COMMENT RESPONSE DOCUMENT (CRD) TO ADVANCE NOTICE OF PROPOSED AMENDMENT (A-NPA) 2008-21

"Review and Analysis of Certification Noise Levels for Subsonic Jet and Heavy Propeller-driven Aeroplanes"

Explanatory Note

I. General

1. ICAO noise standards should reflect the state of the art. Therefore, at the seventh meeting of the ICAO Committee on Aviation Environmental Protection (CAEP/7) in February 2007, CAEP was invited to consider proposals for keeping source noise certification standards up-to-date in a simple and efficient manner and more in particular, CAEP was invited to task ICAO/CAEP Working Group 1 ("Noise Technical") to examine the need of possible future noise reduction on a regular basis[1]. Following this proposal, in the course of the discussion during CAEP/7, general agreement was reached that further work on assessing the need for additional increase noise stringency for subsonic jet and heavy propeller-driven aeroplanes should go forward. Some difficulty was experienced during that meeting, however, in specifying exactly how the task should be tackled. Finally CAEP/7 decided to request Working Group 1 to "Provide a report to CAEP/8[2] on the results of a review and analysis of certification noise levels for subsonic jet and heavy propeller-driven aeroplanes to understand the current state-of-the-art of aircraft noise technology". The final report on this study has to be provided at the eighth meeting of ICAO Committee of Aviation Environmental Protection (CAEP/8) in February 2010. The purpose of the Advanced Notice of Proposed Amendment (A-NPA) 2008-21, dated 13 October 2008, was to solicit comments and to get input from national authorities, professional organisations, private companies and others, thereby enabling the Agency to take such comments into account when the study will be finalised. It is not the intention of the Agency at this stage to initiate a rulemaking change for EU Member States.

II. Consultation

2. A-NPA 2008-21 was published on the web site (http://www.easa.europa.eu) on 14 October 2008. By the closing date of 14 January 2009, the European Aviation Safety Agency ("the Agency") had received 120 comments from 19 National Aviation Authorities, professional organisations and private companies.

III. Publication of the CRD

3. All comments received have been acknowledged and incorporated into this Comment Response Document (CRD) with the responses of the Agency.

4. In responding to comments, a standard terminology has been applied to attest the Agency's acceptance of the comment. This terminology is as follows:

- **Accepted** – The comment is agreed by the Agency and any proposed amendment is wholly transferred to the revised text.
- **Partially Accepted** – Either the comment is only agreed in part by the Agency, or the comment is agreed by the Agency but any proposed amendment is partially transferred to the revised text.
- **Noted** – The comment is acknowledged by the Agency but no change to the existing text is considered necessary.
- **Not Accepted** - The comment or proposed amendment is not shared by the Agency

[1] European Commission and the European CAEP Members: Keeping noise at source standards up-to-date. CAEP/7 meeting, Montreal, Canada, 5-16 February 2007, working paper CAEP/7-WP/64.

[2] Eight meeting of the ICAO Committee on Aviation Environmental Protection to be held in February 2010.

5. Any possible reactions of stakeholders regarding possible misunderstandings of the comments received and the answers provided should be received by the Agency not later than **1 June 2009** and should be submitted using the Comment-Response Tool at http://hub.easa.europa.eu/crt.

IV. Summary of comments and responses to the Agency's questions

6. A-NPA 2008-21 raised eight questions concerning ICAO/CAEP WG1 Project N.24 "Provide a report to CAEP/8[3] on the results of a review and analysis of certification noise levels for subsonic jet and heavy propeller-driven aeroplanes to understand the current state-of-the-art of aircraft of aircraft noise technology". Many of the comment providers responded to the specific questions in detail. In the following paragraphs responses from the comment providers will be highlighted and summarized. An overview of the responses received regarding Questions 1 to 8 is provided in the table at the end of this section. The complete table of all comments and detailed responses is presented in Section V of this CRD.

7. **Question 1** asked whether stakeholders consider it useful to assess the need for increased noise stringency and if so, whether a state-of-the-art analysis is an appropriate approach. Three comment providers fully agreed to this approach. Eight other comment providers also agreed to the need for assessing a stringency increase, but pointed out that other aspects also have to be considered. These other aspects include economic measures, environmental interdependencies (trade-off with gaseous emissions and fuel burn), future/new technologies and the balanced approach for aircraft management. The Agency agrees that other aspects have to be considered within ICAO/CAEP, before a decision on a possible noise stringency increase can be made. However, the Agency emphasises that the subjects listed above are outside the scope of the envisaged N.24 report.

8. In **Question 2** the Agency wanted to know whether an aeroplane database representing today's technology (e.g. the Best Practice database) is an appropriate tool in order to analyse the noise of modern aircraft. Five comment providers agreed to this approach without explicitly making any additional proposal. Five other comment providers also agreed, but suggested to use additional sources of information such as information on future technology and environmental interdependencies. The Agency agrees that these aspects have to be considered in the overall CAEP process. The Agency, however, again has to make it clear that for example future technology and interdependencies are outside the scope of WG1 Project N.24.

9. Regarding Question 2 two other comment providers proposed to utilise the ICAO NoisedB certification database. The Agency emphasises that the Best Practice database (except for project aeroplanes) is a subset of ICAO NoisedB. Therefore, ICAO NoisedB is already utilised in part. In addition in some sections of the envisaged report the "total" ICAO NoisedB will be used for the analysis.

10. **Question 3** is concerned with Sections 3.3 to 3.5 of the envisaged report as described in A-NPA 2008-21[4]. The question was asked whether the analysis within these sections is a useful approach. Seven comment providers responded that it is. Three other

[3] Eighth meeting of ICAO Committee on Aviation Environmental Protection to be held in February 2010.

