

CHINA'S ACTION PLAN



**to Limit and Reduce CO₂ Emissions
from International Aviation**







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BACK GROUND

Article 9 of ICAO Assembly Resolution A37 – 19 (2010), Consolidated Statement of Continuing ICAO Policies and Practices Related to Environmental Protection – Climate Change, "encourages member States to submit their action plans outlining their respective policies and actions, and annual reporting on international aviation CO₂ emissions to ICAO", making it explicit that it is voluntary instead of mandatory for States to submit their action plans.

As a developing country, China has overcome tremendous difficulties in aviation sector, such as technical and financing difficulties, inadequate staffing and insufficient capabilities, and has carried out a lot of effective work in aviation energy conservation and emissions reductions. Currently, the Civil Aviation Administration of China (CAAC) has already formulated the energy conservation and emissions reduction plan for the next decade. Based on the present situation of China, the plan is dedicated to reducing the impact of aviation upon climate change while accommodating the current capacity as well as the growth demand of its civil aviation sector, enabling the sector to develop in a sustainable manner. It calls for the concerted efforts by all actors in China's civil aviation community to reach this target. However, the CAAC will never swerve from the government's solemn promise and will never spare any efforts in accomplishing the plan.

(Note: The contents and data in this document do not cover that of the Hong Kong Special Administrative Region, the Macao Special Administrative Region and Taiwan Province except for points as specified. The official version of the document is presented in Chinese and the English version is provided for reference only.)

PREFACE

China's civil aviation plays a significant role and grows fastest in the national transportation system. The CAAC has been attaching great importance to and promoting actively the fight against international aviation emissions and climate change by speeding up the development of a resource-economical and environment-friendly industry. The principal mandate of the CAAC is to promote the development of air transport in a sustainable, sound and coordinated manner.

