



# ***ENVIROAMICA***

A Newsletter from  
Department of Environmental Science  
Netaji Nagar College for Women

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## ***From The Desk of the Principal***

*It is indeed a great pleasure for me to publish the first issue of the Newsletter of the Department of Environmental Science of the college "Enviroamica", reflecting world environment and related issues focusing on sustainable living. I express my thanks to Dr. Moumit Roy Goswami, Head of the Department. I also like I also thank all the staff and students of the college along with other contributors from different esteemed institutions who have come forward to illuminate the Newsletter.*

**Dr. Tapan Kumar Ghosh**  
*Principal*

## **In this Issue**

- ❖ **Groundwater Pollution- Evaluation and Management**
- ❖ **Assessment of Soil Health for Sustainable Soil Resource Management**
- ❖ **The Art of Living in a Waste-free World**
- ❖ **The Role of People's Biodiversity Register as a Biodiversity Conservation Strategy**
- ❖ **Sustainable tourism in the hilly areas**
- ❖ **'Environment' from a researcher's perspective**
- ❖ **'Microplastics': A Silent Killer**
- ❖ **Invest in Nature**
- ❖ **Invest in Nature...Everyone will be Profitable**
- ❖ **Is Earth Day just a Celebration?**

# Groundwater Pollution- Evaluation and Management

Dr. Tapan Kumar Ghosh

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**Introduction:** The importance of water for the sustenance of life cannot be overemphasized and groundwater being a part of the hydrologic cycle needs attention for proper evaluation and management. Groundwater makes up about 20% of the world's freshwater supply, which is about 0.61% of the entire world's water including oceans and permanent ice. This makes it an important resource which can act as a natural storage that can buffer against a shortage of surface water.

**Discussion:** Groundwater is used for agricultural, municipal, industrial, and domestic purposes throughout the world. The over-exploitation of groundwater in many areas due to the increasing demand for water with the rising population has lowered the water table beyond the range of existing wells and has created various problems related to groundwater subsidence. Yet groundwater is considered as one of the sources of uncontaminated water from earlier times. However, this water is presently polluted by sewerage, agricultural runoff, chlorinated solvents, bio-pollutants, and also by other anthropogenic activities like mining, burning of fossil fuels, disposal of various solids, liquid wastes of industrial and municipal origin, excessive use of chemical pesticides and fertilizers in agricultural fields, etc. All these contaminants (geo generic/ anthropogenic) ultimately contaminate groundwater due to its hydraulic connectivity in the hydrological cycle. Lakes and rivers, which are prominent sources of groundwater recharging, may also affect the groundwater adversely if they are being enriched by industrial effluents as is a common practice nowadays. The over-exploitation of groundwater without adequate recharging has pushed groundwater deeper

Besides seepage from agriculture, industrial waste and municipal solid waste dumped in low-lying areas have also polluted the groundwater.

Arsenic, fluoride, lead, and some heavy metals also enhance the level of toxicity of groundwater naturally. Arsenic (As) has now been identified as the most widespread natural contaminant that has become a threat to the health of millions of people worldwide. Contamination of groundwater with arsenic and fluoride is a very striking geo-environmental problem in West Bengal. The Bengal basin is recognized to be the most acutely arsenic-affected geological province in the world. More than 100 million people are living in the arsenic-affected districts of India and Bangladesh. The available technical literature on the issue indicates the occurrence of arsenic in groundwater within 83 blocks and around 3417 villages of 9 districts of the state mostly in the eastern part, whereas 46 blocks of 7 districts are in the western part of the state of West Bengal are affected by fluoride contamination.

