Semester -V, DSE-2 (Resource Geography)

Prepared by: Sharmistha Manna
(Kharagpur College, Dept. of Geography)

DEPLETION OF NATURAL RESOURCE

The depletion of natural resources occurs when resources are consumed at a faster rate than that of replacement. Natural resources are those resources that are in existence without human actions and they can either be renewable or non-renewable. And when it gets down to the discussion of natural resource depletion, it a terminology used in reference to water usage, farming, fossil fuel consumption, fishing, and mining. And above all, natural resource depletion is defined on the premise that the value of a resource is measured in terms of its availability in nature.

A resource that is rare on earth due to depletion has a higher value than a natural resource which is in abundance. Due to the increasing global population, the levels of natural resource degradation is also increasing. Consequently, the world's eco-footprint is estimated to be one and a half times the ability of the earth to sustainably provide each individual with enough resources that meet their consumption levels. Herein is a detailed explanation of the causes, effects, and solutions of natural resource depletion.

Causes of Depletion of Natural Resources

- **Overpopulation**
  The total global population is more than seven billion people. Still, there is a consistent increase in the overall earth populace and this has been a critical factor in accelerating the depletion of natural resources. An increase in the populace expands the need for resources and conditions necessary to sustain it. In addition, it contributes to increased ecological contamination. Research further indicates that developing countries are using more and more resources to industrialize and support their ever-increasing population. Hence, the depletion of natural resources will continue as long as the world population increases.

- **Poor Farming Practices**
  Humans are causing a lot of stress to land resources due to the over-reliance on food production for daily nutritional requirements. Poor irrigation practices, for example, is a key contributing factor to salinization and alkalization of the soil that sustains plant growth. Poor soil management practices and the use of heavy machinery and farming equipment also destroy the soil structure making it unsuitable for plant growth.
  Some farming practices such as excessive use of pesticides, fungicides, and herbicides equally kill important soil micro-organisms that are essential in replenishing nutrients in the soil.

- **Logging**
  The World Bank reported that the net loss of global forest between 1990 and 2016 was 1.3 million square kilometers. On the same note, tropical deforestation is estimated to occur at a rate of one percent annually, especially in Latin America regions. People are clearing forests primarily for agricultural reasons due to the increase in the population pressure.
  Humans are also cutting down trees to make space for residential complexes and multiplexes. Through deforestation, the planet not only loses tress but also thousands of animals and great

plant biodiversity due to the destruction of their natural habitats. Moreover, increased logging activities lead to soil erosion that degrades natural soil minerals.

- **Overconsumption of Natural Resources**
  The 1760 industrial revolution saw large-scale mineral and oil exploration and the practice has been gradually growing, leading to more and more natural oil and mineral depletion. And together with the advancements in technology, development, and research in the contemporary era; exploitation of minerals has become easier and humans are digging deeper to access different ore. The increased exploitation of different minerals has led to some of them entering into a production decline. For example, minerals such as Gasoline, Copper, and Zinc production are estimated to decline in the next 20 years. Plus, oil mining continues to rise due to the upsurge in the number of engines that use petroleum thereby magnifying its depletion. The peak oil theory supports this fact by putting forward that it will come a time when the globe will experience uncertainties on alternative means of fuels owing to the over-harvesting of petroleum.

- **Pollution**
  An increase in population and modern anthropogenic activities is a major contributor to the disposal of pollutants into the natural environment and as such, the value of natural environments is gradually exposed to degradation. The soil, air, lakes, and seas are being contaminated with sewage, radioactive, materials, and toxic chemicals among other pollutants.
  Uncontrolled release of carbon monoxide, nitrous oxide, sulfur oxide, and carbon dioxide, for example, have resulted in the degradation of the ozone layer and global warming – environmental changes with their resultant depletive impacts on different natural habitats. Millions of different animal and plant species have thus lost their natural habitats and are on the verge of extinction.

- **Industrial and Technological Development**
  The present-day world is incessantly becoming industrialized as more and more countries make major technological breakthroughs. But as technological advancements continue, there is similarly a considerable growth in industries that release toxins and chemical by-products which are eventually deposited in lakes, soils, and lands. As a result, the by-products and toxic materials alter natural habits such as aquatic systems and wildlife.
  Examples of the impacts include acidic lakes, dead zones, and the death of wildlife as well as aquatic life. Industrial and technological advancements have also driven the demand for virgin materials for research, development, and production. More resources are hence being used to satisfy the industrial demands, increasing the rate of natural resource depletion.