[4] Section 3.3 will contain an overall analysis of all data from the Best Practice database in order to give an overview of the state of the art. Section 3.4 will provide specific data analysis using recently certificated aeroplanes and project aeroplanes from the Best Practice database. In Section 3.5 additional analysis will be presented using additional data. This includes the effect of time, technological developments and engine thrust rating. This will also cover the analysis of the effect of introducing Chapter 4 of ICAO Annex 16, Volume I and the influence of local rules of design and certification.

comment providers came to the conclusion that Sections 3.3 to 3.5 contain all necessary elements, but emphasised that the envisaged report is work in progress and adjustments might have to be made. Two comment providers also agreed to the approach as proposed, but suggested to also investigate additional "technical" subjects", future technology and to take into consideration the balanced approach for noise. The Agency will propose that these additional technical subjects are studied. The Agency, however, again has to make it clear that future technology and the balanced approach are outside the scope of the present study.

11. **Question 4** was to find out whether additional elements have to be added to Section 3 of the N.24 report. Four comment providers did not see any need for any additions at this stage. One comment provider emphasised that technologies with low technology readiness level should not be studied. In contrast to these comment providers six organisations recommended to investigate additional elements. These elements include future technology, operational aspects, interdependencies as well as other technical aspects. Except for "other technical aspects" the Agency again has to clarify as follows: These aspects are to be considered within the ICAO/CAEP process, but are outside the scope of the N.24 report.

12. In **Question 5** it was asked whether the envisaged report as a whole is seen to provide sufficient information as regard of the state-of-the-art analysis. Eight comment providers stated that the report will provide all necessary information. Three out of these eight, however, emphasised that the study is work in progress and therefore, changes might have to be expected. Four comment providers came to the conclusion that the study will not provide a sufficient/complete analysis. Two of these four comment providers are of the opinion that the envisaged report will only be a useful technical paper, while the two other comment providers did not explain their position.

13. Related to the previous question the Agency wanted to find out via **Question 6**, what information stakeholders consider to be missing. In response four comment providers suggested to consider trade-off issues (like local and global gaseous emissions), while one comment provider again proposed to investigate future technology. The Agency again has to make it clear that these aspects are outside the remit of the WG1 Project N.24.

14. In **Question 7** it was asked whether stakeholders have any other comments, data, views and proposals to improve the present study. Two comment providers explicitly noted that they have no other comments, while three other comment providers pointed out again that the study has to be seen as work in progress. This means that additional aspects have to be taken into account during the completion of the state-of-the-art analysis. Two comment providers recommended considering future technology. This, as mentioned before, is outside the scope of the N.24 report. Lastly, two comment providers proposed to integrate the views of stakeholders. This has and will be done to the extent that is possible.

15. Finally, **Question 8** was to find out the preliminary opinion of stakeholders on a noise stringency increase. One comment provider suggested a stringency increase for all aircraft regardless of the margin to the present noise limits, unless in some cases other options are required. Four other comment providers recommended an appropriate stringency increase (for two of these comment providers this means that the stringency increase should depend on today's margin). Two comment providers proposed a stringency increase for all cases/configurations where the margin is reasonable large, but no stringency increase where the margin is small. One comment provider pointed out that careful consideration has to be taken, before stringency can be increased. Five other comment providers made it clear that for them it is not today appropriate or is too early to come to a conclusion on a possible noise stringency increase. Finally, two comment providers proposed a "technology approach" (for details see comments No. 49

and 78), while one comment provider suggested to base a stringency increase on future technologies only. To the latter comment the Agency cannot agree. The Agency is of the opinion that many aspects have to be taken into account such as state-of-the-art technology, future technology, economic measures, interdependencies etc. Only after a careful consideration of all these aspects a decision on a possible increase of noise stringency can be made.

16. The Agency concludes that many of the comments and responses to the Agency's questions contain interesting ideas and information. The Agency will consider the input provided when continuing to work on WG1 Project N.24. The Agency will also consider the comments and responses, as appropriate, during further discussion on a possible noise stringency increase within ICAO/CAEP.

Table: Overview of responses received towards Questions 1 to 8 of A-NPA 2008-21
(Comment numbers in brackets)

Question	(General) Agreement with the proposed approach	Different opinion or proposal for a different approach
Question 1: The Agency is interested in knowing whether stakeholders consider it useful to assess the need for increased noise stringency for subsonic jet and heavy propeller-driven aeroplanes at this stage and if so, consider a state-of-the-art analysis as an appropriate approach.	**Yes:** Air France (25), CAA CZ (7), ERCD UK CAA (66) **Yes, but consider other aspects:** ADV (58), Airbus (2), Dassault (15), Fraport (80), Gulfstream (98), ICCAIA (29), LBA (32), Snecma (54)	**Study interferes with update of 2002/30/EC:** BARIG (42), Lufthansa (71)
Question 2: The Agency is interested in knowing whether stakeholders consider the use of an aeroplane database representing today's technology, such as the Best Practice database, to be an appropriate tool in order to analyse the noise of modern aeroplanes.	**Yes:** Air France (26), CAA CZ (7), Dassault (16), ERCD UK CAA (66), LBA (33) **Yes, but consider other sources of information:** Airbus (3), CAA-NL (91), Gulfstream (98), ICCAIA (27), Snecma (56)	**Use ICAO NoisedB:** *BARIG (43), Lufthansa (72)* **Consider future technology:** ADV (59), Fraport (81)
Question 3: The Agency is interested in knowing whether stakeholders consider the analysis as described above for Sections 3.3 to 3.5 of Chapter 3 of the state-of-the-art report a useful approach.	**Yes:** ADV (60), Air France (31), CAA CZ (9), CAA-NL (92), Dassault (17), ERCD UK CAA (68), Fraport (83) **Yes, but consider study as work in progress:** Airbus (4), ICCAIA (28), Snecma (57) **Yes, but consider other aspects:** Gulfstream (100) **Yes, but consider future technology and neglect three-engine aeroplanes:** LBA (34)	**Purpose of report is unclear:** BARIG (44), Lufthansa (73)
Question 4: The Agency is interested in knowing whether stakeholders are of the opinion that additional elements have to be added to the above mentioned sections of Chapter 3 of the report in order to gain an even more complete picture. If the answer is "yes" the Agency is interested in knowing, which elements stakeholders consider to be missing.	**No additions needed:** CAA CZ (10) **Consider study as work in progress:** Airbus (4), ICCAIA (28), Snecma (57) **Do not study technologies with low technology readiness level:** Dassault (18)	**Consider operational aspects and future technology:** ADV (61), BARIG (45), Fraport (82), Lufthansa (74) **Consider future technology:** LBA (35) **Consider other technical aspects and assess interdependencies:** Air France (36) **Add tool for total analysis:** CAA-NL (93)

