



August 2023
Vol. 5, Issue 8

A young green plant with a globe as a leaf. The globe is green with dark green continents, and the plant has several large, vibrant green leaves. The background is a light blue gradient.

CPRG CHRONICLE

'A newsletter for public policy and governance
enthusiasts'

**TOURISM
AND
ENVIRONMENT**

JULY 2023 HIGHLIGHTS



SECURITY & INTERNATIONAL RELATIONS

- India signed the Artemis Accords in accordance with international laws for space activities.
- India and France adopted the Horizon 2047 Roadmap
- The Directorate General of Civil Aviation (DGCA) India has signed an (MoU) with the European Union Aviation Safety Agency (EASA) for cooperation in Unmanned Aircraft Systems and Innovative Air Mobility.
- India & Panama signs MoU on Electoral Cooperation



SCIENCE & TECHNOLOGY

- The government of India has launched 'Bharat 6G Alliance' to drive innovation and collaboration in next-generation wireless technologies.
- Chandrayaan-3 took off from the Satish Dhawan Space Centre, Andhra Pradesh perched on the back of a Geosynchronous Statellite Launch Vehicle Mark III heavy lift rocket



SOCIAL

- The Union Ministry of Home Affairs, Government of India launched a 'Scheme for Expansion and Modernization of Fire Services in the State' for expanding and modernizing fire services in the state.
- NITI Aayog released the Techno-Commercial Readiness and Market Maturity Matric (TCRM Matrix) framework to enhance innovation and entrepreneurship in India.
- CSIR -IIM Jammu initiated the first India Cannabis Medicine Project with the objective of using Cannabis as a medicine.





ECONOMY

- The GST council decided to levy a uniform tax of 28% on online gaming, casinos and horse racing.
- Ministry of Fisheries, Animal Husbandry and Dairying, Government of India implemented the Credit Guarantee Scheme for the purpose of strengthening the credit delivery system.
- The Directorate General of Foreign Trade (DGFT) implemented the Advance Authorisation Scheme which will provide the duty-free import of inputs for export purposes.



REGIONAL DEVELOPMENT

- Mo Jungle Jami Yojana (MJJY) Scheme was launched by the Government of Odisha to effectively implement the provisions of ST and other Traditional Forrest Dwellers Act 2006.
- Rajasthan Government introduced the Minimum Guaranteed Income Bill, 2023 with an aim to provide guaranteed pay or pension to the whole adult population of the state.
- Skill India project successfully revives the dying Namda Art of Jammu and Kashmir



EDUCATION

- UGC introduces NET/SET/SLET as the Minimum Requirement for Assistant Professor Recruitment.
- University Grant Commission recently passed guidelines for individual HEIs to develop their own Institutional Development Plans for increasing the higher education system in India.
- Ministry of Education released a report on Performance Grading Index 2.0 for States/UTs for the year 2021-22.
- Bureau of Indian Standards conducts 2nd batch of Capsule Course on National Electrical Code of India
- MoU signed to establish 1st campus of IIT Delhi in Abu Dhabi



TRAINING & GOVERNANCE

- The Government of India developed New Drugs and Clinical Trial Rules 2023 that authorize the replacement of animal testing in research with the use of non-animal, human-relevant methods for testing the effectiveness of drugs.
- The cabinet cleared the Digital Personal Data Protection Bill which majorly focuses on regulating the processing of digital personal data, both within and outside India.
- Multi-State Co-operative Societies (Amendment) Bill, 2022 passed by the Lok Sabha
- India and Singapore signed a Protocol Document to extend the current MoU on Cooperation in the field of Personnel Management and Public Administration till 2028



ENVIRONMENT AND CLIMATE CHANGE

- Lok Sabha has passed the Forest Amendment Bill, 2023 that will amend the Forest Conservation Act, 1980.
- Resource Efficiency Circular Economy Industry Coalition (RECEIC) launched by MoEFCC is a partnership for impact, technology cooperation and finance for scale.
- Ministry Of Jal Shakti celebrated 1st Anniversary of Rural WASH Partners' Forum



EFFECT OF TOURISM ON CORAL REEFS IN INDIA

The name “rainforests of the seas” is apt for the significance of coral reefs in the marine ecosystem. They characteristically are known as one of the most diverse ocean habitats in the world- around 25% of all marine species have their existence centred around coral reefs. It is when they merely have a global ocean cover of 0.7%. Corals protect coastlines from storms, aid in maintaining fisheries, separate freshwater resources from salty seawater and have possibilities for innovations in modern medicine.

