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About E-magazine

“Earth Root” is an open access e-magazine in the discipline of Environmental sciences published by Earth Root Foundation. The aim of the e-magazine is to provide information and upgradation of knowledge about environmental issues on wider scale and to share ideas and resources to the readers. Using essential knowledge people can lead a healthy life, which is more sustainable and can connect with ongoing efforts for stopping catastrophically the climate change. E-magazine caters to all related environmental aspects ranging from big issues like climate change, renewable energy and pollutants in the atmosphere to the health of human and living beings on Earth. We also take topics of water resources and efforts and measurement to provide optimum use of it; including large scale atmospheric circulation linked with oceans and ecology.

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INDIA'S ADVANCEMENT IN GREEN ENERGY AT THE AIRPORTS

-Akriti Singh,
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University School of Law and Legal Studies,
GGSIPU, New Delhi

With every new year, we welcome new green initiatives, and so will be the discussion of the Day. For quite some time now energy and climate change have occupied the central stage. Rising human populations and escalating consumption have driven up energy demands, placing mounting pressure on the environment. Around 176 nations collectively and individually are building strategies to arrest the threats to environment while achieving their economic goals by tapping on "green" energy sources[1].

India possesses a prodigious geographical stretch between the eastern and western hemisphere, a strong middle class of approximately 30 crore Indians, being one of the fastest growing economies across the globe, has witnessed latest major transformation in aviation sector with equitable policies like SUGAM (Sustainable Green Airports Mission) initiated by Airport Authority of India, it thrusts on promoting renewable energy, energy conservation, and curbing pollution.

During the recent presentation of the Union Budget 2025, the finance minister cited the initiative to now introduce greenfield airports in Bihar[2]. These types of airports are focused on solving the problems faced by Brownfield airports, namely, scarcity of land for expansion and opposition of residents near to the airport due to noise and pollution[3]. The 2016 policy mandates such airports to have a crystallized plan of energy efficiency and conservation including customized facilities of waste management for solid and liquid waste.

Being humbly transgressed by environmental concerns, the Ministry of Civil Aviation is actively pursuing collaboration with the Ministry of Environment, Forest and Climate change for sustainable Indian aviation industry with a strong aim to limit emission of Carbon gas in the aviation sector. This initiative coincides with the provisions and principles of United Nations Framework Convention on Climate Change (UNFCCC) and the Paris agreement.

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According to available data, eighty airports across India are now operating entirely on green energy[4].

What is Green Energy

It is the economy's energy sector that is quite significant for development goals. The sources of extracting energy determine the health of the environment. Energy can be derived from either fossil-based source- such as coal and petroleum, which are non-renewable-or non-fossil sources like water. Turkish and Canadian scholars, Adnan and Ibrahim, define green energy as[5]:

the source with zero or minimal environmental impact, as more environmentally benign and more substantiable and produced from solar, hydro, biomass, wind, geothermal, etc.

Green House gas emissions from airports can be classified into three categories: direct emission from airport-owned sources such as power plants and vehicles indirect emissions from purchased energy like electricity and heating; and other indirect emissions that airports influence but don't control, including those from tenants, aircraft after parking, passenger vehicles, and waste disposal. Data analysis reveals that direct emissions account for 5% while emissions from purchased energy make uo a staggering 95% of the total direct emissions from airports[6].

Unlike fossil fuels, these energy sources are not finite and help mitigate the adverse impacts of fossil fuel-based energy generation commonly found at airports. They decrease greenhouse has emissions, offer a proactive approach to environmental stewardship, and meet the demand for clean energy. This ensures a sustainable and environmentally friendly energy supply for long term.

Realizing Sustainability at Airports

The Airport Authority of India (AAI), as the sole Air Navigation Service provider and operator established under AAI Act 1994 has undertaken utilization of green energy under its CSR obligations. This policy is well crafted which aligns with the India's Nationally Determined Contributions (NDCs), AAI is committed to reducing the adverse effects on society, community, and the ecosystem.

Energy resources must be reasonably priced, sustainably available, and impact-free in order to support sustainable development. By integrating this initiative into the aviation sector, the significant amount of harmful waste generated by aircraft travel can be eliminated. Further, green energy sources, which have an advantage over fossil fuels, will persist over the long term at lower costs. According to a research, wind power is the most sustainable renewable energy source when considering variables like electricity costs, greenhouse gas emissions, energy conversion efficiency, land and water consumption, and social implications. Hydropower comes in second[7].