Question	(General) Agreement with the proposed approach	Different opinion or proposal for a different approach
		Clarify influence of airport policy on aircraft design: Gulfstream (101)
Question 5: The Agency is interested in knowing whether stakeholders consider the envisaged report to provide sufficient information as regard of the state-of-the-art analysis.	**Yes:** Air France (41), CAA-NL (94), CAA CZ (11), LBA (37) **Yes, but consider study as work in progress:** Airbus (4), ICCAIA (28), Snecma (57) **Yes, but consider other aspects:** Gulfstream (102)	**No:** ADV(62), Fraport (84) **No, only a useful paper:** BARIG (46), Lufthansa (75) **Independent Experts Review is an integral part:** Dassault (19)
Question 6: If the response to the last question is "no", the Agency is interested in knowing, which information stakeholders consider to be missing.	**Consider study as work in progress:** Airbus (4), ICCAIA (28), Snecma (57)	**Consider trade-offs:** ADV (63), BARIG (47), Fraport (85), Lufthansa (76) **Consider future technology/ projects:** LBA (38)
Question 7: The Agency is interested in knowing whether stakeholders have any other comments, data, views and proposals in order to improve the analysis and/or have any alternative ideas on how to tackle the problem.	**No other comment:** CAA-NL (96), CAA CZ (12) **Consider study as work in progress:** Airbus (4), ICCAIA (28), Snecma (57)	**Consider future technology:** Air France (50), LBA (39) **Integrate views of stakeholders:** ADV (64), Fraport (86)
Question 8: The Agency is interested in knowing whether stakeholders are in favour of: (a) a stringency increase for subsonic jet and heavy propeller-driven aeroplanes regardless of the margins to the present noise limits; (b) a stringency increase for all cases/configurations where the margin to the present noise limits is reasonable large, but no stringency increase for all cases/configurations where the margin is small; (c) no stringency increase regardless of the margins to the present noise limits; or (d) a different approach (please specify).	**8(a), in some cases 8(b), also consider 8 (d):** Gulfstream (104) **8(b):** CAA CZ (13), Rolls Royce (23)	**8(d), appropriate stringency increase:** ADV (65), CAA-NL (97), ERCD UK CAA (69), Fraport (87) **8(d), use "technology approach":** BARIG (49), Lufthansa (78) **Careful consideration required:** LBA (40) **Not appropriate/too early to provide opinion:** Airbus (2), Dassault (20), FAA (22), ICCAIA (29), Snecma (54) **Base stringency increase on future technology:** Air France (52)

V. CRD table of comments and responses

(General Comments)	-

comment	*5* comment by: *UK CAA* Please be advised that the UK CAA has no comments and supports the proposal.
response	*Noted* The Agency appreciates the support of UK CAA.

comment	*14* comment by: *Dassault Aviation* [Dassault Aviation comments have been sent to EASA by letter N° 575 510 on Jan 14th 2009 by mail. All the items have been splitted in CRT.] Dassault Aviation understood that this A-NPA is a public consultation EASA to obtain the opinions of the industry (aircraft and engine manufacturers, airlines, …) about the on going CAEP process. As the topic of this A-NPA is in discussion in ICAO/CAEP/8 as N24 among the WG1 items and consequently through the CAEP process (adopted by the ICAO members), Dassault Aviation remark that the observers from industry are strongly implicated in this process due to their various works taken into account in the future reports. The ICAO process in CAEP/8 and CAEP/9 is not restricted to the study of the state of art report to reach a possible noise stringency at CAEP/9 : economic and encroachment studies are elaborated during the CAEP cycles. The complete CAEP study will take into account also : • the tradeoffs due to novel regulation on emission gaseous and fuel burn ; • balanced approach to aircraft management.
response	*Noted* The Agency appreciates the support of Dassault Aviation as a member of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". Indeed, in addition to the state-of-the-art analysis report other studies related e.g. to economic measures and related to trade-off between noise and emissions have to be carried out. This has to be done before a final decision on a possible noise stringency increase can be made.

comment	*21* comment by: *FAA* The FAA appreciates the opportunity to comment on A-NPA 2008-21. As a member of ICAO/CAEP Working Group 1, the FAA has been involved in development to date of the State-of-the-art analysis report. As such, FAA has

	provided input within Working Group 1 regarding the structure and content of the report, and therefore has no additional comments to A-NPA 2008-21 relative to report structure and content.
response	*Noted* The Agency appreciates the support of the FAA in WG1 Project N.24 "state-of-the-art analysis".