Corals live in a symbiotic relationship with algae, called Zooxanthellae, where algae live in the protection of a tough outer shell of calcium carbonate from the corals. In return, the algae provide food from photosynthesis and noticeable colours. Under events of acidification and rising temperatures, zooxanthellae are expelled from coral tissues, leading to loss of colour- a process called coral bleaching. It may or may not result in the death of a coral reef, depending on the recovery of zooxanthellae in time. The recovery process requires cooler temperatures.

Lakshadweep: A case study

The case of Lakshadweep aptly captures the effects of tourism on marine ecosystems. Lakshadweep depends on coral atolls for its existence. Coral reefs build up across centuries of coral life cycles.

Corals often get brought up by storms from death and erosion. Several coral-consuming creatures exist on the reefs which leads to a constant supply of broken aragonite in the lagoon, creating strips of sand where the people of Lakshadweep reside. Such developments lead to a decline in the regenerative capacity of these coral reefs, leading to several, often irreversible, harms to marine biodiversity.

In current times, tourism has led to a surge of factors working against the resilience of corals. Scuba diving equipment often breaks coral colonies on contact. Divers can also kick up sediments that damage coral reefs. Construction debris often leads to sedimentation into the ocean waters, increasing the turbidity in coral reef waters and blocking sunlight from reaching them. Anchors from large boats, like cruise ships and freighters, often break corals. These damages last for several years. Seagrasses and related habitats also get affected due to anchors. These become relevant as such habitat serves as nurseries for various coral reef organisms.

Chemicals from paint residues from boats and oil discharges pollute local waters apart from the damages occurring during fuelling. According to the United Nations Environmental Program, several instances of untreated wastewater discharge from hotels into the oceans are present globally. Even sunscreen used by tourists alters the Ph levels of seawater.

Several tourist interventions, as simple as feeding, often alter the natural behaviour of reef species. It ranges from changes in foraging behaviour, population density in any area, migration patterns, and even reproductive patterns.

Invasive species are a threat to Archipelago ecologies due to their sensitive nature. Recently, some non-native species got found on the islands. Discharges of ballast water and ship-fouling organisms are prominent introducers of such species. It is concerning as they compete with natives for food and space. In this process, they eventually dominate the ecosystem. A fatal risk looms over the fragile ecosystem of Lakshadweep.

Besides corals, one can easily observe the effects of tourism on fishing. There has been a steep rise in demand for local fish in the Indian Archipelago. This rise has forced locals to move away from their sustainable fishing practices. Many instances of indiscriminate fishing, disregarding the spawning process of fish, have become common. Overfishing accumulates harmful algae on corals and reduces sustainable fish exploitation over time. As exploitation rises, the regenerative capacity of fish as a resource is seeing a downward trend. The tuna fish population, the lifeline of the people of Lakshadweep, is experiencing a stark decline, with fishermen forced to go out for days searching for lagoon fish.

Before the 1990s, Tourism Carrying Capacity (TCC) is used as a metric to judge the impact of a tourist on society and resources. TCC has several ecological and social parameters, like the quality of the environment and tourist experience. Additionally, the idea of Sustainable Tourism came up with TCC in the early 1990. It is similar to TCC in terms of aims, practices, utility and variety of types. Sustainable Tourism is “ a tourism which is economically viable but does not destroy the resources on which the future of tourism will depend, notably the physical environment and the social fabric of the host community.” It focuses on resource management by the host communities for their socio-economic well-being and satisfying tourist needs. It focuses on replacement while using natural resources rather than their depletion.

In the years that followed, TCC and sustainable tourism have co-existed to measure the impacts of tourism on the host environment and society due to their similar approaches. TCC, according to the WTO, refers to “the maximum number of people that may visit a tourism destination at the same time, without causing destruction of the physical, economic and socio-cultural environment and an unacceptable decrease in the quality of the visitor satisfaction”. It is the highest bearing capacity of a natural socioeconomic-ecological system beyond which facilities are saturated (Physical Carrying Capacity), the environment gets degraded (Environmental Carrying Capacity), or the visitor experience is reduced (Perceptual or Psychological Carrying Capacity).

As coral reefs face unprecedented attacks on their regenerative capacity, it's becoming a grave concern for the survival of the people of Lakshadweep and TCC can help to bring back focus to the maintenance of the regenerative capacity of an environment. Given the recent example of Maldives which has lost 60% of its corals and faces the risk of submersion by 2030, areas dependent on tourism are facing massive challenges.

There are an urgent need to contain the practices that are damaging the environment in Lakshadweep thereby harming the corals. Educating tourists about responsible snorkeling and diving practices, including not touching or standing on corals, can help reduce physical damage. Enforcing regulations on boat anchoring to prevent damage to coral reefs is essential. Implementing mooring buoys can offer a safer alternative. Implementing a limit on the number of tourists allowed in sensitive areas can help prevent overcrowding and minimize stress on coral reefs. Stringent regulations and their enforcement have become quintessential to prevent the damage to conservation. There is a need to balance the economic benefits of tourism with the need for conservation through careful planning, cooperation between stakeholders, and a commitment to sustainable practices.

