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INDIA'S ADVANCEMENT IN GREEN ENERGY AT THE AIRPORTS

-Akriti Singh,
B.B.A, LL.B,
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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