

ATTACHMENT to State letter AN 1/17-09/093

**QUESTIONNAIRE CONCERNING VOLUNTARY ACTIVITY FOR GHG REDUCTION/MITIGATION
IN THE AVIATION SECTOR**

A copy of the questionnaire, in Microsoft Word format, has been posted on the Internet at <http://www.icao.int/icao/en/env/measures.htm>.

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Q1. Name of the voluntary activity.

Continuous Lower Emissions, Energy, and Noise (CLEEN) Program

Q2. Type¹ of the voluntary activity.

<input type="checkbox"/> Unilateral commitment <input type="checkbox"/> Public voluntary scheme <input checked="" type="checkbox"/> Negotiated agreement
<input type="checkbox"/> Other (Please describe the activity in the box below.)

Q3. Please mark all the participants² of the activity.

<input type="checkbox"/> Airline <input type="checkbox"/> Airline association <input checked="" type="checkbox"/> Manufacturer <input type="checkbox"/> Manufacturer association <input type="checkbox"/> Airport authority
<input type="checkbox"/> Air traffic control <input checked="" type="checkbox"/> Government <input type="checkbox"/> Other (Please specify in the box below.)

Q4. Is the voluntary activity accompanied by a side agreement³?

<input type="checkbox"/> Yes (Proceed to Q4-1.) <input checked="" type="checkbox"/> No (Proceed to Q5.)

¹The features of each type of voluntary activity are as follows.

- Unilateral Commitment: The environmental improvement plan established by the participant itself, and declared to the stakeholders, such as employees, stockholders, consumers, etc. Target and measures to environmental improvement are established by the participant itself.
- Public Voluntary Scheme: The scheme which the participant agrees voluntarily with the standard on environmental improvement target, technology, management, etc. established by public organization such as Ministry for Environment.
- Negotiated Agreement: Contract based on negotiation between public organization (national government/local government) and industries. Both parties can independently decide whether to agree to the contract.

² If you marked "Public voluntary scheme" on Q2, the public organization which establishes the standard is included in the participants. If you marked "Negotiated agreement" on Q2, the public organization which agrees to the contract is included in the participants.

³ "Side agreement" is the agreement between the participant of the activity and a third party. For example, the agreement between an airline and an engine manufacturer, which prescribes that the manufacturer assist the airline to attain its target by introducing new emission-reducing technologies, is considered as a side agreement. For more information, please refer to Part II Paragraph 6.5.2 on "Template and Guidance on Voluntary Measures", released on ICAO CAEP website (http://www.icao.int/icao/en/env/Caep_Template.pdf).

Q4-1. If the voluntary activity is accompanied by side agreement, please describe the parties and outline the side agreement.

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Q5. Please answer the following questions concerning the coverage of the voluntary activity:

Q5-1. Select all green house gases (GHGs) which are part of the voluntary activity.

Carbon dioxide (CO₂) Methane (CH₄) Nitrous oxide (N₂O) Hydrofluorocarbons (HFCs)
 Perfluorocarbons (PFCs) Sulphur hexafluoride (SF₆) Nitric oxide & Nitrogen dioxide (NO_x) Water vapor (H₂O) Other (Please specify in the next box.)

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Q5-2. Please select all operations⁴ which are part of the voluntary activity.

International passenger flight Domestic passenger flight International cargo flight
 Domestic cargo flight Other (Please specify in the next box.)

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Q6. Please answer the following questions concerning the index to measure the effect of the voluntary activity.

Q6-1. Select the index used to measure the effect of the voluntary activity.

Absolute quantity of GHG emissions⁵ (Please outline the index in the box below.)
 Unit of GHG emissions⁶ (Please outline the index in the box below.)
 Introduction of specific technology
 Introduction of specific procedure Other (Please specify in the box below.)

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⁴ In case that the voluntary activity describes its coverage from the other viewpoint than listed above, such as “operation under IFR”, “operation of aircraft larger than specific weight”, etc. and that aim of the activity is not linked to operation directly, for example introduction of new technology which contributes reduction/mitigation of GHGs, please mark “other” and please describe feature.

⁵ The example of the unit is Ton-CO₂, Ton-C, m³-CO₂, etc.

⁶ The example of the unit is g-CO₂/RPK(Revenue Passenger Kilometer), g-CO₂/ASK(Available Seat Kilometer), g-CO₂/RTK(Revenue Ton Kilometer), g-CO₂/ATK (Available Ton Kilometer), etc.

Q6-2. Please outline the procedure to acquire data to calculate or describe the index of Q6-1.

Contractors performing technology development efforts under the FAA CLEEN Program must conduct technology demonstration tests, and using the results of those tests must quantify the benefits of the technology relative to the CLEEN Program goals.

