

Japan's Cooperation and Technology in the Airport Sector including Eco-Airport

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Ministry of Land Infrastructure, Transport and Tourism(MLIT)*

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- Japan's International Cooperation in the Airport Sector
 - ✓ Much experience, Advanced technology

- ECO-Airport
 - ✓ Introducing the concept of environmentally friendly airports

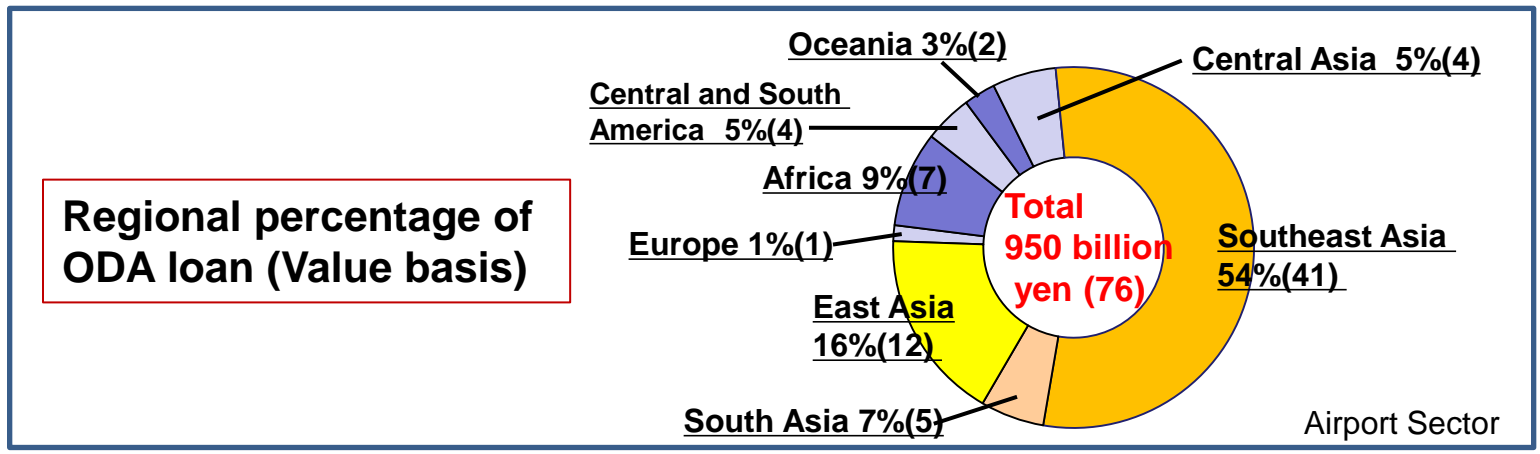
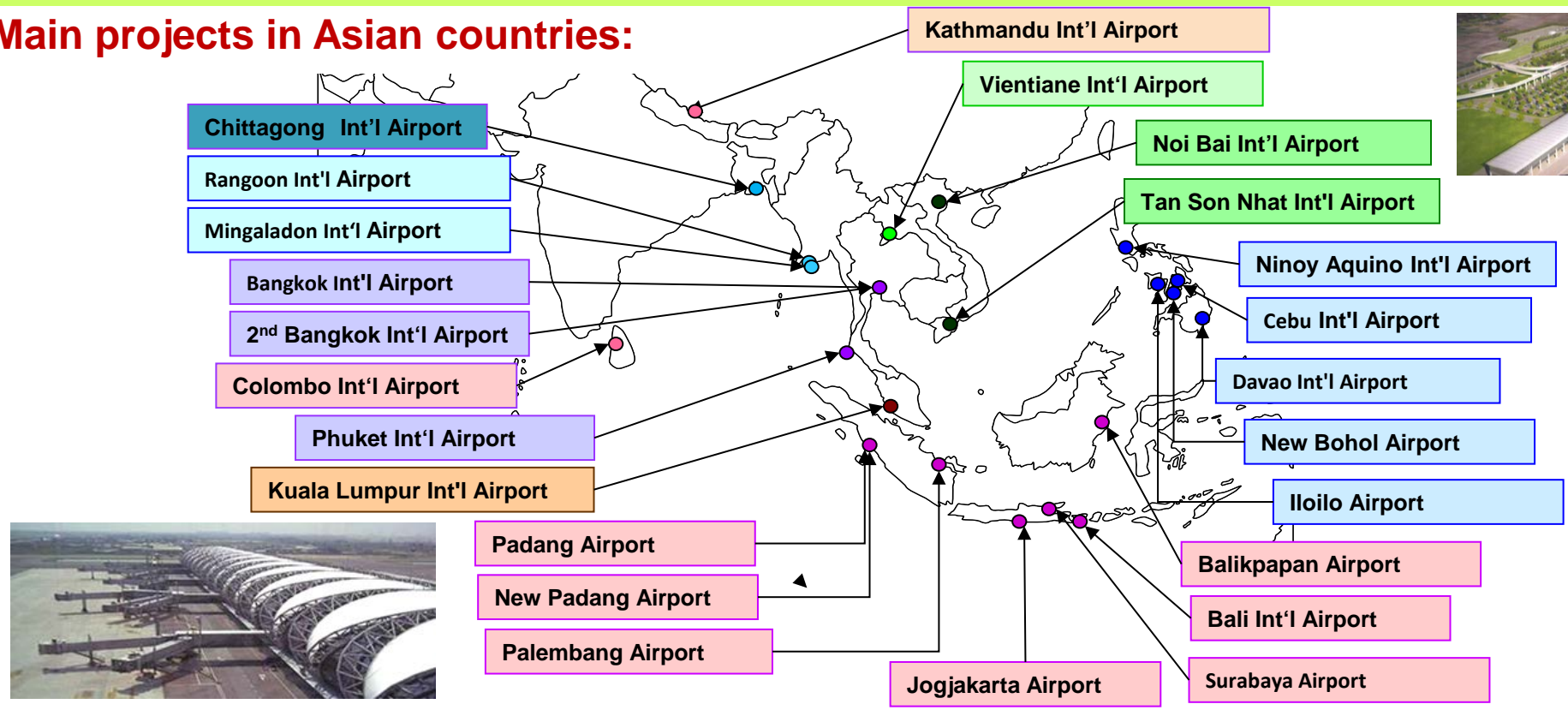
- Other Field of International Cooperation (Reference)
 - ✓ Air Navigation and Aviation Safety



