

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.

Implementation of RNAV STARS at Auckland Wellington and Christchurch
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Q2. Type¹ of the voluntary activity.

<input checked="" type="checkbox"/> Unilateral commitment <input type="checkbox"/> Public voluntary scheme <input 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 checked="" type="checkbox"/> Airline <input type="checkbox"/> Airline association <input type="checkbox"/> Manufacturer <input type="checkbox"/> Manufacturer association <input type="checkbox"/> Airport authority <input checked="" type="checkbox"/> Air traffic control <input type="checkbox"/> Government <input checked="" type="checkbox"/> Other (Please specify in the box below.)
All aircraft operators capable of RNAV 1 specifications

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.)
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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.)

Although all GHG emissions will be affected, only CO₂ is being reported.

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.)

All flights that are capable of RNAV1 specifications

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.)

Kg of CO₂

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.

Airways obtained fuel consumption data for each aircraft type from each airline. Airways then calculated the potential savings in track miles available to the airlines over the period being measured due to the introduction of RNAV STARS. This data was also used to calculate the monetary savings the airlines obtained and the corresponding reduction of CO₂ emissions. The estimates of CO₂ emissions were derived using 3.16 kilograms of CO₂ per kilogram of jet fuel. The fuel cost per kilogram was obtained from Shell New Zealand and an average price of \$1.50 per kilogram was used for the modelling calculations for the reporting period.

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.

Aim is to minimise fuel burn to the greatest extent possible.

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

Reduce total track miles associated with the procedure and minimise tactical intervention so that flights follow the STAR using the most fuel efficient trajectory.

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.

Every three months.

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.

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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.

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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, 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.)

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.

Q12-2. Please outline the third party opinion.

Note: GHG results are communicated to the customers but no opinion is being sought on these results.

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?

Full year data for 2009 is not available yet.

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

No website

Q14. Please describe additional information, if any.

N/A

Duly completed questionnaires should be returned to:

Voluntary Measures Focal Point
ICAO Committee on Aviation Environmental Protection (CAEP)
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