comment	*23* comment by: *Rolls-Royce plc [DGJ]* As members of and contributors to the ICAO WG1 and N24 study group, Rolls-Royce is fully supportive of the proposed activities of the working group as summarised in the Appendix to A-NPA 2008-21. In response to question 8, we believe option 8(b) to be the most appropriate approach but only on the strict understanding that increased stringency is only considered in the context of all the environmental interdependencies. It would be unacceptable to Rolls-Royce if increased noise stringency were to exclude new technologies that significantly improve other environmental characteristics and thereby prevent the introduction of new products which offer a net benefit to the environment as a whole.
response	*Noted* The Agency appreciates the support of Rolls-Royce as a member of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". The response to Question 8 is noted. Indeed, in addition to the state-of-the-art analysis report other aspects such as environmental interdependencies and the potential impact of new technologies have to be taken into consideration. This has to be done before a final decision on a possible noise stringency increase can be made.

comment	*55* comment by: *ADV* ADV is the German Airports Association. It brings together more than 45 airports in Germany, Austria and Switzerland including the largest.
response	*Noted* The Agency appreciates the explanation given on the role of ADV.

comment	*89* comment by: *DGAC France* As you will read we don't consider that it is appropriate to answer specifically all the questions because this A NPA seems to be premature, when considering the work already undertaken by the CAEP WG 1 task 24 this A NPA refers to, and we think that the objectives of this A NPA are redundant with this task. In particular, we are not in a position to assess whether "the state of the art report" is a useful approach or contains sufficient information until we have the results of the task 24 quoted above. Under those circumstances we respectfully propose to 1) Wait for the results of the study "review and analysis of certification noise for transport category jet aircraft to understand the current state of the art of

	aircraft noise technologies" presently carried out by the CAEP WG1 and which will be presented at the CAEP 8 in February 2010 2) Actively participate , under the European commission umbrella , to reach a "European" position on this study and define a strategic position for "possible" further noise level reduction 3) Act during the next CAEP 8 meeting in order to defend this European position 4) Note the ICAO decision and if necessary to be active in the following works (in case the decision to elaborate new constraints is taken
response	*Partially accepted* The Agency comes to the conclusion that DGAC France might have misunderstood the purpose of this A-NPA. The purpose is not to initiate a separate study on the state-of-the-art analysis. The purpose is "to present the concept of the state-of-the-art analysis report as developed by [ICAO/CAEP] Working Group 1 at the present state in order to solicit comments and to get input from national authorities, professional organisations, private companies and others, thereby enabling the Agency to take such comments into account when this report will be finalized" (see paragraph 12 of A-NPA 2008-21). Following this approach, the Agency disagrees with proposal 1) and agrees with proposals 2) to 4) of DGAC France.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Question 1 p. 5

comment	*2* comment by: *AIRBUS* Answer to Questions 1 & 8: Airbus is fully committed to the ICAO CAEP process and has a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, Airbus supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. fuel burn). The potential impact of new technologies (such as Open Rotors) should be considered when considering increased noise stringency. Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by Airbus to draw any conclusion on any of the scenarios formulated in Question 8 as (a), (b), (c) and (d) as no sufficient justification have been developed so far. Airbus considers the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.
response	*Partially accepted*

The Agency appreciates the support of Airbus as a member of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". Indeed, in addition to the state-of-the-art analysis report other aspects such as environmental interdependencies and the potential impact of new technologies have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The response towards Question 8 is noted. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment

7 comment by: *CAA CZ*

YES ,…..is useful to assess the need for increased noise stringency for subsonic jet and heavy propeller-driven aeroplanes.

YES…….we think that state–of-the-art analysis may be appropriate approach.

response

Noted

The Agency appreciates the response of CAA CZ.

comment

15 comment by: *Dassault Aviation*

Industry generally does not have access to community complaints regarding noise nuisance from aircraft operations, as these complaints are not published in publicly available reports.

It is expected that, during planning for noise management in the vicinity of airports, aircraft noise sources (as considered by the certification process) are not the only contributing factors be taken into account: for example, land use planning or operational procedures may be of interest.

Provided the other aspects are also reviewed, Dassault Aviation considers that studying the need for possibly increased stringency in noise levels is indeed useful and supports the state of the art study approach.

response

Noted

The Agency appreciates the comment of Dassault Aviation. Definitely, other aspects will be taken into account. This has to be done before a final decision on a possible noise stringency increase can be made.

comment

25 comment by: *Air France*

Yes, it is useful to assess the need for increased noise stringency and a state-of-the art analysis can help to that effect. This approach is even a prerequisite (among others, see answer to question 8) to any decision. Differences between current production aircraft noise performances and potential noise improvement by introduction of available and demonstrated new technologies should be assessed on a regular basis and decision for an increased noise stringency should be made when the difference is substantial.

response

Noted

The Agency appreciates the response of Air France towards Question 1. The Agency agrees that differences between current production aircraft noise performances and potential noise improvement by introduction of available and demonstrated new technologies should be assessed on a regular basis.

comment *29* comment by: *ICCAIA*

Response to Questions 1 & 8: ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG).

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response *Noted*

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment *32* comment by: *Luftfahrt-Bundesamt*

Question 1: Noise certification limits should be regularly updated and the LBA supports that technological advances have to be reflected in current ICAO requirements. It is well known that a 50% noise reduction is expected by 2020 and we see an urgent need that the certification limits represent an incentive for the optimization of the noise emission values of future projects. However increasing noise stringency requires careful consideration. Therefore the analysis should not be limited to state-of-the-art aircraft data. We think that it is a useful approach to extend the scope of the analysis on future technologies as well.

response *Partially accepted*

The Agency agrees that technological advances have to be reflected in the ICAO noise requirements. Future technologies have to be investigated, before any decision on a possible increase of noise stringency can be made. WG1 Project N.24 "state-of-the-art analysis" by definition is limited to review and analyse the past and the present situation. Future technologies are reviewed and analysed within another work item of the WG1 CAEP/8 work programme, which looks at technology that is expected to become available in the mid and long term (Project N.29). The result of this latter analysis will also be taken into consideration when CAEP/8 will decide on the way forward concerning a possible increase of stringency.

comment

42 comment by: *BARIG e.V.*

The definition of a new increased noise stringency should be left open until a thorough analysis of the present regulation has been carried out. Therefore this initiative interferes with current analysis of an update of the EU-Directive on noise-related operating restrictions at Community airports (2002/30/EC).