That is why it's crystal clear why the agreement signed Tata power and Noida International Airport has renewable source as its subject matter. They have entered into a 25-year purchase agreement to supply solar and wind power from onsite and offsite projects totally nearly 24 MW. It has committed to providing the airport with 10.8 MW of wind power. Additionally, in order to generate and use green energy for themselves, the Airport Authority of India, which is controlled by the AAI Act, 1994, has erected solar power plants at several places.

The initial success of this plan is evident with Delhi Airport becoming the first airport to operate entirely on Hydro and Solar power[1]. Building on this achievement, India has now surpassed the 50 percent mark in the application of green energy at operational airports. Whether Indian airports can achieve 100% green energy usage by 2030 remains to be seen, but it is certainly a milestone worth watching.

[1]REN21 (2017) Renewables 2017 Global Status Report, REN21 Secretariat

[2]https://news.abplive.com/business/budget/greenfield-airports-in-bihar-patna-airport-capacity-expansion-udaan-scheme-budget-2025-plans-1748317

[3]Alok Gupta, Smita Agrawal, Greenfield Airport Development in India: A Case Study of Bangalore International Airport.(2013)

[4]https://www.energetica-india.net/news/80-indian-airports-running-on-100-percent-green-energy-mos-civil-aviation-murlidhar-mohol

[5]Adnan Midilli et al., Green energy strategies for sustainable development, Energy Policy, Volume 34, Issues 18, 2006, pp. 3623-3633, https://doi.org/10.1016/j.enpol.2005.08.003.

[6]https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1909435

[7]Evans, A. et al. (2009) Assessment of Sustainability indicators for renewable energy technologies. Renew. Sustain. Energy Rev. 13, 1082-1088

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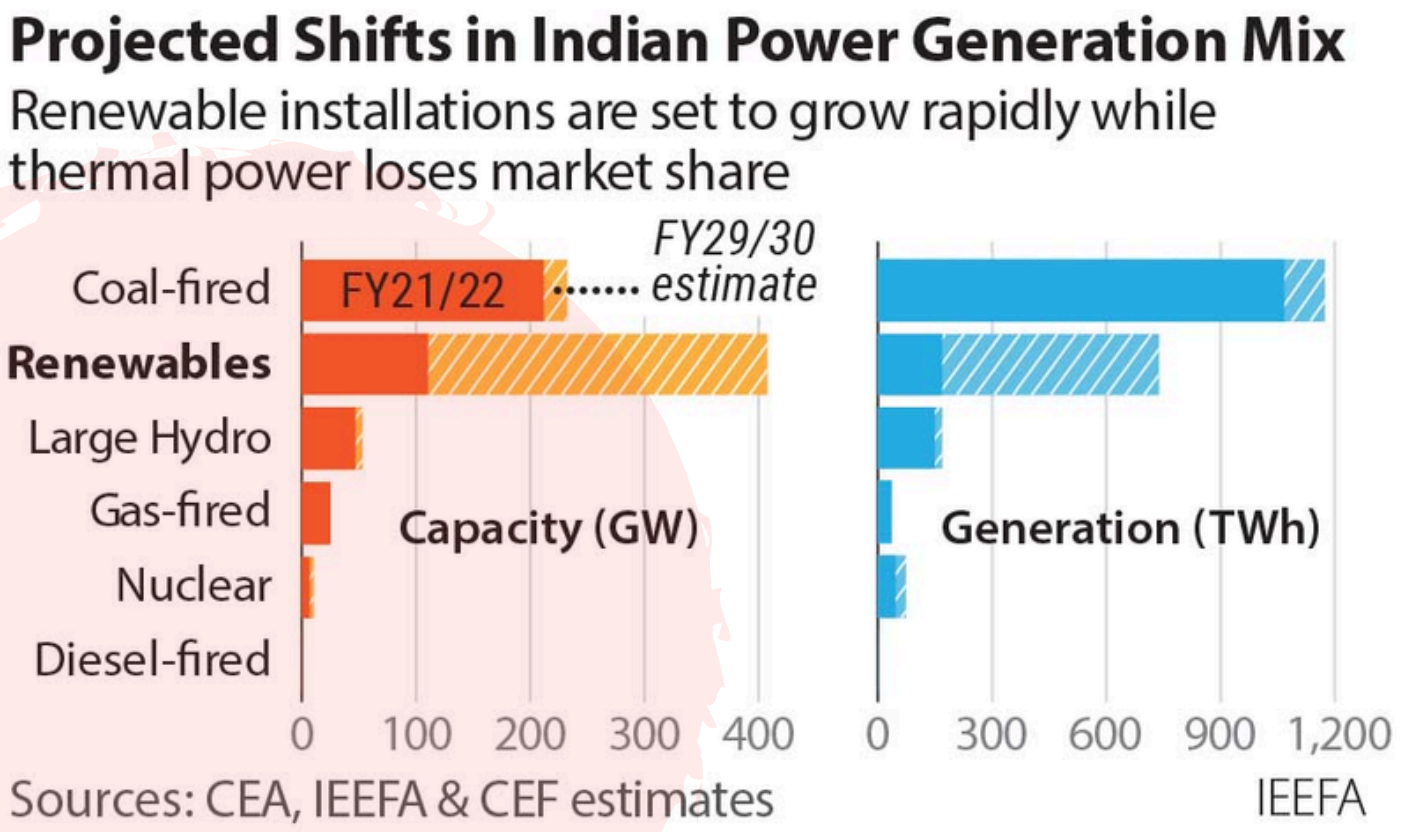