References

- Aggarwal, M. (2021, June 3). [Commentary] *The unspoken crises of Lakshadweep*. Mongabay-India. <https://india.mongabay.com/2021/06/commentary-the-unspoken-crises-of-lakshadweep/>
- Tata Economic Consultancy Services. (2003). 20 YEAR PERSPECTIVE PLAN FOR TOURISM DEVELOPMENT IN LAKSHADWEEP ISLANDS. In <https://tourism.gov.in/>. Department of Tourism, Government of India.
- Horton, B. A. (2022, March 12). The tourism paradox: Is the Maldives facing an existential crisis? *Euronews*. <https://www.euronews.com/green/2022/01/18/the-tourism-paradox-is-the-maldives-facing-an-existential-crisis>
- Raheem, P., Vincy M. V., Brilliant R. and Jude, E. (2017). Estimation of beach carrying capacity for lakshadweep islands south india. *Global Journal of Current Research*, 5(3), 2320–2920.
- Thomas, M., S, S., & Narayananankutty, N. (2023). Report of invertebrates with invasive nature from Lakshadweep Islands, Arabian Sea, India Focal Theme: 2. . . *ResearchGate*. https://www.researchgate.net/publication/367219508_Report_of_invertebrates_with_invasive_nature_from_Lakshadweep_Islands_Arabian_Sea_India_Focal_Theme_2_Invasive_species_threat_in_Marine_and_Freshwater_Ecosystem_OP_18
- Greentumble, & Greentumble. (2022). How does tourism affect coral reefs? | Greentumble. *Greentumble*. <https://greentumble.com/how-does-tourism-affect-coral-reefs>
- Coral Reef Info. (2020, November 5). *Where are coral reefs located? - Coral Reef info*. <http://www.coral-reef-info.com/where-are-coral-reefs-located.html>
- *The Great Coral Grief of Lakshadweep islands | United Nations Development Programme*. (n.d.). UNDP. <https://www.undp.org/india/great-coral-grief-lakshadweep-islands>
- *Coral reefs*. (n.d.). <https://education.nationalgeographic.org/resource/coral-reefs/>
- V. R., S. (1991). *STUDIES ON THE CORAL REEFS OF LAKSHADWEEP* [PhD Thesis]. Central Marine Fisheries Research Institute, (Indian Council of Agricultural Research).
- Thomas, M., S, S., & Narayananankutty, N. (2023b). Report of invertebrates with invasive nature from Lakshadweep Islands, Arabian Sea, India Focal Theme: 2. . . *ResearchGate*. https://www.researchgate.net/publication/367219508_Report_of_invertebrates_with_invasive_nature_from_Lakshadweep_Islands_Arabian_Sea_India_Focal_Theme_2_Invasive_species_threat_in_Marine_and_Freshwater_Ecosystem_OP_18
- 13. GOVERNMENT OF INDIA LAKSHADWEEP ADMINISTRATION (SECRETARIAT - GENERAL SECTION) (MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE). (2015, October 23). *The lakshadweep gazette* [Press release]. <https://cdn.s3waas.gov.in/s358238e9ae2dd305d79c2ebc8c1883422/uploads/2018/04/2018040424.pdf>



LEARNINGS FROM MIKOKO PAMOJA- A MANGROVE RESTORATION PROJECT

INTRODUCTION

In the increasingly globalised world, it becomes quintessential to balance tourism with sustainability. Many environmentally sensitive places in the world have become prone to the dangers of tourism and Kenya's Makongeni and Gazi villages also saw the destruction of their mangroves due to the increased tourism in the area. The mangrove cover in the village decreased by 20% between 1985 and 2009 and their deterioration became a critical issue. Erosion brought on by tour boats and waste from the tourism industry pollutes estuary waters, construction of beach hotels led to the degradation of the mangroves and also harmed the marine species that were dependent on these mangroves.

The increased concern for these mangroves and the need to protect these priceless ecosystems led to the creation of a prosperous restoration endeavour called the Mikoko Pamoja Project which is the first ever blue carbon initiative in the area. Mikoko Pamoja which means “mangroves together” in Swahili is the world's first community-based, mangrove-conservation project that is funded by the sale of carbon credits. A Carbon Credit is a tradeable certificate or permit that gives the holder power to emit carbon dioxide or other greenhouse gases over a certain period. These Carbon Credits are generated from projects around the

world that keep the Greenhouse Gases (GHGs) altogether. Carbon credits are basically market mechanisms for the reduction of greenhouse gas emissions and slowing down climate change.

