Climate Change and its Effects on Aviation

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"How does climate change affect the aviation industry?" question was handled in 2014 in the creation of the “Fifth Assessment Reports of the Intergovernmental Panel on Climate Change- IPCC”. (Hane, 2016) The core aim of the forum was to exemplify the effects of climate change on air travel as a paramount part of the transport sector. Dedicated studies were published that looked at the user and scientific issues related to the problem. Such studies are underway and maybe in a few years, one will be able to distinguish the climate change impacts towards the aeronautics industry in a large-scale phenomenon. The micro-scale effects will also be highlighted since they affect the system in the long run.

The aviation and navigation system is adversely exposed to the climate portents not only on the earth's surface but in the higher troposphere and lower stratosphere levels. The aviation industry has the sturdiest convention of prioritizing safety within the transport sector and this is a key element to show that they should be keen on climate change effects. Climate change experts also blame aviation on the increase of this menace. The “International Civil Aviation Organization” (ICAO) has estimated that aviation is highly responsible for the release of most of Carbon Dioxide emissions (Sullivan, 2017). Aircraft are said to emit nitrogen oxides, which trap high altitude heat, which leads to global warming. The industry has constantly committed itself to improving its fuel efficiency to stabilize its Carbon dioxide emissions to solve the climate change menace. In this advancement of helping improve climate change in the globe, the aviation industry has been caught up in a situation where it has to deals with climate change adverse impacts. There is justifiably high media coverage of the impact of climate change on the aviation industry and vice versa. However much input is placed on the effects that aircraft have had on the climate.

**Weather Aviation Hazards**

Airframe icing is conventionally viewed as an issue for general aviation and mostly on commuter aviation which contains rudimentary anti-icing devices and limited engine power. The existence of supercooled droplets are brought by varied conditions such as the presence of water vapor. General warming trends, as well as the increase of latitude all, lead to icing. They also cause an upper frontier on icing layers due to the high temperatures. According to (Hane, 2016), there is a high chance of an increase in the sand and dust storms' intensity which is caused by extensive drought periods and strong winds in the subtropical latitudes. The latter highly affects the regularity and safety of flights. The performance and maintenance of air flight engines are affected due to the silicates retrieved from dust storms which are dangerous when melted.

**Global Climate Events Effects towards the Aviation Sector**

Pale-climatologic studies show that there has been increased severity of the effects of global climate events such as El Niño towards the aviation industry. This negative trend was observed during the 2015/2016 El Niño event (Sullivan, 2017). The high amplitude attached to its effects affected vast regions in the world leading to heat waves and extreme droughts. The extreme conditions have major effects on varied forms of transport and also in the aviation industry. To offer robust scientific help to aviation stakeholders, the scientific community ought to deal with typical scenarios and should try to develop solutions based on the scenarios. There is a paradoxical occurrence that is viewed in global climatic events such as El Niño, the evidence should help in predicting when the events may occur next and how to handle the impacts that arise from such occurrences (Coffel & Horton, 2015).

**Conclusion**

The efforts to minimize fuel burn as well as CO2 emissions over the past five decades has been overly impressive. The new aviation management systems have shown potential in trying to work on the issue of climate change. The Commission for Aeronautical Meteorology (CAEM) has an avid support for efforts shown by aviation stakeholders in handling climate conditions (Sullivan, 2017). The organization has held several meetings to raise issues that the aviation industry is handling when it comes to atmospheric science and climate change. The information garnered from these forums aides the aviation industry to make informed decisions. Major aviation stakeholders also create mitigation measures in these meetings. Long-term adaptation strategies should also be created to have a clear outline of what is to be done if climate change worsens. The International Aviation Safety Agencies should team up to create guidance materials as well as the most efficient practice models that can help in risk management of adverse issues that are linked with climate change. Major stakeholders in the aviation sector such as; airport managers, operators, aviation manufacturers, the government, national safety regulators and pilots should be involved (Hane, 2016). Multidisciplinary efforts are needed to understand the best means of curbing climatic change impacts on the aviation industry in the future.

Sources

Coffel, E., & Horton, R. (2015). Climate change and the impact of extreme temperatures on aviation. *Weather, Climate, and Society*, *7*(1), 94-102.

Hane, F. T. (2016). Comment on “Climate Change and the Impact of Extreme Temperatures on Aviation”. *Weather, Climate, and Society*, *8*(2), 205-206.

Sullivan, R. (2017). *Corporate responses to climate change: achieving emissions reductions through regulation, self-regulation, and economic incentives*. Routledge.