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EARTH ROOT

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"Progress is impossible without change, and those who cannot change their minds cannot change anything."
-George Bernard Shaw

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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Phone No. -	011 49064364
Email ID -	info@earthrootfoundation.org vivekpanwar@earthrootfoundation.org
Mobile No. -	+91 876631774 +91 99990013202
Website -	www.earthrootfoundation.org
Address -	456, pocket B, Sector -13 Dwarka, New Delhi -110078

Editorial Board

DR. VIVEK PANWAR

Editor-in-Chief

Assistant Professor, Department of Physics, Sri Venkateshwara College, University of Delhi, Benito Juarej Marg, Dhaula Kuan, New Delhi, Delhi 110021,India
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Profile Link:http://www.svc.ac.in/SVC_MAIN/Departments/FacultyPhysics/Vivek.php

PROF. SURENDRA KUMAR DHAKA

Editor

Professor, Department of Physics & Electronics,
Rajdhani College, University of Delhi, Ring Road, Raja Garden, New Delhi – 110015, India
Email: skdhaka@rajdhani.du.ac.in
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DR. NARENDRA SINGH

Editor

Aryabhatta Research Institute of Observational Sciences (ARIES),
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Profile Link: https://www.aries.res.in/people/user-profile/sci/76

DR. DEEKSHA KATYAL

Editor

Associate Professor, University School of Environment Management,
Guru Gobind Singh Indraprastha University, Sec-16C, Dwarka, New Delhi – 110078, India
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DR. PAWAN KUMAR

Editor

Assistant Professor, Department of Chemistry,
Rajdhani College, University of Delhi, Ring Road, Raja Garden, New Delhi – 110015, India
Email: drpkumar@rajdhani.du.ac.in
Profile Link: https://www.rajdhanicollege.ac.in/Base/faculty/248

Earth Root Foundation

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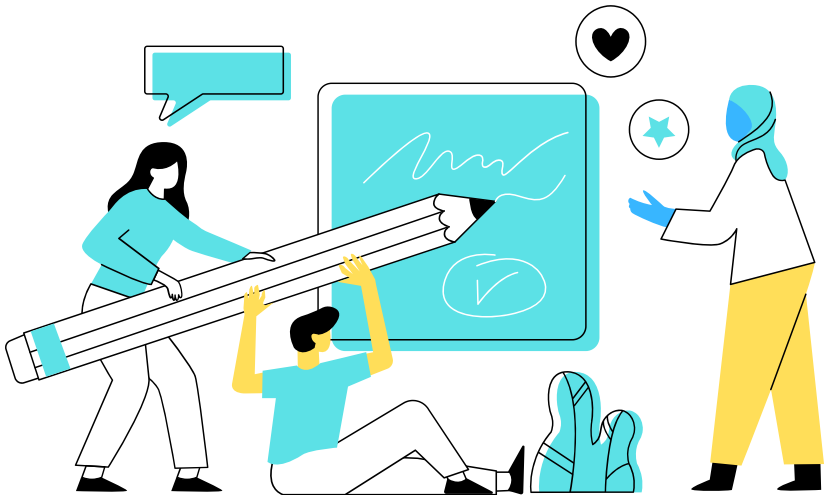


PG. NO.

TRANSFORMING ENVIRONMENT - POWER OF AI

Kusum Jaswal,
USEM, GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, NEW DELHI

Artificial intelligence & Environment

"Artificial Intelligence (AI) encompasses systems and machines capable of performing tasks that traditionally rely on human intelligence and continuously improving themselves through data-driven insights," explains David Jensen, who leads the United Nations Environment Program's (UNEP) Digital Transformation sub-programme.

AI stands as a transformative technology, endowing machines with human-like cognitive abilities, enabling them to acquire knowledge from data, engage in logical reasoning, make informed decisions, and excel across a multitude of domains. Its versatility is evident in applications ranging from natural language processing and computer vision to the realms of robotics and autonomous systems. AI has ushered in a wave of innovation across industries, elevated the quality of healthcare services, and ushered in personalized user experiences. As AI continues its evolution, its far-reaching impact on society and the economy is poised to be transformative, fundamentally shaping the way we exist, labor, and interact with technology.

In recent times, Artificial Intelligence (AI) has risen as a groundbreaking force within the realm of environmental science and conservation.