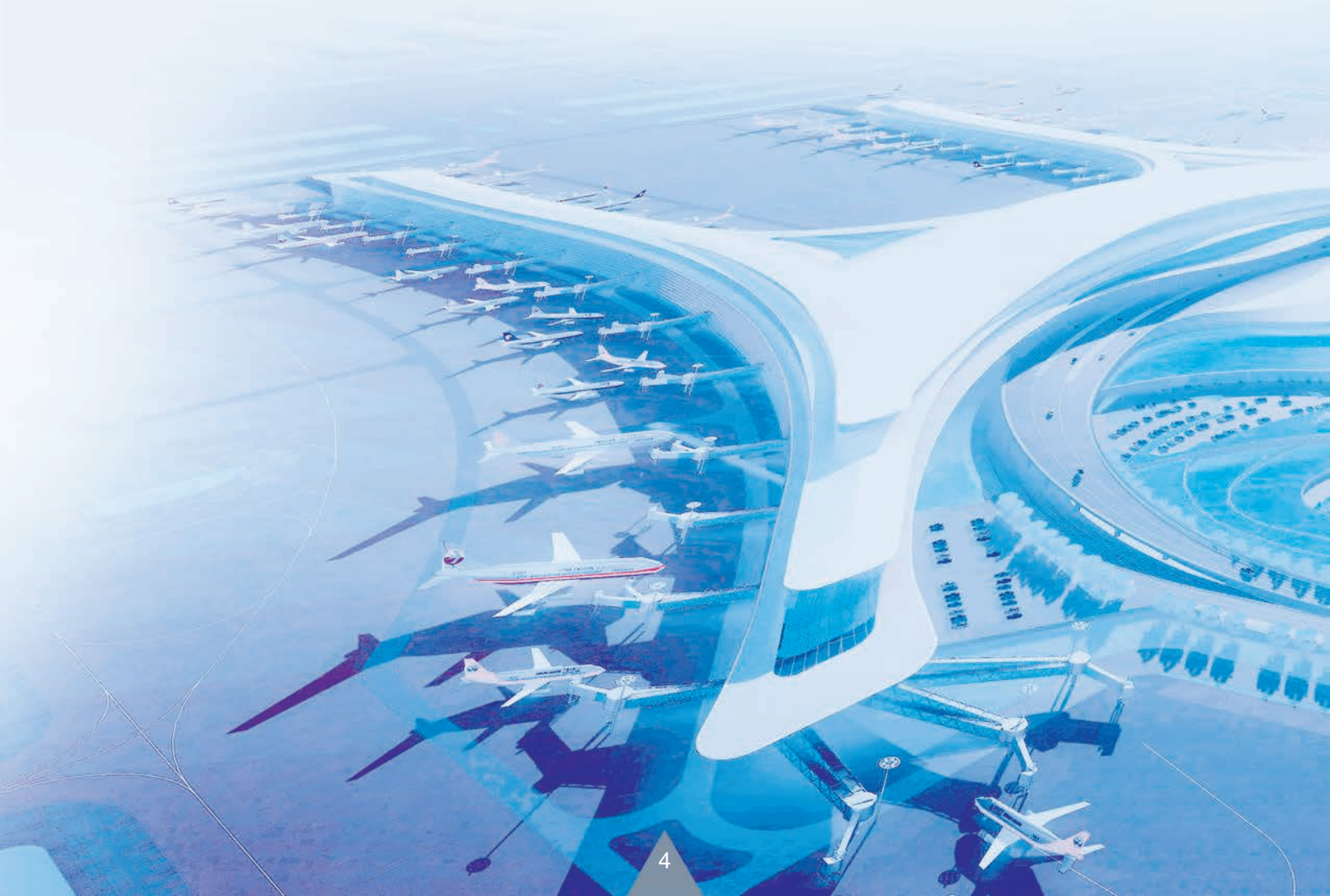
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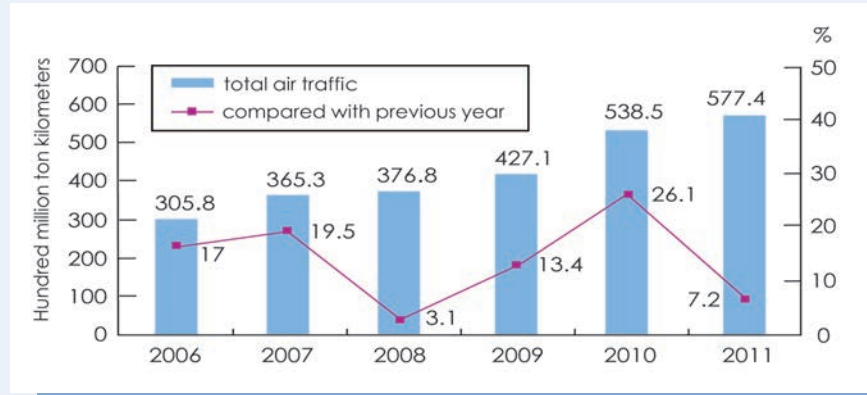


An Overview of China's Civil Aviation Industry

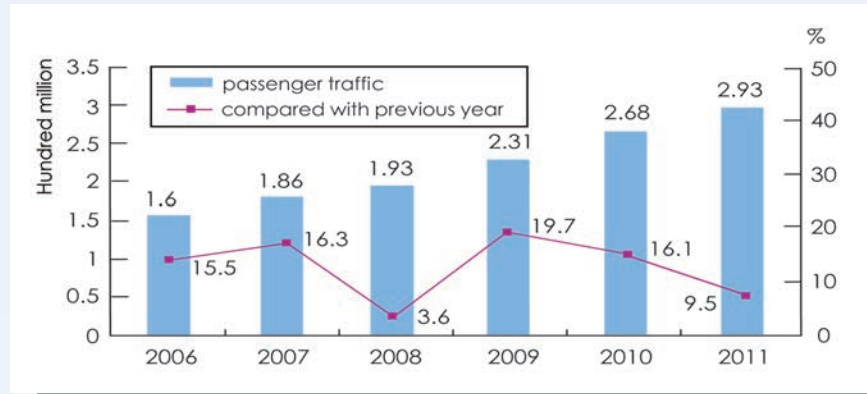
- ➔ In 2011, the whole industry carried a total air traffic of 57.74 billion ton kilometers, passenger traffic of 293 million, and cargo and mail of 5.58 million tons, representing an increase of 7.2%, 9.5% and -1.0% respectively over that of 2010. And on international operations, the corresponding figures are 19.684 billion ton kilometers for total air traffic, 21.18 million for passenger traffic, and 1.78 million tons for cargo and mail traffic, representing an increase of 2.0% , 9.7% and -7.6% respectively over that of 2010.
- ➔ By the end of 2011, the industry has possessed 1,764 transport aircraft and 180 certified civil airports. The number of air lines for scheduled operation totals 2,290, of which 443 are international ones. Operators registered in Mainland of China provide international scheduled services to 126 destinations in 58 countries.



