

On-site and Social Issues

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1. Introduction

Airports are essential and fundamental infrastructure that supports civic life and economic activity.

The major development of airports is said to be largely complete in Japan, but given strong inbound demand, etc., there is a need to strengthen the functions of airports in major metropolitan areas and regional hub airports, and the maintenance of previously developed facilities will also be an important issue.

Given recent social changes such as from labor shortages due to the declining birthrate, there is a need to address issues such as improving the efficiency and sophistication of airport facility construction and maintenance and management and increasing the productivity of airport operations.

The Airport Department has supported the planning, construction, maintenance and management of airports, through the development of methods for demand forecasting and project evaluation, the development of design and construction methods and the establishment of related standards, and the development of inspection systems and construction cost estimation systems, etc.

The Department will continue making efforts using the knowledge accumulated through activities so far, in order to resolve issues on site related to airport construction and maintenance and management, and social issues in light of recent circumstances.

Here, some of these major initiatives will be introduced.

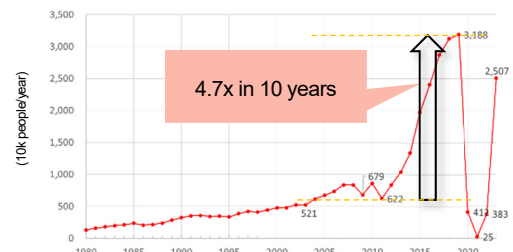
2. Development of Methods and Standards as a Basis for Airport Planning, Construction and

Maintenance and Management

(1) Development and improvement of demand forecasting methods

Methods have been developed for the forecasting of air transportation demand (“NILIM Model”), contributing to the formulation of aviation/airport policy and airport planning, and this know-how has been broadly disseminated and the results of demand forecasts have been reported to the Aviation Subcommittee of the Transport Policy Council as needed.

Efforts are being made to improve methods to appropriately reflect social changes in recent years including increases in inbound demand, such as through modeling the trips of foreign visitors in Japan.



Increase in foreign visitors to Japan and Post-COVID-19 recovery

(Source: JNTO, “No. of Foreign Visitors to Japan”)

(2) Revision of airport facility design manuals, etc.

The Airport Department has been conducting research on technical standards for essential airport facilities (runways, taxiways and aprons) and the development of design manuals (pavement design, earthquake-resistant design, and structural design), etc.

Research is being conducted into needed revisions to

design manuals to contribute to the resolution of on-site problem in airport construction, maintenance and management.

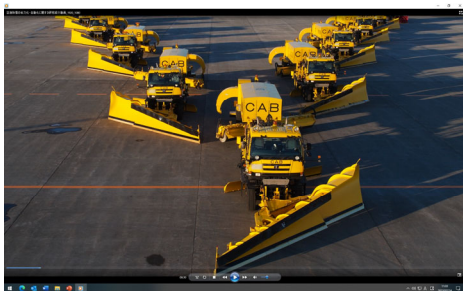
3. Initiatives for the Resolution of Various Issues

(1) Improvement of airport operation through the introduction of automated driving technologies

Research is being conducted to promote automation and labor-saving through the introduction of automated driving technologies for airport snow removal and GSE (ground support equipment: airport operation support vehicles).

Please see the NILIM YouTube channel for more information about research on airport snow removal vehicles.

<https://www.nilim.go.jp/lab/bcg/nilim-youtube/index.html>



From the NILIM YouTube channel
“Research on automation and labor-saving for
airport snow removal vehicles”

(2) Improvement of the efficiency and productivity of airport construction and maintenance and management

Research will be conducted into the advancement of airport pavement survey and design methods from the perspective of preventing the sudden failure of airport pavement and improving the efficiency of nighttime construction, etc.

Efforts will also be advanced to standardize airport precast concrete structures (box culverts, pipes, etc.) and to build data platforms for the introduction of BIM/CIM.

(3) Support for airport construction, maintenance and

management, and disaster response

Support is provided to resolve on-site issues based on knowledge of airport facility design and construction methods, in response to technical inquiries from construction, maintenance and management entities such as Regional Development Bureaus and Regional Civil Aviation Bureaus.

The Airport Department also prepared a draft “Manual for the Inspection and Emergency Restoration of Airport Pavements after Earthquakes,” which was formulated by the Civil Aviation Bureau in March 2022, to support airport administrators in quickly determining whether runways, taxiways and other airport pavements can be used and considering emergency restoration methods in the event of an earthquake.

In addition, researchers are dispatched to local airports as needed in the event of an actual earthquake to provide technical knowledge and to support airport administrators in determining whether airports can be used and to provide support for emergency restoration work.

[Topic: Support for the restoration of the Noto Airport]

Following the recent Noto Peninsula Earthquake on January 1, 2024, two staff members, the Head of the Airport Facilities Division and a Senior Researcher, were dispatched to the site between January 6 and 9 to provide technical support to the airport administrator, Ishikawa Prefecture, for the early recovery of Noto Airport.

Thanks to strong efforts to carry out emergency restoration work under the unfavorable conditions in which access to the airport by car was poor, there was a lack of material supply for restoration works due to the damage to surrounding asphalt plants, and the need to remove accumulated snow by continuous fall, etc., takeoffs and landings resumed for Self-Defense Force fixed-wing aircraft on January 12, and for civilian aircraft on January 27.



Resumption of civilian aircraft operations at Noto
Airport after emergency recovery work

4. Conclusion

When conducting the above research, it is required to foster a common understanding of issues by closely sharing information and exchanging opinions with relevant government agencies, airport administrators, other airport stakeholders and academics, etc. In addition it is necessary to understand and share information on the content of research on each issue and the division of roles among relevant parties, as well as the results of research and the path to implementation, etc., to ensure that results are implemented and new research topics are identified.

The Department will conduct and manage such research, based on the new Basic Airport Technology Plan formulated by the Civil Aviation Bureau.

The Department will also continue to actively participate in the activities of academic societies, develop research capabilities, including for paper-writing skills, and disseminate research results to the public.

See here for more details

NILIM Airport Department website

<https://www.ysk.nilim.go.jp/kenkyujosyukai/kukou.htm>