Fueled by its unmatched ability to process vast datasets, AI is in the process of revolutionizing our comprehension of the natural world. It is proving instrumental in addressing pressing ecological issues and guiding us toward sustainable practices. From the surveillance of wildlife and anticipation of natural calamities to the optimization of resource consumption and the fight against climate change, AI is swiftly becoming an essential tool in the preservation of our planet and the protection of its fragile ecosystems.

How is AI helping?

• Providing Real-time analysis-

AI proves invaluable in acquiring real-time information and predicting future natural events, encompassing shifts in glacier mass, rising sea levels, atmospheric CO2 levels, and more. As a crucial environmental indicator, AI contributes significantly to our efforts to enhance the quality of life on our planet.

Moreover, AI has the capacity to analyze extensive datasets from satellites, sensors, and diverse sources, delivering up-to-the-minute data on environmental parameters such as air quality, water quality, and temperature.

This wealth of information is instrumental in monitoring the advancement of environmental projects, identifying areas requiring enhancement, and shaping effective policy choices.

• Measuring environment footprints-

AI plays a transformative role in assessing and computing the environmental and climate impacts of products, enabling businesses to make well-informed and efficient decisions in this regard. This capacity extends to evaluating a product's footprint throughout its entire lifecycle and supply chain, empowering both businesses and consumers to make informed and effective choices. This data proves indispensable for promoting sustainable practices on e-commerce platforms like Amazon.com, Shopify, and Alibaba.

• Tracking air quality-

AI has the capability to oversee air pollution levels and provide valuable insights into the immediate consequences of air quality, enabling individuals to proactively safeguard themselves. This has the potential to expedite worldwide environmental efforts by furnishing precise data. AI's role in air quality control extends to sophisticated algorithms that analyze vast datasets from monitoring stations, satellites, and IoT sensors. By processing this data, AI can generate highly accurate air quality forecasts, alerting communities and authorities to potential health risks and facilitating timely interventions. This technology is particularly vital in urban areas, where air quality management is of paramount concern due to its impact on public health and the environment.

• Monitoring methane emissions-

One of the initiatives spearheaded by the United Nations Environment Programme (UNEP) within the WESR digital framework is the International Methane Emissions Observatory (IMEO). This groundbreaking effort harnesses the power of artificial intelligence (AI) to transform the way we track and reduce methane emissions.

IMEO serves as a comprehensive worldwide repository of methane emissions that have been empirically verified. AI plays a pivotal role in this endeavor by skillfully linking this data to actions grounded in science, transparency, and policy. This synergy facilitates the formulation of data-driven decisions, enabling more effective strategies for monitoring, mitigating, and ultimately reducing methane emissions—a crucial step in addressing climate change and its associated environmental impacts.

• AI for energy-

AI is increasingly emerging as a critical player in the drive to harness renewable energy efficiently. Its role extends beyond mere energy generation; it encompasses managing the inherent intermittency of renewable sources, addressing power fluctuations, and optimizing energy storage.

Wind energy companies are increasingly turning to AI-driven solutions to enhance the performance of individual turbines. By analyzing real-time weather data and operational information, AI algorithms enable turbines to adjust their propeller angles dynamically. Moreover, researchers at institutions like the Department of Energy and the National Oceanic and Atmospheric Administration (NOAA) are employing AI to gain a deeper understanding of atmospheric conditions. By leveraging AI, they can more accurately forecast the energy output of wind farms, thus improving their overall efficiency and reliability.

• Agriculture-

The agricultural sector is not immune to the far-reaching effects of rising temperatures. However, a transformation is underway with the integration of AI. Field sensors, tasked with tracking critical data like crop moisture, soil quality, and temperature, are at the forefront of this revolution. AI leverages this data to enhance agricultural productivity by determining optimal watering schedules and other crucial factors. When coupled with information from drones, which monitor conditions from above,

AI systems become increasingly adept at automating decisions related to planting, pesticide application, and harvest timing. This synergy between AI, sensors, and drones promises to elevate agricultural efficiency, boost crop yields, and reduce the overall consumption of water, fertilizers, and pesticides, presenting a sustainable path forward for the agricultural industry.

• Climate Prediction

As the climate undergoes significant changes, the need for precise climate projections becomes increasingly critical. Traditional climate models often yield divergent predictions, primarily due to disparities in data segmentation, process coupling, and the multitude of spatial and temporal scales considered. Presently, the Intergovernmental Panel on Climate Change (IPCC) relies on an averaging approach to consolidate these models in their reports.

