Regd.No: 224/2017
INSTITUTE OF POLICY STUDIES
(Registered under Societies Registration Act - 2001)

Environmental Protection, Our Collective Responsibility

Anjum Cottage, Plot No. 72, Sagar Society,
Kamalapuri Colony, Road No. 2, Banjara Hills,
Hyderabad - 500 033, Telangana, India

Environment - The Abode of Our Life

The environment encompasses all external factors, both living and non-living, that surround an organism or a system and influence its development, behaviour, and survival. It's a complex interplay of biotic (living) and abiotic (non-living) elements, including air, water, soil, plants, animals, and microorganisms. The environment can range from the microscopic level of individual cells to the vastness of ecosystems and the entire planet.

Nature of the Environment

1) Dynamic

The environment is constantly changing due to natural processes, human activities, and interactions between different components. These changes can occur gradually over time or rapidly in response to specific events like natural disasters or human interventions.

2) Interconnected

Every element within the environment is interconnected and interdependent. Changes in one part of the environment can have ripple effects throughout the entire system, often leading to complex and sometimes unpredictable outcomes.

3) Multifaceted

The environment consists of multiple layers and dimensions, including physical, biological, chemical, and social components. Understanding and managing the environment require considering its various aspects and their interactions.

Importance of the Environment

1) Ecosystem Services

The environment provides essential services such as clean air and water, nutrient cycling, pollination, climate regulation, and natural resource availability, which are crucial for sustaining life on Earth and supporting human well-being.

2) Biodiversity

The environment is home to millions of species, each playing unique roles in ecosystems. Biodiversity not only enhances the resilience of ecosystems but also offers potential sources of food, medicine, and genetic resources for future innovations.

3) Climate Regulation

Natural processes within the environment, such as the carbon cycle and water cycle, help regulate Earth's climate. Healthy ecosystems play a vital role in mitigating climate change by absorbing greenhouse gases and stabilizing temperatures.

Unique Features of the Environment

1) Adaptability

The environment has a remarkable capacity to adapt to changes, whether natural or human-induced. However, rapid environmental changes, such as habitat destruction and pollution, can exceed the adaptive capabilities of ecosystems and lead to degradation.

2) Thresholds and Tipping Points

Ecosystems often exhibit threshold levels beyond which they may undergo sudden and irreversible changes, known as tipping points. Understanding these thresholds is crucial for preventing ecological collapse and maintaining the resilience of ecosystems.

3) Cultural and Social Significance

Beyond its ecological importance, the environment holds cultural, spiritual, and recreational value for human societies. Many communities have deep connections to their local environments, which shape their identities, traditions, and livelihoods.

In summary, the environment is a complex and dynamic system that sustains life on Earth, provides essential services to humanity, and possesses unique features that warrant careful stewardship and conservation efforts. Recognizing the interconnectedness of all living beings and their surroundings is essential for ensuring the long-term health and resilience of our planet.

Threat to the Environment

The threats to the environment and life within it are numerous and complex, presenting a critical situation that demands immediate attention and action. Here are some key areas of concern:

1) Climate Change

Perhaps the most pressing environmental threat of our time, climate change is causing rising global temperatures, extreme weather events, melting ice caps, and disrupted ecosystems. This not only endangers countless species but also poses significant risks to human communities through droughts, floods, food shortages, and the spread of diseases.

2) Loss of Biodiversity

Human activities such as deforestation, habitat destruction, pollution, and overexploitation of resources are driving a rapid loss of biodiversity. This loss diminishes the resilience of ecosystems, reduces their ability to provide essential services like clean air and water, and threatens the survival of countless plant and animal species.

3) Pollution

Pollution in its various forms—air pollution, water pollution, soil contamination, and plastic waste—is poisoning ecosystems, harming wildlife, and endangering human health. From industrial emissions to plastic debris in the oceans, pollution is a pervasive threat that requires comprehensive solutions.

4) Overconsumption and Resource Depletion

The relentless consumption of natural resources, coupled with a growing global population, is depleting finite resources such as fresh water, fossil fuels, and minerals at an unsustainable rate. This not only exacerbates environmental degradation but also fuels conflicts over scarce resources.

5) Land Degradation

Land degradation, including soil erosion, desertification, and salinization, is rendering vast areas of land unfit for agriculture or habitation. Unsustainable farming practices, urbanization, and industrial activities are major contributors to this problem, jeopardizing food security and livelihoods.

6) Ocean Acidification and Depletion

The oceans, which play a crucial role in regulating the Earth's climate and supporting marine life, are under severe stress. Ocean acidification, caused by the absorption of carbon dioxide from the atmosphere, threatens coral reefs and shellfish populations, while overfishing and pollution are depleting fish stocks and damaging marine ecosystems.

7) Emerging Risks

Emerging environmental risks, such as the spread of invasive species, the loss of pollinators like bees, and the potential impacts of emerging technologies like genetic engineering and nanotechnology, pose additional challenges to the health and stability of ecosystems.

Addressing these threats requires collective action at local, national, and global levels, informed by scientific evidence and guided by principles of sustainability, equity, and environmental justice. Efforts to mitigate climate change, protect biodiversity, reduce pollution, promote sustainable resource management, and foster resilience in the face of environmental risks are essential to safeguarding the health and well-being of present and future generations.

Environmental Pollution

Environmental pollution is a pressing issue that stems largely from human negligence and irresponsibility. From the industrial revolution to the present day, mankind has exploited natural resources without proper consideration for the consequences. As a result, our planet is now facing a crisis of contamination across air, water, and land.

Air pollution, primarily caused by emissions from vehicles, factories, and power plants, poses significant health risks to humans and wildlife alike. Particulate matter, sulphur dioxide, nitrogen oxides, and volatile organic compounds contribute to respiratory diseases, cardiovascular issues, and even premature death. The smog-choked skylines of many cities serve as a stark reminder of the toll our actions have taken on the atmosphere.

Water pollution is equally concerning, with chemicals, pesticides, and plastics finding their way into rivers, lakes, and oceans. Marine life suffers from ingestion of plastic debris, entanglement in discarded fishing gear, and exposure to toxic substances. Contaminated water sources not only endanger aquatic ecosystems but also jeopardize the health of communities reliant on them for drinking and irrigation.

Land pollution, often overlooked but no less significant, results from improper waste disposal and industrial activities. Landfills overflow with non-biodegradable waste, leaching harmful substances into the soil and groundwater. Moreover, the indiscriminate use of pesticides and fertilizers in agriculture leads to soil degradation, diminishing fertility and biodiversity.

The consequences of environmental pollution are far-reaching and multifaceted. Beyond the immediate health impacts, pollution contributes to climate change, biodiversity loss, and ecosystem degradation. Rising temperatures, melting ice caps, and extreme weather events are all manifestations of the planet's deteriorating condition.

Addressing environmental pollution requires concerted efforts at individual, community, and governmental levels. Transitioning to sustainable energy sources, implementing

stricter regulations on emissions and waste disposal, and promoting eco-friendly practices are crucial steps towards mitigating pollution's harmful effects. Additionally, fostering environmental awareness and education is essential to instil a sense of responsibility and stewardship for the planet among future generations.

Ultimately, combating environmental pollution is not just a matter of policy or technology; it's a fundamental ethical imperative. It requires a collective commitment to preserving the natural world for ourselves and future generations. Only by recognizing the consequences of our actions and taking proactive measures to mitigate them can we hope to reverse the tide of pollution and safeguard the health and integrity of our planet.

Need for Collective Responsibility

Protecting the environment is not just a choice; it's an imperative for the survival of our planet and future generations.

1) Biodiversity Preservation

The environment is home to millions of species, each playing a crucial role in maintaining the delicate balance of ecosystems. By protecting the environment, we safeguard biodiversity, ensuring the survival of diverse plant and animal species, which in turn supports human life through services like pollination, clean water, and air purification.

2) Climate Regulation

The environment regulates climate patterns, absorbing carbon dioxide, and releasing oxygen through processes like photosynthesis. Human activities, such as deforestation and the burning of fossil fuels, disrupt this balance, leading to climate change with devastating consequences like extreme weather events, rising sea levels, and habitat loss.

3) Resource Sustainability

Natural resources like water, air, soil, and minerals are vital for human survival and economic development. Protecting the environment ensures the sustainable use of these resources, preventing overexploitation, pollution, and depletion, and ensuring their availability for future generations.

4) Human Health

A clean environment is essential for human health. Pollution of air, water, and soil contaminates food and water sources, leading to diseases, respiratory problems, and other health issues. By protecting the environment, we safeguard public health and well-being.

5) Economic Benefits

Healthy ecosystems provide valuable ecosystem services like crop pollination, water purification, and carbon sequestration, contributing to economic prosperity and livelihoods. Additionally, industries like ecotourism and sustainable agriculture thrive in environments with rich biodiversity and pristine landscapes.

6) Cultural and Spiritual Importance

The environment holds cultural and spiritual significance for many communities worldwide. Indigenous cultures often have deep connections to their natural surroundings, viewing the environment as sacred and integral to their identity and way of life. Protecting the environment is essential for preserving cultural heritage and traditional knowledge.

7) Global Responsibility

Environmental degradation transcends national borders, affecting the entire planet. Addressing environmental challenges requires global cooperation and collective action. By protecting the environment, we fulfill our responsibility to future generations and contribute to a more sustainable and equitable world.

In conclusion, protecting the environment is not only a moral obligation but also a practical necessity for ensuring the well-being of current and future generations. It requires concerted efforts at individual, community, national, and international levels to promote sustainable development, conserve natural resources, and mitigate the impacts of climate change. Only by working together can we create a healthier, more resilient planet for all life forms.

Towards Environmental Consciousness
A Comprehensive Study for Awareness and Action

Abstract

In today's world, the pressing need to protect our environment has become more apparent than ever before. This study aims to raise awareness among the general populace regarding the critical importance of environmental preservation. Drawing upon a diverse array of sources including official documents, documentaries, media releases, stories, and press releases, this research endeavors to provide a comprehensive overview of the current environmental challenges we face and the imperative for proactive measures. Through meticulous analysis and synthesis of information, this report elucidates the urgent need for collective action to safeguard our planet for future generations.

Introduction

The global environment is under unprecedented threat due to human activities ranging from deforestation and pollution to climate change and habitat destruction. Recognizing the severity of these challenges, this study embarks on a journey to shed light on the various dimensions of environmental degradation and the cascading impacts on ecosystems, biodiversity, and human well-being. By harnessing data from official documents, insightful documentaries, impactful media releases, compelling stories, and informative press releases, this research endeavors to galvanize individuals and communities towards meaningful action in defense of our planet.

Methods

To construct a robust understanding of the environmental issues at hand, a multifaceted approach was adopted. Primary sources such as official documents provided authoritative insights into policy frameworks and scientific assessments. Documentaries served as powerful visual narratives, offering first-hand accounts of environmental degradation and conservation efforts across the globe. Media releases from reputable organizations and agencies furnished up-to-date information on emerging environmental

crises and mitigation strategies. Additionally, stories shared by individuals and communities offered poignant perspectives on the human dimensions of environmental stewardship. Through a meticulous analysis of these diverse sources, this study sought to distill key findings and actionable recommendations for fostering environmental consciousness.

Findings

The synthesis of information gleaned from diverse sources revealed a sobering reality: our planet is facing unprecedented environmental challenges that demand immediate attention. From the destruction of vital ecosystems to the depletion of natural resources, the ramifications of human-induced environmental degradation are far-reaching and profound. However, amidst the gloom, there exist glimmers of hope in the form of grassroots initiatives, policy reforms, and technological innovations aimed at mitigating environmental harm and promoting sustainability. By harnessing the power of collective action and fostering a sense of environmental stewardship, we can chart a course towards a more sustainable and resilient future for all.

In conclusion, this study underscores the urgent need for heightened awareness and concerted action to protect our environment. Through the judicious utilization of diverse sources including official documents, documentaries, media releases, stories, and press releases, this research has endeavored to illuminate the interconnectedness of environmental issues and inspire individuals and communities to become proactive agents of change. As we confront the daunting challenges posed by environmental degradation, let us heed the call to action and strive towards a harmonious coexistence with nature. Our collective future depends on it.

Topic 1
The Top Nine Environmental Issues

Introduction

Industrialization and urbanization have caused significant and harmful environmental changes to the earth during the past century. We still rely heavily on fossil fuels to meet the majority of our energy demands, which has led to severe environmental deterioration. Population expansion and modern living standards have enhanced energy consumption.These environmental challenges are a global issue that all nations must address.

Environmental Concerns

The state of our ecosystem is getting worse as time goes on, from pollution and deforestation to global warming and habitat loss, yet all is not lost just yet. If we truly commit to modifying our behavior and making investments in sustainability, we still have time to set things right.

