

**54th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

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AGENDA ITEM 5: AVIATION AND ENVIRONMENT

**“ECO-AIRPORT” INITIATIVES AND TECHNICAL
ASSISTANCES BY JAPAN**

(Presented by Japan)

INFORMATION PAPER

SUMMARY

The “Eco-Airport” initiatives have been implemented not only in Japan but in foreign countries in parallel. In this paper, Japan introduces a current status of the introduction of hydrogen energy as a recent topic of “Eco-Airport” initiatives and examples of cooperation for the airport development projects in foreign countries such as New Bohol Airport in Philippine, Noi Bai International Airport in Viet Nam and Nadzab Airport in Papua New Guinea through “Eco-Airport” initiatives. These examples show the effectiveness of the “Eco-Airport” initiatives by Japan. Moreover, the collaboration on “Eco-Airport” initiatives between ASEAN Member States and Japan is also presented.

“ECO-AIRPORT” INITIATIVES AND TECHNICAL ASSISTANCES BY JAPAN

1. INTRODUCTION

1.1 The environmental measures in the aviation field are mainly focused on CO₂ emission reduction from aircrafts due to its large amounts. However, not only taking measures against CO₂ and aircraft, but making comprehensive environmental efforts are essential. Japan has been promoting various environmental efforts at the airports as “Eco-Airport” initiatives since 2003. The airport experts, officials, and staff have established Eco-Airport Councils to build a system for “Improvement (Kaizen)” through environmental planning, implementation of measures based on environment plans, and monitoring the implemented measures. The measures include various means, from large-scale ones such as co-generation facility, GPU, and solar panels to small-scale ones which can be achieved through our daily efforts such as adopting LED lamps, turn off the lights when not in use, stop engine idling, and recycling. The “Eco-Airport” initiatives are being implemented overseas by Japan in parallel.

1.2 In this information paper, Japan introduces a current status of the introduction of hydrogen energy as a recent topic of “Eco-Airport” initiatives and examples of cooperation for the airport development projects in foreign countries thorough “Eco-Airport” initiatives, and the technical assistances with ASEAN Member States would be explained. Then, the promotion of “Eco-Airport” initiatives would be discussed.

2. DISCUSSION

2.1 The introduction of hydrogen energy has been considered as one of “Eco-Airport” initiatives at Haneda Airport, Kansai Int’l Airport and Narita Int’l Airport in Japan. At Haneda Airport, the utilization of hydrogen energy has been considered in order that the visitors can realize the hydrogen society in the Tokyo 2020 Olympic & Paralympic Games. The installation of hydrogen fueling station at the airport and the introduction of the fuel cell vehicles such as a forklift, towing car and bus have been discussed. At Kansai Int’l Airport, the Japanese airport’s first commercial hydrogen fueling station has already opened in Jan. 2016, and hydrogen fueling station for the fuel cell forklift was developed in Apr. 2017. Also, the trial operations to assess the feasibility of a hydrogen fuel cell bus was conducted in May. 2017. At Narita Int’l Airport, the hydrogen fueling station for the fuel cell vehicles was opened in Mar. 2016. The utilization of hydrogen energy will be continued for the realization of the environmentally-friendly airport in Japan.

2.2 Japan has provided the technical support for the overseas airport development project through the “Eco-Airport”. At first, an example measure taken by Japanese companies at the New Bohol Airport in Philippines are introduced. The New Bohol Airport, utilizing Japanese ODA Loans, has been constructed by Japanese companies, and will be opened in 2018. The Panglao Island where the new airport is constructed has beautiful reef-fringed beach and clear ocean, and these beautiful natures are its resources for tourism. Then, the Japanese companies set a recharge and settling basin, in order to prevent the coral reef and other environmental resources would be damaged by not only muddy waters flown from construction sites but drain waters from the operating airport. Furthermore, to avoid natural ground clogged, the prevention sheet of muddy water outflow was placed at the basin. In addition, to utilize its shiny sunlight, the solar-power generation system is installed in the terminal building. In these ways, the Japanese companies are constructing the airports, taking care of their environments.

2.3 It is very important that the environmental measures are taken into consideration at the planning stage of the project.