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SHINRIN YOKU: FOREST BATHING AMIDST DELHI'S RUSH

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Peace has become a rare commodity, much like clean air, due to Delhi's rapid development. Endless scrolling and constant pings on the phones pull the mind deeper into digital noise, leaving anxiety, stress, and a sense of lost peace. As John Muir once said, "In every walk with nature, one receives far more than he seeks." In such a world, Shinrin Yoku, the Japanese practice provides a peaceful break where people can relax and reconnect with nature, away from the pressures of daily. In the early 80s, recognizing the growing stresses of modern life, the Japanese government introduced Shinrin Yoku, a program encouraging people to connect with nature in the country's national parks for mental well-being. Shinrin means "forest" and Yoku means "bath." it's about immersing all the senses in the atmosphere of the forest. Shinrin Yoku encourages slow, mindful presence. Despite Delhi's rapid urbanization and bustling environment, the city is home to several green zones that offer much-needed escapes from the chaos. These parks, gardens, and forests provide peaceful sanctuaries ideal for Shinrin Yoku (forest bathing):

- Aravali Biodiversity Park, Vasant Vihar
- Asola Bhatti Wildlife Sanctuary
- Deer Park
- Hauz Khas Forest
- Hauzrani City Forest
- Jahanpanah City Forest
- Lodhi Garden
- Okhla Bird Sanctuary
- Rajokri Forest
- Sanjay Van
- Yamuna Biodiversity Park
- Tughlakabad Biodiversity Park

Healing Power of Nature

Japanese studies have found that walking in a forest can greatly reduce cortisol levels. Trees exude phytoncides, natural substances with germ-fighting properties, that may support the immune system.

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In 2009, a study in Japan by Dr. Qing Li and his team at Tokyo's Nippon Medical School investigated the effects of Shinrin Yoku (forest bathing) on immune function. Volunteers spent two days and one night in a forest, while another group stayed in an urban setting. The results showed that the forest group had a significant increase in natural killer (NK) cells—immune cells that fight infections and cancer. A study at Seoul National University in South Korea discovered that wandering through forests greatly enhanced mood and lowered stress. A study by the University of Essex in the UK showed that participants who walked in nature, especially forest environments, had improved memory, attention span, and mental clarity.A research conducted in the United States revealed that spending time in forested environments led to decreased blood pressure and reduced activity in the sympathetic nervous system. A 2017 study published in Nature found that being around trees can affect the amygdala — the part of the brain that handles emotions and stress—by supporting its structure and function

A guide to forest bathing in Sanjay Van, Delhi

Wear Comfortable clothes and shoes . Turn off all the electronic devices. Begin the walk gently without any rush. Observe the environment and use all the five senses - 1. Sight: Observe the colors of the leaves, the form and size of the trees, and the birds around you. 2. Sound : Sound: Pay attention to the melody of the birds, the gentle crunch of twigs beneath your feet, and the hum of insects around you. 3. Smell - Breathe in the natural aromas around you, including the earthy fragrance of damp soil after rainfall (if rain has occurred). 4. Touch - Feel the rough texture of tree bark , hug the trees around , touch the flowers and fallen leaves. 5. Taste - The coolness of breath and air around. Find a quiet bench or spot under a tree. Sit for 10–15 minutes. Take a moment to ponder about your walk. Walk slowly back, carrying the serenity and freshness of nature with you.