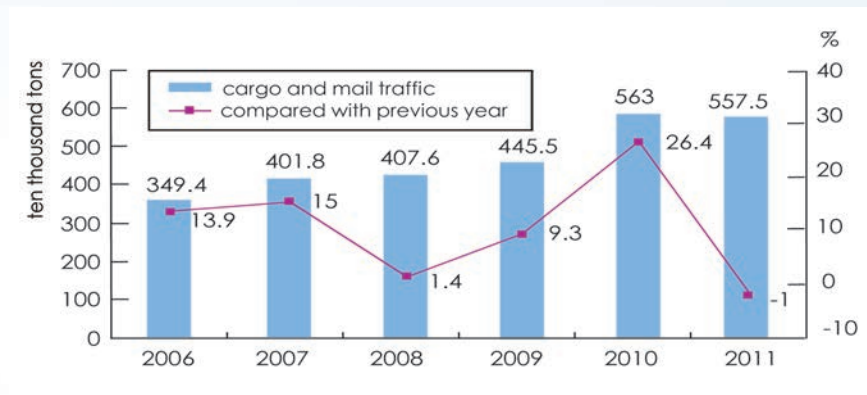
Total air traffic: 2006 to 2011



Passenger traffic: 2006 to 2011




Cargo and mail traffic: 2006 to 2011





The Position to Address the Climate Change

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- 2.1** China maintains that principles of "Common But Differentiated Responsibilities (CBDR)" and respective capabilities enshrined in the United Nations Framework Convention on Climate Change (UNFCCC) should be acknowledged and respected when addressing the international aviation and climate change, which are viewed as the prerequisite and foundation for further actions against international aviation emissions.

To limit and reduce international aviation emissions, the International Civil Aviation Organization (ICAO) should respect the principles and provisions of the United Nations Framework Convention on Climate Change (UNFCCC) by reflecting the differentiated responsibilities and actions between developed countries and developing countries in terms of goals, measures, in particular market-based measures, and monitoring, reporting and verifying (MRV) rather than imposing the same level of standards and requirements on all States.

- 2.2** International air transport in developed states enjoys a longer history, a larger market share worldwide, and stable growth. Due to the historical contribution of their international aviation to global climate change, developed countries must shoulder their responsibility for their accumulative historical emissions and the current high-level per capita emission. The Article 2.2 of Kyoto Protocol commits Annex I Parties to the UNFCCC in a legally binding way to pursue limitation or reduction of aviation emissions, working through the International Civil Aviation Organization (ICAO).

Developed countries should take the lead in making substantial quantified reductions of greenhouse gas emissions from international aviation in line with the Article 3.1 of Kyoto Protocol. In the meantime, developed countries should honor their international pledge to strengthen their efforts on the provision of financial, technology and capacity building support to developing countries in order to improve their capabilities to deal with the international aviation and climate change.

2.3 The international air transport in developing countries starts later, accounts for a smaller market share worldwide, and maintains a rapid growth rate. Air transport industry in developing countries lags behind that of developed countries in various aspects such as Air Traffic Management (ATM) techniques, operation levels, infrastructure and financial capabilities, aviation market maturity, growth stage, capacities, historical emissions, per capita emissions, frequency of air travel per capita, and so on.

ICAO should fully recognize the "special needs and special circumstances of developing countries" in line with the principles of the UNFCCC and with its Kyoto Protocol, and acknowledge and respect the fact that the share of international aviation emissions originating in developing countries will grow to meet their social and development needs.