The use of arsenic-contaminated groundwater for irrigation purpose in crop fields elevate arsenic contamination in surface soil and in plants grown in these areas. The accumulation of arsenic in plants occurs primarily through the root system and the highest arsenic concentration has been reported in plant roots and tubers. Thus, not only the consumption of arsenic-contaminated groundwater but also the bio-accumulation of arsenic and other edible plants must be assessed properly to understand the importance of arsenic exposure from these food sources. The magnitude of arsenic prevalence in West Bengal is so acute that it demands immediate intervention. Chronic exposure to Arsenic can cause cancerous and non-cancerous drew like skin cancers,

hyperpigmentation, hyperkeratosis, ‘corns’ on the soles and palms, etc. Therefore, the consumption of polluted drinking water has deleterious effects on the health, of communities and has an impact on morbidity and mortality. The synergistic antagonistic effect of arsenic/ fluoride and other trace elements in groundwater with respect to biological toxicity needs to be well documented. Remedial measures for groundwater contamination need to be undertaken to combat the menace.

**Conclusion:** Thus groundwater pollution can be evaluated and solved by proper management of groundwater resources and its pollutants which is a highly dynamic process, embracing a very wide spectrum of activities. These activities are essentially multi-disciplinary involving Engineers, Scientists in the discipline of hydrology, geohydrology, water supply irrigation, and a host of other experts such as Zoologists, Environmentalists, Ecologists,

Agriculturalists, and Physicists. Groundwater being a part of the hydrological cycle needs attention for evaluation and management not only to meet our needs for the present but also for the future generation. The present situation demands an authentic and genuine database for water quality managers and decision-makers at the district/ Block/ Panchayat level for identification, definition, and prioritization of zones towards taking proper mitigation measures against ill effects of arsenic, fluoride, and iron contamination and to reach the goal of sustainable development of groundwater. For holistic management of groundwater, the groundwater managers have to consider the whole spectrum of district users/ stakeholders as well as the silent users- namely the environment keeping a keen focus on the assured and equitable supply of fresh water, basic water demand for sanitation and replacement of the natural resources.

## **Assessment of Soil Health for Sustainable Soil Resource Management**

**Dr. Moumit Roy Goswami**

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Soil provides an array of ecosystem services and functions worldwide. Soil health refers to the capacity of soil to function as a vital living system within ecosystem and land use boundaries to sustain plant and animal productivity and health and maintain or enhance water and air quality. A healthy living soil provides the basis for plant establishment and growth and for crop, forest, and livestock production. It provides support, nutrients, and

water for plant root uptake. Soil health indicators describe specific soil properties.

These soil properties are categorized as stable or dynamic properties. Stable soil properties are influenced by soil-forming factors such as climate, organisms, parent material, and topography, which change little with management practices while dynamic properties can change with land use and management practices over the course of a short time, generally within a human lifespan.



Accordingly, soil health assessment programs include measuring various physical, chemical, and biological properties of soil that respond to management changes, thereby providing clues on soil processes. Soil health indicators are therefore site-specific and sometimes temporal in nature. Assessment of soil health and quality includes quantifying various soil physicochemical parameters such as soil pH, conductivity, organic carbon, Soil NPK, etc., and biological parameters including soil microbial biomass, soil respiration, and activity of soil microorganisms. Soil microbial biomass measurements have been reported to give an early indication of long-term changes in soil organic matter content, long before such changes could be measured by conventional techniques. Apart from that, the estimation of the microbial metabolic quotient ( $qCO_2$ ) is considered to be a sensitive bio-indicator to assess the effects of various disturbances on soil quality. The microbial respiration quotient is considered another index to assess the effects of various perturbations in soil ecosystems. Soil health assessment methods include soil health cards, Solvita soil health tests, Haney soil health tests, etc. These methods provide a soil health score which indicates overall soil health conditions. Above all these assessments acts as a tool and help in guiding and framing proper management strategies for soil. Soil health is connected to sustainable soil productivity through balanced physical, chemical, and biological soil attributes. Land use and management practices directly affect soil health, productivity, and resilience. As per FAO “Soil management is sustainable if the supporting, provisioning, regulating, and cultural services provided by soil are maintained or enhanced without significantly impairing either the soil functions that enable those services or biodiversity.