Enter AI, a game-changer in the realm of climate modeling. AI contributes by discerning the reliability of climate models, granting greater significance to those with a proven track record of accurate predictions while reducing the influence of underperforming models. This approach holds immense potential for elevating the precision of climate change projections.

Furthermore, AI, in conjunction with deep learning, is revolutionizing weather forecasting and the anticipation of extreme weather events. These technologies excel in accommodating the complexities of real-world climate systems, encompassing factors like atmospheric and ocean dynamics, as well as ocean and atmospheric chemistry. This capability substantially sharpens the accuracy of weather and climate models, rendering simulations considerably more valuable for policymakers and decision-makers in the quest to address the challenges posed by climate change.

• Natural disaster prediction and management

AI has the capacity to examine data obtained from various sources, including sensors and satellites, with the aim of detecting indicative patterns signaling the potential occurrence of natural disasters such as hurricanes, floods, and wildfires. This information proves invaluable in the issuance of timely warnings, facilitating evacuations from affected areas, and efficiently allocating resources to regions at higher risk.

Artificial Intelligence (AI) is at the forefront of a transformative shift in natural disaster management, driven by its ability to analyze extensive datasets for early warnings and pattern recognition. Through machine learning, AI processes real-time data originating from sensors, satellites, and even social media, resulting in highly accurate predictions and proactive responses to a spectrum of disasters including earthquakes, hurricanes, wildfires, and floods. AI also employs natural language processing to gauge public sentiment, thereby enhancing adaptive strategies. Moreover, AI-driven drones and remote sensing technologies expedite damage assessment and search-and-rescue missions, ushering in a paradigm shift in disaster response. In essence, AI is elevating disaster preparedness, response mechanisms, and mitigation strategies to new levels of effectiveness and efficiency.

INFORMATIVE INSIGHTS-

• In India, AI has significantly boosted groundnut yields per hectare for farmers by providing guidance on land preparation, fertilizer application, and optimal sowing dates, resulting in a remarkable 30% increase.

• Norway has harnessed AI to create a highly adaptable and self-regulating electric grid, facilitating the seamless integration of renewable energy sources.

• Climate AI models have projected a potential 60% increase in the intensity of extreme rainfall events in the tropical Pacific Ocean, highlighting AI's role in climate change impact assessment.

‘FAST FASHION’ AND THE MODERN DILEMMA

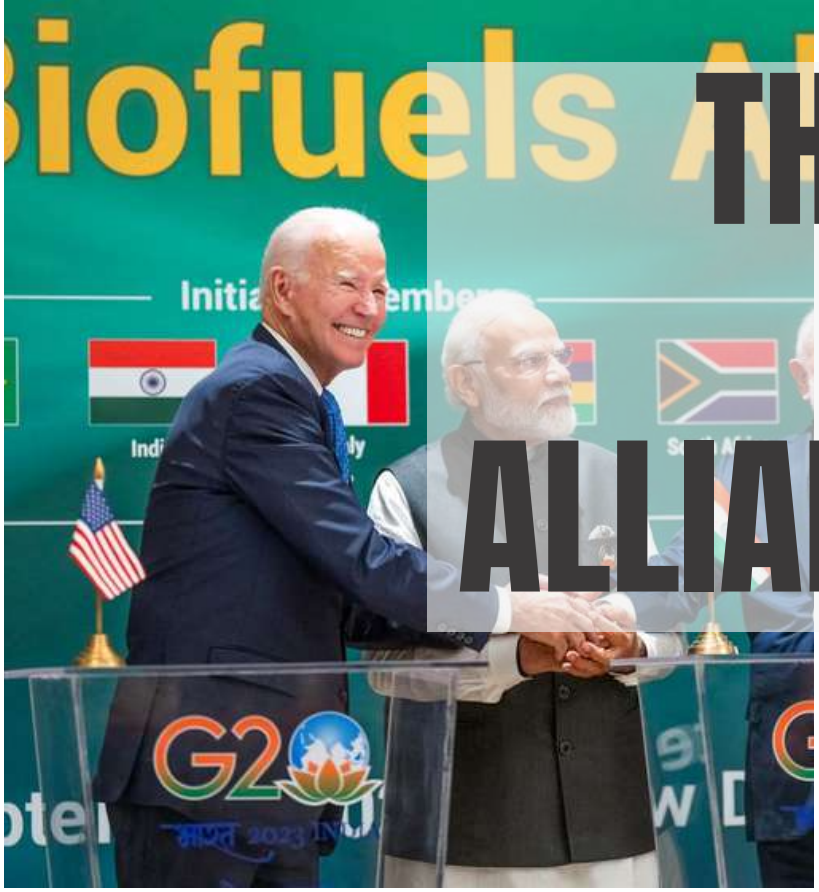
Gurpreet Kaur Saini
Assistant Professor
Sri Guru Nanak Dev Khalsa College , University of Delhi

