Green Aviation Policy

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Civil aviation is regarded as the backbone of the Indian transport industry. Aviation's contribution to climate change could grow if appropriate actions are not taken to offset the growth. Therefore, Green Aviation Policy becomes critical for inclusive and sustainable growth of the civil aviation sector.

Placing it in syllabus: Economy
Dimensions:

- Emissions from aviation industry,
- Alternative fuels used in aviation,
- Aviation policy and electric vehicles in ground handling norms,
- Carbon footprint in aviation,
- Future potential

Content

Emissions from aviation Industry

- Until the Covid crisis, Indian air transport sector has **shown very strong growth**.
- Over the next 20 years International Air traffic Association (IATA) **forecasts passenger growth of 6.1% per year on average** – the number of annual air passenger journeys is forecasted to increase by more than 350 million over the period, moving to almost 520 million journeys in 2037.
- India can overtake Germany, Japan, Spain, and the UK **within the next 10 years to become the world's third largest air passenger market**.

There are three basic concerns:

1.Aircraft Noise

- Aircraft noise near airports poses major health and environmental risk
- is likely to impact future operations, as well as expansion and development of airports.

2.Greenhouse gas emissions

- Aviation is one of the fastest-growing sources of greenhouse gas emissions globally
- **Currently aviation sector contributes to 2% of overall anthropogenic Greenhouse Gas (GHG) Emission** (Intergovernmental Panel on Climate Change (IPCC), 2004)
- The **International Civil Aviation Organization's (ICAO) 2016 Environmental Report** "On Board A Sustainable Future" states that changes to the atmosphere, brought about by rising global temperatures caused by greenhouse gas emissions, will affect airplane's ability to fly, while rising sea levels will affect airports.

3.Improper Waste Management

- Waste Management by municipal bodies around the airports is also one of the concern areas for airport & aircraft operation.
- **Improper waste management leads to bird attraction** which is a threat for aircraft operation at airports.

Alternative fuels used in aviation

- An aviation biofuel [or bio-jet-fuel or bio-aviation fuel (BAF) or sustainable aviation fuel (SAF)] is a **biofuel used to power aircraft**.
- The **International Air Transport Association (IATA)** considers it to be one of the key elements to reduce the carbon footprint within the environmental impact of aviation.
- Aviation biofuel could help **decarbonize medium- and long-haul air travel** generating most emissions, and could extend the life of older aircraft types by

lowering their carbon footprint.

- **Biofuels** are **biomass-derived fuels, from plants or waste**; depending on which type of biomass is used, they could lower CO_2 emissions by 20–98% compared to conventional jet fuel.
- The first test flight using blended biofuel was in 2008, and in 2011 **blended fuels with 50% biofuels were allowed in commercial flights**.
- In 2019, the IATA was aiming for a 2% penetration by 2025.

Alcohol to Jet Synthetic Paraffinic Kerosene (ATJ-SPK):

- It is created from an **alcohol called isobutanol**
- produced from renewable feed stocks such as sugar, corn, or forest wastes
- Alcohols such as **ethanol or butanol are de-oxygenated** and processed into jet fuels

Hydroprocessed Esters and Fatty Acids Synthetic Paraffinic Kerosine (HEFA-SPK):

- a specific type of **hydrotreated vegetable oil fuel** used in aviation.
- is considered as leading alternative replacements for conventional jet fuel by the CAA because of its sustainability
- produced by the deoxygenation and hydroprocessing of the feedstock fatty acids of algae, jatropha, and camelina

Bio-SPK:

- involves using **oil which is extracted from plant sources like Jatropha, algae, tallows, other waste oils**, Babassu and Camelina to produce bio derived synthetic paraffinic kerosene (bio-SPK) by cracking and hydroprocessing.
- The growing of algae to make jet fuel is a promising but still emerging technology.