Individuals and industrialists create carbon emissions, especially in rich countries. To try to counter the damaging effect, the tonnes of carbon emitted by them can be offset by initiating or participating in carbon-capture initiatives like planting trees that can remove carbon from the atmosphere. Businesses, NGOs, educational institutions, and citizens who want to reduce their carbon footprints buy these credits while preserving the environment. Swahili speakers refer to this carbon crediting as “hewa kaa” and Mikoko uses Mangroves as the domain to facilitate carbon - offsetting.

Mikoko Pamoja's commitment to sell at least 3,000 metric tonnes of CO₂ equivalent annually from 2013 to 2033 has been approved by Plan Vivo, a group that assists communities in planting trees and generating carbon credits. It is anticipated that this arrangement will bring in around \$130,000 per year in revenue. Through community participation and engagement, the project aims to offer long-term incentives for mangrove restoration and protection which can be accomplished by the sale of mangrove carbon credits in the area.

The main interventions included educating the locals about how cutting down mangrove trees damages fish nests and other marine life, which has an impact on their way of life. Community participation and educating the locals about the impact of deteriorating mangroves led to the establishment of fast-growing casuarina tree plantations as a substitute supply of wood fuel and construction posts. The maintenance of existing mangrove forests through the establishment of the Community Forest Association (CFA) and planting new ones for the carbon market with technical support from KMFRI and WWF-Kenya, was one of the significant turning points. The Project not only aids in attaining net zero emissions as envisaged by the Kyoto Protocol but also protects the environment by conserving mangroves which indirectly supports the fishing industry and absorb the impact of powerful waves as they come ashore, defending the shoreline and populated areas.

In addition to preserving land and marine environments, this project has also aided in employment generation and growth of the community as a whole. The revenue from the sale of carbon credits is used to fund local development initiatives in the areas of water and sanitation, education, health, and environmental preservation. For more than 5,400 individuals in the larger community and several hundred kids in elementary schools in Gazi and Makongeni, Mikoko Pamoja has funded pumps that provide safe drinking water. Additionally, the effort assisted 700 kids with the purchase of textbooks, athletic gear, and other educational supplies.

As a result of the interventions, Mama Hafsa claims that the communities of Gazi and Makongeni village are now on an unheard-of growth trajectory. "Our husbands have been able to return home with bigger fish of different kinds because they now have a secure and habitable place to nest and enough food," the woman said. "Since we started conserving the mangroves and established new plantations."

As far the global market is concerned, Mikoko Pamoja has had influence and Madagascar has started its venture on a similar path after understanding the impact of the project. The project has also been presented at COP26, Glasgow where countries were urged to reduce emissions. Although it is an excellent example of a ‘triple win’ project for climate, community, and biodiversity conservation, Critics argue that it is difficult the amount of carbon sequestered by the project. Despite criticism, Mikoko Pamoja has been successful in dealing with the ill impact of tourism in the Kenyan village.

It has not only reduced the impact of tourism on mangrove deterioration but also paved the way for net zero emissions through carbon trading. Its success can become instrumental for other countries as far as the protection of the environment is concerned.

References

- *Mikoko Pamoja community based organisation. (2021, October 27). Welcome to Mikoko pamoja! Mikoko Pamoja Community Based Organization. <https://www.mikokopamoja.org/>*
- *Rupert Bedford. (2022, June 6). The Blue Forest [Video]. YouTube. <https://www.youtube.com/watch?v=qWNdg-sHnvo>*
- *How Kenyan coastal villagers are cashing in on carbon credits. (2023, March 20). Africa Renewal. <https://www.un.org/africarenewal/magazine/january-2023/how-kenyan-coastal-villagers-are-cashing-carbon-credits>*
- *A business case for carbon credit: Mikoko Pamoja in Gazi-Kwale County. (n.d.). WWF Kenya. <https://www.wwfkenya.org/?229310/Mikoko-Pamoja-in-Gazi->*
- *Cross, C. (2021). A day in the life at Mikoko Pamoja and Vanga Blue Projects. Ocean Bottle Store. <https://oceanbottle.co/blogs/news/a-deep-dive-into-life-at-the-world-s-first-two-blue-carbon-projects>*
- *South Pole. (n.d.). Carbon Credits - what are they and how do they work? <https://www.southpole.com/carbon-offsets-explained>*
- *Mangroves for Community and Climate | Initiatives | WWF. (n.d.). World Wildlife Fund. <https://www.worldwildlife.org/initiatives/mangroves-for-community-and-climate>*
- *Conservation Education Society » Mangroves of Kenya. (n.d.). <https://ceskenya.org/mangroves-of-kenya/>*
- *Owen-Burge, C. (2021, August 17). A threat and a solution – tourism’s role in mangrove protection - Climate Champions. Climate Champions. <https://climatechampions.unfccc.int/a-threat-and-a-solution-tourisms-role-in-mangrove-protection/>*