Wildlife Conservation

It is more important than ever to concentrate our efforts on protecting animals. Unfortunately, several causes including disease, invasive predatory species, and habitat degradation have combined to cause wildlife populations to drop 1000–10,000 times faster than they would have in the absence of human activity. Human activity poses a direct threat to 99 percent of the at-risk species that exist today.

To maintain the biodiversity of our planet-the range of life found in a given ecosystem—wildlife protection is essential to ecological health. No matter how tiny, every native species to a given environment has a specialized role to play. The survival of all species, including plant, animal, and even insect ones, is guaranteed by biodiversity. Think about bees. Bee populations across the planet are collapsing, endangering not only

the diversity of insects but also hundreds of flowering plants and the animals that eat them, including humans, as bees are pollinators.

Significant Deaths of Coral Reefs

Although they make up a small portion of the enormous ocean, coral reefs are home to over 25% of all marine species. Reefs are bleached and destroyed by ocean acidification, overfishing, physical deterioration, and human pollution. The food chain of corals is upset by climate change, which makes it harder for them to live and promotes the growth of opportunistic fungi that turn these vibrant coral forests into underwater cemeteries.

Apart from the warming of the oceans, another grave issue is ocean acidification, which prevents coral reefs from forming their skeletons, even rupturing pre-existing reef structures and causing the corals to shatter when touched. Because overfishing upsets coral reef ecosystems and increases the number of invasive species that can take over, humans have a more direct and detrimental impact on the degradation of coral reefs. Furthermore, even seemingly unconnected activities like sewage and chemical runoff from lawn maintenance can end up in our oceans and make the water uninhabitable for marine life.

Water Pollution

Any type of pollutant that contains dangerous substances that are present in lakes, streams, rivers, seas, and human water systems is referred to as water pollution. Human sewage, incorrectly disposed of toxic waste, unintentional oil spills, and even soil erosion sediment are the main causes of this contamination. Although it impacts all life, water pollution endangers marine life. Runoff from farms and sewage systems promotes the development of algal blooms, which deplete the water's dissolved oxygen content. Animals exposed to synthetic hormones, antibiotics, and other drugs may experience unfavorable side effects. These substances frequently wind up in water.

Air Pollution

When most people think of air pollution, they think of emissions from cars, factories, and power plants, but methane and other gases from landfills and animal farms also play a big role. The emission of air pollutants that trap heat creates a positive feedback loop that raises the atmospheric concentration of greenhouse gases. In addition to

contributing to climate change, these air pollutants are harmful to human health; nevertheless, the most severe health effects are frequently experienced by children and the underprivileged.

However, our preferences for consumer goods also have a role in the emission of these dangerous chemicals into the environment, not simply big businesses. Volatile organic compounds (VOCs), are harmful gases released by even seemingly insignificant items like air fresheners, cleaning supplies, and cigarettes. These gases have been related to hormone disturbance in wildlife and cancer in humans. Even when thousands of kilometers away, natural disasters like volcanoes, wildfires, and dust storms from fresh deserts can affect the quality of the air.

Air Pollution Environmental Concerns and Problems, Source

Unsustainable Waste Generation

We are encouraged to create a lot of waste without realizing how it affects the whole world. We produce and consume at an incredible rate, removing natural resources from the environment. Excessive consumption leaves non-biodegradable waste in the form of plastic packaging, toxic electronic waste, and harmful chemicals that wash into waterways. When making new purchases, consider the product's life cycle from manufacturing to the end of its useful life. Many of our homes will one day end up in a landfill, only to decompose over decades, if not centuries.

Minimalism and zero waste are becoming more common as today's technology means we have significantly less stuff. As our lives are increasingly lived in digital environments, things like books, music collections, art, and even work and study need to fit in the cloud. Before we buy, we should consider our purchases carefully and buy things that will serve multiple purposes and last for years.

Climate Change

When we burn fossil fuels to power our cars and homes, we release carbon dioxide (CO_2), methane, nitrous oxide and CFCs into the atmosphere. Deforestation, fertilizers and decaying waste all lead to the release of greenhouse gases into the atmosphere. The rise of these gases causes global warming, causing serious damage to the coastal cities where most of the world's people live.

Extreme weather events including heat waves, hurricanes, and forest fires are brought on by climate change. Our financial security and safety are at risk due to these consequences. It will have detrimental long-term repercussions on ecosystems, public health, and the availability of food and water.

Deforestation

Globally, deforestation is happening at an alarming rate. The amount of forest cover that was lost between 1990 and 2016 was almost 502,000 square miles or the size of South Africa. The main causes of the current rate of deforestation are mining, drilling, and animal husbandry.
In addition, forests have been converted to produce palm oil, a product found in plantation produced goods, detergents, and cleaning products, damaging the orangutans from their habitat.

Overpopulation

The number of people on the planet has grown from 5.3 billion to 7.3 billion since 19th century. It is expected to reach 9.7 billion in upcoming years. The main reasons for this population increase are longer life spans, easier access to nutrient-dense food, higher rates of mother and child survival, and improved availability of vaccines and life-saving drugs. In order to sustain a growing population that is both productive and healthy, our natural resources must yield more.

Overpopulation Environmental Concerns And Issues

Natural Disasters

Drought, hurricanes, flooding, and wildfires are examples of natural calamities. These calamities have enormous financial repercussions. In the United States alone, natural disasters cost $1,537.4 billion in losses between 1980 and 2018. The survival of entire ecosystems and the plants and animals that depend on them are also impacted by these disasters. Scientists predict that if global warming goes unchecked, the consequences and expenses will worsen as the world warms.

Though many people, especially those in positions of authority, would rather keep their heads in the sand than offend or terrify their supporters, we all know that our world is in peril. Over the past 50 years, it has been easy to ignore climate change

because it is difficult to see changes year over year, especially in places where the devastation caused by climate change has not yet occurred. However, the hard evidence, such as extreme weather and severe droughts, is becoming harder to deny.

Transparent production methods and responsible resource management can pave the path for increased sustainability for organizations and businesses. Since we only have one planet, it is our collective responsibility to care for it better for future generations.

Environmental Solutions
Addressing the Earth's Problems

We should reduce our overall consumption by making an effort to acquire fewer items and extend the life of our possessions. De-cluttering by giving the things we don't use new homes.We need place our organic waste in a composting bin or have it picked up by a vermin composting service.

Also, we have to invest in renewable resources by purchasing recycled goods or using a green energy plan to offset our energy use.

open the windows to let fresh air in and cut back on our energy usage when the weather is pleasant.

increase the amount of time we spend riding our bike, walking, or taking public transit. eat in instead of ordering takeout to avoid single-use goods.

purchase with awareness: choose old goods or donate to ecologically friendly and sustainable companies.

learn about green issues and cast our vote in favor of them, especially those that deal with waste management and renewable energy.

Topic 2
Effects of Climate Change

The Effects of climate change

The biggest threat to the survival of our planet is climate change. Rising global temperatures will cause huge crop and fishery collapses, the extinction of hundreds of thousands of species, and the disappearance of entire populations if greenhouse There is no cap on the amount of gas released when fossil fuels burn. going to be uninhabitable. Even if these results might still be preventable, pain and fatalities are already being brought on by climate change. The cascading consequences of wildfires and supercharged storms are still felt today, even outside our windows.

Understanding these impacts can help us prepare for what is present, avoidable, and what is yet to come, and better prepare and protect all communities. While everyone is affected or affected by climate change, the people most vulnerable to climate change are those who live in the world's poorest countries, which have done the least to cause the problem. They have the fewest economic resources to respond or adapt to crises and are highly dependent on a healthy and thriving natural world for food and income. , Communities of color and those with low incomes are frequently the ones most affected by climate change, because climate change and growing inequality are interconnected crises, policymakers must act to combat both - and we must all fight for climate justice.

Effects of Climate Change on Weather

Widespread changes in weather systems brought about by rising global temperatures make natural disasters like hurricanes, floods, and droughts more severe and unpredictable. Severe weather catastrophes that may have only happened once in our grandparents' lives are happening more frequently in our own. Not every location will be affected equally, though; for example, climate change may increase the likelihood of floods in some areas while causing severe drought in others.

since the start of the preindustrial era 250 years ago, the Earth has already warmed by 1.1 degrees Celsius (1.9 degrees Fahrenheit). Furthermore, scientists caution that if we do not address the root causes of climate change, which are the combustion of fossil fuels like coal, oil, and gas, the temperature may reach a worst-case scenario of 4 degrees Celsius (7.2 degrees Fahrenheit) by 2100.

Higher Average Temperatures

We could expect more intense heat waves every summer due to this seemingly little but significant increase in the average world temperature. Meteorologists on local news are beginning to link streaks of record-breaking days to new long-term trends; these are particularly worrisome in areas where housing and infrastructure were not designed with the escalating heat in mind.

Longer-Lasting Droughts

Warmer temperatures accelerate the pace at which water vapor escapes the atmosphere, resulting in droughts that are more severe and widespread. The American West is currently experiencing a catastrophic "megadrought" due to climate change; it is the driest 22-year period of dry weather in at least 1,200 years. As a result, drinking water supplies are being reduced, crops are wilting, and forests are becoming more vulnerable to insect infestations. Additionally, a positive feedback loop resulting from drought can generate even quicker evaporation because of drier soil and less plant cover.

More Intense Wildfires

In addition to making wildfire seasons more destructive, this drier and hotter weather also increases the risk of wildfires, which can spread quickly and burn for longer periods, endangering millions more lives and homes.

In the western United States, the number of massive wildfires more than doubled between 1984 and 2015. Furthermore, the annual area burned by wildfires in California alone increased by 500% between 1972 and 2018.

Stronger Storms

Additionally, warmer air retains more moisture, which increases the strength, wetness, and ability of tropical cyclones to intensify quickly, the risk of floods will rise with every degree Celsius and global warming will increase daily rainfall during intense precipitation events. It's also anticipated that the frequency of powerful category 4 and 5 hurricanes will rise. Hurricane Harvey, a powerful category 4 storm that hit the Houston area in 2017, left hundreds of people dead and dropped a record 275 trillion pounds of rain.

Effects of climate change on the environment

From the poles to the tropics, climate change is destroying ecosystems. Even a seemingly slight shift in temperature can cause dramatic changes that ripple through food webs and the environment.

Melting Sea Ice

The poles, which are the coldest places on Earth, are where the effects of climate change are most noticeable. Massive amounts of water are being stored in glaciers and polar ice sheets, which are melting at a rate twice as fast as the rest of the planet due to the Arctic's increased temperature. A positive feedback loop accelerates the melting process when sea ice melts because it exposes darker ocean waters that take in more sunlight. The summertime ice cover in the Arctic may disappear completely in about fifteen years.

Sea Level Rise

If we don't reduce emissions, scientists estimate that sea levels might rise by as much as 3.61 feet by the

end of the century due to melting sea ice Glaciers and warm water expanding in volume. The magnitude (and speed) of this shift will destroy low-lying areas, such as island states and densely populated coastal cities like Mumbai and New York City.

Even at much lower levels, however, sea level rise is costly, hazardous, and disruptive. The United States will experience a foot rise in sea level by 2050, sea level-rise technical study. This will frequently harm infrastructure, including sewage treatment facilities, power plants, and highways. By century's end, beaches that families have grown up going to might disappear. The environment is also harmed by sea level rise because invading seawater can destroy coastal ecosystems and contaminate freshwater inland aquifers, which are essential for human consumption and agriculture. In countries like Bangladesh, where 25% of the land is below sea level, saltwater encroachment is already changing the way people live.

Flooding

Climate change affects not only the coastal flooding brought on by sea level rise but also the inland and urban flooding produced by heavy rain and snowmelt. Our country's floodplains are predicted to expand by roughly 45% by 2100 as a result of global warming's continued exacerbation of extreme weather and sea level rise. As much as a third of Pakistan was submerged with severe flooding in 2022 as a result of heavy rains combined with snowmelt and melting glaciers.

Warmer Ocean Waters and Marine Heat Waves

The oceans, which make up more than 70% of the planet's surface, absorb up to 30% of the carbon dioxide emitted from burning fossil fuels and 93% of the heat trapped by greenhouse gases. As a result, temperature-sensitive fish and other marine life are already shifting their migratory patterns toward deeper, cooler waters to survive, upending food webs and major commercial fisheries. Additionally, the frequency of marine heat waves has increased by more than a third, and these spikes have caused massive die-offs of plankton and marine mammals.

