**“Aviation And Environment : Issues & Challenges”**

“**Modern technology, Owes ecology, an apology.”**  
~Alan M. Eddison

*This paper tries to concentrate on growing impact of aviation on atmosphere and on the climate change. It further explains the background of the global operational concept and illustrates how it takes into account aviation environmental concerns and priorities.* *It makes an attempt to provide a clear basis of evidence for a wider and deeper public debate on these issues and concludes with a number of policy recommendations that are intended to ensure that aviation continues to contribute to the economy in a way that does not threaten environmental quality either globally or locally. By which we mean that Aviation is not an example of the intractable international industry that cannot be part of the solution.*

* **Introduction:**

Aviation is a fast growing sector of the economy .The air transport industry is of vital economic significance – as an employer, trading partner and driver of economic growth in the respective regions. Along sides this social and economic achievement, the focus is being shifted on a range of environmentally damaging consequences which are contributing to the global inventory of greenhouse gases which implicates climate change.

* **How aviation effects environment?**
* *LAND TAKE*- building an airport inevitably takes land away from its previous uses. In particular, it can affect wildlife habitats, landscape and heritage.
* NOISE POLLUTION- the areas in vicinity of airports have to face the repercussions of airplanes as Taxiing aircraft, aircraft engine tests, generators or airside vehicular traffic are few activities which creates problem of noise pollution. As it interferes with sleep patterns, concentration studies and gives rise to the cardiovascular problems. The reason for this is that noise above certain decibels becomes intolerable.
* *WATER POLLUTION*- particularly from de-icing aircraft, runways and other parts of the airport site
* *WASTE MANAGEMENT*- particularly waste generated inside terminal buildings.
* *EMISSIONS* - aircraft engines contribute to global warming as one of the most objectionable impacts of airport development and that for many airports.

Aircraft emits their exhaust gas pollutants directly in the upper troposphere and lower stratosphere. These emissions interact in these sensitive parts of the atmosphere and are responsible for changes in ozone and methane concentration thus forming contrails.

The most important factors influencing the atmosphere are: carbon dioxide,ozone (enhanced by NOx levels),methane (CH4),water vapour, contrails,cirrus,clouds,sulphates,soot aerosols.

The impact of these pollutants on human health can be summarized as follows:

*Carbon Monoxide (CO):* at high levels it causes headaches, drowsiness, nausea, slowed reflexes and atvery high levels, death. Even at low levels it can impair concentration and nervous system function and may cause exercise-related heart pain in people with coronary heart disease

*Nitrogen Oxides (NOx):* impair respiratory cell function and damage blood capillaries and cells of the immune system. They may increase susceptibility to infection and aggravate asthma, In children exposure may result in coughs, colds, phlegm, shortness of breath, chronic wheezing and respiratory diseases including bronchitis.

*Ozone*: ground level ozone reduces lung function in healthy people as well as those with asthma. It may increase susceptibility to infection and responsiveness to allergens such as pollens and house dust mites. It may cause coughs, eye, nose and throat irritation, headaches, nausea, chest pain and loss of lung efficiency and increases in the likelihood of asthma attacks.

*Particulate matter (PM):* strongly associated with a wide range of symptoms such as coughs, colds, phlegm, sinusitis, shortness of breath, chronic wheezing, chest pain, asthma, bronchitis, emphysemaand loss of lung efficiency.

* **Recommendations for the problems:**

The quantities of CO2 and water vapour emitted from aircraft engines are proportional to the amount of fuel used. So, a key to reduce these emissions is to increase the fuel efficiency of aircraft. Potential for fuel efficiency gains is concentrated in two areas:

• Technological options such as improvements in engine efficiency, using alternative fuels like use of bio jet and power sources and improvements in aircraft aerodynamics

• Operational procedures such as changes to air traffic control practices and flight arrangements.

• Voluntary agreements wherein industry and governments collectively agree target reductions in emissions.