Delhi's Need for Shinrin Yoku

The fast-paced nature of daily life offers minimal opportunities for rest or mental calm, leading to increased stress, exhaustion, and emotional drain. The lack of natural spaces to retreat to further intensifies this pressure. In a world where the demands of daily life often overshadow personal health, Shinrin yoku provides an opportunity to re-engage with the natural world and escape the overwhelming urban chaos. By immersing in the calming presence of trees and greenery, residents can experience a break from the relentless demands of city life, helping to restore both mental and physical health. This routine fosters a stronger bond with nature, something especially valuable in a city with finite green areas. It's an opportunity to slow down, breathe deeply, and find balance amidst the chaos.

References

Li, Q. (2018). Forest bathing: How trees can help you find health and happiness. Viking.

National Institutes of Health - Effects of forest environment (Shinrin Yoku/Forest bathing) on health promotion and disease prevention.

Harvard Health- Can forest therapy enhance health and well being.

National Geographic- Forest Bathing: what it is and where to do it.

Medycyna Srodowiskowa - Effect of forest bathing on human health - a literature review.

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UNDERSTANDING HEAT STRESS AND ITS LONG-TERM EFFECTS

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Director, Copper Cross Solutions

In recent years, the issue of heat stress has emerged as a growing concern in the global fight against climate change. While most discussions tend to focus on immediate weather patterns like heatwaves, the prolonged impacts of heat stress on human health, ecosystems, and economies are often overlooked. Heat stress occurs when the body is unable to cool itself sufficiently to maintain a healthy temperature, leading to a host of physiological and environmental issues. This article will delve into the causes of heat stress, its long-term consequences, and the urgent need for sustainable solutions.

What is Heat Stress?

Heat stress is defined as the condition in which the body experiences difficulty maintaining normal body temperature due to excessive heat. Normally, the human body regulates its temperature through sweating, blood circulation, and breathing. However, when exposed to extreme temperatures or humidity for prolonged periods, these mechanisms may fail, leading to the body overheating.

The impact of heat stress is not limited to human discomfort or health problems; it also extends to various environmental and economic challenges. This phenomenon is particularly problematic in urban areas where infrastructure, air quality, and social disparities exacerbate the effects.

Causes of Heat Stress

The primary cause of heat stress is exposure to excessive heat, often exacerbated by high humidity levels. The body's ability to cool itself is compromised when temperatures exceed a certain threshold, especially in areas where the air is saturated with moisture, making it harder to sweat efficiently.

Several factors contribute to the rise in heat stress incidents:

- Global Warming: With rising global temperatures, heatwaves are becoming more frequent and intense. According to the Intergovernmental Panel on Climate Change (IPCC), the global temperature is expected to rise by 1.5°C above pre-industrial levels by 2030, making heat stress a more common occurrence.

- Urban Heat Island Effect: Cities are often hotter than surrounding rural areas due to human activities and the high density of heat-absorbing surfaces like concrete, asphalt, and buildings. This phenomenon is known as the urban heat island effect, and it exacerbates the impact of heat stress on urban populations.
- Deforestation: The loss of forests and green cover leads to higher temperatures in affected regions. Trees play a crucial role in regulating temperature through shade and evapotranspiration, and their loss significantly contributes to heat stress.
- Increased Pollution: Air pollution, particularly in large cities, can enhance the effects of heat stress. Pollutants like ozone and particulate matter can make the air hotter and more toxic, affecting both human health and the environment.