The balance between the supporting and provisioning services for plant production and the regulating services the soil provides for water quality and availability and atmospheric greenhouse gas composition is a particular concern”. Management practices that threaten the soil biological community may also threaten soil sustainability by reducing the capacity of the soil to adapt in the future. Soil sustainability can be threatened by numerous practices including over-cultivation, increased water abstraction, over-fertilization, excessive use of pesticides, etc. These may threaten sustainability in several ways through various soil degradation processes including soil erosion, salinization, tillage, compaction, pollution, desertification, or biological processes including decreased soil fertility. The impacts of poor soil management have become severe in many areas of the world particularly in the tropics and the adoption of sustainable soil management is the need of the hour for the sustenance of future human needs and natural systems. Therefore, to overcome these threats assessment of soil health and subsequently, suitable soil management practices is essential, which include soil structure enhancement, soil organic matter enhancement, the addition of organic nutrients to the soil, introduction of the reduced or no-tillage system, following integrated nutrient management system, adoption of bio-control technique, following the principle of crop rotation, the practice of rainwater harvesting and watershed management, etc. These will help in the effective maintenance of soil health and its quality and above all in achieving sustainability.

# The Art of Living in a Waste-free World

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“Zero-waste”, once a concept, is now a reality. As the name suggests, a zero-waste lifestyle is about generating no waste from the utilization of resources in the process of meeting personal needs through supporting initiatives to eliminate waste by individuals, cohesive family units, or coordinated communities. This sustainable, systematic technique can reduce the amount of waste created, eliminate toxicity in the resulting waste, and conserve and recover resources. We all are accustomed to the “3-Rs” of waste management, reduce...reuse...recycle’. Yet hardly have we tried to maintain it in our daily life. The uptake of zero-waste lifestyles is somewhat slow because of the weak legislative and social environment that surrounds the management of waste. The zero-waste lifestyle is unconventional. This means that the people likely to take it up are those who can appreciate its benefits based on some higher ideal.

The world count mentions that “we throw out over 50 tons of household waste every second. A number that will double by 2030” (The World Counts, 2018). Thus keeping in mind the current scenario of exponential increase in population with the subsequent blooming of industries, waste management is a critical issue to inhibit pollution and over-exploitation of resources. Hence, a “zero waste” lifestyle can be a major solution to such issues. The “3-Rs” concept has thus become a key to sustainable development. After all, “when you refuse to reuse, it’s the earth you abuse”. God gave nature to His children to utilize and take care of it, not abuse it. Moreover, when it comes to nature, there is no such thing as “waste” since one system produces a by-product, it becomes feedstock for another.

The “waste-to-wealth” concept in the circular economy has now gained limelight globally as it not only boosts the global economy, enhancing career scope and extra income for the industries and the government but also greatly reduces the hassles associated with the

handling and treatment of such huge volume of wastes generated in daily basis. For instance, earlier the sky around the factories and power plants was painted grey due to the huge quantity of fly ash liberated from the stacks and chimneys. It was earlier a challenge for the nearby residential to dwell in such a polluted environment. But now, this fly ash is going into bags instead of air since they are now treated as raw materials in the fly-ash brick factories and fertilizer industries. Even to reduce carcinogenic hazards from the increasing electronic waste, most companies are popularising the concept of product-concession on recycling discarded gadgets. The small-scale factories and business units are collecting various non-biodegradable wastes like plastics, metals, clothes, etc. to recycle them into new consumer products.

Large-scale industries are also currently adapting to the zero-waste concept. For example, even in the last decade, gallons of fresh water were consumed daily in the coolants of thermal power plants. Moreover, such heated-up water was discarded to the nearby streams or canals, adding to the ordeal by causing thermal pollution and eutrophication. With the advancement of wastewater treatment techniques, the wastewater is now recycled through reverse osmosis or demineralization techniques, thus cutting down the wastage of precious freshwater along with the reduction in pollution issues. Another major “waste-to-wealth” technology adopted by industries and factories is the conversion of biodegradable waste materials into energy via anaerobic digestion. This not only reduces the immense pressure on non-renewable energy sources but also provides economic benefits to industries. Hence, it is expected that most of the waste generated will be sustainably converted into various products and by-products instead of landing up in the landfills.

