

**54<sup>th</sup> CONFERENCE OF  
DIRECTORS GENERAL OF CIVIL AVIATION  
ASIA AND PACIFIC REGION**

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AGENDA ITEM 5: AVIATION AND ENVIRONMENT

**TO DEVELOP A GREEN CIVIL AVIATION THROUGH  
UPGRADING EXISTING FACILITIES AND INTRODUCING  
GREEN, RENEWABLE AND LOW-CARBON GROWTH**

(Presented by the People's Republic of China)

**INFORMATION PAPER**

**SUMMARY**

China is a developing country with a population of over 1.3 billion, and the Chinese government is bent on building a more beautiful China with blue sky, green space, and clean water by integrating ecological civilization building into all aspects and throughout the whole process of economic and social development. As an important strategic industry supporting China's economic and social development, China civil aviation has consistently upheld the concept of green development and has been active in promoting energy conservation and emission reduction initiatives, with notable successes. China is ready to strengthen exchanges with other countries for mutual enrichment. The Conference is invited to note the tangible actions that have been taken by China to develop a green civil aviation and the achievements that have been made, and provide countries, developing countries in particular, with exchange and cooperation platforms to promote the development of green aviation.

## **TO DEVELOP A GREEN CIVIL AVIATION THROUGH UPGRADING EXISTING FACILITIES AND INTRODUCING GREEN, RENEWABLE AND LOW-CARBON GROWTH**

### **1. INTRODUCTION**

1.1 China is the largest developing country in the world. In 2015, China's total population was 1.375 billion, with the Gross Domestic Product (GDP) and energy consumption per capita respectively standing at 49,400 yuan (approximately 7,931 US dollars) and 3.14 tons of standard coal or so. Development is still the top priority for China now and will remain so for some time to come.

1.2 China ranks second among ICAO member states in terms of air traffic volume. In 2016, China's civil aviation industry handled a total traffic of 96.09 billion ton-km<sup>1</sup>, with an average growth rate of 10.85% per year in the period 2011 – 2016. China's aviation market is enjoying robust demand and is expected to maintain fast growth for some time to come. It is planned that by 2025, China will be home to about 320 civil airports. By the end of 2020, there will be about 260 civil airports in China, and the number of airports each with an annual passenger traffic over 100 million will be over 40.

1.3 Ecological civilization building has a bearing on promoting the well-being of mankind, and is essential for the campaign to build a more beautiful China. China's civil aviation industry has been driven by the concept of green development, and is compounded with twin tasks and challenges of upgrading existing facilities and introducing green, renewable and low-carbon growth during the process.

### **2. DISCUSSION**

2.1 From 2011 to 2016, China's civil aviation industry carried out over 1,200 energy conservation and emission reduction projects in eight categories, with a total investment of over 15 billion yuan (excluding purchases of new aircraft) or approximately 2.4 billion US dollars. In 2016, the industry consumed 0.293 kg of fuel per RTK, down by 13.8% compared with 2005.

2.2 Major projects have been carried out to promote systematic efforts on energy conservation and emission reduction.

2.2.1 Starting from 2011, CAAC has been dedicated to promoting the replacement of aircraft Auxiliary Power Units (APU) with gate Power and Pre-Conditioners (PCs) across the industry. Currently, 43 airports with an annual passenger throughput of over 5 million have been equipped with gate power and PCs, and the annual utilization rate of the equipment stands at over 70%, saving over 300,000 tons of CO<sub>2</sub> emissions each year.

2.2.2 From 2014, CAAC has been working to promote the use of electric Ground Service Vehicles (GSV) at civil airports. A three-year pilot program has been carried out in six airports in Beijing, Chengdu, Kunming, Changsha, Xiamen and Harbin, with a total investment of nearly 300 million yuan (48.17 million US dollars). A total of over 400 electric GSV and over 160 charging piles have been put in place. Through the pilot program, CAAC has explored various management models and a set of technical standards, which sets a solid foundation to enhance the promotion of the electric GSV across the industry. In the next few years all airports each with an annual passenger traffic of over 5 million are encouraged to expand the use of electric GSV. Meanwhile, more efforts will be taken to develop a monitoring system featuring network, visualization and intelligence.

2.2.3 CAAC has consistently promoted the establishment and management of temporary routes to continuously optimize the airspace and route structure. In 2016, 326,000 flights used temporary routes, which led to a reduction of 9.79 million km in flight distance, 53,000 tons in fuel consumption, and 166,000 tons in CO<sub>2</sub> emissions.

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<sup>1</sup> It should be noted that the statistic data does not include Hong Kong and Macao SARs, and Taiwan Province of China.

2.3 CAAC has been actively promoting the development and application of management systems.

2.3.1 CAAC has developed a civil aviation statistical system of energy consumption and emissions. From 2013, statistics activities have been carried out on the energy consumption and emissions of airlines and airports on a trial basis, and progress has been made on the availability and verification of the data.

2.3.2 Building energy management systems have been installed and used in places such as terminal buildings, office buildings, teaching and training facilities, to monitor and analyze the use of all kinds of energy and related factors, so as to provide data that can be used in the decision making and solutions for the improvement of energy efficiency.

2.3.3 Hardware and software systems have been developed based on QAR data, ACARS data and other data sources, to reinforce analysis of fuel consumption of flights and thereby to manage fuel consumption in a meticulous way.

2.4 The energy performance contracting model has been promoted across the industry. CAAC has used the model to encourage retrofitting of energy-efficient lighting systems and heating/cooling systems in airports (terminal buildings, movement areas), teaching spaces, parking buildings, etc., and actively promote the rolling out of solar photovoltaic and thermal projects in places in a position to do so, which has reduced the consumption of fossil energy and improved the professionalism of civil aviation companies in energy conservation and emissions reduction.

2.5 Continuous efforts have been made to promote aircraft retrofits for better fuel efficiency. Over 1,000 aircraft have been installed with winglets. Airlines are encouraged to use lightweight seats, catering trolley carts and containers used for air transport to reduce the weight of aircraft; regularly cleanse engines by using self-developed equipment or equipment purchased or rent from the market to improve engine performance; and innovate cooperation with relevant companies to facilitate the use of bio jetfuel.

2.6 Newly-built or expanded airports are required to carry out the concept of green development from the outset, with emphasis on planning and integrating both immediate and long-term needs, to avoid the practices of “construction first, retrofit later” and “pollute first, treatment later”, and thereby reduce the waste of resources and cost.

2.7 The industry has been actively engaged in the development of a national carbon emissions trading scheme and other market-based mechanisms. According to the 13th Five Year Plan of the People’s Republic of China, China will explore and introduce market-based mechanisms for energy& water saving and carbon emissions reduction, to enrich the measures for ecological civilization building. China’s civil aviation industry has actively participated in policy research and system design in this regard in light of its own development characteristics and has kept stepping up efforts on energy conservation and emissions reduction.

### **3. ACTION BY THE CONFERENCE**

3.1 The Conference is invited to note the information contained in this paper.

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