Air Travel Slowly Recovering

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World air travel rose less than 1 percent in 2003, the latest year with data available, according to the International Civil Aviation Organization (ICAO).[1] In 2003, passengers traveled 2.99 trillion passenger-kilometers, nearly recovering to levels posted before the unprecedented slowdown in air travel that followed the terrorist attacks of September 2001.[2] (See Figure 1.) Between 2000 and 2002, air travel fell by 73 billion passenger-kilometers, or 2.4 percent, from a high of 3.04 trillion passenger-kilometers.[3]

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In the 50 years since the first commercial jet was introduced, demand for air travel has increased by 9 percent a year on average, and the market is expected to continue growing over the next 20 years, albeit at only 3–5 percent per year.[4] Currently, 1.7 billion people (see Figure 2) and 35 million tons of freight are transported by aircraft each year.[5] North America generates just over one third of the global air traffic.[6]

The market for air travel is expanding rapidly in both the Asia/Pacific region and the Middle East.[7] Demand for domestic air transport in China is growing at the rate of 10 percent a year, compared with 2 percent a year in the United States.[8] In Africa, meanwhile, most aviation involves South Africa and is linked to either tourism or perishable food exports to Europe.[9]

Of 25,000 new planes slated for construction, approximately 17,000 will be for short-haul flights, which by 2023 are expected to account for 90 percent of all departures.[10] China's air fleet is due to skyrocket from 777 planes in 2003 to just over 2,800 planes in 2023.[11] Nearly two thirds of these are projected to be single-aisle planes, built for short-haul, usually domestic, routes.[12]

The world's airlines use some 205 million tons of aviation fuel (kerosene) each year, producing greenhouse gases such as carbon dioxide (CO_2), nitrogen oxides (NO_x), ozone, sulfur dioxide, and methane.[13] (Jet fuel is the second largest expense to airlines after labor and can amount to 20 percent of companies' operating expenses; one industry representative estimated that oil price increases in mid-2004 could add $1 billion a month to aviation costs.)[14] Aviation accounts for 2 percent of all human-caused CO_2 emissions but nearly all the NO_x emissions found 8–15 kilometers above Earth.[15]

Planes accounted for about 3.5 percent of the climate impacts due to human activities in 1992.[16] The Intergovernmental Panel on Climate Change estimates that by 2050, aviation could have 11 times as much impact on climate as it did in 1992.[17] The ICAO has been charged with coordinating the reduction of emissions from aircraft fuels, which are not covered by targets set in the Kyoto Protocol on climate change that went into effect in February 2005.[18]

Emissions from aviation can also produce contrails—clouds of water vapor, a greenhouse gas, that condense at high altitudes. After the September 2001 terrorist attacks, when nearly all aircraft were restricted from using U.S. airspace for several days, the difference between daytime and nighttime temperatures in the nation averaged 1–2 degrees Celsius above normal. This suggests that the absence of contrails lowered high cloud formation and allowed more sunlight to enter Earth's atmosphere, as well as providing less insulation against cooling at night.[19]

Planes use the most fuel—and produce the most harmful emissions—during takeoff. On short flights, as much as 25 percent of the total fuel consumed is used then.[20] Nearly three quarters of the new routes in Europe and North America are less than 2,000 kilometers long.[21] The most fuel-efficient length, however, is about 4,300 kilometers—roughly a flight from Europe to the U.S. East Coast.[22]

About 45 percent of all flights in the European Union cover less than 500 kilometers.[23] The Climate Action Network Europe estimates that a passenger traveling from Amsterdam to London would produce more than three times as much CO_2 traveling by plane than by train.[24] By improving rail systems, governments could provide a more sustainable alternative to the expected increase in short-haul air travel.[25]

Figure 1. World Air Travel by Distance, 1950–2003

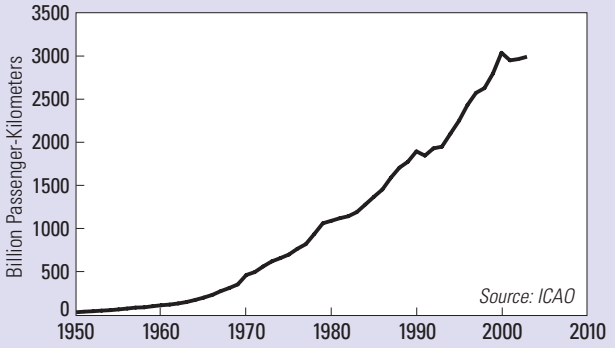
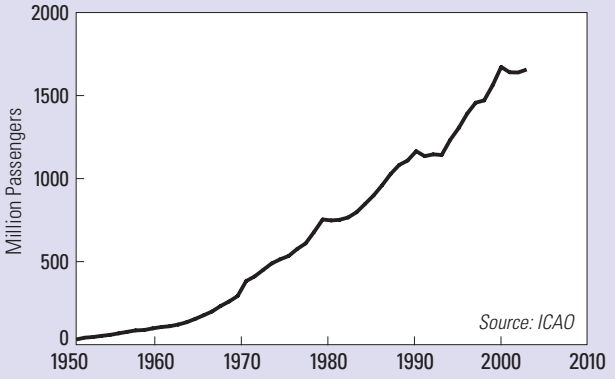