Immediate Effects of Heat Stress

The immediate effects of heat stress are usually physiological and can vary depending on the severity of exposure. These effects include:

- Dehydration: Sweating leads to the loss of water and electrolytes, which, if not replenished, can result in dehydration. Dehydration exacerbates the effects of heat stress and can lead to heat exhaustion or heatstroke.
- Heat Exhaustion: This is a precursor to heatstroke and is marked by symptoms like heavy sweating, weakness, dizziness, nausea, and muscle cramps. If not addressed, heat exhaustion can progress to heatstroke, which can be fatal.
- Heatstroke: Heatstroke is the most severe form of heat stress and occurs when the body's temperature exceeds 40°C (104°F). Symptoms include confusion, loss of consciousness, seizures, and organ failure. Immediate medical intervention is critical to prevent death.

Long-Term Effects of Heat Stress

While the immediate effects of heat stress are often acute, the long-term consequences can be far-reaching, affecting both human health and ecosystems.

1. Human Health

Heat stress can have serious long-term health effects, particularly for vulnerable populations such as the elderly, children, and those with pre-existing health conditions like cardiovascular diseases. Chronic exposure to high temperatures can lead to a variety of long-term health problems, including:

- *Respiratory and Cardiovascular Diseases: Prolonged exposure to extreme heat and air pollution can strain the heart and lungs, leading to respiratory issues, heart disease, and an increase in mortality rates.*
- *Kidney Disease: Heat stress contributes to dehydration, which, if persistent, can lead to kidney damage and chronic kidney disease. This is particularly concerning for laborers who work in hot conditions without adequate hydration.*
- *Mental Health Issues: The stress of coping with extreme heat can have a significant psychological impact. Studies have shown that heat stress can lead to an increase in cases of anxiety, depression, and sleep disorders, as well as a decrease in overall quality of life.*

2. Agriculture and Food Security

Heat stress has a direct impact on agriculture. Crops are highly sensitive to temperature changes, and prolonged periods of excessive heat can reduce crop yields significantly. The long-term effects on agriculture include:

- *Reduced Crop Productivity: Crops like wheat, rice, and maize are particularly vulnerable to heat stress, with yield losses predicted to increase as global temperatures rise.*
- *Livestock Losses: Heat stress also affects livestock, leading to lower fertility, reduced milk production, and, in extreme cases,*

death. This can affect food supply chains, leading to higher food prices and food insecurity.

3. Ecosystem Disruption

Heat stress also disrupts ecosystems, particularly in sensitive areas like coral reefs and forests. Many species are unable to adapt to rapid temperature changes, leading to:

- Loss of Biodiversity: As species struggle to adapt to changing temperatures, biodiversity declines. Heat stress can lead to the extinction of vulnerable species, which in turn disrupts ecosystems and the services they provide, such as pollination and soil fertility.
- Coral Bleaching: Rising sea temperatures due to heat stress have caused widespread coral bleaching, which severely damages coral reefs. These ecosystems, which are vital to marine biodiversity, face irreversible damage due to sustained heat stress.

4. Economic Impacts

The economic consequences of heat stress are also significant. From healthcare costs to reduced labor productivity, the financial toll on society is substantial:

- Labor Productivity Losses: Workers exposed to extreme heat, especially in construction, agriculture, and manufacturing, are at a higher risk of heat-related illnesses, which leads to absenteeism, lower productivity, and higher costs for employers.
- Increased Healthcare Costs: The long-term effects of heat stress lead to increased hospitalizations, especially for respiratory, cardiovascular, and heat-related illnesses. This places a significant strain on healthcare systems.

Long-Term Effects of Heat Stress

As the impacts of heat stress become more pronounced, it is crucial to adopt strategies to mitigate its effects. Some of these solutions include:

- Urban Planning and Green Spaces: Expanding green spaces and improving urban planning can help mitigate the urban heat island effect. Trees, parks, and green roofs provide shade and cool the environment, reducing the risk of heat stress.
- Climate-Resilient Infrastructure: Building climate-resilient infrastructure, such as cooler urban areas and reflective surfaces, can reduce the intensity of heat stress in cities.
- Education and Awareness: Public health campaigns that educate people on how to recognize and mitigate heat stress are crucial. Simple measures, such as staying hydrated, avoiding direct sun exposure, and wearing protective clothing, can significantly reduce the risk.
- Policy Advocacy: Governments must integrate heat stress management into their climate action plans, including setting heat action plans, improving early warning systems, and providing support to vulnerable populations during heat events.