A state-of-the-art analysis should consider aircraft that presently can be bought and that presently are operated. This should not include project aircraft expected to enter service within the next five years since these aircraft do not represent the current situation and their noise properties might undergo changes in the final project phase leading to unreliable data in the intended best practice database.

response

Not accepted

The Agency does not agree to the statement that the state-of-the-art analysis of noise certification limits interferes with the current analysis of an update of EU-Directive 2002/30/EC related to noise operating restrictions. In contrast, carrying out both studies in parallel could lead to an even better understanding of today's potential concerning noise reduction technologies and the annoyance of aircraft noise around airports.

The Agency does not agree to exclude project aircraft from the analysis. At this stage the Best Practice database contains four project aircraft types/models (Boeing 787, Boeing 747-8/8F, Airbus A350 and Bombardier CRJ 1000) to enter into service between 2009 and 2013. For these aircraft the expected noise levels are known within a small range. Based on the information provided by manufacturers it is not expected that the noise characteristics of these aircraft will change leading to "unreliable data" in the Best Practice database.

comment

54 comment by: *Snecma*

As an engine manufacturer, Snecma is fully committed to the ICAO CAEP process and has a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, we support a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on

environmental characteristics other than noise should be considered (e.g. NOx, GHG). The potential impact of new technologies (such as Open Rotors) should be considered when considering increased noise stringency.

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

We consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response *Noted*

The Agency appreciates the support of Snecma as a member of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". The Agency agrees that in addition to the state-of-the-art analysis report other aspects such as environmental interdependencies and the potential impact of new technologies have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The response towards Question 8 is noted. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment *58* comment by: *ADV*

In January 2001 CAEP/5 considered increased stringency for the third time. Three cumulative increases of 8dB, 11dB and 14dB where finally discussed. These increases had been selected in light of their impact on a "best practices" fleet of about 500 aircraft reflecting current noise reduction technology, rather than best available and future noise technology. All aircraft in this fleet could meet the 8dB increase, only 5 percent would fail the 11dB increase, and 25 percent would fail the 14dB increase. To sum up, in establishing its proposals, CAEP looked to the past, not to the future. The airports called for increased stringency of 4dB at each measurement point and a cumulative reduction of 14dB. This policy was technologically feasible.

CAEP/5 unanimously recommended a cumulative increased stringency of -10dB relative to current Chapter 3 limits, to be incorporated into ICAO Annex 16 as new Chapter 4, applicable from 1 January 2006. No tradeoffs would be allowed and the sum of any two measurement points had to be at least 2dB. This new standard was not meant for operational restrictions or phase-out, only for certification purposes.

Therefore we consider an appropriate approach, where the *best available and future noise technology* is reflected. If a state-of-the-art analysis is an appropriate approach, depends on the definition of "state-of-the-art".

response *Partially accepted*

The Agency appreciates the information given by ADV.

WG1 Project N.24 "state-of-the-art analysis" is limited by definition to review and analyse the past and the present situation. Future technologies are

reviewed and analysed within Project N.29 of the WG1 CAEP/8 work programme. The result of this latter analysis will also be taken into consideration when CAEP/8 will decide on the way forward concerning a possible increase of noise stringency.

comment

66 comment by: *ERCD, UK CAA*

The cumulative increase in stringency of 10 dB was met by almost all aircraft in production after the announcement of the Chapter 4 standard by CAEP in 2001. Despite this, it is evident from EASA's published data that new airframe/engine variants continue to be certificated that do not meet the Chapter 4 standard.

The lead-time between a possible decision for any new stringency at the end of the CAEP/9 cycle (2013) and its implementation (and therefore its effect on the operating fleet) is likely to be of the order of 5 years (i.e. similar to the lead-time for Chapter 4). On that basis, the earliest introduction of any new standard would likely be 2018. Thus, with the predicted growth in air travel worldwide over the next few decades, there is a risk that noise impact around airports will increase.

Secondly, aircraft manufacturers are considering a new generation of single-aisle aircraft to enter service in the latter half of the next decade. Without further consideration of stringency there is limited incentive for manufacturers to integrate state-of-the-art technologies into these designs. If stringency is not considered within the CAEP/9 cycle, any ability for ICAO standards to influence the next generation of single-aisle aircraft designs will be lost.

ERCD therefore consider it important to assess the need for increased noise stringency at this stage, and consider the proposed state-of-the-art analysis to be an appropriate approach.

response

Noted

The Agency appreciates the comment of ERCD, UK CAA.

It is indeed evident from the Agency's Type Certification Datasheet for Noise (TCDSN) database that additional airframe/engine configurations are certificated according to Chapter 3 of Annex 16, Volume I. These aeroplanes, however, are no new designs, which include latest available technology. These aeroplanes are derived versions of already certificated aircraft also certificated according to Chapter 3.

comment

71 comment by: *Lufthansa German Airlines*

The definition of a new increased noise stringency should be left open until a thorough analysis of the present regulation has been carried out. Therefore this ANPA and regulatory initiative interferes with current analysis of an update of the EU-Directive on noise-related operating restrictions at Community airports (2002/30/EC).

A state-of-the-art analysis should only consider aircraft that presently can be bought and that presently are operated. This should not include project aircraft expected to enter service within the next five years since these aircraft do not represent the current situation and their noise properties might undergo changes in the final project phase leading to unreliable data in the intended

best practice database.

response

Not accepted

The Agency does not agree to the statement that the state-of-the-art analysis of noise certification limits interferes with the current analysis of an update of EU-Directive 2002/30/EC related to noise operating restrictions. In contrast, carrying out both studies in parallel could lead to an even better understanding of today's potential concerning noise reduction technologies and the annoyance of aircraft noise around airports.