# The Role of People's Biodiversity Register as a Biodiversity Conservation Strategy

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Biodiversity conservation is crucial for the sustainable development of any country and vital for maintaining ecological balance. India, being a biodiversity-rich country, has been taking steps towards conserving its flora and fauna for decades. One such step is the creation of the People's Biodiversity Register (PBR), a document that catalogues the biodiversity of a particular region. In this article, we shall explore the People's Biodiversity Register's role in biodiversity conservation in India.

Biodiversity is the variety of life forms including different species of plants, animals, and microorganisms that live in various ecosystems that exist on Earth. Biodiversity conservation is preserving and protecting these life forms and their habitats.

India is a mega diversity nation with a variety of ecosystems ranging from deserts to tropical rainforests. However, human activities like deforestation, pollution, and climate change are threatening its biological diversity. India has recognized the importance of biodiversity conservation and has implemented various initiatives to conserve its flora and fauna, including the creation of PBRs. The People's Biodiversity Register is instrumental in developing conservation strategies and is an essential tool for biodiversity conservation in India. A PBR is a document that lists the biodiversity of a particular region, including details of the species, their habitats, and traditional knowledge associated with them. It is part of the National Biodiversity Act, 2002, which provides legal and institutional frameworks for the conservation and sustainable use of biodiversity. The PBR is prepared by local communities and stakeholders, with the support of the government, to document the

biodiversity in their area and develop strategies for its conservation. The local communities who have traditional knowledge of the local biodiversity are involved in the preparation of PBR. Thus, it is a comprehensive record of the biodiversity of a particular region and serves as a valuable resource for researchers, policymakers, and conservationists. For example, the PBR for the Himalayan foothills listed the Himalayan Yew tree as a threatened species in the Himalayas, leading to the implementation of measures to protect them. The PBR has often helped identify the key threats to an ecosystem and develop strategies to mitigate them. It has also been used to develop ecotourism activities that promote the sustainable use of natural resources and generate income for local communities. In India, PBR is used to encourage sustainable harvesting of medicinal plants, which has helped in generating income for local communities while promoting biodiversity conservation.

The PBR has been instrumental in promoting biodiversity conservation at the grassroots level. It has helped in documenting traditional knowledge related to biodiversity management, which remained undocumented previously. It helps in identifying and documenting rare and endangered species and developing conservation strategies. The PBR has emerged as a significant tool for creating awareness among local communities about the importance of biodiversity and its conservation and is used to promote the sustainable use of natural resources and to generate income for local communities. In conclusion, PBR is a vital tool in biodiversity conservation and its implementation should be encouraged athwart with other conservation strategies across the country.



## Sustainable tourism in the hilly areas

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Hills cover 24% of the Earth's land surface. They are home to 12% of the world's population. Another 14% of the population resides in their immediate proximity. They provide vital goods and services - particularly freshwater - to a significant proportion of humanity. Hills are key centers of biological and cultural diversity as well as important sites of traditional ecological knowledge. They also influence the climate on many scales. In other words, they provide multiple ecosystem services across our planet. Therefore, their effective management is not only important for hill communities but also for a sizeable proportion of the global population. However, hill ecosystems are particularly fragile and subject to natural and anthropogenic drivers of change. These range from volcanic and seismic events and flooding to global climate change. They also cause the loss of vegetation and soils because of inappropriate agricultural and forestry practices, and extractive industries. Darjeeling has always been famous for timber, tourism, and tea. However, the ecosystem of this region has been experiencing several distressing issues from increased pressure of tourism activities, expansion of agriculture, changing demography, political instability and over-exploitation of natural resources. According to the National Forest Policy of India (1988), an estimated 20% of dense forest destruction has occurred in the hills in the name of development and the needs of local livelihoods. The major ongoing threat to the sustenance of this region is the unsustainable tourism practices that have caused uncontrolled degradation of this fragile environment. For the purpose of expansion of tourism and accommodation of tourists in the hills, a large number of medium and low-grade hotels are

growing day by day. The mushroomed hotels occupying residential area not only pressurizes the basic necessities for local inhabitants but also causes degradation of natural resources and land features while exerting additional burden on the drainage/waste management capacities maintained by local governing bodies.