ADOPTING GREEN TOURISM: A SUSTAINABLE ROADMAP TO A GREENER FUTURE

In recent years, the travel industry as a whole has undergone a paradigm change in light of the increasing awareness towards developing a sustainable future and moving towards environmentally aware practices and sustainable tourism is one the prerequisites to achieve such sustainability. Green tourism, also known as sustainable tourism or ecotourism, places a focus on responsible vacationing that lessens the amount of harm done to both the natural world and the communities in which travellers stay, all while fostering cultural preservation and economic growth. In the context of the growing cruciality attached to green tourism, it becomes necessary to understand its relevance in the process of protecting our world, and the techniques used by tourists and other stakeholders to promote an approach that is ecologically sensitive.

Understanding Green Tourism

One meaning of "green tourism" is "travel that is aware of the environment and takes into account the culture of the area." The organization's core values are the reduction of carbon footprints, the protection of wildlife, the preservation of traditional history, and the support of social and economic growth in the areas of goal. Green tourism tries to find a happy medium between the health of the environment, the health of the people who live

there, and the health of the guests. This will make sure that people in the future can still enjoy the beauty and variety that the world has to offer.

The Significance of Ecotourism in Today's World

The main goal of green tourism is to help protect wildlife and their natural environments. It does this by reducing the amount of disruption caused to ecosystems, which in turn serves to maintain the fragile web of life and keeps the ecological balance intact.

It is necessary to take action to reduce greenhouse gas emissions, which significantly contribute to the tourism sector. Green tourism encourages environmentally friendly modes of transportation, housing that is more energy-efficient, and responsible consumption, all of which contribute to a smaller total carbon footprint for the tourist industry.

Empowering Local Communities Sustainable tourism practices empower local communities by increasing the socioeconomic well-being of host areas, as a result of the creation of job possibilities, the support of small enterprises, and the preservation of traditional cultural practices.

Methods for Making Travel More Eco-Friendly

Travellers have the option of staying in eco-friendly hotels and inns, which are distinguished by their dedication to the preservation of the environment via the implementation of practises such as pollution prevention and water and energy conservation.

By supporting local businesses, you are helping to preserve cultural traditions while also strengthening the local economy by purchasing things that were made locally and participating in community-based tourist activities.

It is possible to significantly cut down on carbon emissions inside a destination by using modes of transportation that are friendlier to the environment, such as public transit, cycling, or walking.

Protecting endangered species and the environments in which they live by participating in environmentally conscious wildlife tours and avoiding activities that involve animal cruelty.

Respect for Local Culture For the sake of preserving cultural history and fostering an understanding between other cultures, it is necessary to respect the rituals, practises, and beliefs of the communities who are hosting travellers.

Travellers should follow eco-friendly practices such as transporting reusable water bottles, recycling garbage, and avoiding single-use plastics to decrease their negative influence on the surrounding ecosystem. Volunteering one's time and energy towards the advancement of causes such as environmental protection and community improvement may have a beneficial impact on both society and the natural world.

The country of Bhutan, which is well-known for its high Gross National Happiness index, has implemented an innovative tourist plan. The nation places an emphasis on tourism that has a minimal environmental effect and great economic value. This is accomplished by limiting the total number of tourists and fostering practices that are ecologically and culturally responsible.

This gem of Central America has emerged as a leading destination for ecotourism in recent years, drawing visitors with its large network of protected areas, eco-lodges, and ecologically conscious practices. Because of Costa Rica's unwavering dedication to the protection of its rich biological variety, the country has become a model for other countries.

s.

The Netherlands: Amsterdam in particular is a leader in promoting green tourism thanks to its bike-friendly infrastructure, measures to encourage renewable energy, and eco-friendly hotel option.

Conclusion

Ecotourism is not just a fleeting trend; it is important to the preservation of our planet for the generations who will come after us. Through the adoption of sustainable practices, tourists and other parties involved in the tourism industry have the opportunity to take an active part in the protection of the environment, the maintenance of cultural assets, and the promotion of socioeconomic growth. The allure of travel may be preserved via the practice of green tourism, which also helps to maintain the delicate beauty of our earth. We have the potential to co-create a future that is both more environmentally friendly and more sustainable.