Living in the day and age where everything is consumed instantly whether it is the latest news story or noodles, how can what we wear really lag behind. Surely gone are those days when the purpose of buying new clothes was pondered upon.

Befitting the pace at which our lives are being operated and considering the part that fashion industries have played in creation of demand for more has added subsequent power to the model of ‘fast fashion’. As the term itself suggest this model promotes copying of high-end fashion designs and producing replicas of same for the masses at cheaper prices. This process not only involves exploitation of workers as they are not paid appropriately, it simultaneously forces them to work in inhumane conditions.

The Adverse Effects of Mass Production on the Environment and Human Life When products are manufactured with no regard for human life and with the sole intention of meeting the insatiable demand of the masses, it's easy to see that the quality of these products will be subpar. This type of manufacturing puts pressure on developing nations for cheap labor while using non-biodegradable substances and natural resources that cause irreversible damage to our environment. Additionally, mass manufacturing and consumption produce waste that exacerbates environmental hazards and the pressing issue of climate change. According to the article "Fast Fashion Pollution and Climate Change" by Nikita Shukla, released in February 2022 by Earth.Org, the statistics are alarming. not only the global per capita production of textile has increased over the years, simultaneously, the “global consumption of apparel has risen to an approximate 62 million tonnes per year and is projected to further reach 102 million tonnes by the year 2030”. As a consequence, Shukla noted that both “pre–and post-production textile waste” has increased tremendously. But textile recycling still remains low and with almost “57% of all discarded clothing ending up in the landfills”, the risks to human life have also increased. Sustainable Fashion Brands and the Importance of Conscious Consumption While many people are drawn to the glamour and allure of the fashion industry, it's important to recognize the negative impacts of fast fashion on the environment. Although these concerns are often ignored, the rise of sustainable fashion brands in recent years offers a glimmer of hope. These brands prioritize longer-lasting, high-quality clothing and strive for a carbon-neutral fashion industry with a focus on social equality. While we cannot shift from over-consumption to conscious consumption overnight, supporting sustainable fashion brands is a step in the right direction towards reducing environmental damage.

REFERENCE:
FAST FASHION POLLUTION AND CLIMATE CHANGE | EARTH.ORG
SHUKLA, NIKITA. “FAST FASHION POLLUTION AND CLIMATE CHANGE”. PUBLISHED BY EARTH.ORG, 21 FEBRUARY 2022.



THE GLOBAL BIOFUEL ALLIANCE (GBA)

Kamaldeep Kumar
DEPARTMENT OF PHYSICS AND ASTROPHYSICS, UNIVERISTY OF DELHI

The Global Biofuel Alliance (GBA), announced at the G20 New Delhi summit in 2023, is a testament to international cooperation in the quest for sustainable energy solutions. This collective of nations, including major biofuel producers such as Brazil and the United States, aims to extend and develop markets for sustainable biofuels. The GBA is not only an initiative for energy diversification but also a platform for India to advance towards its net-zero emissions goal.

Biofuels, derived from plant waste, agriculture, or industry, have shifted from their traditional use for heating to become a cleaner alternative in the transportation sector. Ethanol, biodiesel, and renewable diesel are some of the notable biofuels in use today1. The GBA aspires to be a central knowledge hub, expanding the usage of biofuels while ensuring their affordability, accessibility, and sustainability. This includes exploring diverse fuel sources like algae, biomass, and other renewables to ensure an environmentally friendly energy future. The alliance also aims to improve the efficiency of existing biofuels through advanced technologies and conservation efforts.