2.4 As a developing country with an enormous population, China's economy is at a low level of development, and the frequency of air travel per capita and per capita emissions in this country are still relatively low. Hence, China is facing serious challenges to carry out economic development and improve people's well-being, and air transport in China, which is an important contributor to the economic growth, still has a long way to go. Nevertheless, China will continue its determined efforts to further limit and reduce international aviation emissions.





Actions and Achievements

To actively mitigate the impact of international aviation greenhouse gas (GHG) emissions on climate change, China, aiming at increasing fuel efficiency, has taken an array of measures in the field of technology, operations and management despite difficulties in finance and technology, and has carried out a lot of effective work.

3.1 Organization and Institution

In August 2008, the Civil Aviation Administration of China (CAAC) launched a taskforce to deal with energy conservation and emissions reductions led by the Administrator and established an office in charge of the sectoral energy conservation and emissions reductions with international aviation included. More detailed specifications have been developed by government agencies at all levels, enterprises and public institutions to clarify the respective roles, responsibilities and accountabilities regarding energy saving and emissions reductions, whereby a dedicated hierarchical organizational structure has been established in China's aviation sector.

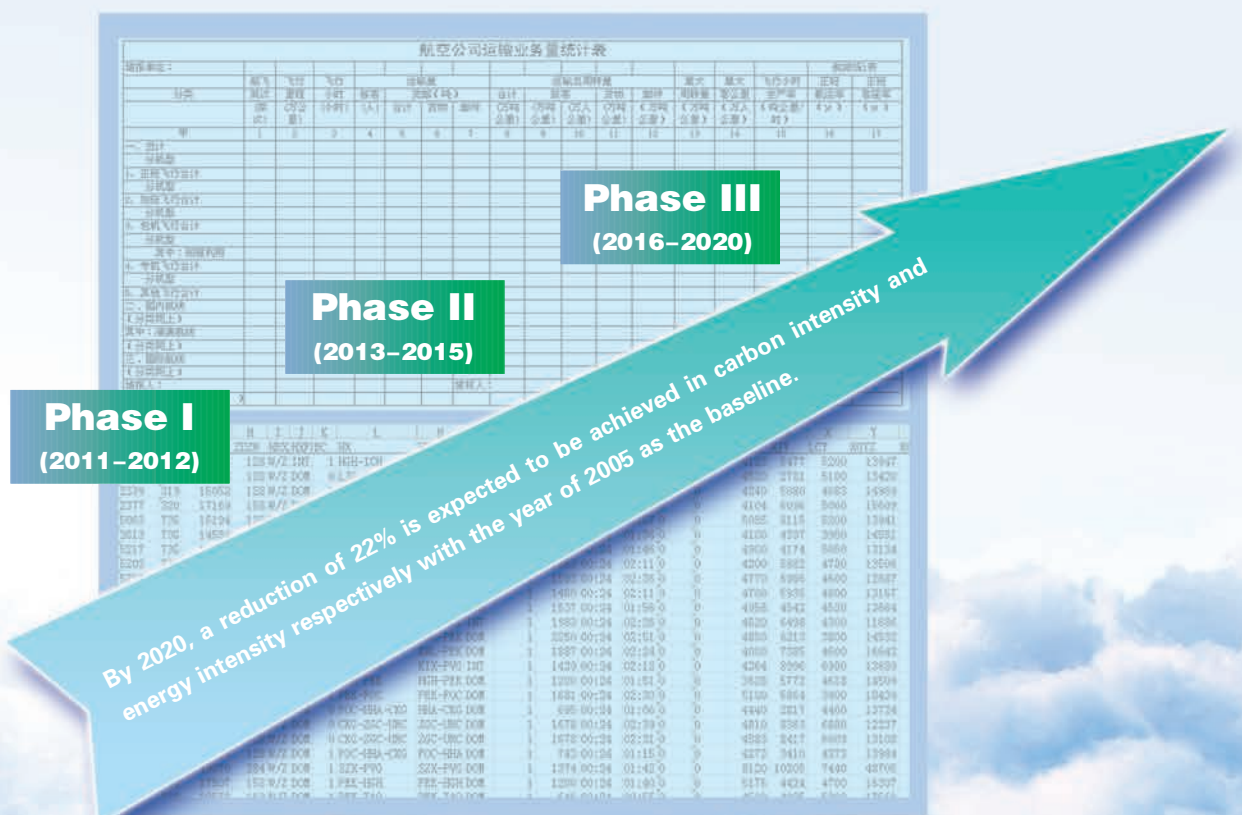
All these indicate the setup of organizational systems in the civil aviation industry to deal with climate change and energy conservation and emissions reductions.