- Japan's International Cooperation in the Airport Sector
 - ✓ Much experience, Advanced technology



Main projects in Asian countries:



Note: Research projects included

Japan's assistance to foreign airports includes a wide variety of items, ranging from planning and construction for new airport, to improving existing airport functions, support for the introduction of environmental measures and developing human resources of the airport sector.

● Repair work & Expansion of facilities during operation

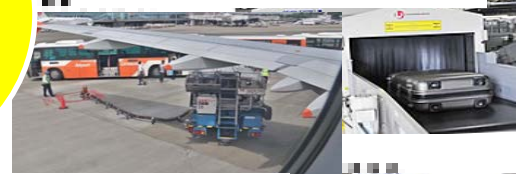


● Support for introduction of environmental measures

● Airport planning



● Airport development by advanced technology



● Dispatch of experts



Improve-
ment of
existing
facilities

Planning
Construc-
tion

Japan's
International
Cooperation

Operation
Mainte-
nance

Preparation
of operation
Human
resource
development



● Effective Operation & Maintenance

● Training in Japan Human resource development

Japan was faced with various issues that include noise pollution and a lack of airport capacity primarily due to a rapid increase in aviation demand. While striving to overcome these problems, we have cultivated advanced technological expertise and a wealth of experience and know-how in the airport sector.

● Cutting-Edge Technology in Airport Construction

As an example, the D Runway at Tokyo International Airport, which opened in 2010, combines a piled pier for the river area and reclamation fill so that it does not obstruct the flow of the river.



● Flexible Response in Airport Planning, Design and Construction

Examples range from the design of an international airport as a grand entranceway to a country to the construction of a terminal equipped with standard specifications at an affordable price.



● Technology and Knowledge in Airport Operation, Maintenance and Management

Expansion and repair work can be conducted without closing the airport in order to minimize the impact on flights and users. The revenue growth initiatives in retail business, etc.



Efficient maintenance and improvements

● Terminal Operation Pursuing Convenience and Comfort for Users

Airport users can spend comfortably while also enjoying the cultural and entertainment features provided by efficient terminal operation.



- ECO-Airport
- ✓Introducing the concept of environmentally friendly airports



What is “Eco-Airport” ?

“ECO” which can sustainable is asked for **ecology** and an **economy**. => Double ECO

“Eco-Airport” means both:

- **Airport which is environmentally-friendly**
- **Environmental Policy/measures** at or around the airports

Under the concept of the “Eco-Airport”, in Japan, since 2003, various measures have been made for the better environment at airports mainly initiated by JCAB with the collaborative approach of airlines, airport operators and local governments etc.