References

- Weaver, D. B. (2014) Sustainable tourism: Research and reality. *Annals of Tourism Research*, 50, 1–15.
- Gössling, S., Scott, D., & Hall, C. M. (2020). Tourism and water: from stakeholders to rights holders and back again *Current Issues in Tourism*, 23(3), 369–376,
- Becken, S. (2018) The role of sustainability certification programmes in advancing sustainable tourism *Journal of Sustainable Tourism*, 26(7), 1023–1037.
- Stoeckl, N., Jackson, M., Straton, A., Stanley, O., & Larson, S. (2020). Indigenous Land and Sea Management Programmes (ILSMPs) Enhance the well-being of Indigenous Australians. *Ecological Economics*, 176, 106767.



RELIGIOUS TOURISM IN HARIDWAR

Introduction:

In the era of rapid globalisation, Tourism has emerged as one of the most profitable and fastest-growing industries. It makes up a whopping 10% of the world's GDP (UNEP). Unfortunately, this growth is accompanied by a detrimental impact on the environment with grave consequences. If things remain the same, UNEP predicts that tourism will generate an increase of 154% in energy consumption, 131% in greenhouse gas emissions, 152% in water consumption and 251% in solid waste disposal by 2050. It also leads to a significant loss of biodiversity. A sub-component of tourism that is one of the major contributors to environmental pollution, especially in a culturally diverse country like India, is Religious Tourism or Pilgrimage-related tourism.

Though traditionally pilgrimages have encompassed renunciation of worldly desires through ritual activities, they are associated with consumerism in the contemporary times. The magnitude and frequency of travellers has surged. Pilgrimages have been converted into an industry through commercialisation. Certain aspects like usage of big hefty package tours, qualitative changes in the marketing of sites, lesser engagement on a spiritual level with the ritualistic practices, etc have become commonplace. The increased inflow of pilgrims

lays stress on the resources, namely water supply, sewage and solid waste management. It also contributes to increased pollution owing to greater traffic of automobiles.

One of the most important pilgrimage destinations for Hindus in India is Haridwar, having particularly heavy tourist influxes around major festivals like Makar Sankranti, Basant Panchmi, Ganga Dussehra, Kanwar Mela, Maha Kumbh, Ardh Kumbh, etc. For instance, more than 4 crore kanwariyas ventured on the Kanwar yatra in 2023. Unfortunately, this is leading to adverse ecological outcomes. One aspect of the story relates to the pollution generated through ritual practices. This point is illustrated by the fact that Har-Ki-Pauri is a significant location for devotees in the region, who participate in a multitude of rituals like mass bathing, offering flowers, submerging idols of gods and goddesses and last remains of the ones who have passed away. The other side concerns the incapacity of the local government, visible in inefficient waste management systems.

The current state of Haridwar is lamentable. It's inflicted by extremely hot temperatures, traffic congestion and illegal constructions. The region is reportedly flooded with 30,000 tonnes of trash this year, and it is also seriously impacted by the discharge of untreated sewage and open defecation. According to the Delhi-based non-profit Toxic Link, it is one of the top locations where the Ganga is contaminated by microplastics, often found in packaging of religious offerings. Water quality, particularly the groundwater, is deteriorating, thereby negatively impacting marine life and human health.

The region suffers from poor governance, evident in inefficient waste management operations and deficient infrastructures. The problem is more pronounced in rural areas. Debris from demolition and construction is not properly disposed of. Illegal mining which has been reported on the news, especially sand mining, is problematic. Industrial activity such as construction of dams and barrages is severely impacting the ecosystem.

Actions have been taken to address the situation. In Haridwar and Rishikesh, the National Green Tribunal (NGT) has already imposed a ban on plastic carry bags, plates and cutlery. The National Mission for Clean Ganga (Namami Ganga) and the Clean India Mission (Swachh Bharat Mission) are major initiatives. Innovative projects such as Aviral, a circular system to tackle the problem of plastic waste, have also been introduced.

Following the success of the Varanasi ghat cleaning project, the 13th EC meeting of NMCG approved a ghat cleaning project in Uttarakhand, with projected cost of Rs. 15.90 crore. This entails cleaning 72 ghats (18 major ghats and 54 other ghats) of Haridwar over the course of three years using both manual and mechanical equipment, including scrubbers, jetting machines, dustbins, mobile vans, etc. Researchers at the National Environmental Engineering Research Institute (NEERI) have recommended limiting activities linked to cremations, trash disposal, and the dumping of Hindu idols, garlands, and flowers into rivers. Despite spending Rs 7,304.64 crore by the federal government, state government, and local authorities of the state of UP up to March 2017, the status of Ganga has "not improved in terms of quality or otherwise and it continues to be a serious environmental issue" as per a 2017 ruling of the National Green Tribunal.