3.2 Regulatory Support

The CAAC issued in 2008 "Civil Aviation Industry Energy Conservation and Emissions Reduction Plan (2005–2015)" and "Circular on the Full – scale Implementation of Energy Conservation and Emissions Reductions throughout Civil Aviation Industry". These two documents illustrate a thorough analysis to the current situation as well as the problems and challenges facing the industry in implementing energy conservation and emissions reductions, and clarify in a very clear way the intended working principles, objectives and tasks concerned.

In 2011, the CAAC released "Guidelines to Speed up the Promotion of Energy Conservation and Emissions Reduction Regime in Civil Aviation Industry", in the light of "the 12th Five-year Plan of the Civil Aviation Industry" and "Civil Aviation Industry Energy Conservation and Emission Reduction Plan (2005–2015)" as well as changing circumstances concerned in China and beyond. According to this "Guidelines", the CAAC is going to materialize its emissions reduction objectives into three phases and therefore a target benchmark has been set for each Phase: Phase I, to better up the foundation (2011–2012); Phase II, to scale up the promotion (2013–2015); and Phase III, to trickle up innovation and optimization (2016–2020). By the end of each phase, a reduction of 11%, 15% and 22% respectively is expected to be achieved in fuel consumption per Revenue Tonne Kilometer (RTK) with the year of 2005 as the baseline.

It should be noted that these are China's autonomous targets and the CAAC is going to exert itself to achieve the benchmarks by integrating joint efforts throughout the industry.

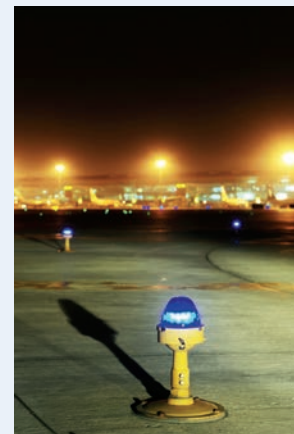


3.3 Comprehensive Energy Efficiency Programs and Actions

All the airports, airlines and air traffic service units have been proactively engaged in the energy conservation and emissions reduction efforts.

Airports

- ✈ As for the efforts on airport energy conservation, the CAAC carried out a comprehensive investigation in early 2009 on the electricity and energy consumption among all the civil airports for the period 2005–2008. Through this investigation, data and information have been collected on the electricity consumption, the installation of electric metering devices and the utilization of energy efficient products at various different sized airports located in different areas; In-depth analyses have been conducted on the electricity and energy consumption of an individual airport in different seasons, with a view to tapping the potential of energy conservation among different types of airports.



LED Lighting in Airport

By providing more regulatory support, the CAAC continues to strengthen policy guidance on energy conservation in airports, encourage the improvement on energy measurement and statistics management, and enhance the awareness and concept of energy conservation among airport staff. Considerable investments have been made in the transformation and update of the aging and out-of-date equipment / facilities. Large scale efforts have been taken to improve the electric circuit and electricity distribution network. All of the work has laid a solid foundation for intensifying follow-up energy conservation efforts.



Daylighting roof

→ Airlines and Air Traffic Services

As for the efforts on airline energy conservation, various measures have been taken to improve operation efficiency and reduce aviation emissions, which, among others, include the optimization of airspace and routes, the implementation of Reduced Vertical Separation Minimum (RVSM), the replacement of APU usage by gate power units, and the phase – out of the aging aircraft. Concerted efforts have also been made from various air traffic service units and substantial achievements have been obtained. Examples include: optimizing airspace structure, opening up temporary air routes, reducing aircraft taxiing time by 3 minutes, and so on.