Worse, as a result of the ocean's increased absorption of carbon dioxide, the water gradually becomes more acidic, changing the water's basic chemical composition and

endangering marine species that have adapted to exist in a restricted pH range. Since the calcification process needed to form their shells is disrupted by acidification, organisms like corals, oysters, and mussels are likely to experience these consequences first.

Ecosystem Stressors

Ecosystems on land, such as tropical rainforests, savannahs, and old-growth forests, are not doing any better. In forests, outbreaks of invasive species, disease infections, and pests are expected to rise with climate change. It is altering the kind of flora that can grow in a certain area and upsetting the wildlife's life cycles, all of which are causing ecosystems to become less resilient to stresses and changes in composition. Although ecosystems are naturally able to adapt, many are already at their carrying capacity. There will be more effects as the temperature rises.

It seems that ecological changes are being triggered by climate change in a cascading manner that we are unable to entirely forecast or, once they get sufficient pace, completely stop. The destabilization of an ecosystem can be particularly noticeable in cases where keystone species play a significant role in maintaining the structural integrity of the ecosystem.

Effects of Climate Change on Agriculture

Less Predictable Growing Seasons

Crop production becomes more unpredictable as a result of global warming, and raising livestock becomes more difficult because they are vulnerable to harsh weather. Changes in precipitation patterns brought about by climate change result in longer-lasting droughts and unpredictable floods. A crop season's worth of crops can be destroyed by more frequent and powerful hurricanes. It is also anticipated that the dynamics of invading species, diseases, and pests—all of which are expensive for farmers to control—will grow more unpredictable. Considering that small, family-run farms make up the majority of farms worldwide, this is poor news. A severe drought or flood can wipe out a crop or herd for the entire season. For instance, a triple-digit heat wave that struck Kansas in June 2022 killed thousands of cows. While rural people are being empowered by the regenerative agriculture movement to make their lands

Reduced Soil Health

In addition to having an optimal moisture and mineral content, healthy soil is brimming with microorganisms, fungi, bacteria, and other organisms that support the growth of nutritious crops. However, strong heat waves and variations in precipitation brought on by climate change might deteriorate soil quality. These effects are more pronounced in regions where monoculture farming, driven by industrial chemicals, has reduced crop and soil resilience to environmental fluctuations.

Food Shortages

In the end, changes to our agricultural systems directly endanger the world's food supply. Furthermore, not everyone will be equally impacted by food shortages and price increases brought on by climate change. While wealthier people will likely continue to have more options for getting food, billions of plummet may experience food insecurity, adding to the billions of people who already have moderate to severe difficulties getting enough to eat.

The current threats to the poison dart frog's survival are habitat loss and climate change.

Effects of Climate Change on Animals

It is about more than just polar bears: half of the animal species in the most biodiversity places in the world, such as the Amazon rainforest and the Galapagos Islands, are at risk of extinction due to climate change. Climate change threatens species that are already suffering from a biodiversity crisis caused mainly by changes in land and ocean use (such as the conversion of wild places to farmland) and the direct exploitation of species (such as overfishing and wildlife trade). With species already in trouble - more than 500,000

species do not have suitable habitats for long-term survival - unchecked climate change could drive millions across borders.

Climate change is rapidly and profoundly altering (or in some cases destroying) the habitats that wildlife has depended on for millennia gradually adapted. This is particularly harmful to the habitats of species that are currently endangered for other reasons. Ice-dependent mammals such as walruses and penguins, for example, do not fare well when the ice sheet shrinks. Rapid changes in ocean temperatures are putting pressure on the algae that feed coral reefs, causing reef starvation, an increasingly common phenomenon known as coral bleaching. Millions of migratory birds in the Midwest's Prairie Hole region would lose their drinking water and breeding habitats if wetlands were to disappear. It is currently difficult for many species to thrive; since 1700, more than 85% of wetlands have disappeared. Numerous coastal areas that support hundreds of species of birds, crustaceans, and other marine life will be submerged or destroyed by rising sea levels.

The behavior of many species - mating, feeding, migration—is closely related to subtle seasonal changes, Such as temperature, precipitation, and foliage. In some cases, environmental changes occur faster than species can adapt. If the types and amounts of plants in an area change, or if certain species bloom or hatch earlier or later than before, that affects food and water supplies and reverberates through food chains.

Effects of Climate Change on Humans

In the end, humankind is impacted by how climate change affects the weather, the ecosystem, animals, and agriculture. However, there's more. All around the world, very stable climates have shaped the way we live, from the businesses that support our economies to the methods we obtain our food. Global warming threatens to upend this foundation and change society as a whole. In the worst-case scenario, this might result in widespread sickness, famine, conflict, injuries, and fatalities. This dire prediction has already come true for a large number of people worldwide. Thus, all human life is threatened existentially by climate change.

Human health

Climate change is worsening air quality. This increases exposure to dangerous fire smoke and ozone haze from warmer conditions, both of which harm our health, especially for those with conditions like asthma or heart disease.

Insect-borne diseases like malaria and Zika are on the rise. In a warming world because their carriers can occur in more areas or bloom longer. The incidence of Lyme disease in the United States has nearly doubled over the past 30 years. Every year, thousands of people face an increased risk of injury, illness, and death from extreme weather events. If the global average temperature rises by 2 degrees Celsius, about one billion people will be at risk of heat stress. In the summer of 2022 alone, heat waves across Europe killed thousands of people. Urban flooding in the United States and South Korea killed dozens, and more than 1,500 people died in Pakistan, where standing water and unsanitary conditions pose an even greater threat.

The consequences of climate change have a substantial negative impact on mental health, as does the threat posed by what lies ahead. Fifty-five percent of the participants stated that their emotions on climate change, ranging from helplessness to fury, had an effect on their day-to-day existence. In September 2022, a patient in Karachi, Pakistan, suffering from dengue fever, a mosquito-borne illness, as the disease's spread grew worse owing to floods. In September 2022, a patient in Karachi, Pakistan, suffering from dengue fever, a mosquito-borne illness, as the disease's spread grew worse owing to floods

Worsening Inequity

The climate crisis exacerbates the existing inequalities. While rich countries like the United States have emitted the largest share of historical greenhouse gases, developing countries may not have the resources to adapt and are now bearing the brunt of the climate crisis. In some cases, low-lying island nations—like many Pacific nations—could cease to exist before advanced economies significantly reduce their carbon emissions.

Even in the richest nations, inequality is growing among those rich enough to protect them. Wars over food or water will not drive those with abundant resources from their homes—at least not immediately. They have homes with cool air during heat waves and can easily evacuate when a hurricane approaches. They can buy increasingly expensive food and receive treatment for respiratory illnesses caused by forest fire smoke. Billions of others can't - and are paying the highest price for climate pollution they didn't cause.

For example, Hurricane Katrina displaced more than a million people along the coast of the Gulf of Finland. But in New Orleans, where zoning encouraged racial and

economic segregation, the wealthier areas of the city were at a premium—and those residents were able to come back and rebuild much faster than others.

Economic impacts

The end of the 2018, climate change will cost the US economy up to $500 billion annually if nothing is done. Not to mention the significant effects it has on human health. Whole local industries, including the ones that support the economy, including commercial fishing, tourism, and husbandry, run the risk of failing.

Every year, the cost of recovering from the devastation caused by extreme weather events like hurricanes, flash floods, and wildfires rises. 2021 was the third most expensive year on record due to weather-related disasters in the United States, with several billion-dollar weather occurrences contributing to the total cost of $145 billion.

Future Effects of Climate Change

The first wave of effects can already be seen in our communities and can be seen on the evening news. the effects of climate change would result in an additional 250,000 fatalities year from diseases transmitted by insects, heat stress, and malnourishment. The climate change could displace more than 140 million people in their homelands in sub-Saharan Africa, South Asia, and Latin America by 2050.

But how much the climate crisis will change our lives depends on whether global leaders decide to choose another course. If we fail to curb greenhouse gas emissions, a catastrophic 4.3 degrees Celsius (or about 8 degrees Fahrenheit) of warming by the end of the century. What would a warm world look like? Wars over water. Hospitals are overcrowded to fight the spread of the disease. a collapsed fishery. Dead coral reefs, even deadlier heat waves. These are just some of the effects predicted by climate scientists.

Climate mitigation, or our ability to reverse climate change and its far-reaching effects, depends on successful policies that significantly reduce carbon pollution by ending our dependence on dangerous fossil fuels and the deadly air pollution they cause, and prioritizing people and ecosystems on the front lines. And these actions must be taken quickly to ensure a healthier present and future. its most optimistic emissions scenario, in which global warming will only briefly exceed 1.5 degrees, but restrictive measures

will bring it back below that by 2100. Climate change, a term that refers to dealing with the climate, is not further is optional; this is especially necessary for the world's most vulnerable populations.

May be able to avoid crossing some critical thresholds beyond which potentially irreversible catastrophic consequences for the planet, including further warming, could result. These thresholds are called climate tipping points and refer to when a natural system 'clings' to a completely different state. One example is Arctic permafrost, which stores carbon as a freezer: when the permafrost melts under the influence of warming temperatures, it releases carbon dioxide into the atmosphere.

The important thing is that climate change is not a binary pass-fail test. Every degree of warming we prevent reduces human suffering and death and keeps more of the planet's natural systems intact. The good news is that there is a wide range of solutions to dramatically reduce emissions, slow warming and protect communities on the front lines of climate impacts. Climate leaders around the world - both those in the big political arenas and grassroots activists - are offering alternative models for systems that put polluters before people. Many of these solutions are based on an ancestral and indigenous understanding of the natural world and have existed for millennia. Some solutions require large investments in clean, renewable energy and sustainable technologies. To be successful, climate solutions must also address intersecting crises such as poverty, racism and gender inequality, which combine and drive the causes and consequences of the climate crisis. A combination of human wisdom and immense political will can help us achieve.

Topic 3
Four Effects of globalization on the environment

Many changes have resulted from globalization, which is defined in the online course Global Business as the greater flow of capital, people, ideas, goods, and services across international boundaries.

Globalization has both beneficial and bad effects on society, but it mostly has a detrimental influence on the environment. Here is an explanation of how the environment and society are affected by globalization, along with actions that company executives can take to mitigate these negative effects.

Globalization Impact on Society

Because of the rapid improvements in technology and economic integration, the world is now more interconnected than it has ever been.As local companies expand internationally and further aid in the globalization of technology, advanced economies are created.

Globalization has various advantages, including a decrease in international hostility and a rise in trade and collaboration between nations. Innovation in the fields of medicine, technology, and environmental protection has resulted from social globalization, or the exchange of ideas and information between nations.

The standard of living has also increased in a number of developing countries as a result of globalization. This entails putting in place effective transportation networks and making sure that services like healthcare and education are accessible.

Globalization may, however, also have detrimental impacts on society, such as a rise in income disparity and poor working conditions in developing nations that supply commodities to more developed ones. Globalization and income inequality go hand in hand since it widens the gap between developed and poor countries. It may therefore also raise the possibility of social violence. Globalization affects society and the environment in the long run, and usually not in a good way.

Effects of Globalization on the Environment

1) Increased Transport of Goods

The fact that globalization creates new markets for businesses to sell their products and find suppliers of labor, raw materials, and components is one of its most significant effects.

Both of these realities mean that finished products now travel farther than ever before—perhaps half, road across the globe. In the past, products were mostly produced, sold, and consumed locally.

Increased emissions: the further a product moves, the more fuel is used and the more greenhouse gases are produced. Carbon dioxide emissions from traffic will increase by 16 percent by 2050. These emissions have been demonstrated to have a major negative impact on biodiversity and to contribute to global pollution, climate change, and ocean acidification.

Habitat destruction: Transportation—especially on land—requires infrastructure such as roads and bridges. The development of such infrastructure can. Contribute to problems like pollution and habitat loss. There is a direct correlation between the number of ships traveling by sea and the likelihood of significant oil spills or leaks harming the fragile marine ecosystem.

Every shipping container and vessel offers a chance for any kind of living thing, including fungi, animals, and plants, to hitch a ride to a new area where they might proliferate and become invasive without the normal environmental checks and balances.

2) Economic specialization

An often overlooked side effect of globalization is that it allows countries and geographies to focus on their economic strengths by relying on trading partners for goods they do not produce themselves. Such economic specialization often increases productivity and efficiency.

Unfortunately, overspecialization can threaten the health of forests and cause serious environmental problems, often in the form of habitat loss, deforestation or overexploitation of natural resources. Some examples:

Illegal deforestation in Brazil due to the country's increase in cattle ranching, which requires significant land for grazing. Overfishing of coastal areas in Southeast Asia, which has greatly reduced fish stocks and ocean pollution.Habitat loss is encouraged by an overreliance on cash crops like coffee, cocoa, and different fruits, particularly in tropical regions.