Q7. Please answer the following questions concerning the target of the voluntary activity.

Q7-1. Is the target of the voluntary activity clearly defined?

Yes (Proceed to Q7-2.) No (Proceed to Q8.)

Q7-2. Please describe the target of the voluntary activity, including substance of the target, target year, base year.

The goals of the CLEEN Program that are relevant to reduction of GHG emissions are described as follows: The CLEEN Program includes goals to develop and demonstrate:

- Certifiable aircraft technology that reduces fuel burn by 33% compared to current technology, reducing energy consumption and greenhouse gas (CO₂) emissions;
- Certifiable engine technology that reduces landing and take-off cycle (LTO) nitrogen oxide emissions by 60%, at a pressure ratio of 30, over the ICAO standard adopted at CAEP 6, with commensurate reductions over the full pressure ratio range, while limiting or reducing other gaseous or particle emissions;
- The feasibility of use of alternative fuels in aircraft systems, including successful demonstration and quantification of benefits; and
- Transition strategies that enable “drop in” replacement for petroleum derived turbine engine fuels with no compromise in safety. The CLEEN procurement was structured with a base period of 12 months and four 12 month option periods, or a potential total of 5 years. Technology development and alternative fuels advancement efforts under the CLEEN Program were initiated in 2010.

Q8. Please list the measures to attain the target or to reduce/mitigate GHGs.

The CLEEN program is focused on reducing current levels of aircraft noise, air quality and greenhouse gas emissions, and energy use, and advancing alternative fuels for aviation use. The focus of this effort is to: (1) mature previously conceived noise, emissions and fuel burn reduction technologies from Technology Readiness Levels (TRLs) of 3-4 to TRLs of 6-7 to enable industry to expedite introduction of these technologies into current and future aircraft and engines, and (2) assess the benefits and advance the development and introduction of alternative “drop in” jet fuels for aviation. The goals of the CLEEN Program that are relevant to reduction of GHG emissions are described in the response to Q7-2.

Q9. Please answer the following questions concerning periodic review of the voluntary activity.

Q9-1. Is the progress of the voluntary activity reviewed periodically?

Yes (Proceed to Q9-2.) No (Proceed to Q10.)

Q9-2. Please describe the frequency of the periodic review.

The FAA continually monitors progress of Contractors performing work under the CLEEN Program through telecoms, meetings and various other communications. In addition, Contractors performing work under the CLEEN Program provide an update on the technology development and alternative fuels advancement efforts that they are performing under the CLEEN Program at a public session of the CLEEN Consortium meeting during the Fall of each year.

Q9-3. Is a third party's opinion considered/to be considered in the periodic review?

Yes (Proceed to Q9-4.) No (Proceed to Q10.)

Q9-4. Please outline the third party opinion.

Q10. Please answer the following questions concerning legislative obligation.

Q10-1. Is there any legislative obligation on attainment of the target?

Yes (Proceed to Q10-2.) No (Proceed to Q11.)

Q10-2. Please describe legislative obligation, including measures taken in case that the participant of the voluntary activity fails to attain the target.

Q11. Please answer the following questions concerning disclosure of information⁷ on the voluntary activity:

Q11-1. Is the name of the participant of the voluntary activity disclosed to the public?

Yes No

Q11-2. Is the target of the voluntary activity disclosed to the public? (If you marked "no" at Q7-1, the answer to this question shall be "not applicable".)

Yes No Not applicable

Q11-3. Are the measures taken/to be taken by the participant of the voluntary activity to attain the target/reduce or mitigate GHGs disclosed to the public?

Yes No

Q11-4. Is the result of each periodic review disclosed/to be disclosed to the public? (If you marked "no" at Q9-1,

⁷ Item(s) to which the answer is/are "no" from Q11-1 to Q11-5, are considered but this information will not be included in the final report.

the answer to this question shall be “not applicable”.)

Yes No Not applicable

Q11-5. Is the effect of the voluntary activity disclosed/to be disclosed to the public?

Yes No

Q12. Please answer the following questions concerning effect of the voluntary activity:

Q12-1. Is third party’s opinion considered/to be considered when examining the effect of the voluntary activity?

Yes (Proceed to Q12-2.) No (Proceed to Q12-3.)

Q12-2. Please outline the third party opinion.

Q12-3. How much of GHGs amount emitted per year, in CO₂ weight equivalent are reduced or mitigated/expected to be reduced or mitigated by the voluntary activity?

The goals of the CLEEN Program that are relevant to reduction of GHG emissions are described in the response to Q7-2.

Q13. Please provide the website address for the voluntary activity, if any, in the box below.

http://www.faa.gov/about/office_org/headquarters_offices/apl/research/aircraft_technology/cleen/

Q14. Please describe additional information, if any.