The CAAC endeavors to practice the specific program of "replacement of APUs usage by gate power units".

→ Other Mechanisms and Actions

In addition, great efforts have been made by the CAAC to explore a system of "Data – Collecting, Monitoring and Evaluating" aiming at a more accurate understanding of energy consumption by the sector, promote the establishment of a industry-wide energy conservation and emissions reduction scheme, and accelerate the development of a long term mechanism to address energy conservation and emissions reductions as well as climate change in the sector so as to meet the industry's needs for its future sustainable development.



CAAC ECER Exhibition

3.4 International Cooperation

Since 2008, the CAAC has been actively participated in various meetings and conferences on international aviation and climate change host by International Civil Aviation Organization (ICAO), including the 36th and 37th sessions of Assembly, the GIACC meetings, the HLM-ENV, meetings and workshop on the sustainable alternative aviation fuel, the market-based measure expert group meetings and Committee on Aviation Environmental Protection (CAEP) procedures, and China has contributed enormously to the efforts to address the international aviation and climate change.

In all these conferences and discussions, China has been consistently adhering to the principles of Common But Differentiated Responsibilities (CBDR) set in the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol. In the meanwhile, by communicating and exchanging ideas with representatives from other countries in a very active way, China has greatly facilitated the progress of agenda in a flexible and constructively way.

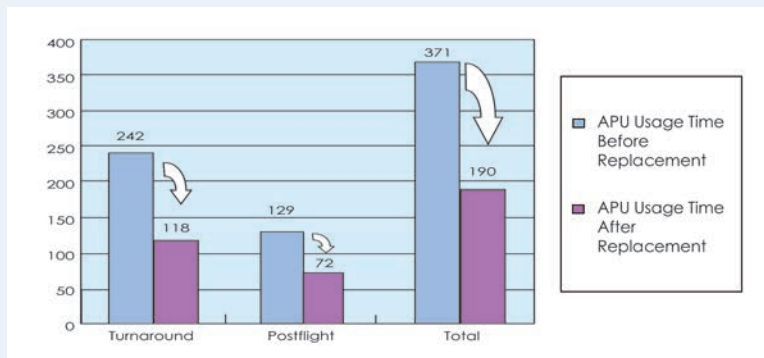
In order to maintain the ICAO's leadership and the orderly development of international air transport, China, together with other countries concerned, has shown her clear opposition to the European Union (EU) unilateral inclusion of aviation into its EU ETS, and requested the EU side to resort to multilateral framework for tackling the global issue. In addition, China has actively joined in the sectoral approach discussions in COP/MOP conferences since 2007 in Bali through 2011 in Durban.

3.5 Achievements

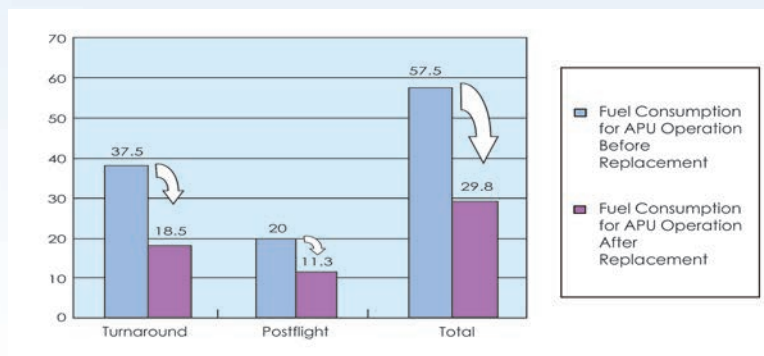
- ✈ The CAAC endeavors to practice the specific program of "replacement of APUs usage by GPUs", demanding that all airports with an annual throughput of over 5 million passengers shall have had their gate power units in place by the end of 2012. The full-scale implementation of this program will save a huge amount of fuel for the airlines, reduce the emissions of CO₂ and

noise on or in the vicinity of an airport and correspondingly reduce environmental pollutions. Benefiting from the implementation of this program, it's estimated that China's aviation industry will annually save 270,000 tons of aviation fuel and reduce 860,000 tons of CO₂ emissions.