It is worth considering that globalization has allowed some nations to specialize in the production of various energy products, such as oil, and natural products, gas and wood. Countries that rely on energy sales to finance a large part of their national budgets, as well as those that prioritize energy security, are more likely to adopt market interventions in the form of subsidies or laws that make the transition to renewable energy more difficult.

The main by-product of these energy sources is greenhouse gases, which contribute significantly to global warming and climate change.

3) Decreased Biodiversity

Rising greenhouse gas emissions, ocean acidification, deforestation (along with other forms of habitat loss or destruction), climate change, and the introduction of invasive species are all reducing the amount of biodiversity on Earth.

The population sizes of all organisms—including fish, amphibians, birds, mammals, and reptiles—have dropped by 68 percent. Two fast developing continents that are significant to world trade, Latin America and Africa, have had disproportionately high rates of biodiversity loss, particularly in fish, reptiles, and amphibians that are sensitive to their surroundings.

Although there are other reasons for this decline in biodiversity, it is generally accepted that the problems mentioned above have played a role.

4) Increased Awareness

Globalization has increased environmental consciousness worldwide, even though many of its consequences on the environment have been harmful.

People can now more easily than ever witness how deforestation, habitat loss, and climate change are affecting the environment thanks to increased connections and increased rates of foreign travel. This has therefore aided in the creation of new laws, rules, and procedures that restrict adverse impacts.

Globalization- AThreat and An Opportunity

Numerous advantages have been made possible by globalization for society, such as stronger international cooperation, a decreased likelihood of international war, and cheaper costs for goods and commodities. Sadly, it has also had detrimental consequences on the ecosystem.

Since globalization cannot be stopped or reversed, conditions will probably get worse before governments, businesses, and other entities are forced to enact laws and regulations that restrict its harmful impacts.

Companies and sectors with a global presence are motivated to undertake voluntary measures to mitigate the risk of adverse outcomes. By doing this, a company can get more control over its projects and also have access to an effective marketing and communication tool.

Topic: 4
Top 10 Global Environmental Issue

It has been discovered via several surveys and extensive research that over 50% of people worldwide think that abrupt climate change is the largest global issue. It is the cause of numerous other issues, including an increase in floods, droughts, and other extreme weather occurrences, and it is having a major negative influence on the health of our world. The good news is that most individuals are willing to make lifestyle adjustments to correct the problem and protect the environment. There are other environmental issues outside climate change as well, and we need to be aware of them if we hope to preserve the environment. Here is a summary of the Top 10 environmental issues facing the world today:

1) Climate Change

Also known as global warming. The main reason is the release of carbon dioxide into the atmosphere across the border, The greenhouse gas traps the heat of the sun in the earth's atmosphere. The main source of this gas is human activity, such as the burning of transport fuel and carbon emissions from factories and large-scale industries. Controlling these carbon dioxide emissions by changing our habits has become very important.

2) Water Crisis

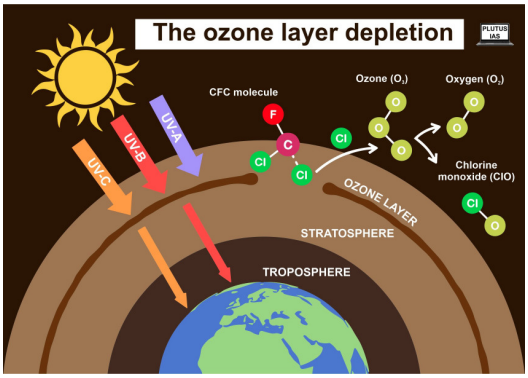
Almost a quarter of the world's population is in a serious water crisis. The 17 countries with major water crises are Qatar, Israel, Lebanon, Iran, Jordan, Libya, Kuwait, Saudi Arabia, Eritrea, United Arab Emirates, San Marino, Bahrain, India, Pakistan, Turkmenistan, Oman and Botswana, 17 countries are experiencing an acute water shortage and several countries are at risk soon.

3) Pollution

Air pollution, water pollution and landfills are becoming increasingly critical problems, especially in densely

populated cities. It affects all aspects of our environment, both humans and animals. Several health problems have been observed in urban areas due to air and water pollution.

4) Ozone Layer Depletion



The ozone layer is a layer of gas in the upper atmosphere. It protects the planet by blocking the sun's UV rays. These rays are very dangerous and can cause many serious health problems such as painful sunburns, premature aging of the skin, cataracts or even skin cancer. These UV rays are also very harmful to marine life because they reduce the amount of plankton in the water. The layer is depleted by the release of chemicals such as chlorine and bromide. The use of aerosols, fire extinguishers, old refrigerants, common cleaners and other products must be kicked to the curb.

5) Waste Generation

Landfill can lead to leaching of pollutants into soil and water. It also leads to the release of toxic gases into the environment. Waste management has now become essential. Recycling, waste, and recycling can not only help the environment but also save hard-earned money. Waste is not only an environmental problem but also an economic loss, so it is better to produce less waste or turn waste into a resource through recycling or reuse.

6) Deforestation

Deforestation is the cutting down of forests for human development and then using the trees to produce wood and paper. But now it has reached a point where we are getting more side effects than benefits. Soil erosion, erratic rainfall, floods, increase in greenhouse gases are some of the adverse effects it has on our environment.

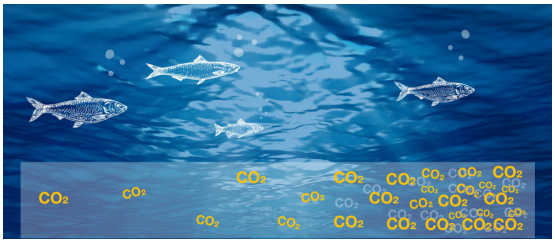
7) Depletion of Natural Resources

We have limited natural resources and if they are not used sparingly, we may soon face an energy crisis. The level of water, fossil fuels, coal, wood, and other natural resources is decreasing every day. Consumption of these sources has grown faster than the rate at which they are being replenished. Conservation is the only solution left to ensure the sustainability of this planet.

8) Loss of Biodiversity

Biodiversity is important because every species on Earth helps keep many ecosystems healthy, thriving, and in balance. It is essential to keeping life on Earth going. There are many causes of biodiversity loss, such as deforestation, climate change, overfishing, overworking, and overhunting. Many species have experienced serious losses and many are close to extinction, so awareness is very important to control this.

9) Ocean Acidification



When carbon dioxide gas comes into contact with seawater, it makes the seawater more acidic. Because of this, the Ph. level of the seawater increases, which affects marine life and coral reefs. So controlling the amount of carbon dioxide in our atmosphere also helps our oceans support life.

10) Overpopulation

Ten Billion people are the upper limit of population when it comes to food. And when we see the population graph, the numbers and the linear curve are shocking! In 1990, the world population was 5.3 billion, which increased to 6.1 billion in 2000, 7 billion in 2010, and 7.7 billion today. The line on the graph shows that the world population will reach 10 billion in 2057, which is alarming. Women's empowerment and education play a crucial role in helping many countries deal with the challenges of climate change.

Topic 5
Nature and Environment - 5 Biggest Environmental Problems

The issue is the excess carbon in the atmosphere and ocean waters. It is a good thing that atmospheric CO2 absorbs and re-emits infrared wavelength radiation since without it, The world would be completely frozen. This leads to warmer air, soils, and ocean surface waters.

1) Air Pollution and Climate Change

The air currently contains too much carbon. Fossil fuel combustion, agricultural deforestation, and industrial processes have increased atmospheric CO2 concentrations from 280 parts per million (ppm) two centuries ago to approximately 400 ppm now. That rise is unparalleled in terms of both magnitude and velocity. Climate disruption is the outcome.

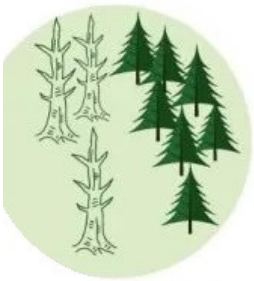
Burning coal, oil, gas, and wood all contribute to air pollution, one of which is carbon overloading. The illnesses brought on by toxins and carcinogens in contaminated air were responsible for one in nine fatalities in 2012.

Solutions

Switch to renewable energy from fossil fuels, planting new trees. Cut back on agricultural emissions. Modify industrial procedures.

The good news is that clean energy is plentiful and just has to be harnessed. Many argue that future energy sources could be totally renewable due to advancements in technology. The bad news is that, we're not building renewable energy infrastructure—like distribution networks, solar and wind farms, energy storage, and solar panels—fast enough to prevent catastrophic climate catastrophe.

it's already widely used and becoming more affordable and efficient every day. There are still financial and policy barriers to be solved



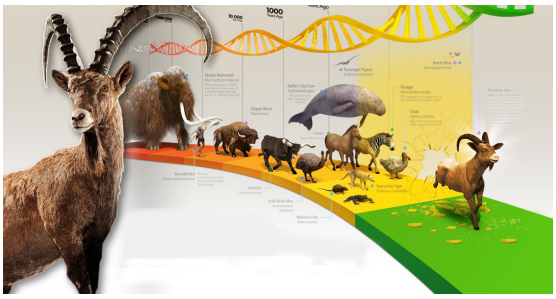
2) Deforestation

Problem: Species-rich wild forests are disappearing, particularly in the tropics, frequently to create room for monocultures of agriculture such as soybean or palm oil plantations or cow ranching.

Approximately half of the total surface on Earth is covered by forests today, down from approximately 30% 11,000 years ago when agriculture first began. Every year, some 7.3 million hectares (18 million acres) of forest are lost, primarily in tropical regions. Approximately fifteen percent of the planet's surface area was formerly covered by tropical forests; today, just six or seven percent are. Logging and burning have ruined a large portion of the remaining area.

Not only do natural forests act as biodiversity reserves, but they are also carbon sinks, keeping carbon out of the atmosphere and oceans.

The preservation of natural forests and the restoration of damaged regions through the planting of native tree species are the two main solutions. This requires a strong administration, but many tropical countries are still emerging, with rapidly increasing populations, uneven legal treatment, and a high degree of corruption and bribery in the distribution of land use.



3) Species Extinction

Problem: The state hunts wild animals to extinction for bush meat, ivory, or medicine. At sea, large industrial fishing vessels equipped with bottom trawlers or seines clean entire fish stocks. Habitat loss and destruction are also major factors contributing to the wave of extinctions, which are unprecedented because they are caused by a single species: humans. The IUCN Red List of Endangered and Threatened Species continue to grow.

Species have not only gained their existence through nature but also provide products and services that are essential for human survival. Consider bees and their ability to pollinate, which is essential for growing food.

Solutions: We need to take concerted action to prevent the loss of biodiversity. Protecting and restoring habitats is one aspect of this - protection against poaching and wildlife trade is another. This should be done in collaboration with local people so that wildlife conservation is in their social and economic interests.

4) Soil Degradation

Issue: There are numerous ways that soils are being harmed, including overgrazing, monoculture planting, erosion, compaction of the soil, excessive exposure to contaminants, and land-use conversion. The 12 million hectares of cropland are substantially degraded each year.

Solutions: There are several ways to conserve and restore soil, such as crop rotation, no-till farming, and using terraces to retain water. Considering that maintaining healthy soils is essential for ensuring food security, we will probably overcome this obstacle in due course. It's unclear if this will be carried out in a way that benefits everyone on the planet.

5) Overpopulation

Problem: The global human population is still expanding quickly. There were 1.6 billion people on Earth when the 20th century began; today, that number is closer to 7.5 billion. By 2050, estimates place us at around 10 billion. Growing global wealth and population growth are increasing the strain on vital natural resources like water. The majority of growth is taking place in southern and eastern Asia as well as on the African continent.

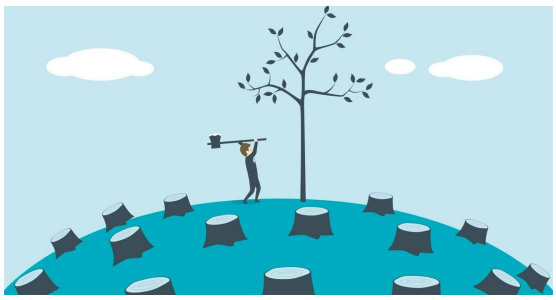
Solutions: Research has shown that the average number of births per woman sharply declines when women are given the freedom to choose their reproduction and have access to basic social services and education.

When implemented well, networked aid systems have the potential to lift women out of extreme poverty, especially in nations with extremely poor state-level governance.