Heat stress is a growing threat to human health, agriculture, ecosystems, and economies. While the immediate effects are widely recognized, the long-term consequences are often overlooked. It is essential to take immediate and sustained action to mitigate the effects of heat stress and build resilience in communities, ecosystems, and economies. By doing so, we can reduce the long-term impact of heat stress and work toward a more sustainable, heat-resilient future.

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MOUNTAIN GREENING: A DOUBLE-EDGED SWORD FOR BIODIVERSITY AND GENETIC DIVERSITY

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Mountain greening, the process of increasing vegetation cover in mountainous regions, has gained popularity as a method to combat desertification, improve ecosystem services, and mitigate climate change. While the benefits of such projects are often highlighted, the potential negative consequences, particularly concerning biodiversity and genetic diversity, are rarely addressed. The attempt to green mountains through large-scale planting of non-native species or the restoration of ecosystems without a thorough understanding of local biodiversity dynamics can inadvertently threaten the very diversity it aims to protect.

The primary concern with mountain greening is the disruption it can cause to the natural balance of ecosystems. In many regions, mountain landscapes are home to unique flora and fauna that have evolved in specific conditions. These ecosystems often rely on a delicate balance of species that are adapted to harsh environmental conditions, such as low temperatures, high altitudes, and limited soil nutrients. Introducing non-native plants or altering the natural landscape in an attempt to "improve" these conditions can upset this balance, making it difficult for indigenous species to thrive.

The concept of greening often involves planting species that are fast-growing, hardy, and capable of covering large areas quickly. While these species may appear to be a solution to environmental degradation, they can pose significant risks to local biodiversity. Non-native plants, for example, can become invasive and out compete native species for resources like water, nutrients, and light. This competition can lead to a decline in the populations of native plants, which, in turn, affects the entire food web, from herbivores that depend on these plants to the carnivores that prey on them. Over time, the dominance of non-native species can lead to the erosion of native ecosystems, diminishing the richness of the landscape.

In addition to threatening plant diversity, mountain greening efforts can also jeopardize the genetic diversity of local species. Genetic diversity is crucial for the long-term survival of species, as it enables populations to adapt to changing environmental conditions.

When non-native species are introduced, they may interbreed with native species, leading to hybridization. This process can dilute the gene pool of indigenous species, reducing their ability to adapt to their environment and making them more vulnerable to disease, pests, and climate change. Furthermore, the introduction of species that are not genetically compatible with the native population can lead to the extinction of local varieties, as hybrid offspring may not be viable or may have lower fitness in the wild.

The alteration of mountain ecosystems through greening projects also has broader implications for the landscape's ecological functions. Mountains play a critical role in regulating water cycles, controlling soil erosion, and providing habitats for a wide range of species. The introduction of non-native vegetation or the removal of indigenous plants can disrupt these natural processes. For example, many mountain plants have deep root systems that help prevent soil erosion by stabilizing the ground. If these plants are replaced with species that do not have the same root structure or growth habits, the risk of soil erosion increases, which can lead to the loss of valuable topsoil and degrade the land further. Additionally, altering vegetation cover can affect water retention and flow, impacting the local hydrology and potentially leading to flooding or droughts.

Another concern is the social and cultural implications of mountain greening. In many mountainous regions, local communities have deep-rooted traditions and knowledge related to the use of native plants and animals. The introduction of non-native species can not only affect the ecological balance but also undermine the livelihoods and cultural practices of these communities. Many indigenous peoples rely on local flora and fauna for food, medicine, and materials. The displacement of native species by non-native plants can limit the availability of these resources, threatening the sustainability of traditional practices and the well-being of local populations.

The impacts of mountain greening on biodiversity and genetic diversity are not always immediately visible, but they are significant and long-lasting. While greening initiatives may seem like a straightforward solution to environmental degradation, they require careful planning and a deep understanding of the local ecosystem. Effective greening efforts should prioritize the restoration of natural habitats using native species, rather than attempting to impose foreign plants on the landscape. Restoration projects should be tailored to the specific ecological needs of the region, with an emphasis on preserving the genetic integrity of local species.

Moreover, collaboration with local communities is essential in ensuring that greening projects do not inadvertently harm the biodiversity or cultural heritage of the region. Local knowledge of the landscape and its species can provide valuable insights into how to approach restoration in a way that respects both ecological and cultural values. Incorporating traditional ecological knowledge and engaging local stakeholders in decision-making processes can lead to more sustainable and effective outcomes.