Effects of Depletion of Natural Resources

- **Water shortages**
  Poor farming practices, deforestation, and pollution are major causes of water resource depletion due to contamination, wastage, and the destruction of natural water catchment areas. As of today, approximately one billion people lack access to clean water because of the effects of deforestation and contamination of water sources and groundwater. Water shortage further contributes to famine and food insecurity.

- **Oil depletion**
  Oil is a non-renewable resource that accounts for approximately 40 percent of the total energy used globally. Research by EIA's International Energy Outlook had shown that due to the high rate of oil exploitation, the amount of oil remaining would last for only 25 years.
  Oil is an essential commodity in manufacturing, planting, mining, and transportation among many activities, and its depletion would be devastating. The adverse effects of oil depletion include the fall of the business, the high cost of living in developing countries, and uncertainty in the transport sector.

- **Loss of forest cover**
  Approximately 18 million acres of forest cover are destroyed annually. This means that half of the world's natural forest cover has already been cleared. Furthermore, studies indicate an increase in deforestation in the past three decades has resulted in a 12% to 17% rise in greenhouse gases globally.
  Other devastating effects of deforestation include soil erosion, an increase in the greenhouse gases leading to global warming, loss of biodiversity, increased flooding, and drought.

- **Depletion of minerals**
  There has been an increase in the exploitation of minerals such as phosphorus, gasoline, copper, and zinc among others to sustain the seven billion people on earth. Studies by Global Phosphorus Research Institute, for example, shows that the earth could run out of phosphorus – an essential element for plant growth, in the next 50 to 100 years.

  Studies by the United States Geological Survey also indicate that there is an increase in non-renewable resources consumption of natural minerals and construction materials such as copper, sand, gravel, and stone.

- **Extinction of Species**
  Due to the changes in the living conditions of animals as a result of resource overexploitation and habitat degradation, some species may go extinct. Forested regions are known to be a habitat for thousands of animals but deforestation is progressively destroying forest habitats. Practices such as overfishing and pollution have similarly led to a drastic reduction in the number of marine species such as the tuna fish.

Solutions of Depletion of Natural Resources

- **Controlling Deforestation**
  Programs aimed at checking against deforestation such as REDD (Reducing Emissions from Deforestation and Forest Degradation) created by the World Bank, the New York Declaration on Forests, and the United Nations are initiatives that could help reduce the depletion of natural resources.

  The initiatives may also act as incentives for encouraging the general public to conserve forests as these are the habitat and protectors of some of the world's unique plant/animal species and water sources respectively. Sustainability programs that aim to educate people about the importance of conserving natural resources should also be enacted as a way of focusing on the long-term risks associated with environmental degradation.

- **Reducing oil, mineral, and material consumption**
  Oil-rich countries together with the World Bank, state, and consumables' regulatory bodies should join hands towards a common international objective of discussing how oil and mineral

consumption, as well as exploitation, can be reduced. Manufactures can, for instance, be trained on lean manufacturing (recycling, re-use, and reducing wastage) while consumers sensitized on how to adopt re-use, reducing wastage, and recycling techniques.

- **More exploration and use of renewable sources of energy**
  Renewables such as solar and wind power can be explored more and utilized to reduce the dependency on fossil fuel, which is a major cause of environmental pollution, climate change, global warming, and destruction of natural habitats.

- **Protecting wetlands and coastal ecosystems**
  Wetlands are regions saturated with groundwater that serve a significant role in sustaining vegetation cover. The coastal and wetland ecosystems are thus vital in sustaining the food chain as they replenish water sources and avail minerals and nutrients for primary producers (green and flowering plants), essential for maintaining plant and animal biodiversity. Also when coastal ecosystems are protected, they aid in controlling marine overfishing and protect coral reefs.

- **Sensitization and awareness creation**
  People need to be educated on how their daily practices put a strain on the scarce natural resources and their individual contributions to the depletion of natural resources. The main purpose of creating awareness would be to encourage people to preserve and restore the natural environment by getting involved in conservation efforts.

What Is Deforestation?