Moreover, due to a lack of awareness and guidelines, tourists often pollute the local environment by:

- Unnecessary noise and gathering;
- Damaging properties;
- Polluting water bodies of the hills (drinking water);
- Violating rules and regulations;
- Open defecation (urination) within or nearby famous tourist spots;
- Vehicular pollution; and
- Unmanaged waste (especially plastic) generation.

Above all, Darjeeling receives a high amount of rain during every monsoon, making it highly vulnerable to natural calamities.

Short-term profit-making ideas and planning might be beneficial for a year or a decade, but they will create huge destruction in the near future and hamper this ecosystem's existence as a whole. The following strategies may be considered for preventing the rapid destruction of this hill ecosystem:

- Spreading awareness and education on sustainable tourism (ecotourism) practices among the local people, students, and tourists alike;
- Checking the growth of illegal mushrooming hotels that are not following basic guidelines or responsibilities towards the environment, or making them adhere to the laws;

- Maintaining basic environmental standards towards sustainable or long-lasting tourism – cleanliness, eco-friendly steps, proper maintenance of sanitation and solid waste management, etc.
- Emphasizing smooth traffic management (by calculating carrying capacity) to attract not only

a greater number of visitors but, to maintain environmental standards of the ecosystem as well.

Through these initiatives, let us all strive to preserve the beauty and nature of the “Queen of Hills” for generations to come.

## **‘Environment’ from a researcher’s perspective**

**Dr. Shubham Roy**

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During our school/college days, we were reluctant to the environmental science (ENVS) subject. Some of us thought that they need not study ENVS as they know everything about the environment! This attitude perhaps comes with our DNA from our ancestors as they were also very unwilling of our environment.

When I joined my doctoral laboratory, I was somewhat involuntary to take up research problems related to wastewater treatment. Our group members (including me) usually sit for long meetings in air-conditioned rooms having two or three AC machines and discussed numerous environmental issues! However, the field visits and distressing statistics made us believe that we should take these issues more seriously. We applied for several projects for funding, but the funding agencies have other things to do, and thus we did not manage to get any funding.

Today, when our city, Kolkata is facing a tremendous heat wave with 42-43 °C temperatures continuously for days (even for weeks) and people are losing their lives, I feel we are still neglecting the alarm of our mother nature. It feels ridiculous when I see cities in Dubai, Qatar has temperatures less than that of our very own desert city (Kolkata).

Due to unplanned urbanization, our city has now become a graveyard. This is not due to politics or any other reasons, this is due to the negligence that we showed in our school/college days. It is very unfortunate that environmental science (or studies) in any capacity is one of the most neglected subjects in schools and colleges (for those who are having it as a compulsory/optional paper). In order to protect our environment, it should be our primary duty to educate people around us to take up environmental studies very seriously by knowing the science behind them. As parents, we need to prepare our future generation cautiously by engaging them in certain activities. As teachers, we need to take care of the teaching methods and organize seminars and debates to engage more students. If we do our duties collectively, then these small pieces of work can create a cleaner and healthier world in near future.



# Microplastics: A Silent Killer

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Plastic pollution has been studied since the 1970s, even though they were first significantly mentioned by Thompson et al. in 2004. Since then it has been a subject of various studies including their presence and distribution in environmental media such as soil, seawater, drinking water, waste water and air. As the global plastic production had reached 359 million tonnes annually, in 2018, following the current trends, it is expected to reach up to 25 billion metric tonnes annually by 2050. The excessive dependency on plastic products along with the lack of proper waste management network system has been leading to the deposition and accumulation of plastic waste in the environment.

Owing to their slow degradation rate and depending on the environmental conditions, plastic can remain for decades to millennia. However, in the course of time, plastic that are released into the environment as macroplastics (greater than 25mm), does lose its mechanical integrity by means of biotic and abiotic degradation pathways such as photo oxidation, abrasion and weathering, giving rise to microplastics (MPs). They have been found abundantly in air, in urban areas and megacities like France, United Kingdom, China.