The Agency does not agree to exclude project aircraft from the analysis. At this stage the Best Practice database contains four project aircraft types/models (Boeing 787, Boeing 747-8/8F, Airbus A350 and Bombardier CRJ 1000) to enter into service between 2009 and 2013. For these aircraft the expected noise levels are known within a small range. Based on the information provided by manufacturers it is not expected that the noise characteristics of these aircraft will change leading to "unreliable data" in the Best Practice database.

comment

80 comment by: *Fraport AG*

In January 2001 CAEP/5 considered increased stringency for the third time. Three cumulative increases of 8dB, 11dB and 14dB where finally discussed. These increases had been selected in light of their impact on a "best practices" fleet of about 500 aircraft reflecting current noise reduction technology, rather than best available and future noise technology. All aircraft in this fleet could meet the 8dB increase, only 5 percent would fail the 11dB increase, and 25 percent would fail the 14dB increase. To sum up, in establishing its proposals, CAEP looked to the past, not to the future. The airports called for increased stringency of 4dB at each measurement point and a cumulative reduction of 14dB. This policy was technologically feasible.

CAEP/5 unanimously recommended a cumulative increased stringency of -10dB relative to current Chapter 3 limits, to be incorporated into ICAO Annex 16 as new Chapter 4, applicable from 1 January 2006. No tradeoffs would be allowed and the sum of any two measurement points had to be at least 2dB. This new standard was not meant for operational restrictions or phase-out, only for certification purposes.

Therefore we consider an appropriate approach, where the *best available and future noise technology* is reflected. If a state-of-the-art analysis is an appropriate approach, depends on the definition of "state-of-the-art".

response

Partially accepted

The Agency appreciates the information given by Fraport AG.

WG1 Project N.24 "state-of-the-art analysis" is limited by definition to review and analyse the past and the present situation. Future technologies are reviewed and analysed within Project N.29 of the WG1 CAEP/8 work programme. The result of this latter analysis will also be taken into consideration when CAEP/8 will decide on the way forward concerning a possible increase of stringency.

comment

90 comment by: *CAA-NL*

CAA-NL considers it more then appropriate that maximum certification noise levels comply with the state of the art technical measures, to lower the noise effects and thus one off their major problems with this industry in the years to come.

response

Noted

The state-of-the-art analysis report is supposed to provide more detailed information on today's situation e.g. by comparing certification noise levels with noise limits.

comment

98 comment by: *Gulfstream Aerospace Corp*

This is not only useful, but necessary, to assess the state-of-the-art for increasing noise stringency. In today's market, and the foreseeable future, the need for environmentally friendly products is at an all time high. Industry recognizes this requirement and takes this into account in future product design considerations. Hence, an evaluation of the stringency options for the future needs to be considered. That said, any stringency discussions should keep the terms "economically reasonable and technically feasible" in mind as this topic is being considered.

response

Noted

In addition to the state-of-the-art analysis report other aspects such as the terms "economically reasonable and technically feasible" will be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - State-of-the-art analysis report p. 5-7

comment

29 ❖ comment by: *ICCAIA*

Response to Questions 1 & 8: ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG).

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

ICCAIA consider the CAEP process of maintaining and developing

environmental standards as appropriate to provide such recommendations to regulating bodies.

response

Noted

The Agency's response to this comment, as follows, was already given to comment No. 29 above:

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Question 2 p. 6

comment

3 comment by: *AIRBUS*

Answer to Question 2: Airbus supports the CAEP approach, which includes use of the Best Practice database. Being representative of current and short to mid-term noise engineering practices, the Best Practice database is an appropriate tool to carry out a state-of-the art study, while other source of information may prove useful to support certain aspects of the study requiring further historical perspective. However, the Best Practice database does not reflect the impact of technology under development, whether it is new low-noise technology or new low-emissions technology. It would be premature to consider unproven low-noise technology (at Technology Readiness Level less than 9) in analysing the noise of modern aeroplanes, but their potential impact and that of environmental interdependencies of new technologies should be considered when considering increased noise stringency. CAEP has recognised the importance of environmental interdependencies and it would be environmentally damaging if increased noise stringency were to exclude new technologies that significantly improve other environmental characteristics.

response

Noted

The Agency appreciates the comment of Airbus. The Agency agrees that other sources of information aside of the Best Practice database are to be considered. It is the intention to do this in the envisaged N.24 report.

WG1 Project N.24 "state-of-the-art analysis" is limited by definition to review and analyse the past and the present situation. Future technologies are reviewed and analysed within Project N.29 of the WG1 CAEP/8 work programme. The result of this latter analysis will also be taken into consideration when CAEP/8 will decide on the way forward concerning a possible increase of stringency.

comment

8 comment by: *CAA CZ*

YES …..we think that the „Best Practise database" (for example) may be an

	appropriate tool in order to analyze noise of modern aeroplanes.
Response	*Noted* The Agency appreciates the response of CAA CZ.

comment	*16* comment by: *Dassault Aviation* The Best Practice data base contains the best technology available for short or mid-term use. It is therefore useful for analysis of noise performance of aircraft types to be certified in the next ten years. Longer term technologies with lower current readiness levels would be excluded, as they anyway cannot be expected to be used in aircraft in the near future.
response	*Noted* The comment of Dassault Aviation is appreciated.

comment	*26* comment by: *Air France* The Best Practice Database is a good tool to analyse the noise of modern aeroplanes, especially if it allows to assess how efficiently a given technology was incorporated on an aeroplane.
response	*Noted* The Agency appreciates the comment of Air France.