Deforestation refers to the decrease in forest areas across the world that are lost for other uses such as agricultural croplands, urbanization, or mining activities. Greatly accelerated by human activities since 1960, deforestation has been negatively affecting natural ecosystems, biodiversity, and the climate. The UN's Food and Agriculture Organization estimates the annual rate of deforestation to be around 1.3 million km^2 per decade.

The Causes of Deforestation: Why Is Deforestation Happening?

Multiple factors, either of human or natural origin, cause deforestation. Natural factors include natural forest fires or parasite-caused diseases which can result in deforestation. Nevertheless, human activities are among the main causes of global deforestation. According to the Food and Agriculture Organization (FAO), the expansion of agriculture caused nearly 80% of global deforestation, with the construction of infrastructures such as roads or dams, together with mining activities and urbanization, making up the remaining causes of deforestation.

- **Agriculture**

According to the FAO, agriculture causes around 80% of deforestation. And how does agriculture cause so much deforestation? According to the same report, 33% of agriculture-caused deforestation is a consequence of subsistence agriculture – such as local peasant agriculture in developing countries.
Commercial or industrial agriculture (field crops and livestock) cause around 40% of forest loss – in the search for space to grow food, fibers or biofuel (such as soybeans, palm oil, beef, rice, maize, cotton and sugar cane). It is also particularly interesting to note livestock is believed to be responsible for about 14% of global deforestation. The main reasons why have to do with the large areas require both to raise livestock but also to grow its (soy-based) food.

- **New Constructions**

The construction of human infrastructures has also been driving deforestation. More specifically, 10% of deforestation can be attributed to new infrastructures that serve the current human lifestyle in four main ways: transportation, transformation and energy generation.
On one hand, roads, rails, ports or airports have been built to move all sorts of goods – from cereals and fruits to spices, minerals or fossil fuels – either directly to trade centers or to transformation sites. So while at first there were only fruit trees, roads soon arrived to allow transporting fruit to other regions. And while some goods were and are collected manually, others such as coal, oil, natural gas, biomass, but also meat, dairy or spirits, required the construction of large extraction, transportation and/or transformation infrastructures.

- **Urbanization**

The populational shift that is leading people to move from rural areas to urban areas is also contributing to deforestation (5%, according to FAO). This urban growth – in which 68% of the world's population is expected to live in cities by 2050 – is leading to an exponential growth of housing and consumption sites. And as cities become larger so they can host more people, they challenge the natural boundaries surrounding them, often leading to deforestation. This is one of the reasons why deforestation is happening.

Effects of Deforestation

Deforestation has many consequences for natural ecosystems and it poses serious problems to the resilience of the planet. Let's take a look at the main effects of deforestation to better understand why it is bad for the planet.

• The Effects of Deforestation on Biodiversity

The most known consequence of deforestation is its threat to biodiversity. In fact, forests represent some of the most veritable hubs of biodiversity. From mammals to birds, insects, amphibians or plants, the forest is home to many rare and fragile species. 80% of the Earth's land animals and plants live in forests. By destroying the forests, human activities are putting entire ecosystems in danger, creating natural imbalances, and putting Life at threat. The natural world is complex, interconnected, and made of thousands of inter-dependencies and among other functions, trees provide shade and colder temperatures for animals and smaller trees or vegetation which may not survive with the heat of direct sunlight. Besides, trees also feeding animals with their fruits while providing them with food and shelter they need to survive.
Aren't you yet sure about the importance of biodiversity for the planet's balance and for human life? Then you should find out some examples of how Life is interconnected:

• The Effects of Deforestation on Local People and Their Livelihoods

Healthy forests support the livelihoods of 1.6 billion people globally, one billion of whom are among the world's poorest. This means there are many people depending on forests for survival and using them to hunt and gather raw products for their small-scale agriculture processes. But in developing countries such as Borneo, Indonesia, Vietnam, Brazil, or Mexico, land tenure systems are weak. This allows big businesses to get these lands and use them for other ends, disrupting local people's lives. Locals then have to make one of two choices. They can decide to abandon "their" land and migrate somewhere else, avoiding conflict and embracing the challenge of a new different life. Or they can stay and work for the companies exploring it in remote plantations – often getting unfair wages and working under inhumane conditions. In some countries like Mexico, plantations' owners are often forced to share their profits with local cartels to keep their families alive and to avoid having their crops burned.