Main feature of “Eco-Airport” :

- Eco-Airport improves the image of the country (:airport is the entrance of a country) -> **Ecology**
- Eco-Airport reduces the operation costs by saving energy at airports -> **Economy**

Benefit of “Eco-Airport” :

- Good for global warming, regional environment
- Good for airport Operation and Management



Various measures for "Eco-Airport"

Note that Eco-Airport is driven by **VOLUNTARY MEASURES**, not passive regulations by authorities.

Efforts which need initial funding

Grass clipped for fertilization use



Electric Vehicle



Recycling and Reusing rain and kitchen water



Recycling Plant



Solar Panels



Rooftop Greening



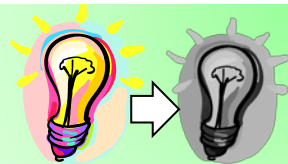
LED lighting



Ground power unit



Efforts we can start from now!



Unnecessary lights off



Less idling of engines



Saving water



Recycling

Japan's Cooperation:

- **Various approaches** spanning from Survey, Workshop/Seminar to setting Guideline
- **Ready to share practices/information** to support ASEAN's steps for "Eco-Airport"

[Our steps so far]

2006.4-10: Questionnaire survey on the environmental measures taken at the major airports in AMS

2007.3: Eco-Airport Workshop (Tokyo)

2008.1: 2nd Eco-Airport Workshop (Tokyo)

2008.3-6: Proposal on the revised draft of the ASEAN-JAPAN Eco-Airport Guideline draft

2008.11.7: Endorsement of the **ASEAN-Japan Eco-Airport Guideline at the 6th ATM+J held in Manila, the Philippines**

2009: Questionnaire survey on the current situation of facilities related to environmental improvement at the major airports in AMS

2009-2011: JICA seminar on Eco-Airport (JICA Training Course 'Airport Development Planning for Considering Environment')

2012.2: Seminar for Following up of JICA seminar on Eco-Airport (Hanoi & Ho Chi Minh)

2013.2-: Survey on the progress of the ASEAN-Japan Eco-Airport Guideline (questionnaire survey and field survey)

Observation of Survey by questionnaire* (Interim findings)

*JCAB conducted survey on the progress of the ASEAN-Japan Eco-Airport Guideline in February, 2013

(As of the middle of June, we've received responses of 4 officials and 10 operators.)

- Recognize that Eco-Airport Council has been already set up at some airports
- Recognize that some voluntary measures (ex. unnecessary light off) have applied at many airports

Observation of Field research* (Interim findings)

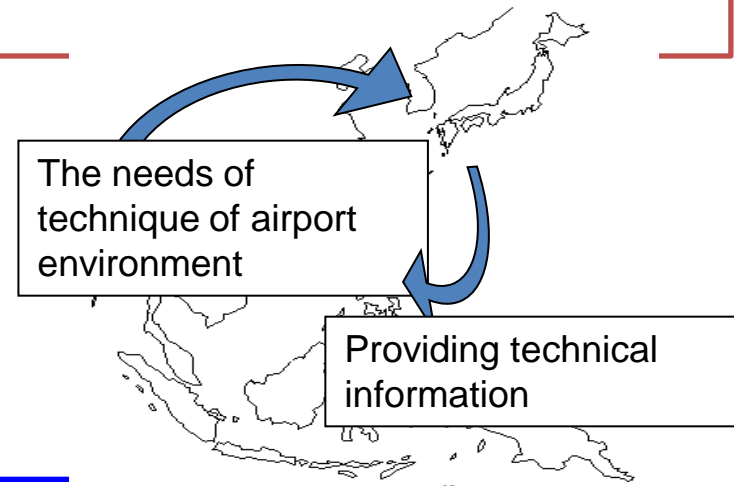
*JCAB conducted field survey of the following airports since February 2013.

(Noi Bai, Yangon, Wattay, Suvarnabhumi, Kuala Lumpur)

- The progress of environmental measures depends on the economic growth of each country and the international rank of each airport.
- It is important to distribute Eco-Airport guideline to local staff, share the best practices and nurture special staff.