Topic 6
The Biggest Threats to Our Natural World

The Age of Extinction is Support by

- **Changes in Land and Sea use**
- **Direct Exploitation of Natural Resources**
- **Climate Crisis**
- **Pollution**
- **Invasive Species**



Since 1970, the number of wildlife species worldwide has decreased by about two-thirds, and there are no indications that this decline is slowing down. This week's first round of cop15 discussions in Kunming will set the stage for nations to draft a worldwide accord to stop the loss of biodiversity next year. The five main causes of biodiversity decline: alterations in the usage of land and sea, the direct exploitation of natural resources, pollution, climate change, and the introduction of alien species.

1) Changes in Land and Sea use

It covert devastation, clearing the US prairies is on a par with tropical deforestation. The United States continues to lose half a million acres or more of grasslands annually.

Number

Changes in land and sea use have been identified as a major driver of 'unprecedented' biodiversity and ecosystem change over the past 50 years. Three-quarters of the terrestrial environment and about 66% of the marine environment have been significantly changed by human activity.

An example is the grasslands of North America, often called prairies. In the United States, about half has been rebuilt since European settlement, and the most fertile land is already in agriculture. The newly converted areas are low-quality agricultural land with yields 70% below the national average, meaning that much biodiversity is being lost due to reduced yields.

Our findings show that the areas are widely degraded. Increasingly marginal for production, but wildlife very important. Traditionally, marshes or rough lands were left as grasslands, but in recent decades even this marginal land has been converted. In the states, 88% of cropland expansion is grassland.

The Five Biggest Threats to Biodiversity

These include, in decreasing order, pollution, invasive species, climate change, direct exploitation of natural resources, and changes in land and sea use.

1) Since 1970, land-use change has had the greatest relative negative impact on nature for freshwater and terrestrial ecosystems. Currently, agriculture and livestock production occupy about one-third of the world's land area and approximately 75% of its freshwater resources. In addition to the fact that the amount of urban area has doubled since 1992, wildlife-dependent features including wetlands, scrublands, and woods are being eliminated from the environment.

2) Ecosystems are badly impacted by the direct exploitation of living things, such as logging, fishing, hunting, and the extraction of soil and water. Overfishing is thought to be the main cause of biodiversity loss in maritime habitats. A millennium ecosystem assessment conducted in 2005 found that overexploitation of 25% of the world's commercial fisheries was occurring.

3) Ecosystems are being destroyed on all fronts by the climate catastrophe. Habitats are being destroyed by extreme weather events like flooding and tropical storms. The timing of natural phenomena, such as the availability of insects and the time of year that birds lay their eggs in the spring, is also shifting due to warmer temperatures. Additionally, there are changes in the range and distribution of species.

4) Pollution of all kinds is rising. Ecosystems in maritime regions are severely harmed by pollution from agricultural runoff, particularly nitrogen and phosphorus. In the worst-affected places, agricultural runoff results in poisonous algal blooms and even "dead zones". Since 1980, there has been a tenfold rise in marine plastic pollution, impacting at least 267 species.

5) Of all known animal extinctions, invading species have been responsible for 40% of them since the 17th century. Over 25% of the planet's surface is vulnerable to plant

and animal incursions. Because they outcompete native species, invasive species alter the composition of ecosystems.

Facts to Ponder

The 'prairie pothole' region, which spans across Iowa, South Dakota, Montana, and Canada and is home to 96 species of songbirds and over 50% of North America's migrating waterfowl, has been identified as a hotspot for this expansion. It also features wildlife-rich grasslands. The around 138,000 waterfowl nesting places have been destroyed by this increase of farmland.

The monarch butterfly, a flagship species for pollinator conservation and a major indication of insect biodiversity overall, thrives in these grasslands as well. One of the main reasons for the decrease of the monarch butterfly nationally was likely farmland development, which eliminated more than 200 million milkweed plants, the caterpillar's only food source.

After the grassland is plowed, carbon that has been lost in the soil is released, accounting for around 90% of emissions from the conversion of grasslands.

Although the rate of clearing occurring on these grasslands is comparable to that of tropical deforestation, it frequently gets significantly less attention. It frequently gets far less attention; the rate of clearing that we're seeing on these grasslands is on par with things like tropical deforestation.

Global food crop production has expanded by over 300% since 1970, despite adverse effects on the environment.

The better management of current croplands and making the most of what is already cultivated will prevent further expansion while reducing food waste and eating less meat would help reduce the amount of land needed for cultivation.

I think there's a huge opportunity to re-envision our landscapes so that by increasing habitats on agricultural land, we can help reduce the impacts of the biodiversity crisis and not only provide incredible food production but also mitigate climate change.

2. Direct Exploitation of Natural Resources

Groundwater Extraction:

From hunting, fishing, and logging to the extraction of oil, gas, coal, and water, humanity's insatiable appetite for the planet's natural resources has destroyed much of nature. Although the consequences are many of these Actions often show that unsustainable groundwater extraction is causing a hidden crisis beneath our feet destroying freshwater biodiversity, threatening global food security, and causing rivers to dry up.

Farmers and mining companies are pumping. According to environmentalists and hydrologists, huge underground water reserves are being depleted at an unsustainable rate. About half of the world's population uses groundwater for drinking water and it supports 40% of crop irrigation systems. The pattern of groundwater wells. The consequences for freshwater ecosystems, the most vulnerable on the planet, have been understudied because research has focused on groundwater, exhaustion due to agriculture.

The pumping the world's most extracted resource, water, is causing serious damage to the planet's ecosystems. A 2017 study of the Ogallala Aquifer—a vast body of water beneath eight states in the American plains—showed that more than half a century of pumping has caused streams to dry up and large fish stocks to collapse.

Uganda is very green, even in the dry season, but that's because a lot of it is irrigated with shallow groundwater for agriculture, and ecosystems depends on its use. The country has two transboundary underground basins: the Nile and Lake Victoria basins. There are at least 592 shared bodies of water around the world.

Some bodies of water are huge, so it's time to fix it. It's just not being noticed. Because groundwater must pass through rocks, it moves slowly.

If we take water today, it will affect the flow of the stream maybe for the next five years, 10 years or the next decades. I think the results of this study and related studies are pretty scary. A hydrologist and lead author of the paper, the research focuses on the consequences for humans and that more research is needed on biodiversity. Millions of wells around the world could run dry even if the groundwater

level drops slightly. And of course, that affects people's livelihoods and the need for reliable, convenient availability of water.

3) The Climate Crisis

Climate and biodiversity: 'Solve both or solve neither'

The 2019 European heat wave reached Montpellier, France, with temperatures reaching 43°C. When temperatures reached 48.8 degrees Celsius in August of 2021, two years later, it seems that the heatwave broke all previous records in Europe. In the meantime, the earth is losing life due to heat waves and wildfires.

Thus far, habitat degradation and resource extraction have had a greater effect on biodiversity than the climatic catastrophe. This is expected to alter over the next few decades as the climate crisis destabilizes ecosystems in unpredictable and catastrophic ways.

The link between climate change and biodiversity crises should not be underestimated. There are many aspects of ecosystem science that we do not know enough about in time. Ecosystems are changing so rapidly due to the drivers of global change that empirical, system-changing changes are bypassing our research and modeling frameworks. The call to address the biodiversity and climate crisis is growing in parallel. The link between climate change and biodiversity crises is huge and should not be underestimated. It does not it's just climate change that affects biodiversity, it's also about biological diversity that exacerbates the climate crisis.

Species At Risk of Extinction

Temperature fluctuations are upsetting our biosphere, the thin layer of life on Earth's surface. Landfalls are changing, there are more frequent catastrophic weather events, and ecosystems are becoming more combustible. Natural disasters like floods, hurricanes, droughts, sea level rise, and other similar events are seriously destroying biodiversity and our ability to rely on it.

Heatwaves and acidity are adding to the stress that other human activities like overfishing and habitat fragmentation are already putting on marine creatures and ecosystems. The Intergovernmental Panel on Climate Change (IPCC), intense heatwaves that would typically occur every 50 years are now occurring every 10 years. These will occur roughly every five years if global warming is limited to 1.5°C.

The IPBEs caution that the distributions of about 25% of vulnerable birds and nearly half (47%) of land-based flightless mammals may already have been adversely impacted by the climate crisis. A 2C rise in temperature puts 5% of species at risk of extinction, whereas a 4.3C rise puts 16% at risk.

The vast, varied, and interconnected ecosystems will have a greater chance of surviving in a world where increasing emissions will irreversibly change the climate and help to stabilize it. Furthermore, biodiversity can be seen as a key ally in dealing with climate change, rather than being framed as a victim of climate change.

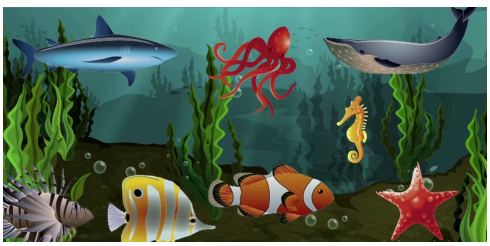
4) Pollution

Nitrogen's slowly eating away at biodiversity is the hidden menace.

Remnants of an ancient rainforest that formerly spanned Britain's Atlantic coast can be found on Scotland's west coast. Covering the crags, gorges, and bark of native woodland, its uncommon mosses, lichens, and fungus are ideally suited to the mild temperatures and consistent supply of rainfall. However, invasive rhododendrons, conifer plantations, deer, and the remaining 30,000 hectares (74,000 acres) of Scottish rainforest are all at risk from nitrogen pollution, an unseen hazard.

Air, water, and soil pollution are all rising in some places, but marine plastic pollution has surged tenfold since 1980 and now affects 44% of seabirds. Because of this, pollution has been identified as the fourth most important factor causing the loss of biodiversity.

In Scotland, nitrogen molecules from burning fossil fuels and intensive farming are deposited skyward into the rainforest, eradicating lichen and bryophytes that are extremely sensitive to atmospheric conditions and draw water from the atmosphere.



Marine Life

The temperate rainforest is far from the sources of pollution, but because it's so wet, we get a kind of acid rain effect, Nitrogen-rich

rainfall and nitrogen deposition in these habitats make it impossible for lichens, fungi, mosses, and native plants to survive.

Environmental damage caused by nitrogen pollution is not limited to Scottish rainforests. Algae blooms around the world often are caused by agricultural runoff, which causes pollution in oceans and lakes huge dead areas that kill scores of fish and destroy ecosystems. Nitrogen-rich rainwater weakens the ability of peatlands, which are declared a climate goal to protect. Aggressive nettles and cow parsley crowd out native plants adapted to low-nitrogen soils, making them less diverse.

About 80% of nitrogen used by humans for food production, transportation, energy, industry, and sewage processes is wasted and ends up in the environment as pollution. Nitrogen pollution may not cause massive floods and apocalyptic droughts, but we are slowly eating away at biodiversity as we put more, and more nitrogen into ecosystems. We have shown across the UK that there are fewer species in high-nitrogen habitats. We've shown it across Europe. We've shown it everywhere. Now we're showing it in China. We're doing more and more damage.

To reduce nitrogen pollution, which causes biodiversity loss, governments are committed to halving nutrient flow by 2030 as part of the Nature Pact currently being negotiated in Kunming. Stopping the massive waste of nitrogen fertilizers in agriculture is an important part of achieving that goal. The nitrogen runoff into streams from agriculture is one of the main issues.

In terms of nitrogen footprint, the most intensive thing we can eat is meat, the more meat we eat, the more nitrogen we put into the environment.

In terms of ecology and hydrology, reducing nitrogen pollution also makes economic sense.

Nitrogen in the atmosphere accounts for 78% of every breath we take. It does nothing, is very stable, and turns the sky blue. Then there are all these other nitrogen compounds: ammonia, nitrates, nitrous oxide. They create air and water pollution.

5) Invasive species

The issue with islands is that extreme caution is required.

Every year, mice devour a large number of seabird chicks on Gough Island in the southern Atlantic Ocean. Several

unique seabirds, including the Tristan albatross, one of the largest of its kind, are in danger of going extinct due to the rodent population that was unintentionally brought by sailors in the 19th century. Even though Tristan albatross chicks are 300 times larger than mice, The two-thirds of them did not fledge in 2020 due to injuries they received from the rodents.

Invasive Species

The state of affairs on the isolated island 2,600 kilometers from South Africa serves as a graphic warning about the effects that invasive species brought about by humans will have on biodiversity. It will take two years to verify whether the strategy has been successful. However, some environmentalists wish to investigate gene drives, a contentious alternative whose application in the eradication of malaria is the most advanced. Gene drives entail delivering genetic code into an invasive population that would render them infertile or all one gender over consecutive generations, as opposed to large-scale capturing or poisoning operations, which are less effective and potentially harm other species. The technique has only been applied in a lab environment thus far, but during the IUCN Congress in Marseille in September, members supported a move to create a policy on studying its applicability and other applications of synthetic biology for conservation.

