



PUDUCHERRY ENVIS HUB

(Environmental Information System)

Host Centre: Puducherry Pollution Control Committee
Funded by Ministry of Environment, Forest & Climate Change
Government of India, New Delhi

**RISE UP
FROM
DROUGHT
TOGETHER**

DESERTIFICATION & DROUGHT DAY
17 JUNE 2022



World Day to Combat Desertification and Drought

Theme: "Rising up from drought together"

**17
June
2022**

Rising up from drought together

Droughts are among the greatest threats to sustainable development, especially in developing countries, but increasingly so in developed nations too. In fact, forecasts estimate that by 2050 droughts may affect over three-quarters of the world's population.

The number and duration of droughts has increased by 29 percent since 2000, as compared to the two previous decades (WMO 2021). When more than 2.3 billion people already face water stress, this is a huge problem. More and more of us will be living in areas with extreme water shortages, including an estimated one in four children by 2040 (UNICEF). No country is immune to drought (UN-Water 2021).

This year, the theme of the International Day Against Desertification, and Drought "Rising up from drought together", emphasises the need of an early action to avoid disastrous consequences for humanity and the planetary ecosystems.

When the soil asks for help

Desertification is the degradation of land in arid, semi-arid and dry sub-humid areas. It is caused primarily by human activities and climatic variations. Desertification does not refer to the expansion of existing deserts. It occurs because dryland ecosystems, which cover over one third of the world's land area, are extremely vulnerable to overexploitation and inappropriate land use. Poverty, political instability, deforestation, overgrazing and bad irrigation practices can all undermine the productivity of the land.

The World Day to Combat Desertification and Drought is observed every year to promote public awareness of international efforts to combat desertification. The day is a unique moment to remind everyone that land degradation neutrality is achievable through problem-solving, strong community involvement and co-operation at all levels.

The matter requires even more attention now. When the land degrades and stops being productive, natural spaces deteriorate and transform. Thus, greenhouse gas emissions increase and biodiversity decreases. It also means there are fewer wild spaces to buffer zoonoses, such as COVID-19, and protect us from extreme weather events, such as droughts, floods, and sand and dust storms.

The UNCCD is therefore calling on all members of the global community to treat the land as a limited and precious natural capital, prioritize its health in the pandemic recovery and push hard to restore the land during the UN Decade on Ecosystem Restoration. Everyone has a role to play because everyone has a stake in the future.





What is Desertification?

Desertification is defined as a process of land degradation in arid, semi-arid and sub-humid areas due to various factors including climatic variations and human activities. Or, to put it in another way, desertification results in persistent degradation of dryland and fragile ecosystems due to man-made activities and variations in climate.

Desertification, in short, is when land that was of another type of biome turns into a desert biome because of changes of all sorts. A huge issue that many countries have is the fact that there are large pockets of land that are going through a process that is known as desertification.

Overgrazing is the major cause of desertification worldwide. Other factors that cause desertification include urbanization, climate change, overuse of groundwater, deforestation, natural disasters, and tillage practices in agriculture that make soils more vulnerable to wind.

Desertification affects topsoil, groundwater reserves, surface runoff, human, animal, and plant populations. Water scarcity in drylands limits the production of wood, crops, forage, and other services that ecosystems provide to our community.

According to UNESCO, one-third of world's land surface is threatened by desertification, and across the world, it affects the livelihood of millions of people who depend on the benefits of ecosystems that drylands provide.

Did you know?

- *Since 2000, the number and duration of droughts has risen 29%.*
- *An estimated 55 million people globally are directly affected by droughts every year.*
- *By 2050, droughts may affect over three-quarters of the world's population.*
- *Between 1900 and 2019, droughts impacted 2.7 billion people in the world, and caused 11.7 million deaths.*

Various Causes of Desertification

1. Overgrazing



Animal grazing is a huge problem for many areas that are starting to become desert biomes. If there are too many animals that are overgrazing in certain spots, it makes it difficult for the plants to grow back, which hurts the biome and makes it lose its former green glory.

2. Deforestation



When people are looking to move into an area, or they need trees in order to make houses and do other tasks, then they are contributing to the problems related to desertification. Without the plants (especially the trees) around, the rest of the biome cannot thrive.

3. Farming Practices



Some farmers do not know how to use the land effectively. They may essentially strip the land of everything that it has before moving on to another plot of land. By stripping the soil of its nutrients, desertification becomes more of a reality for the area that is being used for farming.