Further support for midterm evaluation in 2013

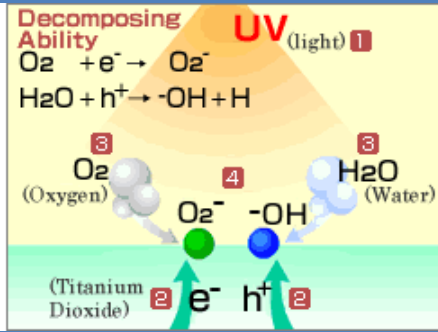
- Arrangement of the progress by doing a survey
- Making proposals for promotion based on the result of the survey



Example of the use of photocatalytic technology

By using the decomposition and hydrophilicity properties of photocatalysis, environmental load can be reduced.

- 1 Titanium dioxide, which is the photocatalyst, is exposed to light.
- 2 e^- (electron) and h^+ (positive hole) are generated
- 3 Reactions between O_2 contained in air and e^- , H_2O and h^+ occur respectively.
- 4 Two types of active oxygen, O_2^- (superoxide ion) and $\cdot OH$ (hydroxyl radical), are generated on the surface of the titanium dioxide.



The effect of installation

- Reduction of environmental load & maintenance cost
- Enhancement of the airport impression & cleanliness

- Other Field of International Cooperation (Reference)
 - ✓ Air Navigation and Aviation Safety



The Project for Improvement on Aviation Safety Policy (JICA)

- The technical cooperation program for strengthening safe and efficient aircraft operation in Indonesia
- 2009- ongoing
 1. Dispatch a long-term expert concerning safety supervision to Indonesia
 2. Invitation to Indonesian personnel for technical training
 3. Dispatch short-term experts in the field of operation, maintenance and safety management



- Purposes are
 1. Provide fundamental knowledge of aviation security
 2. Exchange views in the field among other participants and Japanese experts
- 1986- ongoing
(13 participants from 11 countries in Asia Pacific, Africa, Middle east etc. in 2012)

Seminar on Aviation Security (JICA)

ASEAN-Japan Aviation Security Project

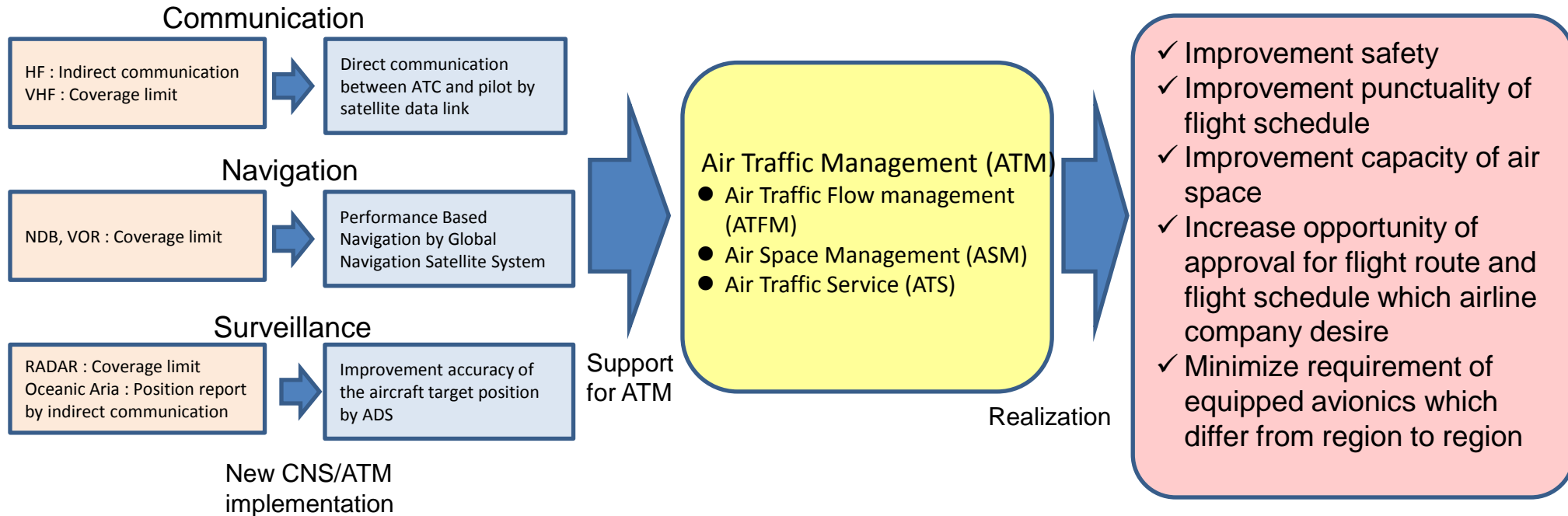
- One of the ASEAN-Japan Transport Partnership Projects endorsed by “ASEAN and JAPAN TRANSPORT MINISTERS Meeting”
- 2004- ongoing
- The goal is to enhance aviation security in the region, making the most of shared information and experiences related to relevant policies and security measures.