Thus, the need of the hour is sustainable tourism and sustainable development. The general public needs to be made aware of the adverse environmental and health-related impacts of the existing practices and sustainable alternatives. The current initiatives, governmental and otherwise, are a step in the right direction but they need to be supplemented by greater activism in the arena of environmental protection.

References

- Bhadula, S. (2014). An Assessment of Solid waste generation during the Religious occasions at Haridwar city. *ResearchGate*. <https://www.researchgate.net/publication/268078776> An Assessment of Solid waste generation during the Religious occasions at Haridwar city
- Groundreportdesk. (2023, May 10). NGT warns of Haridwar's Ganga pollution and illegal construction - GR. *GR*. <https://m.groundreport.in/article/latest/ngt-warns-of-haridwars-ganga-pollution-and-illegal-construction/183251>
- Shinde, K. J. (2007). Pilgrimage and the environment: Challenges in a pilgrimage centre. *Current Issues in Tourism*, 10(4), 343–365. <https://doi.org/10.2167/cit259.0>
- *Microplastics concentration in Ganga more than any other major world river, finds new study*. (n.d.). <https://www.downtoearth.org.in/news/water/microplastics-concentration-in-ganga-more-than-any-other-major-world-river-finds-new-study-78069>
- *NMCG committed to ensuring cleanliness during Kumbh Mela 2019 approves community toilets projects and procurement of dustbins*. (n.d.). <https://pib.gov.in/newsite/PrintRelease.aspx?relid=180202>
- <https://www.ucbmsh.org/colleges-in-dehradun/courses/zoology-courses-in-dehradun/impacts-touristic-activities-environment-special-reference-uttarakhand/#:~:text=Sometimes%20tourists%20make%20very%20bad,risen%20after%20this%20Kanwar%20Mela>
- https://www.giz.de/en/worldwide/91987.html&ved=2ahUKEwj8_8_tvZWAAXW-bfUHHQ7iAY04ChAWegQIAxAB&usq=AOvVaw2fiKRReaEWGoyPXJ6xCq2H
- Sakshi. (2018, July 11). *Traffic congestion, environmental problems hovering over Uttarakhand*. *BW Businessworld*. <https://www.businessworld.in/article/Traffic-Congestion-Environmental-Problems-Hovering-Over-Uttarakhand/11-07-2018-154542/>
- Online, E. (2023, July 16). Holy city Haridwar inundated with 30,000 metric tonne of trash after 12-day Kanwar yatra. *The Economic Times*. <https://m.economictimes.com/news/new-updates/holy-city-haridwar-inundated-with-30000-metric-tonne-of-trash-after-12-day-kanwar-yatra/articleshow/101798305.cms>
- Pti. (2017, December 15). Blanket ban on plastic items in Haridwar, Rishikesh, other towns along banks of Ganga | *Mint*. *Mint*. <https://www.livemint.com/Politics/M3q94Uci3v00OkBbTJzIYL/NGT-bans-plastic-in-Haridwar-Rishikesh-to-tackle-pollution.html>
- *Tourism*. (n.d.). UNEP - UN Environment Programme. <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/responsible-industry/tourism>
-



SPACE TOURISM AND SUSTAINABILITY

“Who will win the Space Race?”, an intense topic of debate in the Cold War era has resurfaced in recent times, in an entirely different context. Space tourism is making headlines, and the now famously dubbed ‘Space Billionaires’ are all set to compete. This zeal for space travel can be dated back to early 2000s, when US multi-millionaire Dennis Tito became the first individual to fund his own space trip. Travelling beyond the Earth has gradually gained popularity among the ultra-rich, as several private trips have grown in number. Commercial space flights by a number of private startups as well as government organizations offer a promising future, with projections of commercial flights to outer space being available by early 2025. A massive \$10 Billion has been poured into private space companies by investors in 2021 while keeping huge environmental costs behind the curtains.

According to Robert Ryan, the impact of rocket emissions will hit the hardest in the upper atmosphere since pollutants are being emitted in the places where we don’t usually emit it. These spacecraft would emit excessive emissions, including black carbon directly into the stratosphere. Besides the ozone layer infiltration, black carbon can provoke lung disease, infiltrate the atmosphere

-e, harm ecosystems, and even impact agricultural practices; all while aggravating climate change. The particles emitted are almost 500 times more efficient at holding heat in the atmosphere than all other sources of soot combined.

