

Crusade against the carbon dioxide or how the civil aviation industry tries to rein its ever increasing carbon dioxide emission

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Aviation by the combusted fuel releases a large amount and lot of different pollutants into the atmosphere. Considering the climate change, one of the most serious problems is the carbon dioxide emission.

According to the most recent data from the Intergovernmental Panel on Climate Change (IPCC), air traffic (domestic and international) is responsible for 2% (814 million tons) of the global carbon dioxide emissions generated by human activity, of which international air traffic produces at about 1.3%. Of course, it is not easy to even grasp this enormous number but easier to think an average airliner we generally travel with and a rough estimation of its one-year carbon dioxide emission. This aircraft consumes ~1.4-1.5 kg kerosene in every second, accordingly produces roughly 4.5 kg carbon dioxide. This kind of aircraft spends minimum 12 hours from 24 hours in the air and 300 days in a year (if less its operation is not economical). The emission production of this average use (rather underestimated) is $4.5 \times 3600 \times 12 \times 300 = 58,320,000$ kg, or 58,320 tons of carbon dioxide. Considering the expected growth rate of aviation, the amount of emitted carbon dioxide, without additional measures, would be triplicated in the next 30 years.

One of the main objectives of the International Civil Aviation Organization (abbreviated ICAO), the United Nations' Organization and highest level coordinator of civil aviation is to support of an economically sustainable and environmentally responsible civil aviation sector. In accordance with it ICAO has decided that with its Member States and in cooperation with the relevant organizations to achieve the global 'carbon neutral' growth of international aviation. This basket includes numerous measures from aircraft technologies to operational improvements, sustainable alternative fuels, and market-based measures (MBMs).

In this paper, we deal mainly with the last one, the so-called MBM (Market Based Measures), namely CORSIA (Carbon Offsetting and Reduction Scheme of International Aviation).