Deforestation for Food May Lead to Food Insecurity in the Future
Today, 52% of all the land used for food production is moderately or severely impacted by soil erosion. In the long term, the lack of healthy, nutritious soil can lead to low yields and food insecurity.

Soil Erosion is One of the Consequences of Deforestation
Deforestation weakens and degrades the soil. Forested soils are usually not only richer on organic matter, but also more resistant to erosion, bad weather, and extreme weather events. This happens mainly because roots help fix trees in the ground and the sun-blocking tree cover helps the soil to slowly dry out. As a result, deforestation will probably mean the soil will become increasingly fragile, leaving the area more vulnerable to natural disasters such as landslides and floods.

Deforestation Affects and Contributes to Climate Change
Deforestation also has a very strong contribution to climate change. Why? Let's remember trees absorb and store CO2 throughout their lives. If we speak about tropical forests, they hold more than 210 gigatons of carbon, according to WWF. And what's worrying is that the destruction of these trees has two big negative side-effects.
Firstly, taking down trees means they'll release back into the atmosphere the CO2 they were keeping. Secondly, fewer trees available means reducing the planet's overall ability to capture and store CO2. Both these effects negatively contribute to the greenhouse effect and to climate change. As a matter of fact, while food and agriculture account for 24% of greenhouse gas emissions, deforestation is estimated to be responsible for 10-15% of all anthropogenic CO2 emissions.

Where Is Deforestation Happening?

Countries most impacted by deforestation:

Around the world, deforestation occurs mostly in the tropics where there are different types of forests are: from wet and hot rainforests to others that lose their leaves in the dry season and become woodlands. Some parts of the world have managed to protect their forests from deforestation while others have seen their forestall area decline.
According to FAO's report, 6 million hectares of land were lost from forest to agriculture since 1990 in the tropical domain. These changes significantly differ but there are 3 important worldwide examples of deforestation: the Amazon rainforest, Indonesia and Borneo, and Africa.

• The Effects Of Deforestation In The Amazon Rainforest:

Brazil and the Amazon forest are also important (for the wrong reasons) deforestation areas worldwide. The Amazon Rainforest is one of the world's largest forest hotspots, with huge biodiversity reserves. Its ability to store carbon and produce oxygen makes it of the "lungs" of the planet.
Since the 1960s, the Amazon forest has been under threat, and nearly 760 000 km^2 (around 20% of its original size) of forest area was lost. Before 1980-1990, large industrial projects such as dams, roads, or mines were the main causes of deforestation in the Amazon region, together with subsistence farming. However, for around thirty years, the causes of deforestation in the Amazon rainforest are changing. Why?
According to various reports on the subject (Greenpeace, FAO), livestock farming, including soya production, is responsible for about 70 to 80% of deforestation in the Amazon region. The development of intensive livestock production, combined with meat consumption increases in developed countries, is thus the main cause of deforestation in the Amazon forest.

• The Effects Of Deforestation In Southeast Asia – Indonesia And Borneo:

Indonesia and the island of Borneo are emblematic symbols of the global phenomenon of deforestation. This region in Southeast Asia is naturally one of the richest reserves of forest and biodiversity in the world. But at the same time, it is also one of the regions that have been suffering the most deforestation in recent decades. According to FAO, between 1990 and 2012 alone, Indonesia lost about 9 million hectares of its forests, largely due to deforestation caused by palm oil.

One of the most important causes of deforestation in Indonesia and Borneo is unquestionably the production of palm oil. According to FAO, between 1990 and 2000, nearly 6 million hectares of palm oil plantations have gradually replaced Indonesian forests. This makes the palm oil industry one of the biggest contributors to deforestation in Southeast Asia – and it is expected to continue to be so.

Due to pressure from NGOs (such as Greenpeace's recent report) and new regulations, as well the expectations of consumers, the situation of the palm oil industry is slowly starting to improve. Certifications are starting to appear, including sustainable palm oil labels (that aim to prove it comes from certified forests and workers are fairly paid) like RSPO.

Indonesia now accounts for nearly 35% of the world's sustainable palm oil production, although the sustainable palm oil market is still small (only 19% is certified). Despite industries still posing serious environmental problems, the media spotlight on this topic is beginning to shift the lines.