Increased space travel has also led to the problem of space debris. The European Space Agency has spotted more than 30,000 pieces of space debris. Much more - too small to be tracked- exist in near-Earth space, and can threaten spaceflights. Hundreds of collision avoidance manoeuvres are performed every year, including by the International Space Station (ISS), where astronauts live. With increasing space traffic, these potential self-induced disasters are set to increase exponentially,

Incidences of space tourism have also reignited debates centred on 'Who Owns Outer Space'. NASA's announcement to end government investment in the International Space Station by 2025, might lead to it becoming a place to host tourists. A laissez-faire neo-liberal approach to outer space can transfer what was formerly an exclusive realm of governments into the hands of venture capitalists, and ultra-wealthy corporations. The 1967 Outer Space Treaty states that outer space is free for exploration and use by all states. But with commercial enterprises pushing in, pressure to demarcate boundaries in the space can emerge. In the absence of a defined regulation, multiple stakeholders, including states, and corporations might enter into a web of conflicts.

Concerted efforts have been made to brush these glaring facts under the carpet. After allegedly emitting a lifetime's worth of carbon footprint in a single spaceflight, it is proclaimed that these trips are a necessary step towards solving earth's problems. While companies claim to employ hybrid engines using different types of fuel, their burning process, akin to a candle, creates conditions that are favourable for soot generation. Comparisons are being made with emissions from the aviation industry. However, it must be kept in mind that spaceflights, though projected to boom in the near future, are far less in number. Yet, a spaceflight can emit as much pollution as a 10-hour trans-Atlantic flight. What's more concerning is that while the commercial aviation industry operates at a maximum altitude of 13 kilometres, spaceflights emit pollutants much higher, directly into the stratosphere which are more harmful to the environment than any other form of pollution.

Space Travel therefore needs to be balanced with sustainability since we need to develop sustainably in order make room for the future generations. Space has become the new destination for high end tourists in the near future. Both developed countries and organizations in the Global South, including the ISRO, are eyeing on the industry. On this road towards development, it is quintessential to keep sustainability at the forefront and many organizations are making efforts to ensure that space travel becomes sustainable.

SpaceX is now using Methane in its starship rockets, which is less polluting than kerosene and can be produced in Mars, facilitating round-trip missions. Reusable rocket ships are also being produced. However, there is an urgent requirement for regulations, especially global standards and certifications to mitigate any possible disaster. A Space Sustainability Rating developed by the World Economic Forum's Global Future Council on Space Technologies provides the opportunity for such companies to demonstrate sustainability and safety, and gain assistance on more sustainable methods.

Initiatives towards cleaner space fuels and mitigating space debris can lead the road to sustainable space tourism. The sector should be protected from becoming a playground for the ultra-rich, and a reminder of the peculiar global inequalities. The ambit of sustainable tourism needs to move beyond the Earth in order to protect the Earth from the petrifying depictions accompanying the emerging innovations in case of Space Tourism.

References

- PTI. (2023, June 28). India ranked 67th on Energy Transition Index, Sweden on top: WEF. *The Hindu*. <https://www.thehindu.com/sci-tech/energy-and-environment/india-ranked-67th-on-energy-transition-index-sweden-on-top-wef/article67018584.ece>
- Ministry of New and Renewable Energy. (2022, September 9). Renewable energy in India. *Press Information Bureau*. <https://pib.gov.in/FeaturesDeatils.aspx?NoteId=151141&ModuleId%20=%20202>
- United Nations Environment Programme. (2015). District energy in cities: unlocking the potential of energy efficiency and renewable energy. *UNEP*. <https://wedocs.unep.org/20.500.11822/9317>.
- BW Online Bureau. (2017). India in 2050: Future of Cities. *BW Disrupt*. <https://bwdisrupt.businessworld.in/article/India-in-2050-Future-of-Cities/30-03-2017-115420/>.
- Livemint. (2022, October 26). Lethal heatwave: More Indians are dying due to high temperature. *Mint*. <https://www.livemint.com/news/india/lethal-heatwave-more-indians-are-dying-due-to-high-temperature-11666778785596.html>
- Taylor, N. (2021, November 20). Five sustainable cooling solutions that can help South Asia deal with global warming. *Scroll.in*. <https://scroll.in/article/1010948/five-sustainable-cooling-solutions-that-can-help-south-asia-withstand-global-warming>
- PTI. (2022, February 25). How Ahmedabad tackled its heat waves and saved 1,000 lives a year. *The Hindu Business Line*. <https://www.thehindubusinessline.com/news/science/how-ahmedabad-tackled-its-heat-waves-and-saved-1000-lives-a-year/article65083634.ece>
- Danfoss Impact. (2023). Roadmap for decarbonizing cities. <https://cdn.sanity.io/files/5zabm86v/production/0397994639d425772172c5dec4f83180a9095ad4.pdf>

Contributors

Team CPRG, New Delhi
Dr. Ramanand Nand, Director CPRG

P. Harshvardhan, Yashica, Deepali Kataria, Banshaj Bharadwaj
Anoushka Salwan, Arnav Jain, Chahat Mahajan