Supporting the transition to New CNS/ATM

➤ Future response

- After approval of 38th ICAO General Assembly (Sep. 2013), every region and country will work on the concrete measures. We have to introduce new CNS/ATM systems to meet Global Air Navigation Plan and ASBUs.



- Japan will support Asia/Pacific countries to draw up **a master plan** for the whole land which enables smooth transition from old CNS/ATM to new ones as technical cooperation and to do **education** and **training** for human resource development, dispatching experts.



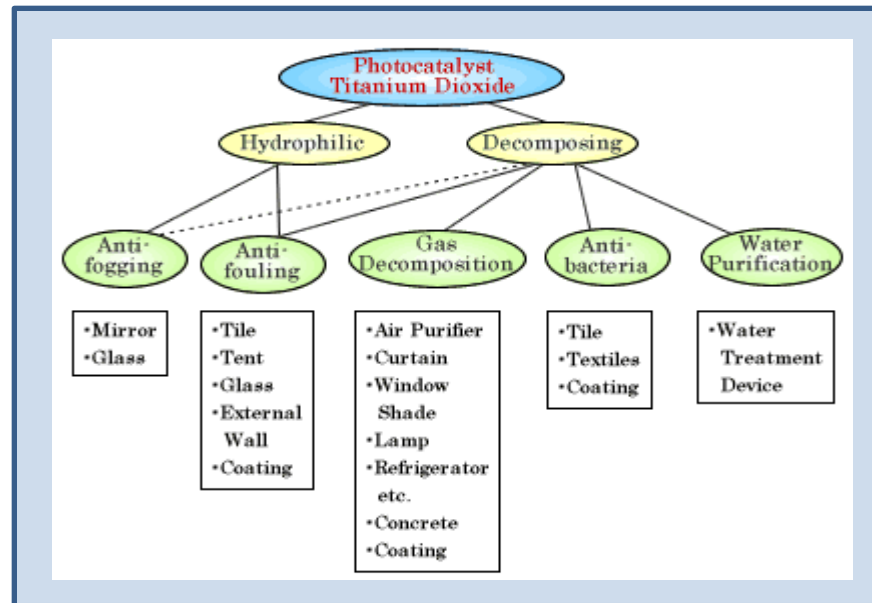
- After then, based on the master plan, we'd like to support you to do the whole land new CNS/ATM transition financed by yen loans.



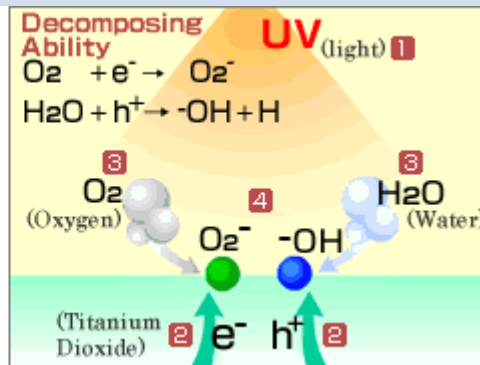
*Thank you for your
attention.*

Mt. Fuji's listing as world heritage site !