An innovation program manager with island conservation, a non-profit committed to preventing extinctions by removing invasive species from islands, would introduce multiple individuals whose genes would be inherited by other individuals in the population, if a gene drive were shown to be successful and safety measures were in place to limit its deployment. They would eventually be unable to reproduce and would either have a completely male or fully female population. Plant and animal invasions pose a threat to about one-fifth of the planet's surface. While this issue is global, wild pigs in the southern.

Population of malaria-transmitting mosquitoes using a gene drive in a laboratory setting, raising the prospect of self-destructing mosquitoes being released into the wild in the next decade. The article was amended on 15 October 2021. The text was changed to reflect that 70% of the recently converted land area has lower yields, rather than total yields being 70% lower than the national averages an earlier version.

Topic 7
Ten Major Environmental Problems in India

In general, an environment is the set of circumstances or surroundings that a person, an animal, or a plant lives in or uses for its operations. Considering this, it would be quite simple to understand the significance of its place in the well-known cycle of life.

The environmental factors producing these changes are ever-changing, just like our surroundings, and we need to pay more attention to them as they do. Given the variety of environmental problems our planet is experiencing as a result of an increase in natural disasters, warming and cooling cycles, and weather patterns, we need to be much more mindful of how we live.

The Environmental Issues

Human action comes with a lot of adverse consequences. It could have both advantageous and harmful consequences. It might promote development on the one hand, but it might also have negative consequences. These negative alterations might have an impact on the environment's natural balance and lead to environmental difficulties.

Anything that negatively impacts the environment as a result of human activities is considered an environmental issue. This encompasses both the physical and biological features of the environment. Today, a number of environmental problems, including contamination of the air, water, natural environment, rubbish, etc., are raising great worry.

Major Environmental Problems

Human actions that damage the environment give birth to environmental challenges. Among these are the following: pollution, overcrowding, waste disposal, global warming, and climate change.

Various environmental protection programs are being undertaken at the individual, organizational, and governmental levels to achieve a balance between the environment and human beings.

The following are some of the current environmental issues requiring urgent attention:

1) Overpopulation

Without question, the largest threat to the environment is human population growth, which is also a significant environmental problem in India. All other important environmental challenges stem from our planet's overpopulation.

The world's population has tripled in the past 60 years, placing pressure on all facets of the ecosystem. Every day, more and more land is developed to make room for urban growth.

In 1950, there were 2,555,982,611 people, but in 2015, there were around 7,382,200,400 people. The population of the world is thought to have grown by nearly three times in the last century. It's astounding in light of that. As we speak, that figure is increasing.

2) Deforestation

Deforestation is causing an alarming pace of tree and forest loss. Trees not only supply raw resources and oxygen, but they help keep the planet's temperature stable. Due to the removal of trees for commercial use, the earth's climate has drastically changed.

Forests are home to a wide variety of natural flora and animals. The loss of forests has resulted in the extinction of countless flora and animals.

3) Climate Change

In May 2016, near Phalodi, Rajasthan, the highest temperature ever recorded in India was 51 degrees Celsius. The nation is currently dealing with

serious issues related to climate change and global warming, as evidenced by the increasingly painful heat waves of recent years.

The melting of the Himalayan glaciers has increased the frequency of natural calamities like floods. Over the past five years, there have been more forest fires, floods, earthquakes, and other natural disasters than ever before.

4) Air and Water Population

Most of our industrial enterprises are run on antiquated equipment and have improvised buildings with no waste treatment facilities. Numerous cities and industrial regions have been found to have the worst levels of water and air pollution.

Even while laws are upheld in the nation, it can be difficult to put them into practice. They demand significant resources because to the technological know-how, political will, and resources required to put them into practice. The public should once more be informed of this information. Without their backing, these regulations could not be put into effect.

5) Groundwater Depletion

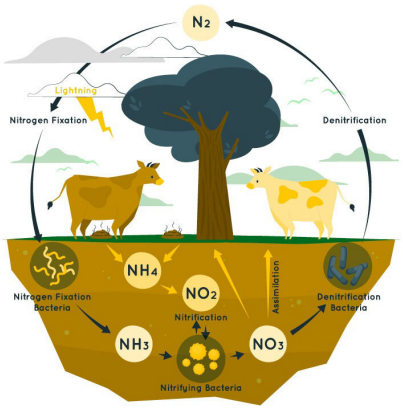
The nation's food security and means of subsistence are increasingly threatened by the rapidly declining levels of groundwater. Over the years, groundwater access has become more and more complex. The irrigation of cash crops like sugarcane has resulted in a six percentage point reduction in the amount of water available within ten meters of ground level due to over exploitation of groundwater resources.

Low rainfall and droughts are two other factors that lead to groundwater depletion. The north-western and southeast parts of the nation have been most affected. The agriculture and food production in this region inevitably lead to a food catastrophe.

6) Use of Plastics

The over usage of plastics is one of the nation's other main worries. The demand for polymers in India is expected to rise from 11 million tonnes in 2012–13 to 16.5 million tonnes in 2016–17. India's per capita plastic consumption grew from approximately 4 kg in 2006 to approximately 8 kg in 2010. Given that plastics are among the least biodegradable materials, it is critical to comprehend the harm that plastics can do to the ecosystem. A plastic beverage bottle may take up to 500 years to naturally decompose.

7) Phosphorous and Nitrogen Cycles



The carbon cycle is more affected by human activity than the nitrogen cycle, but the influence on the nitrogen cycle is really greater due to less known effects. Humans have abused and utilized nitrogen in highly positive ways during the past few decades.

Humans annually transform 120 million tons of atmospheric nitrogen into reactive forms like nitrates through the usage of food additives and the creation of nitrogen-based fertilizer for crops. Phytoplankton, which is harmed by crop runoff, produces the majority of the oxygen in our atmosphere.

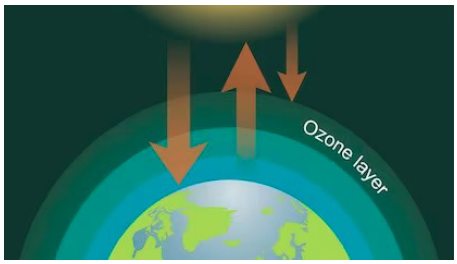
8) Solid waste

Delhi is estimated to produce 8,000 metric tons of solid trash daily. Furthermore, fly ash and other hazardous and non-hazardous waste are produced by power plants. Waste accumulated around the city as a result of the mcd and ndmc clearing 5000–5500 m tons of waste every day.

9) Hazardous Waste Management

The goal of determining an appropriate location for the disposal of hazardous waste. A 150-acre location along the Bawana-Narela road was chosen, but local opposition has prevented the land from being made available.

10) Ozone Layer Depletion



Concentrated ozone gas envelops the planet. The skin's protective layer blocks ultraviolet radiation from the sun. This layer is being destroyed by chemicals like CFCs (chlorofluorocarbons), which are utilized in businesses and daily life (think aerosol cans). Because these substances contain chlorine, they deplete the ozone layer. Humans and wildlife are exposed to UV radiation through an ozone hole, which can cause skin cancer and other illnesses.

The state of the ecosystem is unquestionably dire. Pollution, deforestation, and climate change are just a handful of the urgent environmental problems we currently face. Environmental degradation also affects all countries on the planet, not only those in the poor world. We'll examine some of the most pressing environmental issues affecting both India and the rest of the globe in this article. We'll also talk about the things that can do to influence change.

Environmental Changes

All that is around us is a part of the environment, which is a sophisticated system. It encompasses our dwellings as well as the water and air we breathe. Any modifications to this ecosystem that have the potential to hurt or damage living creatures are considered environmental alterations. An imbalance between human activity and natural processes leads to environmental concerns.

Environmental issues concerning India and the world

• The surroundings are ever-evolving and changing. The need for resources is rising along with the population. The ecosystem is frequently harmed by this. To reduce their consequences, we must be aware of the environmental problems that India and the rest of the world are facing.

• Air pollution has grown to be a major issue in India. More than half of the sulfur dioxide produced worldwide is produced by coal-fired power facilities in the United States. This gas has a significant role in acid rain and other environmental problems. Several of the world's most polluted cities are located in India.

• Since 1951, India has had one of the greatest rates of deforestation worldwide, losing over 11 million hectares. Deforestation contributes to climate change by emitting greenhouse gases into the atmosphere through forest fires and the release of carbon dioxide from decaying trees. Forest fires can create localized pollution and greenhouse gas emissions that contribute to global warming. India has seen a steady rise in the number of forest fires over the years. A significant worry in India is not only air pollution but also water contamination. Large amounts of raw sewage are dumped into rivers and other bodies of water daily. Because of this, the water is unsuited for irrigation or human consumption.

• The Ganges River is among the world's most polluted rivers, while being revered by Hindus. Every day, the city receives 400 million liters of untreated wastewater. There are numerous sources of this effluent, including as residences, places of worship, commercial buildings, and medical facilities.

• A healthy environment depends on sustaining biodiversity; the Yamuna River, which passes through Delhi, is even more contaminated due to the 620 million gallons of raw sewage that are discharged into it every day. Clean water and air, rich soil for food production, and medications to treat illnesses like cancer and HIV/AIDS are all provided by nature. We are better protected against natural disasters like droughts and floods by biodiversity. Biodiversity absorbs extra stormwater during downpours. Additionally, it holds during dry spells moisture. For a long time, India's declining biodiversity has been a serious environmental concern. The reason for this is that due to human activities such as mining, forestry, and urbanization, habitats have been devastated. Apart from the fact that deforestation is rampant in this country—roughly 11 million hectares have been destroyed since 1951—it also upsets ecosystems, making it impossible for animals to live and obtain food. Additionally, the illicit wildlife trade and poaching pose a threat to several species in India.

• One of the creatures with a significant chance of going extinct is the Bengal tiger because of habitat degradation and poaching. As of 2014, it was predicted that there were just 2000 or so tigers remaining in the wild in India. There are just about 2700

Indian rhinoceroses left in the wild, making them another endangered species. Their survival has been seriously threatened by habitat degradation, but they are also targeted for poaching because their horns are utilized in traditional Chinese medicine.

• Environmental problems in India are not limited to animals; people are also impacted. 620 million people, or more than half of India's population, live in poverty. These folks frequently lack access to electricity and clean water because they cannot afford it.

• To preserve the biodiversity of the nation, the Indian government established national parks. Animals are free to wander these parks without human interference. For instance, on the roads close to the parks, vehicles are permitted. In addition, poaching of animals, such as tigers, is strictly prohibited by law and is punishable by harsh consequences if proven. Though many species have been protected thus far, more work still has to be done. Due to their limited resources, governments everywhere must prioritize other matters like famine relief efforts while also making prudent spending decisions.

Conclusion

To enhance comprehension of the environmental situation, we examined India and its distinct effects resulting from climate change. The nation is confronted with issues like deforestation, pollution, and rising temperatures. We also discussed how each of us may deal with these problems personally to give the world a chance to survive. To guarantee a secure and sustainable future, it is already imperative that we address these concerns.

Topic 8
Telangana Leads the Way for Environmental Conservation: A Report

Lifestyle

Telangana topped a list of states and union territories for environmental conservation. The state's success was mostly attributed to increases in forest cover and sewage treatment. Telangana received seven out of ten points in the annual data compendium.

Gujarat, Goa, and Maharashtra were the next most populous states; Rajasthan, Nagaland, Bihar, west Bengal, Arunachal Pradesh, and Manipur ranked last .The indicators included the percentage change in the number of polluted rivers in 2022 over 2018, the stage of groundwater extraction in 2022, the percentage of water bodies not in use in 2022, the share of sewage that gets treated (as of June 30, 2020), the change in installed grid renewable power in 2020–21, and the change in forest cover in 2021 over 2019. Still,

Telangana performed below average in three parameters - share of water bodies not in use, stage of groundwater extraction, and change in the number of polluted river stretches. The performance revealed significant pollution levels in the city's river corridors, dwindling water sources inside the city limits, and a rise in groundwater exploitation. The state's good performance to the 'Haritha Haram' (Green Garland) flagship forestation program of the state government, besides other conservation efforts taken across the State. It cited government initiatives for a remarkable Increase in the green cover in both rural and urban areas, besides waste-to-energy plants and other initiatives, which subsequently led to social benefits and national and international recognition. The Haritha Haram program aimed to increase the green cover from 22 per cent to 33 per cent, as part of which about 273 crores of saplings were planted in the past nine years, which led to an increase in the forest cover in the state from 19,854 square kilometres in 2015-16 to 26,969 square kilometres in 2023. The further emphasized that in order to guarantee the scientific disposal of trash, the state government adopted best methods in sanitation management, such as biomining. Additionally, waste-to-energy plants in Hyderabad generated 24 megawatts (mw) of power, demonstrating the state's leadership in the production of electricity from alternative sources.