• Emissions charges – where airlines or passengers are charged a fee related to the emissions produced by a particular flight.

• Aviation fuel tax – An aviation fuel tax for environmental reasons. However, under ICAO regulations, fuel tax cannot be introduced on fuel for international flights, but it could be promoted for domestic or EU-wide aviation fuel taxes.

* **Efforts & Recent Activities by ICAO:**

The International Civil Aviation Organization (ICAO), an [agency](http://en.wikipedia.org/wiki/Specialized_agency) of the [United Nations](http://en.wikipedia.org/wiki/United_Nations) which fosters the planning and development of international [air transport](http://en.wikipedia.org/wiki/Scheduled_air_transport) to ensure safe and orderly growth. Improving the environmental performance of aviation is a challenge ICAO takes very seriously. Even ICAO in its Chapter 4 has introduced the innovations to reduce engine noise by setting standards for new aircraft from 2006.

Its main effort in environmental protection has been focusing on addressing the impact of aviation emissions on change. In October 2009, it convened a High Level Meeting on International Aviation and Climate Change. In November 2009, ICAO had a Conference on Aviation and Alternative Fuels in which it was addressed that aviation greenhouse gas emission by development and deployment of sustainable alternative fuel by adoption of comprehensive mitigation strategy .It is, in essence, the first and only globally-harmonized agreement from a sector on a goal to address its CO2 emissions. The Programme of Action approved by the High-level Meeting and the results of the Alternative Fuels Conference were presented to the UNFCCC COP15 in December 2009 which was a well-known outcome of COP15. Results from the Assembly will be brought to the attention of COP16 in Mexico.

The Organization actively pursues its technical work to reduce the environmental effects of aviation with the support of CAEP. In its eighth meeting (CAEP/8) in February 2010 it carried out a thorough environmental trends assessment for noise and emissions related climate change. Wherein, several models were provided by States the Committee also agreed on several recommendations to reduce the impact of aircraft noise and emissions on community noise exposure, local air quality and global climate. For climate change CAEP framed a timetable for the development of a CO2 Standard for commercial aircraft, aiming at 2013.

* **Concluding remarks** :

Though improving the environmental performance of aviation is a challenge but needs to be tackled as environmental impacts may be the fundamental constraint on air transportation growth. So there is a need to address this problem by way of balancing the technology with the environment. As, righty said that:

“We have not inherited earth from our ancestors but borrowed it from our future generation.”

**References:**

* Aviation Environment Federation, “Economic Screening of Aircraft Preventing Emissions,” Prepared by CE Delft, August 2000.
* Environmental Protection Agency, “Evaluation of Air Pollutant Emissions from Subsonic Commercial Jet Aircraft,”
* International Civil Aviation Organization, “Report of the Committee on Aviation Environmental Protection,” Fifth Meeting, Montreal, Canada, January 2001.
* International Civil Aviation Organization, “Report of the Committee on Aviation Environmental Protection,” Eight Meeting, Feburary 2010
* “ Emerging trends in air and space law”. Edited by Dr. V. Balakista Reddy.
* .["Beginner’s Guide to Aviation Biofuels"](http://www-org.airbus.com/store/mm_repository/pdf/att00014178/media_object_file_BeginnersGuide_Biofuels.pdf). Air Transport Action Group. May 2009.<http://www.org.airbus.com/store/mm_repository/pdf/att00014178/media_object_file_BeginnersGuide_Biofuels.pdf>.
* Noise Pollution Clearinghouse (undated). ["Aviation Noise"](http://www.nonoise.org/resource/trans/air/airport.htm). <http://www.nonoise.org/resource/trans/air/airport.htm>.

**Authors :**

1. **Aakriti Pandey**

**(2nd year student of Dr. Ram Manohar Lohiya National Law Univesity, Lucknow)**

1. **Anjali Upadhyay**

**(2nd year student of Dr. Ram Manohar Lohiya National Law Univesity, Lucknow )**