• Deforestation In Africa

Africa is also a large area suffering from deforestation. In fact, it experiences more deforestation than Asia: about 2 million hectares of forest disappear each year in Africa. In Nigeria, for instance, over 90% of forests were lost because of practices that started in the colonial era. Woodcutting of forest reserves and the development of cocoa and palm oil plantations are among the main causes of deforestation in Africa, together with land cleaning for mining activities.

What Animals Are Affected By Deforestation?

Unconventional production practices that illegally take down trees and use dangerous chemicals threaten forests and wildlife. In this way, exploiting crops such as palm oil, wood, coffee or avocados has side effects that affect the environment and the surrounding ecosystems. It's estimated that the Earth's biodiversity is going extinct 0.1%, or approx. 200 species per day, every year. Some of the animals under greatest threat are:

- Orangutans – especially in Indonesia, Malaysia, and Borneo
- Elephants – especially in Sumatra and Borneo
- Indonesian tigers – the last surviving ones are struggling to do so on the island of Sumatra
- Many reptiles, amphibians and other vertebrates in Haiti.

How Can We Stop Deforestation?

Solutions to Deforestation:

How can we stop deforestation? According to OECD, the human population is expected to continue to increase and reach over 9 billion people by 2050. At the current rate of consumption, and with more people inhabiting Earth, the need for more space to grow food and extract natural resources is only likely to increase – depending, of course, on tech development such as artificial foods. As the demand for food or raw materials like cotton or minerals increases, so does the need to turn forests into farmland, pastureland, or mining spots. Under this broader perspective, how can we stop deforestation?

- **Eating Less Meat Helps Stop Deforestation:**

How can we stop deforestation? According to the WWF, livestock-caused deforestation is responsible for the discharge of 3.4% of current global emissions of carbon to the atmosphere every year. That's why the late 2018 IPCC report stood out that reducing meat consumption by 90% is the single biggest way to reduce global warming.

Some studies also show that without meat and dairy consumption, global farmland use could be reduced by over 75%. In this way, reducing your meat consumption is also a big step to stop not only deforestation but also global warming on a larger scale. Remember: a lot of space is needed to grow both animals and the food they consume, while other nutritious foods could be grown and result in larger food quantities using the same space. Why not saving meat for important occasions only?

- **Consuming Less and More Consciously Helps Stop Deforestation:**

As consumers we can choose to buy less industrial and transformed products such as cookies, crips, noodles or cosmetics that use plenty of palm oil. Instead, we can go for a home-made approach with fewer chemicals and food preservatives which is better for both the planet and our health.

However, if you are not willing to make such changes – because they are time consuming – you can still consume more responsibly while keeping your lifestyle. To this regard, you can buy products from brands adopting eco-friendly business practices. When it comes to food, buying directly to small farmers using agroforestry practices is the best choice for the planet.

- **To Stop Deforestation, When You Consume: Use, Use, Use**

Your smartphone, your laptop or your car, to name a few, are all made of aluminium, plastic and rare Earth minerals, among other materials. To get these, (just like foods like coffee or cacao) land was clear to build mining sites, roads and factories and where built to transport and transform them, powerplants provide them with energy…

The longer we use our products for, the higher the changes that demand doesn't grow (it won't likely decrease either – there are more people in the planet every day). Economically-speaking, if the demand

doesn't grow, production won't grow either and it it is not necessary to clear more space to extract natural resources and build human infrastructures might, deforestation (and carbon emissions from the industry) might just not increase.

- **Leaving Fossil Fuels and Palm Oil Behind:**

Nearly half of UE's imports of palm oil are used as biofuels – although proposals to ban subsidies are currently under debate. Since diesel and petrol are mixed with biofuels, choosing other transportation methods such as walking, cycling or car-sharing can be good ways of reducing palm oil importations (and production) and to help stop deforestation.

- **Lead by Example and Spread Awareness:**

If you start adopting the behaviors mentioned above to help stop deforestation you can lead by your example. Teach your family, friends or colleagues what deforestation is and why it is happening, the causes and consequences of deforestation, and what solutions individuals, consumers and organizations can adopt.

A Broader Perspective: How Can We Stop Deforestation?