India's leadership in forming the GBA aligns with its broader environmental sustainability goals. Amidst geopolitical disruptions and the pandemic's adverse effects on developing nations, India's role is pivotal. The country's amended National Biofuels Policy and initiatives like the Gobardhan scheme reflect its commitment to renewable energy expansion. The GBA also aligns with India's aim to become carbon neutral by 2070, with the biofuel industry expected to increase farmers' incomes and create sustainability-focused jobs1.

However, the GBA faces the "food versus fuel" debate. The concern is that biofuel production, which often relies on crops, might divert agricultural resources from food production, exacerbating food shortages in conflict-affected regions. The sustainability of biofuel feedstock is subject to climatic conditions, land availability, and agricultural needs. Addressing these challenges involves optimizing land use and considering alternative biofuel sources, such as waste products, to mitigate environmental and food security issues.

The GBA was one of several environmental initiatives launched at the G20 summit, highlighting the global emphasis on sustainability. Other initiatives included "Lifestyles for Sustainable Development" (LiFE), promoting eco-conscious living, and a Technical Assistance Action Plan (TAAP) focusing on sustainable finance and capacity building for MSMEs.

In summary, the GBA is an ambitious endeavor to harmonize environmental stewardship with economic growth and energy security. It is an initiative that reflects a collective acknowledgment of the need for sustainable energy practices and represents a concerted effort by the international community to address the urgent challenges posed by climate change. While the GBA is poised to make significant strides in the energy sector, it must navigate the complexities of environmental impact, economic viability, and food security to achieve its objectives.

For a detailed examination of the GBA and related initiatives, references from various sources, including those from Eco-Business, offer thorough insights:

1. Eco-Business provides a detailed explainer on the GBA, its goals, and the challenges it faces.
2. Further information and updates about the GBA and its initiatives can be found through the World Economic Forum, which discusses the alliance's launch and its role in the G20 summit.
3. The official announcement on the Ministry of External Affairs of India website.
4. An article by Rishi Ranjan Kala on BusinessLine discussing the G20 leaders' launch of the Global Biofuel Alliance.
5. An explanation of what drives the Global Biofuels Alliance by Kunal Shankar in The Hindu.
6. Information provided on the G20's official site.
7. Coverage of the launch by Livemint, which includes comments from PM Modi.
8. An article on the significance of the alliance launched at the G20 Summit by Hindustan Times2.

These resources can provide in-depth information and various perspectives on the objectives, activities, and significance of the Global Biofuel Alliance.

Overview of the Global Biofuel Alliance (GBA)

Under India's G20 presidency, the Global Biofuel Alliance (GBA) was established with the following aims and key facts:

- Membership: The alliance includes major biofuel producers such as Brazil, the United States, and India, which collectively account for 85% of ethanol production. It comprises 19 country members and 12 international organizations, including the World Bank and World Economic Forum.
- Objectives: The GBA's goals are to promote sustainable biofuel markets, achieve net-zero targets by decarbonizing transportation and heating, and establish a virtual biofuel demand and supply marketplace.
- Feedstock: Biofuels are obtained from various sources, including plant waste, agriculture, and industry, with sugarcane, rice, and corn being the primary feedstocks.
- Knowledge Hub: The GBA is a central biofuel knowledge hub, with a focus on expanding biofuel usage, affordability, accessibility, and sustainability. It aims to reduce environmental impact by diversifying fuel sources beyond traditional feedstocks.
- India's Role: India aims to utilize the GBA to achieve its carbon-neutral objectives by 2070, boost biofuel demand, and potentially increase income for farmers by using different feedstocks.
- Environmental and Food Security: The GBA is aware of the "food versus fuel" debate, as the increased demand for biofuel crops could affect food production. To address these concerns, the alliance is exploring alternative sources for biofuels and optimizing land use.

CAUSE AND POTENTIAL SOLUTIONS OF AIR POLLUTION IN NCR REGION DURING NOVEMBER.

As winter approaches India's National Capital Region (NCR), Delhi braces itself for an annual environmental crisis - a thick cloak of air pollution that envelops the city and poses significant health risks to millions. This predicament, which peaks in November, arises from a convergence of various factors that contribute to the region's poor air quality.

Central to this issue is the practice of stubble burning in the agricultural hubs of Punjab and Haryana. Despite alternative stubble management methods and repeated prohibitions, farmers continue to set fire to paddy residue, resulting in smoke that travels towards Delhi, carried by the northwesterly winds typical of this season. This practice contributes significantly to the particulate matter pollution in the region.