comment	*27* comment by: *ICCAIA* Response to Question 2: ICCAIA supports the CAEP approach, which includes use of the Best Practice database. Being representative of current and short to mid-term noise engineering practices, the Best Practice database is an appropriate tool to carry out a state-of-the art study, while other source of information may prove useful to support certain aspects of the study requiring further historical perspective. However, the Best Practice database does not reflect the impact of technology under development, whether it is new low-noise technology or new low-emissions technology. It would be premature to consider unproven low-noise technology (at TRL less than 8) in analysing the noise of modern aeroplanes
response	*Noted* The Agency appreciates the comment of ICCAIA. The Agency agrees that other sources of information aside of the Best Practice database are to be considered. This is foreseen in the envisaged N.24 report. The Agency agrees that unproven low noise technology should not be considered under the N24 task.

comment	*29* ❖ comment by: *ICCAIA* Response to Questions 1 & 8: ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with

	which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG). Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far. ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.
response	*Noted* The comment is not related to Question 2. The Agency's response to this comment, as follows, was already given to comment No. 29 above: The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made. The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment	*33* comment by: *Luftfahrt-Bundesamt* Question 2: Concerning the Working Group 1 work item 'to understand the current state-of-the-art of aircraft noise technology' the Best Practice database is a suitable basis. Nonetheless even this database has to be customized to the needs of the mentioned task.
response	*Noted* The Agency appreciates the comment of LBA. During the process the Best Practice database has been customized to the needs. In addition other sources of information are used for the envisaged report, where appropriate.

comment	*43* comment by: *BARIG e.V.* An aeroplane database with elaborated data sets for a large variety of airframe/engine combinations already exists. It has been developed under ICAO and it is hosted by DGAC (http://noisedb.stac.aviation-civile.gouv.fr/). These data should carefully be taken into account, since for instance it clearly shows the dependence of certification data on operating parameters mainly TOW. Thus Best Practice turns out to be a relative term.
response	*Partially accepted*

The Best Practice database (except for project aeroplanes) is a subset of the ICAO NoisedB certification database. The ICAO NoisedB is developed under ICAO/CAEP and is hosted and maintained by DGAC France. The NoisedB contains more than 5000 records; the Best Practice database contains about 600 records representing manufacturers' best practices. Aside of the Best Practice database other data(bases) are used for the analysis. This includes the ICAO NoisedB.

comment

56 comment by: *Snecma*

Snecma supports the CAEP approach, which includes use of the Best Practice database. Being representative of current and short to mid-term noise engineering practices, the Best Practice database is an appropriate tool to carry out a state-of-the art study, while other source of information may prove useful to support certain aspects of the study requiring further historical perspective. However, the Best Practice database does not reflect the impact of technology under development, whether it is new low-noise technology or new low-emissions technology. It would be premature to consider unproven low-noise technology (at TRL less than 8) in analysing the noise of modern aeroplanes, but their potential impact and that of environmental interdependencies of new technologies should be considered when considering increased noise stringency. CAEP has recognised the importance of environmental interdependencies and it would be environmentally damaging if increased noise stringency were to exclude new technologies that significantly improve other environmental characteristics.

response

Noted

The Agency appreciates the comment of Snecma. In addition to the state-of-the-art analysis report other aspects will be taken into consideration. This includes future (new) technologies and interdependencies. These other aspects have to be considered, before a final decision on a possible noise stringency increase can be made.

comment

59 comment by: *ADV*

A stringency increase must consider today’s technology which is still on the market, when the limit is applicable, and future technology development. Therefore it’s not sufficient to look at the today’s technology. The development of quieter aircraft for different aircraft categories is essential to take the capability of further noise reductions at European airports.

response

Partially accepted

WG1 Project N.24 "state-of-the-art analysis" is limited by definition to review and analyse the past and the present situation. Future technologies are reviewed and analysed within Project N.29 of the WG1 CAEP/8 work programme. The result of this latter analysis will also be taken into consideration when CAEP/8 will decide on the way forward concerning a possible increase of stringency.

comment

67 comment by: *ERCD, UK CAA*

ERCD consider the use of an approved ‘Best Practice’ database of modern and project aeroplane configurations to be an appropriate tool for the envisaged study.

response

Noted

The Agency appreciates the comment of ERCD, UK CAA.

comment

72 comment by: *Lufthansa German Airlines*

An aeroplane database with elaborated data sets for a large variety of airframe/engine combinations already exists. It has been developed under ICAO and it is hosted by DGAC (http://noisedb.stac.aviation-civile.gouv.fr/). This database should carefully be taken into account, since for instance it clearly shows the dependence of certification data on operating parameters mainly TOW. Thus Best Practice turns out to be a relative term.

response

Partially accepted

The Best Practice database (except for project aeroplanes) is a subset of the ICAO NoisedB certification database. The ICAO NoisedB is developed under ICAO/CAEP and is hosted and maintained by DGAC France. The NoisedB contains more than 5000 records; the Best Practice database contains about 600 records representing manufacturers' best practices. Aside of the Best Practice database other data(bases) are used for the analysis. This includes the ICAO NoisedB.

comment

81 comment by: *Fraport AG*

A stringency increase must consider today’s technology which is still on the market, when the limit is applicable, and future technology development. Therefore it’s not sufficient to look at the today’s technology. The development of quieter aircraft for different aircraft categories is essential to take the capability of further noise reductions at European airports.

response

Noted

WG1 Project N.24 "state-of-the-art analysis" is limited by definition to review and analyse the past and the present situation. Future technologies are reviewed and analysed within Project N.29 of the WG1 CAEP/8 work programme. The result of this latter analysis will also be taken into consideration when CAEP/8 will decide on the way forward concerning a possible increase of stringency.

comment

91 comment by: *CAA-NL*

In it's self a database is useful, but is does not compensate the task for the applicant to do research to make sure it's design reflects the state off the art of technical measures. For the Agencies its a tool to determine if known technologies are used, but does not release you from the task of investigating if all is done.