In conclusion, while mountain greening has the potential to address pressing environmental challenges, it must be approached with caution. The risks to biodiversity and genetic diversity are significant and should not be overlooked. A more nuanced approach, one that focuses on restoring native ecosystems and involving local communities, is essential for ensuring that these projects achieve their intended goals without causing long-term harm to the environment. By recognizing the complexities of mountain ecosystems and the importance of preserving both biological and genetic diversity, we can work toward a more sustainable future for our planet's mountainous regions.

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MOVIE RECOMMENDATION

AVATAR

- **Movie Name: Avatar**
- **Director: James Cameroon**
- **Run Time: 2h 42m**
- **Year of Release: 2009**

James Cameron's Avatar isn't just a sci-fi adventure — it's a reflection on humanity's relationship with nature. The film uses the alien world of Pandora to mirror real-world environmental concerns like deforestation, resource exploitation, and the destruction of indigenous lands. Through its vivid ecosystems and deep connection between the Na'vi people and their environment, Avatar highlights the consequences of corporate greed and ecological imbalance, delivering a message about the importance of protecting natural worlds and respecting indigenous cultures.

PLOT SYNOPSIS

Set in the year 2154, Avatar follows Jake Sully, a paraplegic former Marine who is offered a chance to travel to Pandora, a lush and distant moon rich in a valuable mineral called Unobtanium. Taking his deceased twin brother's place in the Avatar Program, Jake remotely controls a genetically engineered Na'vi body, allowing him to breathe Pandora's air and interact with the native people.

Jake's initial mission is to gather intelligence to help the human mining corporation convince — or force — the Na'vi to relocate from their sacred homeland, which sits atop a major Unobtanium deposit. As Jake spends more time with the Na'vi, he is taken in by Neytiri, the chief's daughter, who teaches him the ways of her people and introduces him to the deep spiritual bond the Na'vi share with their planet.

The more Jake experiences Pandora's natural wonders — its bioluminescent forests, unique creatures, and interconnected ecosystem through the deity Eywa — the more he begins to question the morality of his assignment. Tensions escalate when the corporation, led by the ruthless Colonel Quaritch, decides to forcibly destroy the Na'vi's sacred Hometree to access the resources beneath it.

Betrayed and heartbroken, Jake chooses to fight alongside the Na'vi, leading a climactic battle to defend Pandora from human invasion. With the help of the Na'vi clans and the planet's creatures, they wage an epic war against the human forces. In the end, Jake permanently transfers his consciousness into his Avatar body, embracing his new life as one of the Na'vi and becoming a true protector of Pandora.

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WHY GREEN COVER IS ACTUALLY THINNING

1 Delhi's total geographical area is 1,483 sq km

2 In 2017, forest cover was spread over 192.4 sq km, which is 13% of the total area...

3 ... In 2015, this was slightly lower at 189 sq km, which means a 0.3% change

4 But this change masks the loss in very dense forest

DELHI AT NO. 2

GREEN FACTS

SCRUB Degraded forest land with canopy density less than 10%

WHAT IS A FOREST, ACCORDING TO FOREST SURVEY OF INDIA?
An area of 1 ha with canopy density of 10% and above

(Figures in sq km)

VDF All land with canopy density 70% & above (very dense forest)

2015	2017
6.9	6.7

MDF All land with canopy density 40% and above (moderately dense forest)

2015	2017
57.1	56.2

OF All land with canopy density 10% and more (open forest)

2015	2017
124.6	129.4

WHAT IS TREE COVER? Small patches of trees less than 1 ha in extent such as trees in small-scale plantations, compact blocks, woodlots, or trees along linear features, such as roads, canals or bunds

TREE COVER AS % OF TOTAL AREA

Goa	8.7
Delhi	7.6
Kerala	7.6
Gujarat	4.1
Jharkhand	3.6
Tamil Nadu	3.5
J&K*	3.5
Punjab	3.2
Haryana	3.2
Maharashtra	3.1
Total	3.6

The list doesn't include Union Territories except Delhi
* Includes Jammu and Kashmir area outside LOC under illegal occupation of Pakistan and China

https://timesofindia.indiatimes.com/city/delhi/delhis-forest-cover-is-up-0-3-since-2015-but-its-nothing-to-cheer-about/articleshow/62891909.cms

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