Comparison of APU Usage in 2009 (10,000 hours)



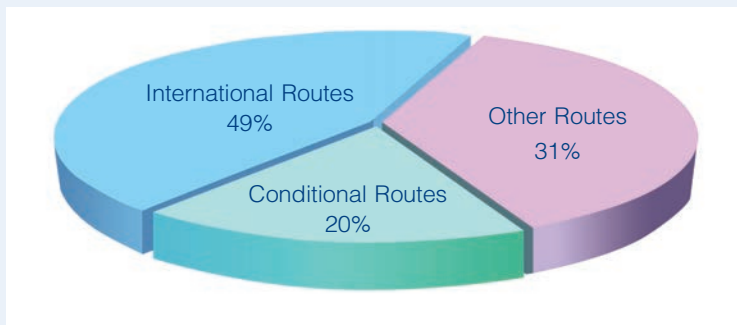
Comparison of Fuel Consumption for APU Operation in 2009 (10,000 tons)



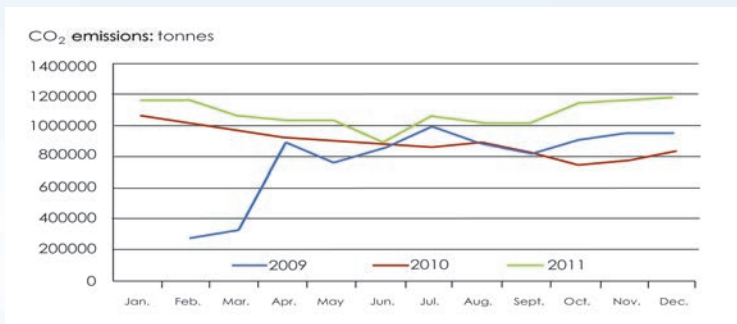
In 2009, by conducting the program of replacing the APU operations by gate powers in Beijing Capital International Airport, Shanghai Pudong International Airport, and Guangzhou Baiyun International Airport, CAAC has saved fuel by 38,000 tonnes and reduced carbon dioxide emissions by 121,000 tonnes.

- ➔ In the meantime, the CAAC endeavors to implement the specific program of "optimization of airspace structure, opening –up of temporary routes", and by the end of 2011, 118 temporary routes has been taken, with a total distance of 34,000 kilometers, accounting for approximately 20% of the total distance of national routes. By this program, it is estimated 180,000 tons of jet fuel will be saved annually. In 2010, the fuel consumption and CO₂ emissions per revenue tonne kilometers decreased by 9% against the 2005 level.

China's Air Routes Breakdown by the End of 2011



The Opening of Temporary Direct Flights



By the opening of "temporary direct flights," a total of 32 million kilometers of the flying distance has been reduced in the period of 2009–2011, resulting in a saving of 175,000 tonnes of fuel and a reduction of 555,000 tonnes of CO₂ emissions.

- ✈️ China's civil aviation industry has been providing active support to the development and application of aviation biofuel. On October 28, 2011, Air China successfully conducted its first biofuel demo flight with a Boeing 747 – 400 carrying aviation biofuel jointly refined by PetroChina and US companies. The flight was conducted at Beijing Capital International Airport and lasted for one hour. The success of this demo flight facilitated the demonstration of the whole production process of aviation biofuel (from the cultivation of raw material, the pressing of raw oil, the refining and blending of jet fuels, and finally to the delivery and refilling into aircraft), proving the technical feasibility of aviation biofuel development in China. This event will encourage and trigger more active involvement of China's enterprises into the R&D as well as commercialization of aviation biofuel.



The initial Bio-jet fuel demo flight in China was conducted on Oct. 28, 2011

PROSPECT

In the long run, to address climate change and promote energy conservation and emissions reductions will continue to be one of the key tasks for China's civil aviation. Advocating green flight, building low carbon airports, promoting efficient air traffic control services, and developing aviation alternative fuels are major pillars for a better future of the air transport in China. China will take a more active and pragmatic attitude to foster wider and closer cooperation with other countries in this regard, and contribute to the international efforts to address international aviation and climate change based upon our special circumstances and capabilities.

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