Usage of Photocatalyst Titanium Dioxide

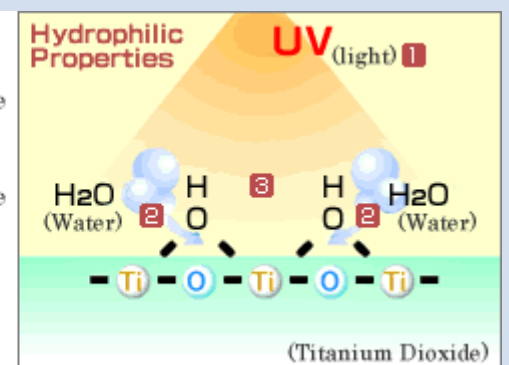


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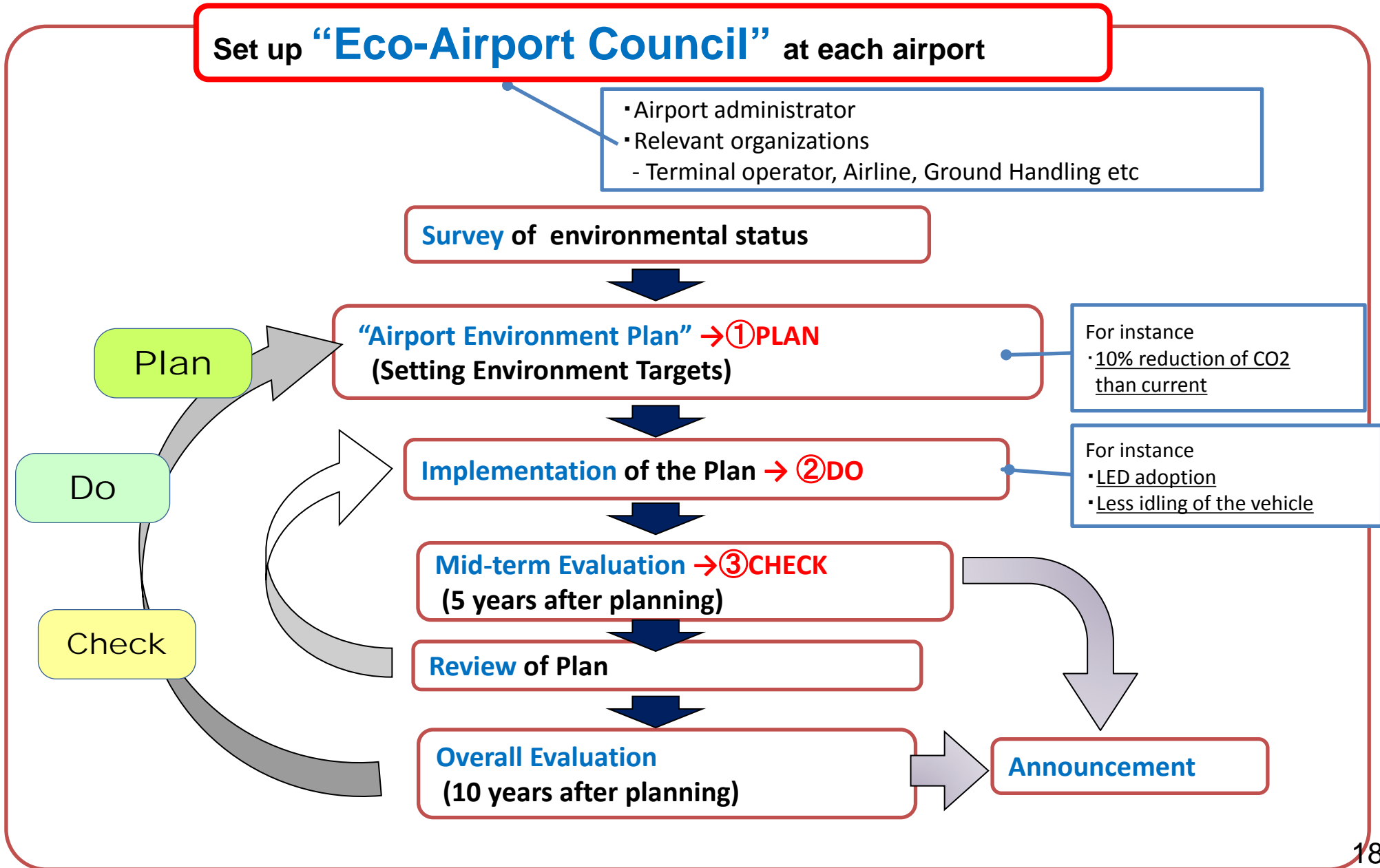


Decomposing Ability

- 1 Titanium dioxide, which is the photocatalyst, is exposed to light.
- 2 There is a reaction between one O (oxygen atom) in the composition of the titanium oxide and the H_2O in the air.
- 3 As a result of the O and H_2O reaction, $\cdot OH$ (hydrophilic group), which is very hydrophilic, is generated on the surface of the titanium dioxide.



Hydrophilic Properties



Plan

Formulate "Airport Environment Plan"
(Setting Environment Targets)

Critical point when planning :

- Each airport should have each Airport Environmental Plan for the best fit Plan
(it is better than planning out single nation-wide Airport Environmental Plan to apply all airports, which may ignore the airport characteristics, regional diversities etc.)

Consider that each airport has its own conditions and constraints etc.

(size of airports, local climate, location of airports...)