Topic 9
Andhra Pradesh Stares at Water Pollution, and Nitrate Contamination: A Study

• Visakhapatnam: intensive farming methods have fuelled fertilizer-intensive systems and exploitative commerce while also contributing to the success of the green revolution. Andhra Pradesh accumulates excess nitrogen and phosphorus annually totalling 14.75 crore kilos and 20 crore kilograms, respectively.

• Food bowls like Andhra Pradesh, although vital in feeding the country, are currently burdened with nitrate contamination and the possibility of a water pollution problem. When this data is combined with water balance analysis, Andhra Pradesh gray-water footprint is further increased due to surplus nutrient conversion, which is a worrying development. The nitrogen and phosphorus in India's interstate commerce in staple crops over the previous ten years in order to investigate the environmental effects on production hubs.

The study found that over the previous ten years, India's domestic wheat and rice trade resulted in 51.4 crore kg of emissions of nitrous oxide (n2O), a long-lived greenhouse gas, at the producers' end.

• Notably, four top manufacturers account for 73.1% of the 4.28 crore kilogram yearly load of NO emissions. Among these states are Andhra Pradesh (12.3%), Chhattisgarh (12.4%), Punjab (20%), and Haryana (28.3%).

Over the course of the last ten years, the primary exporting states have been burdened with an additional 1,103 crore kilos of nitrogen and 362 crore kilograms of legacy phosphorus residues in the soil.

The leftovers either contribute to future environmental degradation or are recycled by plants during their growth.

•The insufficient levels of nutrients reduce crop productivity, excessive amounts can cause serious environmental problems such as groundwater pollution, soil acidification

and leaching. Greenhouse gases into the atmosphere, more than 80% of the nitrogen and phosphorus consumed in the entire agri-food chain is wasted in the environment. Considering India's role in global food security, identifying the country's environmental vulnerability can help design appropriate policy interventions for sustainable development, estimate the nutritional surplus of rice and wheat, where Punjab, Haryana and Chhattisgarh are located. We further found that Tamil Nadu, Maharashtra, Pradesh and Karnataka contributed 61,000,000 kg of nitrogen per year and 20,000,000 kg of phosphorus nutrient load was created through inter-state crop trade in producing states. The study found nitrogen and phosphorus at 378.8 billion cubic meters of gray water equivalent per year for these two main crops, rice and wheat. Part of that environmental impact is mainly concentrated in Haryana, Punjab, Chhattisgarh and Andhra Pradesh, which together account for 73.2% of the gray water footprint.

Topic 10
Hyderabad, Visakhapatnam Most Polluted Among 10 South Indian Cities

The NGO fighting global environmental problems found that the content of particulate matter 2.5 (pm2.5) increased 7-8 times in both cities, while PM10 increased almost 6-7 times. The latest findings are part of Greenpeace India's analysis of air quality data in 10 southern states, including Bengaluru, Chennai, Kochi, Mangaluru, Mysuru, Puducherry, Coimbatore, and Amaravati. South Indian cities are not far behind cities like Delhi when it comes to the health and economic effects of air pollution, a study has found.

Particulate matter is the total amount of solid and liquid particles suspended in the air, many of which are frequent dangerous. This includes both organic and inorganic particles such as dust, pollen, soot, smoke, and liquid droplets. Solid particles are defined by a particle diameter that can be 2.5 microns or less (pm2.5) or 10 microns or less (pm10). The particles produced by vehicles are usually pm2.5 (small particles), and the amount of dust generated on construction sites is pm10 (coarse particles). Both pm2.5 and pm10 can penetrate deep into the lungs, but pm2.5 … can even enter the bloodstream, causing mainly cardiovascular and respiratory effects, as well as affecting other organs 2021 review of air pollution.

While the yearlymean of 5 ìg/m3 isexceededbyall 10 cities in SouthIndia, Visakhapatnamsurpasses the 40 ìg/m3 annual PM2.5 concentrationssetbyNational Ambient Air Quality Standards(NAAQS)byapproximately 50 ìg/m3. Hyderabadis some what beyond the NAAQ Slimit. The PM2.5 naaqs level is well beyond the reach of other cities.

Visakhapatnam and Hyderabad grew 7-8 times while Coimbatore, Bengaluru, Amaravati and Mangaluru grew 6-7 times and Chennai, Kochi, Mysuru and Puducherry grew 4-5 times which is more than any other within naaq. It has annual average pm2.5 values for 10 south Indian cities. If we talk about pm 10 Visakhapatnam and Hyderabad grew 6-7 times, Bengaluru, Mangalore, Amaravati, Chennai and Kochi grew 3-4 times, Mysuru,

Coimbatore and Puducherry grew 2-3 times higher than normal checkers. Except Visakhapatnam and Hyderabad, the values are 1.5-2 times higher than NAAQ and other cities have prescribed norms.

Solution

The future belongs to renewable energy. State governments ought to support decentralized renewable energy options like rooftop solar power, establish integrated public transportation, and tackle sources of pollution like burning of waste, the construction industry, industrial pollutants, and burning of biomass.

After analysis it has realized that making few priority changes can have an impact on the readings that are taken. The first stage would be to look for alternatives to using fossil fuels for industry, transportation, and power. It can also be beneficial if state governments focus on enhancing the transportation infrastructure. Creating green areas is yet another crucial action that needs to be done. Additionally, the government may do a great deal by interacting and working with locals.

Topic 11
15 Biggest Environmental Problems of 2024

1) Global Warming from Fossil Fuels

There has never been as much carbon dioxide (CO2) in the atmosphere. CO2 levels in the atmosphere are currently well above 420 parts per million (ppm), more than twice as high as they were before the start of the Industrial Revolution in the 19th century, after continuously hovering around 280 ppm for nearly 6,000 years of human civilization.
One of the most significant environmental issues of our day is without a doubt global warming, which is caused by greenhouse gas emissions covering the planet and trapping solar radiation.

Global temperatures are rising quickly and steadily due to increased greenhouse gas emissions. This is resulting in catastrophic events around the world, such as some of the most destructive bushfire seasons ever recorded in Australia and the United States, locust swarms decimating crops in parts of Africa, the Middle East, and Asia, and a heatwave in Antarctica that saw temperatures surpass 20 degrees Celsius for the first time. The planet is approaching many tipping points that scientists warn could have catastrophic consequences. These include the accelerating sixth mass extinction, the increasing deforestation in the Amazon rainforest, the advancing permafrost melt in arctic regions, and the unprecedented rate of melting of the Greenland ice sheet.

Tropical storms, along with other weather phenomena like hurricanes, heat waves, and flooding, are becoming increasingly violent and common due to the climate crisis. However, global temperatures would still rise in the upcoming years even if all greenhouse gas production were immediately stopped. Because of this, we must phase out our usage of fossil fuels as quickly as possible, invest in renewable energy sources, and begin a drastic reduction in greenhouse gas emissions right away.

2) Poor Governance

Numerous market failures are to blame for the current climate catastrophe.

Policymakers have been urged by economists and environmentalists for years to raise the cost of activities that emit greenhouse gases. The biggest market failure is the absence of such measures, such as carbon taxes, which will encourage the development of low-carbon technology.

Governments must enact a number of other measures to address each of the other market failures in addition to drastically increasing financing for green innovation to drive down the cost of low-carbon energy sources in order to reduce emissions sufficiently and swiftly.

There are now 27 nations with national carbon taxes in place, including several in the EU, Canada, Singapore, Japan, the Ukraine, and Argentina. For instance, the Organisation for Economic Co-operation and Development (OECD) contends that even while carbon prices have shown to be successful for the energy sector, they are not severe enough when it comes to coal extraction. Sweden has successfully imposed a carbon price; since 1995, emissions have decreased by 25% while the country's economy has grown by 75%. The tax is u$127 per tonne.

Furthermore, organizations like the UN are not fit to deal with the climate crisis: they were created to prevent another world war and are not fit for purpose. In any case, UN members do not have to follow the recommendations or recommendations of the organization. For example, the historic agreement of the United Nations Framework Convention on Climate Change (UNFCCC) in the Paris Agreement stipulates that countries must significantly reduce emissions of greenhouse gases to keep the global temperature increase below 2 degrees before 2100, and preferably below 1.5 degrees. But joining is optional, and there are no real consequences for not following. There is also the still contentious issue of equity where developing countries are allowed to emit more to develop to the point where they can develop technologies with lower emissions and this allows some countries such as China to take advantage.

3) Food Waste

Approximately 1.3 billion tons, or one-third, of the food meant for human consumption is lost or squandered. Three billion people could be fed with this alone. Food loss and waste contribute about 25% of greenhouse gas emissions annually; if food waste and loss were a country,

it would be the third-largest producer of greenhouse gases, behind China and the United States.

Data about our world approximately one-quarter, or 26%, of the world's greenhouse gas emissions are related to food production. Our data-driven world

In underdeveloped nations, 40% of food waste happens at the post-harvest and processing levels, whereas in wealthy countries, 40% of food waste happens at the retail and consumer levels. Food waste and loss occur at various stages in both countries. A startling quantity of food is wasted at the retail level for aesthetic reasons; in the United States, for example, over 50% of produce thrown away is because it is considered too ugly to be sold to consumers; this translates to over 60 million tons of fruits and vegetables. Food insecurity follows, and it's one of the major environmental issues on the list.

4) Loss of Biodiversity

Over the past 50 years, human consumption, population, world trade, and urbanization have grown rapidly, resulting in humanity using more of the Earth's natural resources than it can naturally replenish. WWF's 2020 report showed that population sizes of mammals, fish, birds, reptiles, and amphibians decreased by an average of 68% between 1970 and 2016. This loss of biodiversity is due to several factors, but mainly to land use change, especially to the conversion of habitats such as forests, grasslands, and mangroves to agricultural systems. Animals such as pangolins, sharks, and horses are significantly affected by the illegal wildlife trade, and pangolins are therefore critically endangered. A recently published analysis shows that the sixth global wildlife mass extinction is accelerating. More than 500 species of terrestrial animals are on the brink of extinction and are likely to disappear within 20 years. The same amount disappeared during the last century. Without destruction caused by humans, scientists say, this rate of extinction would continue for thousands of years. In Antarctica, melting sea ice caused by climate change is harming emperor penguins and could wipe out entire populations as early as 2100, according to a 2023 study.

5) Plastic Pollution

The globe produced almost two million tons of plastic annually in 1950. This yearly manufacturing increased to 419 million tons by 2015, worsening the environmental effects of plastic trash.

An average of 300 million tonnes of plastic garbage are produced worldwide per year.

An estimated 14 million tons of plastic enter the ocean annually, endangering the habitats of marine life as well as the creatures that inhabit them. According to the research, the plastic catastrophe will reach 29 million metric tons annually by 2040 if nothing is done. If microplastics are taken into consideration, the total amount of plastic in the ocean by 2040 might be 600 million tons. Surprisingly, National Geographic found that 91 percent of all plastic created to date is not recycled, which is a major environmental risk and represents yet another massive corporate failure. Plastic takes 400 years to break down, therefore it will take several generations for it to entirely vanish. It is impossible to forecast the long-term, irreversible effects of plastic pollution on the ecosystem.

6) Deforestation

Forests the size of 300 football fields are cut every hour. By 2030, the planet may have only 10% of forests; If deforestation is not stopped, they could all disappear in less than 100 years. The three countries with the highest rates of deforestation are Brazil, the Democratic Republic of Congo, and Indonesia. The Amazon, the world's largest rainforest - covering 6.9 million square kilometers (2.72 million square miles) and about 40% of the South American continent - is also one of the most biodiverse ecosystems, home to around three million plants and animal species. Despite efforts to protect forest land, legal deforestation is still rampant, with about a third of the world's tropical forests occurring in the Brazilian Amazon, at 1.5 million hectares per year. The world cuts down 10 million hectares of trees every year to make way for growing crops and livestock and producing materials such as paper. Agriculture is the biggest cause of deforestation, which is also one of

the sector's biggest environmental problems. a list of Land is cleared to raise cattle or plant other crops such as sugarcane and palm oil for sale. In addition to sequestering carbon, forests help prevent soil erosion because tree roots bind the soil and prevent it from being washed away, which also prevents landslides.