4. Excessive Use of Fertilizers and Pesticides



The use of excessive amounts of fertilizers and pesticides to maximize their crop yields in the short term often leads to significant damages for the soil. In the long run, this may turn from arable into arid land over time, and it will no longer be suitable for farming purposes after a few years of excessive farming since the soil has been damaged too much over time.

5. Overdrafting of groundwater



Groundwater is the freshwater found underground and also one of the largest water sources. Over drafting is the process in which groundwater is extracted in excess of the equilibrium yield of the aquifer that is pumping or the excessive pulling up of groundwater from underground aquifers. Its depletion causes desertification.

6. Urbanization and Other Types of Land Development



As mentioned above, development can cause people to go through and kill plant life. It can also cause issues with the soil due to chemicals and other things that may harm the ground. As areas become more urbanized, there are fewer places for plants to grow, thus causing desertification.

Various Causes of Desertification

7. Climate Change



Climate change plays a huge role in desertification. As the days get warmer and periods of drought become more frequent, desertification becomes more and more eminent. Unless climate change is slowed down, huge areas of land will become desert; some of those areas may even become uninhabitable as time goes on.

8. Stripping the Land of Resources



If an area of land has natural resources like natural gas, oil, or minerals, people will come and mine it or take it out. This usually strips the soil of nutrients, which in turn kills the plant life, and eventually leads to the process of becoming a desert biome as time goes on.

9. Natural Disasters



There are some cases where the land gets damaged because of natural disasters, including drought. In those cases, there isn't a lot that people can do except work to try and help rehabilitate the land after it has already been damaged by nature.

10. Soil Pollution



Soil pollution is a significant cause of desertification. Most plants are quite sensitive to their natural living conditions. When soil becomes polluted due to various human activities, the respective area of land may suffer from desertification in the long run. Higher the level of pollution more will be the degradation of soil over time.

11. Overpopulation and excessive consumption



Since our world population is continuously growing, the demand for food and material goods is also increasing at an alarming rate. Our overall level of consumption is also increasing at a steady rate. Thus to fulfill our demand, we have to optimize our farming processes to harvest even higher crop yields. However, this excessive optimization of farming will hurt the soil and will eventually turn into the desertification of land in the long run.

12. Mining



Mining is another big reason for desertification. Large amounts of resources have to be extracted by industries to meet our demand for material goods. For mining, large areas of land have to be used, which causes deforestation as well as pollution of the nearby areas.

Devastating Effects of Desertification

1. Farming becomes next to impossible

If an area becomes a desert, then it's almost impossible to grow substantial crops there without special technologies. This can cost a lot of money to try and do, so many farmers will have to sell their land and leave the desert areas.

2. Decrease in Crop Yields

A major effect of desertification is the decrease in crop yields. Once land turns from arable to arid, it is often no longer suitable for farming purposes anymore. In turn, many farmers may lose their livelihood, since they often solely rely on farming as their single source of income. If their land becomes arid, they may no longer be able to provide sufficient crop yields to make a living out of it.

3. Hunger

Without farms in these areas, the food that those farms produce will become much scarcer, and the people who live in those local areas will be a lot more likely to try and deal with hunger problems. Animals will also go hungry, which will cause even more of a food shortage.

4. Flooding

Without plant life in an area, flooding is a lot more imminent. Not all deserts are dry; those that are wet could experience a lot of flooding because there is nothing to stop the water from gathering and going all over the place. Flooding can also negatively affect the water supply.

5. Poor Water Quality

If an area becomes a desert, the water quality is going to become a lot worse than it would have been otherwise. This is because plant life plays a significant role in keeping the water clean and clear; without its presence, it becomes a lot more difficult for you to be able to do that.

6. Overpopulation

When areas start to become desert, animals and people will go to other areas where they can actually thrive. This causes crowding and overpopulation, which will, in the long run, end up continuing the cycle of desertification that started this whole thing anyway.

7. Poverty

All of the issues that we've talked about above (related to the problem of desertification) can lead to poverty if it is not kept in check. Without food and water, it becomes harder for people to thrive, and they take a lot of time to try and get the things that they need.

8. Biodiversity Loss

In general, the destruction of habitats and desertification may also contribute to a loss of biodiversity. While some species may be able to adjust to the altered environmental conditions properly, many species will not be able to do so and may suffer from serious declines in population.