The situation is further exacerbated by Diwali, a festival traditionally celebrated with the bursting of firecrackers. Despite a ban on fireworks to alleviate the city's air quality concerns, compliance remains inconsistent, leading to spikes in pollution levels. During the first week of November, vehicle emissions become another critical contributor, accounting for up to 80% of the NCR's pollution load at times.

Industrial activity is also a significant contributor to the region's air pollution. The combined emissions from various industries add a persistent layer of pollutants to the air, particularly during the cooler months when atmospheric conditions trap these contaminants close to the ground.

Construction and demolition, along with the dust these activities generate, also contribute to the air quality crisis. Despite efforts to reduce these dust emissions, enforcement remains challenging.

The burning of biomass, municipal solid waste, and fires at sanitary landfills are additional sources of air pollution, releasing a harmful mix of chemicals and particulate matter into the air, worsening the already dire conditions.

Furthermore, Delhi's air pollution is not solely a local issue but also a regional one. Areas in the NCR, primarily Noida and Ghaziabad, have been identified as significant sources of PM2.5 - fine particulate matter that can penetrate deep into the lungs. This shared airshed implies that air pollution knows no administrative borders and necessitates a coordinated response across the region.

As Delhi grapples with these challenges, the city's air quality often plummets to 'severe' levels, as categorized by the Air Quality Index (AQI). The consequences are far-reaching, affecting not just the respiratory health of its residents but also leading to school closures, restrictions on vehicle use, and a heightened sense of urgency to find sustainable solutions.

In the quest for cleaner air, Delhi faces a multi-faceted challenge that requires concerted efforts from government, industry, and citizens alike. With each November, the hope is that the lessons learned will translate into more effective action and that the capital will eventually breathe easier. But for now, the NCR's November air remains a problem that is as complex as it is pressing.

Addressing the severe air pollution in Delhi, particularly in November, requires multifaceted solutions. The Delhi government has implemented a comprehensive 10-point action plan:

1. Green War Room: Monitoring actions against pollution by various government agencies in real-time1.
2. Anti-Dust Campaign: Regular inspections at construction sites to ensure compliance with dust control norms1.
3. Green Delhi App: A digital platform for citizens to report environmental violations, with a high resolution rate for complaints.
4. Bio-Decomposer: Using a bio-decomposer solution to manage crop stubble and prevent burning1 .
5. Water Sprinklers and Anti-Smog Guns: Deploying water sprinklers and anti-smog guns to reduce dust and smog at construction sites and other areas.
6. Industry Pollution: Regular inspections of industrial sites to monitor and ensure the use of authorized fuels only3.
7. PUC Certificates: Enforcement of Pollution Under Control (PUCC) certificates at filling stations and impounding older, more polluting vehicles1.
8. Hotspot Special Monitoring: Targeted monitoring and intervention at the most polluted areas within Delhi4.
9. Firecracker Ban: Banning the manufacture, sale, and use of firecrackers to reduce air pollution during Diwali1.

These measures, spanning from technological interventions to regulatory enforcement and public engagement, aim to reduce the various sources of pollution and improve air quality in the capital.

Innovative solutions to curb air pollution in Delhi, especially from stubble burning, are being spearheaded by entrepreneurs and officials:

1. **Biofuel Circle**: Suhas Baxi and Ashwin Save created a platform to connect farmers with industries to convert agri-waste into clean energy like biofuel, biofertilisers, and biogas, thus avoiding burning2.
2. **Biodegradable Packaging**: Arpit Dhupar innovated a process to transform crop stubble into a strong, biodegradable packaging material, offering an alternative use for agricultural waste2.
3. **Agricultural Machinery**: Vikram Yadav, an IAS officer, reduced stubble burning by 80% in Ambala, Haryana, by promoting machinery that converts stubble into fertiliser23.
4. **Clean Cooking Stoves**: Debashree Padhi developed 'Agnis' stoves that use pellets made from agricultural residue, providing a use for stubble and reducing reliance on biomass fuels2.

These innovative methods highlight a proactive approach to tackling the critical issue of air pollution in Delhi, focusing on sustainability and repurposing agricultural waste.