2.4 Secondly, the use of photocatalyst at the second terminal building of Noi Bai International Airport in Viet Nam is explained. The second terminal building had been constructed by Japanese companies in the use of Japanese ODA Loans. Technical assistances of Japanese long-term experts had been also performed. Then, it fully opened in December 2014.

2.5 The photocatalyst is a generic term of matters that accelerate the photo reaction when the light is absorbed. At the photocatalyst, the radical oxygen is made in the light, and its oxidizing action would decompose organic compounds (“Photoinduced Decomposition”). In addition, the photocatalyst would show hydrophilic function in the light (“Photoinduced Hydrophilicity”). The photocatalyst products are made-in Japan technologies with functions, such as self-cleaning, anti-bacterial (virus) features, and deodorization. These products are applied to various airports such as Haneda Airport, Narita Int’l Airport, Chubu Centrair Int’l Airport in Japan. It is possible to reduce the maintenance cost by saving water and energy and improve the airport impression through cleanliness by applying those products to the airport facilities. For example, the use of photocatalysts at interior tiles and walls of bathrooms would resolve and remove the smelly matters. At roof materials and window glasses, the photocatalysts would make self-cleaning of rains possible. These effects would reduce the costs of water use, electricity use, and cleaning, and would contribute to effective maintenances and cost reductions.

2.6 Moreover, when the photocatalyst is used at handles of baggage carts which are accessed by general public, it is possible to decompose and remove viruses and bacteria like SARS. In placing air purification system with the photocatalyst in front of the check-in counter, its sanitization effect is much improved. Then, especially at international airports, the use of photocatalysts could a good measure of border control to prevent new viruses that are broken out in abroad from entering into the country.

2.7 These effects are proven by several demonstration tests at the airports. The cart handles coated with the photocatalysts could reduce the amount of bacteria, which was 70-90% fewer than those without the photocatalysts. In the bathroom that the photocatalysts were used at its tiles, the amount of ammonias and bacteria would decrease by 92% and 95% respectively within 40 hours. In addition, when the photocatalysis tiles are wiped out, the extraction rate could be substantially improved due to the photoinduced hydrophilicity. In fact, at the second terminal building of Noi Bai International Airport, the photocatalysts have been applied to the tiles of its bathrooms in order to remove bacteria and smelly matters and reduce the maintenance costs effectively, as one of the measures of “Eco-Airport” initiatives.

2.8 Thirdly, the official development assistance for “Nadzab Airport Redevelopment Project” in Papua New Guinea is introduced. Special Terms for Economic Partnership (STEP) will apply to the Japanese ODA loan for this project, and it is expected that Japanese technology such as LED illumination and energy-saving air conditioning and water systems that reduce the environmental impact will be utilized based on the concept of “Eco-Airport”.

2.9 Japan will continue to provide the support for the airport development project in foreign countries through “Eco-Airport” initiatives. For your reference, the videos titled “Japanese Airport Technology” which explain airport construction and operational technology developed by Japan are published on the JICA-Net Library [https://jica-net-library.jica.go.jp/jica-net/user/lib/contentDetail.php?item_id=10052].

2.10 Final topic is the collaboration on “Eco-Airport” initiatives between ASEAN Member States and Japan. In 2008, the “ASEAN-Japan Eco-Airport Guideline” was formulated. In addition to the guideline, several training courses, seminars, and investigations had been conducted. In 2014, addressing conditions for “Eco-Airport” among ASEAN States were also investigated, and those reports were adopted by ASEAN-Japan Transport Ministers Meeting. In 2017, Eco-Airport Training Program (lecture and airport site visit) was held in Japan for Cambodia, Lao PDR, Myanmar, and Viet Nam. Also, “Eco-Airport” has been introduced as one of the contents of JICA Knowledge Co-Creation Program (Group and Region Focus) on “the total planning of airport construction, management and maintenance” for the human resource development in developing countries. In order to promote “Eco-Airport” initiatives, it is necessary to share the information on effective environmental measures, good practices from each Member State, and environmental technologies. Therefore, Japan will continue to take “Eco-Airport” initiatives in partnership with the ASEAN States.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

- a) note the information on measures and strategies for Eco-Airport initiatives contained in this paper, and encourages States to promote the activities independently.

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