Apart from people's individual contributions to stop deforestation, from a political and systemic perspective, other more direct and hands-on actions approaches can be taken:

1. Fighting illegal logging and limiting logging in old-growth forests;
2. Protecting forested areas by creating laws and policies that ensure forests are kept protected and restored and betting on land practices such as wildfire corridors;
3. Reforming trade agreements, starting to value differently products obtained through deforestation, and creating incentives for the use of sustainable forestry certifications such as FSC;
4. Educating local communities and tourists about the need to protect forests and develop and enroll in ecotourism activities.

What Are People Doing to Stop Deforestation?

What is being currently done do stop deforestation? Efforts to replant deforested areas are taking place every day. Unfortunately, some replanting is done with the goal of quickly growing trees to be exploited in the short-term by the logging industry. These often consist of monotypic plantations (less resilient, more appealing to harmful environmental management practices) such as eucalyptus or pines. This is no small effort: there are 1.3 million km^2 of these plantations on Earth, according to FAO.

At the same time, efforts to stop deforestation using more ecological management practices are also underway thanks to forest protection NGOs, eco-villages, UN initiatives and workgroups, and national governments such as New Zealand's.

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DEPLETION OF WATER

Water is the most precious resource for the existence and survival on earth. Three forth of the earth's surface is covered with water. Out of this 90% is salt water unfit for consumption. Only 2% of the total water is fresh water that can be consumed. So, the wise use of this valuable natural resource is very essential. Around 60% of the human body is water and 90% of the blood is water. The human brain is 75% water. Water resource can be defined as sources of water that are useful for humans for various activities. Some of the fresh water sources are ground water, surface water, frozen water, and desalination. Ground water means the fresh water that is present in the surface of soil and rocks. Water flowing below the water table is also considered ground water. Ground water is seeped into the ground through surface water and this is commonly used for agriculture and household purposes. Surface water is the water in lakes, rivers and oceans. There quantities are naturally increased by rains and naturally decreased by evaporation, climate changes and human activities. Frozen water is the water in the glaciers and icebergs. Though these are considered fresh water, it cannot be utilized. Desalination is a process of conversion of salty sea water into fresh water. Distillation and reverse osmosis are the two processes by which desalination is done.

CAUSES FOR DEPLETION OF WATER:

- **Excessive demand of water** : due to over population, the demand of water has increased considerably. More quantities of water are used and wasted over the time.
- **Evaporation** : due to global warming and change in the climate, more amounts of surface water and ground water is being evaporated due to excessive heat. There is a decline in the level of water in the reservoir and dams due to evaporation.
- **Pollution** : most of the industrial waste water are dumped to these water sources. This in turn pollutes and contaminates water. This can be considered another reason for depletion of water resources.
- **Deforestation** : This can be considered a major cause for water depletion. Large scale deforestation considerably lowers the capacity of the soil to retain water and this affects the water table.
- **Poor storage** : due to poor storage facilities, lots of rain water is wasted. The technological development in procuring rain water and storing it for future use is low. A lot of water is again lost due to ignorance. This again causes depletion.
- **Saltwater** : deep within the ground, the water gets mixed with salt water and it is termed as saltwater contamination. This in turn reduces the availability of usable water. This is another reason for depletion of water resources.
- **Low rainfall** : rainfall has reduced considerably over the years. This is mainly because of large scale deforestation and drastic climatic changes. These add to the reduction in water resources.
- **Agriculture** : agricultural activities steadily increasing by the day which means more water is pumped for use. For agricultural use more ground water is pumped because it's free of cost. This can be done by fixing a bore well. This reduces the levels of water leading to its depletion. [Also refer about Agricultural pollution]
- **Urbanization** : the government and the people have behind urbanization. This has really affected the water resources because of mass deforestation.
- **Seepage** : when the collected water is transported through the canals and pumps, a lot of water is seeped into the ground and lost. This again causes depletion.