Devastating Effects of Desertification

9. Endangerment and Extinction of Species

The desertification results in a decline in population for which species may become endangered or even extinct. This problem is especially severe for species that are already endangered as the small number of animals or plants that remains may also die off over time, which may even lead to the extinction of species.

10. Destruction of Habitats

Desertification often leads to a loss of habitats for many animals and plants. Desertification may alter the living conditions of the local flora and fauna that makes it impossible for animals and plants to sustain their populations. After desertification, regions suffer from water shortages due to climate change and animals may suffer and die since water is vital for all life on our planet.

11. Migration

The desertification implies the destruction of the livelihood of farmers. This problem becomes even worse when large areas of land that are currently used for farming will then no longer be suitable for farming due to a lack of water triggered by global warming. This results in serious migration movements.

Solutions to Desertification

1. Policy Changes Related to How People can Farm

In countries where policy change will actually be enforced on those in the country, policy change related to how often people can farm and how much they can farm on certain areas could be put into place to help reduce the problems that are often associated with farming and desertification.

2. Policy Changes to Other Types of Land Use

If people are using land to get natural resources or they are developing it for people to live on, then the policies that govern them should be ones that will help the land to thrive instead of allowing them to harm the land further. The policy changes could be sweeping or they could be depending on the type of land use at hand.

3. Education

In developing countries, education is an incredibly important tool that needs to be utilized in order to help people to understand the best way to use the land that they are farming on. By educating them on sustainable practices, more land will be saved from becoming desert.

4. Technology Advances

Research is the key to overcome most of our environmental problems, and it applies to desertification also. In some cases, it's difficult to try and prevent desertification from happening. In those cases, there needs to be research and application of the latest technology that pushes the limits of what we currently know about the drivers of desertification. Advancements could help us find more ways to prevent the issue from becoming an epidemic.

5. Restricting Mining Practices

Mining often implies the destruction of large areas of land. Therefore it should be regulated by governments to keep the nature reserves intact and protect the natural habitats of many animals and plants. Thus, less land will be arid, and the desertification issue can be mitigated to a certain extent.

6. Putting Together Rehabilitation Efforts

There are some ways that we can go back and rehabilitate the land that we've already pushed into desertification; it just takes some investment of time and money. By putting these together, we can prevent the issue from becoming even more widespread in the areas that have already been affected.

7. Reforestation

The areas that have been subject to deforestation in the past should be considered for reforestation. Planting trees in those areas are quite important since they are natural carbon dioxide storage spaces; they slow down global warming and contribute to maintaining a natural balance.

Whereas using those areas for other purposes may turn them into arid land in the long run. Therefore, planting trees in the affected areas not only prevents desertification but also fights against additional environmental issues.

8. Sustainable Practices to Prevent Desertification From Happening

There are plenty of sustainable practices that can be applied to those acts that may be causing desertification. By adding these to what we should be doing with land, we can ensure that we don't turn the entire world into a desert.

Desertification is a huge problem that needs to be addressed accordingly, and if we take the time to do it now, we can prevent other problems from happening with it in the future. By taking that critical look at desertification, we have the tools that we need in order to get through the processes effectively.





What is Drought

Drought is a temporary situation in which there is the rainfall is below normal that leads to water shortage. Even though it doesn't affect much initially, it has serious consequences. The precipitation becomes low which affects the ground and surface water. The entire area dries up and cracks are formed on the ground. This situation can last for months and sometimes even years. It comes under the category of natural disaster owing to changes in climate and global warming.

Types of Drought

Agricultural drought : This is type of drought in which the moisture level in the atmosphere minimizes which in turn affects the soil moisture. This in turn affects the agricultural productivity. The produce becomes considerably low which widens the gap between demand and supply of food.

Meteorological drought : This occurs due to the change in weather patterns due to drastic changes. The humidity increases, the rainfall becomes low, the temperature rises, water shortage and dry winds are the common characteristics of meteorological drought.

Hydrological drought : This is a type of drought in which there is considerable decrease in the level of water in lakes, ponds and rivers due to less rainfall and increase in temperature. Prolonged metrological drought can lead to hydrological drought.

Socioeconomic drought : This occurs due to the gap between the demand and supply of goods and commodities increases owing to shift in meteorological and hydrological drought. This can also happen due to increase in population and decrease in the amount of rainfall.