The main source of microplastics in air, to which one and all is exposed regularly, is synthetic textiles. Small fibers easily tear from clothes and other fiber products during wearing, cleaning and drying. Other significant sources of microplastics originate from landfills and road dust. In recent times, rapid increase in MPs abundance has been found in marine ecosystems, farmlands, riverbeds, even in remote areas with scarce human interactions.

Airborne microplastics having greater mobility than the ones in sediment or water, has been found abundantly in the atmosphere.

Significant levels of airborne MPs has been found in indoor spaces like offices, classrooms, apartments and dormitories indicating a potential human exposure risk from chronic exposure. Due to their small size, microplastics influence a wide range of organisms causing obstructions, inflammation and accumulation in organs, once they are inhaled or ingested.

Scientists found that the smallest microplastics can pass the gut barrier and reach the bloodstream. MPs can also affect predatory behaviour in fish and cause misunderstanding between MPs and genuine prey, leading to malnutrition and MP storage in key organs such the gills, gut, and stomach. In rats, plastics were detected in the stomach, intestines, kidney and heart. Very small plastic particles have even been detected in the foetuses of mice and in the brain of fish.

Based on bio magnification studies conducted on fishes and mice, researchers have hypothesized that human exposure to MPs could lead to oxidative stress, growth retardation, hormone disruption, metabolic perturbation, immunological and neurotoxicity malfunction,

DNA damage and inflammation, among other health problems. Particularly, when inflammation becomes chronic, this can pave the way to very serious health problems. Hence, it is necessary to study and minimise the sources of microplastics in the atmosphere and identify the pathways through which they enter into the human system.

## Invest in Nature

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“The secret of change is to focus all of your energy not on fighting the old, but on building the new.” – Socrates

There are many environmental issues that the world is facing right now, and there's a big push for humans to change our lifestyles for the benefit of the planet — and each other. Earth has long challenged human minds to observe and reflect. Just by merely examining our planet, we gain important knowledge of science and ourselves. And it's safe to say that nature has a powerful way of teaching us wisdom and healing us. But the planet is also truthful about consequences. Accountability is a part of humanity, and our actions have an impact on living things. The more knowledge we have, the better choices we make in our actions. A healthy environment is nowadays more infrequent than a healthy lifestyle. Natural equilibrium provides a healthy ecosystem

service that exclusively enables the human race to cope with crises, including climate change-related ones. In addition to flood management, drought control, and related courses of action, communities have crafted subsistence and crisis survival strategies that are triggered by deforestation and the rapid increase of urbanization. Environmental sustainability is a part of the region's “ecological infrastructure,” which can complement, and in some cases replace, physical infrastructure in helping cope with climate-related disasters. For instance, investing in green such as mangroves, wetlands, and watersheds or focusing on engineered ecosystems can enhance the performance of traditional ways of healthy breathing. We have to remember we have only one earth to live on. There is no planet B still.

“Every day is Earth Day, and I vote we start investing in a secure climate future right now.”

—Jackie Speier

## Invest in Nature...Everyone will be Profitable

Tanusri Middya

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Before modernity, the Earth was the investor of all living things. She assured an environment suitable for the creation of life with the help of every component she had...just like a mother does to show her child the light of the world. There was a time in our human civilization when people didn't worry about the air, water, soil, land, and animals on this planet. People assumed that these resources would always be there. Several things happened to change that type of thinking. First, a few people took notice of some problems and let others know about

them. Then some disaster occurred and once people learn about the problems, that's why they decided something needed to be done. In 2023 we will celebrate our 53th Earth Day.

Investing in our planet is one of the most critical steps we can take to ensure a sustainable future for all. Not only is it essential for preserving our natural resources and protecting the environment, but it is also profitable for individuals and businesses. By investing in sustainable practices, we can create a more resilient economy that benefits everyone.

The first step in investing in our planet is to shift towards renewable energy. Fossil fuels are a finite resource, and their extraction and use have a significant impact on the environment. Renewable energy sources, such as solar and wind power, offer a cleaner and more sustainable alternative. Investing in renewable energy not only reduces our carbon footprint but also creates jobs and stimulates economic growth. In fact, according to the International Renewable Energy Agency, the renewable energy sector employed more than 11 million people worldwide in 2018, and this number is expected to continue to grow.