EFFECTS OF WATER DEPLETION:

- **Deep wells** : as a result of water depletion, deep wells need to be dug because of the water shortage. Pumps will have to be put deeper and deeper to extract water.
- **Expensive resource** : water being a renewable resource, it will become very expensive due to limited availability. If this resource is used, wasted, polluted and depleted, it will become a non-renewable resource.
- **Contamination** : one of the major effects of depletion is contamination. For getting water, deep wells are dug as a result the ground water gets mixed with salty water deep within making it contaminated. This is known as salt contamination. This eventually reduces the amount of consumable water.
- **Marine life** : due to the depletion, contamination and evaporation of surface water, the marine life gets affected. This is a threat to the fishes, flora, fauna and all the creature of the sea.
- **Agriculture** : agricultural productivity depends on the availability of water. Agriculture cannot exist without adequate supply of water. Due to the depletion of water resource, the output or the productivity of agriculture reduces which affects the food supply of the country.
- **Aquifers** : an aquifer is a permeable rock that holds ground water. This can be used for water supply for agriculture and other human activities. An aquifer can be at different depths depending on a lot of natural factors. So as a result of depletion, the aquifers also get depleted.

EFFECTIVE WATER MANAGEMENT

- **Alternative source** : any other alternative source of water should be discovered so as to avoid further depletion.
- **Technology** : newer technology should be developed so that proper storage of ground water can be attained without leakage. This can reduce depletion to an extent. Comprehensive research should be done to find new methods.
- **Awareness** : the government should organize effective campaign and make people aware of the how precious and priceless the water resources are. Awareness should be reach all levels of the society including children. Special classes should be conducted in each and every school of the country. People should be taught to reduce, reuse and recycle water to avoid wastage. All these measures can be taken to reduce and avoid water depletion.
- **Plant more trees** : afforestation can reduce depletion to a great extend. The roots of the plants and trees helps to hold more water thus increasing the ground water. This prevents soil erosion too.
- Don’t pollute water : throwing of industrial waste and other harmful chemical into the water should be banned completely. Proper measures and strict laws should be passed to check pollution of the water resources. This in turn preserves the naturality of the water available which can be for future use. Less contamination and pollution reduces depletion to a large extent.
- **Ground water pumping** : no measures are adopted to check the pumping of ground water. So more and more water is being pumped because it’s free of cost. This should be completely banned so that the ground water can be preserved.

To conclude, water is very essential for the survival of mankind. If these available water resources are not preserved, it might become a non-renewable resource. Reduce, reuse and recycle should be the motto. Effective utilization without wastage of water resources should be made effective so that the future generations of mankind is not affected.

Fossil fuel depletion

Fossil fuel depletion is possible. In fact, with the increment demand of fossil fuels all over the world, the supply of it in the market will continue to deplete. Thus, among the effects of it are as follows:

Oil price Hike:

The price of oil and electricity will continue to rise to the point that a lot of people who are earning only a minimum wage cannot anymore afford to pay their energy bills. Eventually, if this happens, not only will the oil and energy price will increase but the price of the food and even the energy-related commodities will increase as well. Thus, as a result, more and more people will suffer from economic recession and poverty.

Decrease in human population:

If there's no cheap oil then similarly, there's no cheap food that will be available. Thus, because of this energy and oil depletion, a lot of people will not anymore afford to have clean water to drink as well as cheap and safe food to eat. They will not anymore be able to address their health care needs. Therefore, a lot of them may go ill and eventually die because of high cost of hospital treatment and aid.

Threat to Highly industrialized countries:

Highly- industrialized countries depends primarily on their resources to boost their economy. A lot of businesses need these resources to continue to operate. Industries like manufacturers of steel, cars, gasoline stations, can be affected greatly by this phenomenon. Thus, if they cannot provide their services anymore, then people who also needed their help for their everyday living will suffer also.

Non-payment of loan repayments:

As the prices of the energy and oil continue to rise, then a great possibility of having a lot of non-payment to loans on the bank will happen. Since they cannot anymore buy even their basic needs, they will continue to loan money and perhaps, because of a lot of interest in it, they cannot anymore pay it. Of course, more banks will suffer from bankruptcy that is really not good for the economy.

Many businessmen will opt to close their businesses:

Since a lot of people reduce spending money on discretionary goods, a lot of workers working in restaurants and in businesses such are those who are offering new homes, cars and others will possibly lose their job because the owners of it may decide to close their business.

In general, if the government and the people don't work hand in hand in thinking of the ways on how they can conserve such resources, then more and more problems will arise because of its depletion. Thus, it can create a global famine and recession if it is not solved. Lastly, finding alternative resources other than fossil fuels can be of great help in saving the humanity as a whole.