Aviation policy and electric vehicles in ground handling norms:

The Green Aviation Policy is aligned with the relevant National and International frameworks such as:

- ICAO's Vision, Mission and ambitious goals towards environment protection
- United Nations' **Sustainable Development Goals (SDG)** 2030
- India's **Intended Nationally Determined Contributions (INDC)** under UNFCCC- Paris Agreement
- Ministry of Civil Aviation's objective to achieve **Sustainable Aviation** as outlined in **National Civil Aviation Policy 2016.**

Aims of Green Aviation Policy

- **Systematic environmental management** through a robust Environment Management System
- **Airport Master Planning** by including environment impact assessment
- Setting up **Green Infrastructures** to help environmentally responsible and resource-efficient Operations
- **Minimize or mitigate the adverse effects of aircraft noise** on communities by implementing effective noise management programs
- Minimize and mitigate greenhouse gas emissions
- Adoption of **measures to reduce emissions in all areas**—aircraft, ground support, airport infrastructure and landside access traffic.
- **Adoption of resource efficiency measures including technology and operational improvements to reduce fuel consumption and improve electrical consumption efficiency**

Ground support equipment (GSE) is the support equipment found at an airport, usually on the apron, the servicing area by the terminal. This equipment is used to service the aircraft between flights.

There are efforts to use electric vehicles to serve these purposes:

- In late 2020, John F. Kennedy International Airport using only zero-emissions, all electric ground support equipment.
- Startup Aircraft Towing Systems World Wide (ATS) is developing a towing system that would be built into the taxiways and ramps of airports to move aircraft between gate and runway under electric power.
- Another startup, Moonware, is developing a family of electric-powered tow tugs capable of navigating autonomously between predetermined waypoints provided by air traffic control, receiving dynamic route updates via cloud network.

However, these efforts are in prototype phases or just in trial phases.

Carbon Footprint for Civil Aviation Sector:

As per the carbon footprint report of the DGCA:

- The total carbon emissions was **16.4 million tonnes of CO_2** per year
- global airline operations were responsible for the emission of **739 million tonnes of CO_2 representing 2-3% of global anthropogenic emissions**
- India's total c**arbon emission from aviation represents less than 1%** which is significantly lower than the global average;
- Overall, CO_2 emissions from Indian scheduled passenger airlines has increased which is attributed to domestic operations by new airlines, introduction of new routes and an overall increase in aircraft movements by the airlines as well as passenger growth.

Concerns and Challenges:

- This policy would **require the industry to implement significant capital investment** in order to comply with most of the regulations.
- Airlines will be required to invest heavily in energy and fuel-efficient engines, airline design and other similar heavy equipment.
- A **significant investment pressure on research and development (R&D)** at the present time will severely impact the already troubled industry, which is riddled with insolvency, rising fuel prices, severe competition and reduction of profitability.
- The policy, although aimed at easing the clearance process, has only **resulted in adding more technical compliance** with regard to environmental compliance.
- In addition, the policy is orientated towards the maximum utilisation of biofuels and other alternative renewable energies. However, an important point to be noted is that such **alternative fuels are not available in commercial quantities yet**.
- The supply chain for such fuels has not yet evolved to replace conventional energy sources. Thus, biofuels do not provide a concrete approach to reducing Co2 emissions, and as they are not viable for commercial use, they will lead to a huge financial strain on airlines.

Future Potential:

The green Aviation Policy shows the intent of the policy makers in achieving a cleaner and greener future. However, India needs to bring these policy initiatives into action all over India.

The measures needed to make Green Aviation Policy a success are:

- Green Building developments, Green/Renewable energy generation and use by all airports

- Carbon Neutral Airports & Airport Carbon Accreditations from ACI & Adoption of GHG accounting, carbon offsetting & neutrality programs
- Water management: Rain water harvesting, waste water treatment & reuse by Airports
- Implementation of Noise management programs- ICAO's balanced approach and DGCA requirements
- Low emission technologies at Airports- Fixed Electrical Ground Power (FEGP) & Pre Conditioned Air (PCA)
- Introduction of efficient Aircrafts by airlines
- Adoption of fuel efficiency improvement, operational efficiency improvement measures adopted by Airlines.

Mould your thought: What is the Green Aviation Policy? Why does India need to implement this policy all over the country?

Approach to the answer:

- Introduction
- Write about the aims of Green Aviation Policy
- Write about the environment related problems of Aviation Sector in India
- Way forward