone (which is great in the atmosphere, not so much on the ground) surpassed 500 parts per billion volume (ppbv)- well above the National Ambient Air Quality Standard of 75 ppbv. People thought they were under foreign attack as the smog burned their eyes and left an odor of bleach in

the air. That is when the devastating effect of aerosols was discovered. While air quality in the US has slightly improved, the quality in developing countries continues to plummet as smog continuously blocks out the sun in a dense shroud of pollution.

3. Global Warming

Global warming is arguably the greatest cause of impact to the environment. The largest of causes emanating through CO_2 levels from respiration to more detrimental causes like burning fossil fuels and deforestation. At any rate, humans are consistently increasing CO_2 levels globally- *every year*. The highest level of CO_2 in recorded history before 1950 was about 300 parts per million. However, current measurements of CO_2 levels have exceeded above 400 PPM, abolishing every record dating back **400,000 years**. The increase of CO_2 emissions has contributed to the planet's average temperature increasing almost a whole degree. As the Temperature increases, arctic land ice and glaciers melt which causes the ocean levels to rise at a rate of 3.42mm per year, allowing more water to absorb more heat, which melts more ice, creating a positive feedback loop which will cause the oceans to rise **1-4 feet by 2100**.
So what's the big deal?

4. Climate Change

As global temperatures increase, weather patterns on earth will drastically change. While some areas will experience longer growing seasons, others will become barren wastelands as water will **deplete** in vast areas, turning once floral regions into deserts. The increase will impact weather patterns, promising more intense hurricanes in both size and frequency, as well as intensifying and prolonging droughts and heat waves. But air pollution does not just effect the environment. The evidence is mounting that poor air quality and rising temperatures are ruining delicate ecosystems, even leading to increased asthma and cancer rates in humans.

5. Genetic Modification

Genetic modified organisms (GMOs) have been a major contributor to the survival and prosperity of humans. GMO's are selected bred crops, or crops that have had DNA directly implanted into it in order to give an advantage to the crop, whether that be to sustain colder temperatures, require less water, or yield more product. But GMO's are not always intentional. For years humans have used glyphosate, a herbicide designed to eliminate weeds. However, just as humans have a learning immune system, certain weeds have developed a resistance to 22 of 25 known herbicides, with 249 species of weeds completely immune.

"Super weeds" threaten farming lands by chocking out crops. One of the only solutions is to till the land, turning over the soil to kill the weeds and give an early advantage to the planted crops. The disadvantage of tilling however is that it causes the soil to dry faster and kills off good bacteria, making its fertile life span significantly shorter. To replenish the depleted soil, fertilizer is used, which introduces a whole new set of problems to the environment.

6. Ocean Acidification
Ocean acidification is caused when CO_2 dissolves into the ocean bonding with sea water creating carbonic acid. The acid reduces the pH levels in the water, essentially changing the Ocean acidity by 30% in the last 200 years- a level that the ocean has not been at in over 20 million years. The acidity depletes the calcium concentrations, making it difficult for crustaceans to build their shell, leaving them vulnerable without their armor. Between the global temperature rise of one degree and the ocean acidification, scientists say a quarter of all coral reefs are considered damaged beyond repair, with two-thirds under serious threat. Coral reefs are home to 25% of aquatic life, many of which are responsible for the natural filtration of the ocean and production of necessary nutrients that are vital for life under the sea. However, acidification is not the only watery threat.

7. Water Pollution
Every year over 8 millions tons of garbage dumped into the ocean. Not only is garbage introduced into the oceans, but also the excessive amounts of fertilizer that finds its way into the ocean through rains, floods, winds, or dumped in excess right into the largest producer of oxygen we have. Fertilizer contains nitrogen, an element essential for the growth of plants- but that does not limit it to what it was intended for.

Phytoplankton and algae thrive off of nitrogen, causing excessive growth in what is known as "red tides" or "brown tides" in areas with high concentrations of nitrogen. The brown tide is caused by the rapid growth of billions of algae, which deplete water bodies of oxygen and cause poison to accumulate in all life that consumes it, including fish and birds. But water pollution does not end there.

Year after year, millions of tons of garbage is dumped into the ocean. Since the garbage mainly consists of plastics, it is largely indissoluble. The garbage accumulates in large vortexes across the ocean. Marine life, including the loggerhead sea turtles, are tricked into thinking they are eating food when really it is only a floating plastic bag or other poisonous plastic that will cause starvation or suffocation to any unfortunate animal that mistakenly ingests it. Pollution is the number one threat to all aquatic life.

8. Deforestation
With an exponential expansion in human beings, more food, materials, and shelter are being manufactured at stupendous rates, mostly stemming from forestry. Forests are cleared to make way for new humans, which in turn, makes more humans, you can see the problem. An estimated **18 million acres** of trees are clear-cut each year to make way for new development and wood products- that is just under half of all the trees on the planet since the industrial revolution began. With trees being one of the largest producers of oxygen, clearly that is not a good thing for humans- and especially not for the animals that call the forest home. With millions of different species that live in forests, deforestation is a major threat to their survival.

9. Acid Rain
When humans burn coal, sulphur dioxide and nitrogen oxides are released into the atmosphere where they rise up and accumulate in the clouds until the clouds become saturated and rain acid, causing havoc on the ground beneath. When the rain falls, it accumulates in water bodies which is especially harmful for lakes and small bodies of water. The ground surrounding the water soaks up the acid, depleting the soil of essential nutrients. Trees that absorb the acid accumulate toxins that damage leaves and slowly kills large areas of forest. Acid rain has also been known to completely eliminate entire species of fish, causing a snowball effect of damage to the ecosystem that relies on diverse organisms to sustain the environment.

10. Ozone Depletion
The ozone layer is renowned for its ability to absorb harmful UV rays that would otherwise be detrimental to the health of all walks of life. Without an ozone layer, walking outside would be unbearable. Ozone is made up of three bonded oxygen's that float up to the stratosphere where they absorb a substantial amount of UV radiation, protecting all life down below. However "ozone-depleting substances" (or ODS) primarily made up of chlorine and bromine find their way up to the stratosphere where they strip the O3 of an oxygen, destroying its capabilities of absorbing UV light. The result is devastating for plants that are extremely sensitive to UV light including wheat and barley, two indispensable crops to humans. Although most chemicals that deplete the ozone layer have been banned, the chemicals that have already been released can take upwards of **80 years** to reach the upper atmosphere, so it will be some time before our protective boundary will be fully functional again. Until then, slap on that sunscreen and be safe out there.

It is imperative that we take care of the earth that we life on, but no matter what, the earth will live on. Whether we live with it or not solely depends on the decisions and actions we make next. Mother nature is an unrelenting, unforgiving force, so it is probably best if we treat her well, and maybe, just maybe we can make up for the damage that has already been dealt. The best time to act, was yesterday, the best we can do is today, but if we wait for tomorrow, it may just be too late.