SOURCE: 1.- HTTPS://BLOG.MYGOV.IN/EDITORIAL/G20S-COMMITMENT-TO-ENVIRONMENT-AND-CLIMATE-SUSTAINABILITY-A-ROADMAP-TO-DECISIVE-ACTION/

SOURCE: 2.- HTTPS://WWW.THEBETTERINDIA.COM/333727/DELHI-AIR-POLLUTION-AQI-ENTREPRENEURS-INNOVATIONS-PREVENT-STUBBLE-BURNING-FARMERS-SMOG-PUNJAB-HARYANA/

MOVIE
RECOMMENDATION

WALL·E
2008

In the distant future, a small waste-collecting robot inadvertently embarks on a space journey that will ultimately decide the fate of mankind.

- Director
  - Andrew Stanton
- Writers
  - Andrew Stanton
  - Pete Docter
  - Jim Reardon
- Stars
  - Ben Burtt
  - Elissa Knight
  - Jeff Garlin

Synopsis

"WALL-E" is a poignant animated film by Pixar that paints a dystopian future where Earth is uninhabitable due to extreme pollution and waste. Humans have left the planet, living on a spaceship called the Axiom, and have become obese and dependent on technology for all their needs.

The protagonist, WALL-E (Waste Allocation Load Lifter – Earth-class), is the last remaining robot of his kind on Earth, tasked with cleaning up the trash. Over 700 years, he has developed sentience and a personality, becoming lonely and longing for companionship. He spends his days compacting trash and collecting interesting items he finds amidst the debris.

His life changes when he meets EVE (Extraterrestrial Vegetation Evaluator), a sleek, advanced robot sent to Earth to search for signs of life. WALL-E falls in love with her and, in an attempt to impress EVE, he shows her a living plant he has found. Recognizing the plant as proof that Earth can sustain life again, EVE takes it and automatically enters a dormant state to await retrieval. WALL-E, not understanding this, believes EVE is malfunctioning and, in his determination to care for her, stows away on the ship that comes to retrieve her, leading him to the Axiom.

On the Axiom, WALL-E's adventure escalates as he and EVE disrupt the life of the spaceship. The plant WALL-E found is the key to returning humans back to Earth, but the ship's autopilot, Auto, has secret orders to prevent this. WALL-E and EVE inspire the humans and other robots to revolt against the autocratic control of Auto, eventually leading to a mutiny.

The climax of the film sees WALL-E nearly destroyed in his efforts to help humanity. In the end, the plant is placed in the ship's holo-detector, triggering the return to Earth. Humans and robots work together to begin the process of cleaning and rejuvenating the planet.

"WALL-E" is a tale of environmental stewardship and the enduring human spirit. It combines themes of love, hope, and the pursuit of purpose, all wrapped up in a critique of consumerism and a warning about environmental degradation. The story is told with minimal dialogue, relying on visual storytelling and expressive robot characters, which has been praised for its ability to evoke deep emotion and thought on the part of the audience.

SOURCE: HTTPS://WWW.IMDB.COM/TITLE/TT0910970/

ISSN: 2583-6013

"Echoes of the Earth"

In the book of time, a chapter unfolds,
A story of sorrow, in verses untold.
Environmental damage, a planet's plea, A world in peril, calling you and me.

Forests, ancient sentinels, they weep,
Their mighty branches, secrets they keep.
Habitats vanish, species are lost,
The true cost of our actions, the Earth's exhaust.

Oceans, vast and deep, once pure and blue,
Now choked with waste, a tragic debut.
Coral reefs fade, life struggles to cope,
In nature's rhythm, a faltering hope.

The skies, once clear, now a smoky embrace,
Respiratory burdens, a heavy case.
Carbon emissions, a warming trend,
A climate crisis message, we must comprehend.

Rivers, the lifelines of Earth, grow frail,
Polluted by our choices, a woeful tale.
But from these echoes of damage and despair, Awakens a call for change in the air.

In unity, let us stand, as a global team,
To mend the Earth, fulfill the dream.
A greener future, where life's beauty thrives, In the echoes of the Earth, hope survives.

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Stay tuned for our upcoming article on.

Effects of environmental damages on Human Development..

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Earth Root Foundatlion
456, Pocket B, Sector-13, Dwarka, New Delhi-110078
www.earthrootfoundation.org | info@earthrootfoundation.org | +91 8766317774