7) Air Pollution

One of the most important environmental problems of our day is outdoor air pollution. Nine out of ten people breathe air that has high levels of pollution, and it is estimated that air pollution causes between 4.2 and 7 million deaths yearly.

that outdoor air pollution claimed the lives of 258,000 Africans in 2017 compared to 164,000 in 1990. The main causes of air pollution are motor vehicles and industrial sources. Emissions from burning biomass also contribute to poor air quality, as do dust storms.

One of the most polluted regions in the world, South Asia, has air pollution that reduces life expectancy by almost 5 years, per a 2023 study. The high levels of pollution in some countries are attributed to several issues, according to the report, including inadequate infrastructure and finance. The majority of Asian and African nations, which combined account for over 92.7% of life years lost worldwide as a result of air pollution, lack the essential air quality standards required to create effective policies. Furthermore, the percentage of governments in the two continents that offer their residents complete open-air quality data is just 6.8% and 3.7%, respectively.

Over 500,000 European Union citizens passed away in 2021 as a direct result of health problems brought on by exposure to hazardous pollutants.

8) Melting Ice Caps and Sea Level Rise

The Arctic is warming more than twice as quickly as any other region in the world due to the climate issue. Earth's temperatures are rising, causing sea levels to rise more than twice as quickly as they did throughout the majority of the 20th century. Sea levels are currently increasing globally at a rate

of 3.2 mm a year, and by the end of this century, they will have risen to a height of roughly 0.7 meters. Since melting land ice is the primary contributor to rising sea levels, the Greenland ice sheet in the Arctic presents the biggest risk to sea levels.

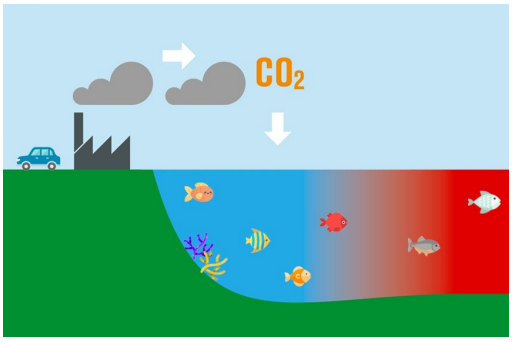
Arguably the largest environmental issue, this is all the more worrisome because Greenland lost 60 billion tons of ice during the summer of last year, which is equivalent to a 2.2 mm rise in sea levels in just two months. One of the largest environmental issues with ripple effects, the Greenland ice sheet shed an unprecedented amount of ice in 2019 according to satellite data—an average of one million tons every minute. The sea level would increase by six meters if the whole Greenland ice sheet melted.

In the meantime, the Antarctic continent accounts for one-third of the annual worldwide rise in sea level—roughly one mile meter every year. The continent has lost over 7.5 trillion tons of ice. Furthermore, the last completely unbroken ice shelf in the Arctic melted lately, losing roughly 80 square kilometers, or 40%, of its area in two days in late July.

Since 1997, Antarctica has lost almost 7.5 trillion tons of ice.

The research and advocacy group Climate Central predicts that sea level rise this century could flood coastal areas that are currently home to 340 million to 480 million people, forcing them to migrate to safer areas and adding to the overpopulation and resource strain in the areas they migrate to. These predictions have dire consequences for those who live in coastal regions. Among the cities most vulnerable to flooding and sea level rise are Bangkok, Thailand; Ho Chi Minh City, Vietnam; Manila, Philippines; and Dubai, United Arab Emirates.

9) Ocean Acidification



In addition to having an impact on the surface, rising global temperatures are the primary driver of ocean acidification. About 30% of the carbon dioxide produced in the earth's atmosphere is absorbed by our oceans. The amount of carbon dioxide absorbed back into the water rises in tandem with the concentrations of carbon emissions emitted by human activities like burning fossil fuels and the effects of global climate change like an increase in the frequency of wildfires.

Even a small change in the pH scale can have a significant impact on the acidity of the ocean.

Ocean acidification causes irreversible changes in habitat quality and has catastrophic effects on marine animals, ecosystems, and food webs. The bones and shells of marine creatures like oysters may even begin to crumble if pH levels drop too far.

Coral bleaching and the ensuing loss of coral reefs are, nevertheless, two of the most significant environmental issues brought on by ocean acidification. This phenomenon happens when the symbiotic link between the algae and reefs is disrupted by rising water temperatures. As a result, the algae are driven away and the coral reefs lose their naturally vivid colors. There could be no coral reefs left by 2050. The capacity of coral reef systems to regenerate their exoskeletons and recover from these coral bleaching events would be hampered by increased ocean acidity.

one of the consequences of plastic waste in the ocean is ocean acidification. The microbes and bacteria that grow from plastic waste that is discarded in the ocean harm marine ecosystems and cause coral bleaching.

10) Agriculture

Up to one-third of greenhouse gas emissions caused by humans come from the global food chain, with 30% coming from fisheries and livestock. With the use of fertilizers, crop production generates greenhouse gas emissions, including nitrous oxide.

Cattle ranching take up 60% of the world's agricultural land, yet only accounts for 24% of the world's meat consumption.

In addition to taking up a large amount of land, agriculture is one of the main causes of environmental concerns on this list since it uses a large amount of freshwater. Even while grazing pastures and arable areas make up one-third of the planet's land area, they use up three-quarters of its finite freshwater supplies.

Rethinking our current food system is necessary, as scientists and environmentalists have repeatedly warned. A shift to a more plant-based diet would significantly lower the carbon footprint of the traditional agriculture sector.

11) Food and Water Insecurity

Water and food insecurity are on the rise as a result of unsustainable farming techniques and rising temperatures.

Over 68 billion tonnes of topsoil are lost every year worldwide, with the rate of erosion being 100 times greater than the rate of natural replenishment. Rich in fertilizer and biocides, the soil winds up in streams where it contaminates downstream protected areas and drinking water sources.

Furthermore, because exposed and dead soil lacks the root and mycelium systems that keep it together, it is more susceptible to erosion by wind and water. Over-tilling is one of the main causes of soil erosion. While it can boost productivity temporarily by incorporating surface nutrients (fertilizer, for example), tilling physically damages the soil's structure and eventually causes soil compaction, fertility loss, and the formation of surface crusts, which exacerbates topsoil erosion.

there will be 9 billion people on Earth and that by 2050, there might be a 70% rise in world food demand. Over 820 million people do not get enough food in the world.

Just 3% of the water on Earth is fresh water and two thirds of it is either inaccessible to humans or hidden beneath glaciers. Water security is a worry raised by this. As a result, 2.7 billion people worldwide experience water scarcity for at least one month of the year, and 1.1 billion people worldwide lack access to clean water.Two-thirds of the world's population might experience a water deficit by 2025.

12) Fast Fashion and Textile Waste

One of the largest environmental issues of our day is the fashion industry, which today contributes 10% of global carbon emissions due to the unprecedently high demand for apparel and

fashion worldwide. According to the UN Environment Programme, the fashion industry alone generates more greenhouse gas emissions than the aviation and shipping industries put together. Textile dyeing accounts for almost 20% of worldwide wastewater, or 93 billion cubic meters.

Furthermore, the amount of textile waste produced worldwide is predicted to increase to 134 million tonnes annually by 2030 from the current estimate of 92 million tonnes. The majority of non-biodegradable discarded textile and apparel waste ends up in landfills, and microplastics from synthetic materials like polyester, nylon, polyamide, acrylic, and other materials used in clothing are leaching into the ground and adjacent water sources. Significant volumes of apparel textile waste are also disposed of in less developed nations, as demonstrated by the driest desert in the world, Chile's Atacama, where at least 39,000 tonnes of foreign textile waste are left to decay.

The ever-expanding fast fashion business model, which relies on the quick and inexpensive production of low-quality apparel to keep up with the newest trends, only serves to worsen this quickly rising problem. The majority of corporations worldwide have not yet addressed their involvement in climate change, despite the United Nations Fashion Industry Charter for Climate Action requiring signatory fashion and textile companies to commit to attaining net zero emission by 2050.

Even though these are some of the most serious environmental issues facing the world today, there are a ton more that have gone unmentioned, such as changes in land use, overfishing, urban sprawl, and hazardous superfund sites. While there are numerous factors to take into account while developing a crisis response, it must be well-coordinated, realistic, and comprehensive enough to have a significant impact.

13) Overfishing

Fish is the main source of protein for more than three billion people worldwide. Approximately 12% of the world's population is dependent on fishing in one way or another, with 90% of these fishermen being small-scale operators; picture a small crew operating a boat rather than a ship, using modest nets or even rods, reels, and lures that aren't all that different from what we most likely use. Ninety percent of the 18.9 million fishermen worldwide are classified as such.

There are four times as many people on Earth as there were at the end of the 1960s, and most people consume roughly twice as much food as they did fifty years ago. This is one of the factors contributing to the 30% of seas used for commercial fishing being categorized as "overfished." This indicates that the amount of fishable waterways is being drained more quickly than it is being replenished.

The ecology suffers greatly from overfishing, as seen by rising levels of algae in the water, the devastation of fishing villages, ocean littering, and a sharp decline in biodiversity.

Maintaining the proportion of fish stocks within biologically sustainable levels is a target that the UN and FAO are pursuing as part of the 17 Sustainable Development Goals (SDG 14). But to do this, the world's oceans must be subject to far harsher laws than they already are. In a landmark agreement, the WTO outlawed fishing subsidies in July 2022 to reduce global overfishing. Subsidies for fuel, fishing equipment, and the construction of new boats do encourage overfishing, which is a serious issue.

14) Cobalt mining

Cobalt is fast emerging as the quintessential illustration of the mineral problem at the center of the shift to renewable energy. As attempts to reduce carbon emissions move forward, cobalt—a vital component of battery materials that power electric vehicles (EVs)—is seeing a steady increase in demand. The Democratic Republic of the Congo (DRC) is the world's largest producer of cobalt, with artisanal miners responsible for up to a fifth of the country's production.

However, cobalt mining is linked to hazardous worker exploitation as well as other significant social and environmental problems. The costs associated with cobalt mining operations are extremely high. In addition to copper and cobalt, the southern parts of the DRC have significant deposits of uranium. Scientists have observed elevated amounts of radioactivity in mining regions. Furthermore, contamination from mineral mining, like other industrial mining operations, frequently seeps into nearby rivers and water supplies. Residents have also been reported to experience respiratory issues due to dust from ground-up rock.

15) Soil Degradation

Soil needs organic matter to be able to take in carbon from the atmosphere. Through photosynthesis, plants naturally and efficiently take carbon dioxide from the atmosphere. Soil organic carbon (SOC) is one way that plants store some of this carbon. A minimum of 3-6% organic matter is present in healthy soil. Nonetheless, the substance is substantially less than that practically everywhere in the world.

Soil degradation refers to the loss of organic matter, changes in its structural state, and/or reduction in soil fertility, and is often the result of human activities such as traditional agricultural practices, including the use of toxic chemicals and pollutants. If business as usual continues until 2050, experts predict that an area nearly the size of South America will deteriorate. But there is much more here. Unless we change our reckless practices and act to protect soil health, the food security of billions of people will be irreversibly compromised, with around 40% less food produced within 20 years, regardless of the world population, estimated to reach 9.3 billion people.

Breathing Life into Collective Responsibility

It is abundantly clear that safeguarding our environment is not just a duty but an urgent necessity that demands the concerted efforts of all segments of society. From adults to students, citizens to organizations, each one of us holds a crucial role in preserving the fragile ecosystems upon which our planet thrives.

As demonstrated throughout this report, the challenges facing our environment are multifaceted and require a multifaceted response. Whether it's reducing carbon emissions, preserving biodiversity, or curbing pollution, the solutions lie not in the actions of a select few, but in the collective endeavours of a global community committed to sustainability.

Every individual, regardless of age or occupation, has the power to make a meaningful difference. Whether it's by adopting environmentally friendly practices in our daily lives, advocating for policy changes, or supporting organizations dedicated to conservation, each action, no matter how small, contributes to the greater cause of environmental protection.

Furthermore, it is imperative that we instill in future generations a profound sense of stewardship for the planet. By educating students about the importance of environmental conservation and empowering them to take action, we sow the seeds for a more sustainable future.

However, responsibility does not rest solely on the shoulders of individuals. Governments, businesses, and organizations also have a vital role to play. By implementing environmentally conscious policies, investing in renewable energy, and prioritizing sustainability in their operations, these entities can lead by example and catalyse widespread change.

In essence, environmental protection is not a burden to be shouldered by a select few, but a collective responsibility that we all share. By uniting our efforts and embracing this responsibility wholeheartedly, we can create a world where the beauty and diversity of nature are preserved for generations to come. Let us heed the call to action and work tirelessly to ensure a sustainable future for our planet and all its inhabitants.