Another way to invest in our planet is to support sustainable agriculture practices. Sustainable agriculture involves using methods that minimize environmental impact while also promoting healthy and diverse ecosystems. This can include practices such as crop rotation, integrated pest management, and the use of organic fertilizers. Investing in sustainable agriculture not only helps to preserve our soil and water resources but also produces healthier and more nutritious food. Investing in our planet also means protecting our natural resources. This can involve supporting conservation efforts, such as preserving forests and protecting endangered species. It can also mean investing in water conservation and protecting our oceans and waterways. These efforts not only benefit the environment but also support economic growth by ensuring the continued availability of essential resources. Investing in our planet is not only beneficial for the environment and the economy, but it is also essential for addressing social issues such as poverty and inequality.

Sustainable development offers a path towards a more equitable and just society by promoting economic growth that benefits everyone, not just the wealthy. It also helps to ensure access to essential resources such as clean water and healthy food, which are critical for human well-being.

There are many ways that individuals and businesses can invest in our planet. For individuals, this can involve making changes in our daily lives, such as reducing energy consumption, using public transportation or electric vehicles, and supporting sustainable agriculture and conservation efforts. For businesses, this can involve adopting sustainable practices, investing in renewable energy, and reducing waste and pollution.

Governments also have a critical role to play in investing in our planet. Policies and regulations can encourage sustainable practices and incentivize investments in renewable energy and conservation efforts. Governments can also invest in infrastructure, such as public transportation, that supports sustainable development.

In conclusion, investing in our planet is essential for a sustainable future for all. By shifting towards renewable energy, supporting sustainable agriculture, protecting natural resources, and promoting economic growth that benefits everyone, we can create a more resilient and equitable society. While the benefits of investing in our planet may not always be immediately apparent, they are crucial for creating a more prosperous and sustainable world for ourselves and future generations.



# Is Earth Day just a Celebration?

Anwasha Ray

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World Earth Day 2023 brings the theme of "Invest In Our Planet " to the forefront. This theme emphasizes the need to prioritize investing in the planet for a sustainable future.

## Why Invest In Our Planet ?

The planet is facing numerous challenges such as climate change, loss of biodiversity ,deforestation and pollution .Investing in the planet has several benefits, including economical ,social and environmental benefits. Investing in sustainable initiatives will lead to economic growth ,create jobs ,and promote social equality.

It will also help in conserving natural resources and protecting the environment.

## ***Economic Benefits***

Investing in sustainable initiative such as - renewable energy, sustainable agriculture ,and conservation will lead to economic growth. It will create job opportunities in different sectors such as - clean energy ,green transportation and sustainable tourism.

## ***Social Benefits***

Investing in the planet will promote social equality by creating job opportunities in different sectors, including low -income communities. Sustainable initiatives will also promote healthy living and improve public health.

## ***Environmental Benefits***

Investing in the planet will help conserve natural resources and protect the environment. Renewable energy will reduce greenhouse gas emissions, improve air quality and reduce the use of fossil fuels .Sustainable agriculture will promote soil conservation ,reduce land degradation and promote biodiversity.

## Ways to Invest in Our Planet

Investing in our planet requires a collective effort from individuals, businesses and governments.

### ***Support Clean Energy Initiatives***

Renewable energy such as wind, solar, and hydropower are clean sources of energy that do not emit greenhouse gases.

### ***Promote Sustainable Transportation***

The transportation sector is a major contributor to greenhouse gas emissions.

### ***Invest in Sustainable Agriculture and Food Systems***

Sustainable Agriculture practices such as - organic farming, conservation tillage, and agroforestry promote soil conservation, reduce land degradation, and promote biodiversity.

### ***Support Conservation Efforts***

Protecting natural ecosystems and biodiversity is critical in ensuring a sustainable future.

### ***Invest In Research And Innovation***

Research and innovations are sustainable solutions to the challenges facing the planet. Investing in research and innovations will lead to developing new technologies and ideas that will help solve environmental challenges.