Figure 2. World Passenger Air Travel by Volume, 1950–2003



World Air Travel by Distance and Passenger Volume, 1950–2003

Year	Distance (billion passenger-kilometers)	Passengers (million)
1950	28	31
1955	61	68
1960	109	106
1965	198	177
1970	460	383
1971	494	411
1972	560	450
1973	618	489
1974	656	514
1975	697	534
1976	764	576
1977	818	610
1978	936	679
1979	1,060	754
1980	1,089	748
1981	1,119	752
1982	1,142	766
1983	1,190	798
1984	1,278	848
1985	1,367	899
1986	1,452	960
1987	1,589	1,028
1988	1,705	1,082
1989	1,774	1,109
1990	1,894	1,165
1991	1,845	1,135
1992	1,929	1,146
1993	1,949	1,142
1994	2,100	1,233
1995	2,248	1,304
1996	2,432	1,391
1997	2,573	1,457
1998	2,628	1,471
1999	2,798	1,562
2000	3,038	1,672
2001	2,950	1,640
2002	2,965	1,639
2003	2,992	1,657

Source: ICAO.

8. "Stop World Bank Pressure to Ban Rickshaws," *Sustainable Transport*, winter 2004, p. 6.
9. John Pucher and John L. Renne, "Socioeconomics of Urban Travel: Evidence from the 2001 NHTS," *Transportation Quarterly*, summer 2003, p. 50.
10. Aimée Gauthier, "Using Bicycles to Save Lives," *Sustainable Transport*, winter 2004, pp. 8–11.
11. Ibid.
12. Carlos Felipe Pardo, "Feeding Bogotá's TransMilenio with Non-Motorized Transport," *Sustainable Transport*, winter 2004, pp. 6–7.
13. Ibid.
14. John Pucher and Lewis Dijkstra, "Promoting Safe Walking and Cycling to Improve Public Health: Lessons from the Netherlands and Germany," *American Journal of Public Health*, September 2003, pp. 1509–16.
15. Pucher and Renne, op. cit. note 9, p. 50.
16. Pucher and Dijkstra, op. cit. note 14, pp. 1509–16.
17. Ibid.
18. Ibid.
19. Ibid.
20. Ibid.

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1. International Civil Aviation Organization (ICAO), "World Air Passenger Traffic to Rebound Strongly in 2004 and Continue to Grow in 2005 and 2006," press release (Montreal: 22 September 2004); increase in air travel based on passenger-kilometers performed.
2. ICAO Statistics Section, e-mail to author, 20 January 2005. Figures for 1950–69 do not include states formerly within the Soviet Union; figures for 2003 are provisional ICAO estimates.
3. ICAO Statistics Section, op. cit. note 2.
4. ICAO Statistics Section, e-mail to author, 3 February 2005; John Whitelegg and Howard Cambridge, *Aviation and Sustainability* (Stockholm: Stockholm Environment Institute, 2004), p. 7.
5. ICAO Statistics Section, op. cit. note 2; ICAO, op. cit. note 1.
6. Rebecca Bowe et al., "Flying the Dirty Skies," *E Magazine*, September/October 2004; North America represented 34 percent of the ton-kilometers performed and 38 percent of the passengers carried in 2003, according to ICAO Statistics Section, op. cit. note 4.
7. ICAO Statistics Section, op. cit. note 4.
8. .Whitelegg and Cambridge, op. cit. note 4, p. 7.
9. Ibid.
10. Boeing, *Current Market Outlook 2004*, at www.boeing.com/commercial/cmo.
11. Ibid.
12. Ibid.
13. Organisation for Economic Co-operation and Development, *Policy Instruments for Achieving Environmentally Sustainable Transport* (Paris: 2002).
14. "Oil Prices to Hit Airline Profits," *BBC News*, 7 June 2004; "High Oil Costs Hit More Airlines," *BBC News*, 18 August 2004.
15. Intergovernmental Panel on Climate Change (IPCC), *Aviation and the Global Atmosphere: Summary for Policy Makers* (Cambridge, U.K.: Cambridge University Press, 1999); Whitelegg and Cambridge, op. cit. note 4, p. 7.
16. IPCC, op. cit. note 15.
17. Ibid. These estimates do not take into account possible changes in cirrus clouds.
18. IPCC, op. cit. note 15; Bowe et al., op. cit. note 6; Kyoto Protocol to the United Nations Framework Convention on Climate Change, Article 2.2.
19. D. J. Travis et al., "Contrails Reduce Daily Temperature Range," *Nature,* 8 August 2002, p. 601.
20. Whitelegg and Cambridge, op. cit. note 4, pp. 17–18; ICAO Statistics Section, op. cit. note 4.
21. Whitelegg and Cambridge, op. cit. note 4, pp. 17–18.
22. Ibid.; ICAO Statistics Section, op. cit. note 4.
23. Whitelegg and Cambridge, op. cit. note 4, p. 8.
24. Bowe et al., op. cit. note 6.
25. Whitelegg and Cambridge, op. cit. note 4, p. 8.

POPULATION CONTINUES ITS STEADY RISE (pages 64–65)

1. U.S. Bureau of the Census, *International Data Base*, electronic database, Suitland, MD, updated 30 September 2004.
2. Ibid.
3. Ibid.
4. U.N. Population Division, *World Population Prospects: The 2002 Revision* (New York: 2003).
5. Ibid.
6. Ibid.
7. Ibid.
8. Ibid.
9. Gary Gardner, Eric Assadourian, and Radhika Sarin, "The State of Consumption Today," in Worldwatch