Causes of Drought

Low rainfall : The main reason for drought is low or lack of rainfall. If a region or area goes for a long period of time without much rainfall, water deficiency occurs in that area. So thus this area comes under the category of drought.

Global warming : Due to excessive emission of green house gases, the composition of the atmosphere changes leading to the increase in temperature thus causing global warming. The temperature rise leads dry spells and wildfires. Thus global warming adds up to drought.

Human causes : Humans play a major role in maintaining water table. Human activities like construction, urbanization and deforestation has had negative impact on the environment and climate. There is considerable decrease in the level of water table owing to excessive evaporation due to heat. Cutting down of trees for roadways, airways and construction of buildings have considerably reduced the water holding capacity of the soil. Overall the soil loses its credibility resulting in dry spells.

The surface water flow dries easily : Due the excessive irrigation and construction of hydro electric dams, the water that flows in the downstream reduces. Rivers, lakes and streams are the main source of downstream. Due to these human activities, the surface water may even evaporate leading to drought.

The surface water flow dries easily : Due the excessive irrigation and construction of hydro electric dams, the water that flows in the downstream reduces. Rivers, lakes and streams are the main source of downstream. Due to these human activities, the surface water may even evaporate leading to drought.

EFFECTS OF DROUGHT

Desertification : This is a situation in which the soil becomes incapable due to its infertility and becomes bare land. Over grazing can also lead to desertification. Apart from all these, severe drought can also lead to desertification of the land and it becomes unsuitable for any vegetation. The possibility of survival of any vegetation is impossible.

Water bodies dry up : Because of drought, the water bodies like lake, rivers, ponds and streams dries up quickly. The natural habitat gets disturbed. The wildlife, aquatic life, forests and all gets endangered due to this process. The entire ecosystem and the natural life cycle get disrupted.

Reduction in crop yields : During drought, the agricultural yields reduce considerably. This increases the gap between the demand and supply of crops. The farmers have to incur a huge loss i.e. pay more for the labor with fewer outcomes in yields.



Migration and death of animals : Due to drought in an areas, the animals are forced to leave their habitat and move to new areas where there is water and food. As far as animals are concerned, it is very difficult for them to adjust to newer environment. It can also lead to the death of many animals because of the loss in natural biodiversity.

Monetary loss : The monetary loss incurred during a drought is very high. The loss is incurred by businesses, families, government and even individuals at lower levels.

Waterborne diseases spread : The quality of the water decreases due to water scarcity. The available clean water will not be sufficient for drinking and cooking purposes. Chemicals and impurities mixed with the water will be widely used owing to the spread of waterborne diseases like cholera and typhoid.

Migration of people : People are force to migrate to better conditions at the time of drought. This mainly affects the livelihood of the poor farmers who wholly depend upon their agriculture for a living. Because of the loss incurred, the family has to undergo through a lot of stress and strain which leads them to do other jobs. Elderly people, children and women are the most affected during a drought.

Malnutrition and deaths : Many people die during drought because of hunger and malnutrition. The major reason behind this is the non availability of food. Such situations are usually seen in poorer countries.

Hydroelectric power becomes expensive : Because of the dry spells and lowered water levels in dams and rivers that were used to generate hydro electricity, more energy should be utilized for the same. So the power generated at a cheaper rate has to be given t a higher rate due to shortage of water. Due to the huge loss in incurred by the energy industries that utilize hydroelectric power.

Conclusion

Drought is a natural disaster due to manmade causes that has to be dealt with globally. Proper measures should be implemented by the government to check misuse of water available. The water resources should be properly used without wastage. More and more trees should be planted so as to maintain the credibility of the soil. Planting of trees is very important to maintain the water table beneath. The emission of green house gases should be banned so as to reduce global warming and drastic change in climate. Rain water should be harvested in each and every household so that water can be used for summer seasons. Drip irrigation should be practiced in farming so that very less amount is wasted in the agricultural lands. Waste can be effectively managed so that it can be reused for many other useful purposes. The soil moisture should be checked regularly so that early sighs of drought gets indicated. Awareness programs should be conducted regularly so that people will be aware of the importance of water. If all these are followed, water scarcity can be tackled to a great extent. This can build up healthier generations.



**Avoid overgrazing, land clearance, over-exploitation of cultivated and natural lands,
Widespread cutting down of trees**