response

Noted

The Agency appreciates the comment of CAA-NL and will take it into consideration.

comment

99 comment by: *Gulfstream Aerospace Corp*

Past studies have utilized the Best Practices Database to establish the best

noise reduction available. The current state-of-the-art considers noise gains in conjunction with other environmental concerns, primarily energy and emissions. Considering the current emphasis on energy and climate change, these may have more sway and may compromise the maximum noise reduction goals. The Best Practices Database should be a primary tool for evaluation, since the environmental aspects should have already been balanced in the design. Gulfstream contends that if noise gains are not considered in conjunction with other environmental concerns that a supplemental method needs to be developed to ensure a balanced approach on all environmental goals in the tradespace.

response

Noted

The Agency appreciates the comment of Gulfstream Aerospace Corp. WG1 Project N.24 "state-of-the-art analysis" is limited by definition to review and analyse the situation concerning aircraft noise. However, other environmental concerns have to be taken into consideration by ICAO/CAEP. This has to be done before a decision on the increase of noise stringency can be made.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Question 3 p. 6

comment

4 comment by: *AIRBUS*

Answer to Questions 3, 4, 5, 6, 7: As active participant to the N24 CAEP WG1 study, Airbus intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Airbus representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study.

response

Noted

The Agency appreciates the support of Airbus in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment

9 comment by: *CAA CZ*

YES

response

Noted

The Agency appreciates the response of CAA CZ.

comment

17 comment by: *Dassault Aviation*

Dassault Aviation considers the decomposition presented in sections 3.3 to 3.5 of chapter 3 of the report to be an acceptable approach.

response

Noted

The Agency appreciates the comment of Dassault Aviation.

comment

28 comment by: *ICCAIA*

Response to Questions 3, 4, 5, 6 & 7: As active participants to the N24 CAEP WG1 study, ICCAIA certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. ICCAIA representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study

response

Noted

The Agency appreciates the support of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment

29 ❖ comment by: *ICCAIA*

Response to Questions 1 & 8: ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG).

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response

Noted

The comment is not related to Question 3. The Agency's response to this comment, as follows, was already given to comment No. 29 above:

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is

useful to ask stakeholders about their opinion as of today.

comment *31* comment by: *Air France*

Globally, the database structure is good. In §5.3, one should keep in mind that main noise reductions come from technology breakthroughs and then for a given technology continuous improvements allow for (small) additional noise reductions. This distinction should be documented to allow for noise reduction forecasts.

response *Noted*

The Agency appreciates the comment of Air France and will take it into consideration.

comment *34* comment by: *Luftfahrt-Bundesamt*

Question 3: Of course already existing technology has to be taken into account, but a thorough investigation must be carried out on the analysis of potential or projected noise reduction systems. Furthermore we think that particular attention should be given to an incentive for the optimization of the noise levels of future projects.

In return we do not see the need for an extensive investigation of three-engine aircraft. Since the ETOPS-range of twin-engined aircraft is extended to more than 3 hours, this technology seems to be limited only to a small amount of business-jets.

If these considerations attract interest, the LBA agrees that the described analysis is a useful approach.

response *Partially accepted*

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse the past and the present situation. Therefore, the analysis of potential or projected noise reduction systems is outside the scope of the N.24 report. However, this analysis will be provided within Project N.29 of the WG1 CAEP/8 work programme on future technology.

The Agency agrees that in the future the technology of three-engine aircraft will probably be limited to business jets. However, for completeness three-engine aeroplanes have to be analysed within this study. The reasoning is as follows: If at the end noise stringency will be increased, this decision most probably will include an increase in stringency for three-engine aeroplanes.

comment *44* comment by: *BARIG e.V.*

Aim and purpose of the intended report are unclear. Therefore the purposed approach for sections 3.3. to 3.5. may not be properly judged. Concerning in particular the Best Practice database the agency should make more clear whether the planned database analysis should for instance a) promote more refined operational restrictions b) and / or incentive technology development or c) other.

response *Noted*

The Best Practice database is a subset of the ICAO NoisedB certification database containing all necessary information (aircraft configuration, noise levels etc.) of about 600 records representing manufacturers' best practices (current technology). In addition the Best Practice database contains (four) project aeroplanes, for which noise levels are available. The Best Practice database is used as a tool in order to analyze the state-of-the-art e.g. by comparing noise levels with certification limits. The analysis carried out by applying the Best Practice database and other data(bases) is not meant to promote more refined operational restrictions and/or incentive technology development. The purpose of the envisaged report is to review and analyse certification noise levels in order to help come to a conclusion whether or not a noise stringency increase for subsonic jet and heavy propeller-driven aeroplanes should be considered.

comment

57 comment by: *Snecma*

As an active participant to the N24 CAEP WG1 study, together with EASA and other authorities and stakeholders, Snecma certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Our representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the A-NPA, considering the trends and key parameters that may develop in the course of the study.

response

Noted

The Agency appreciates the support of Snecma in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may be identified in the course of the study will be taken into account.

comment

60 comment by: *ADV*

We think this is a useful approach. It is important to analyse the parameters of flyover, lateral and approach conditions separate. It is also important to look at the effect of mass. To analyse the effect of the implementation of Chapter 4 is also important.

response

Noted

The Agency appreciates the comment of ADV.

comment

68 comment by: *ERCD, UK CAA*

On the understanding that the analysis will consider the implications of further limiting the noise that may be emitted at each of the three certification measurement points, in addition to any increase of cumulative margin, ERCD consider the described methodology to be a useful approach.

response

Noted

The Agency appreciates the comment of ERCD, UK CAA. The main subject of the envisaged report is to analyse the state-of-the-art. The Agency expects that the analysis will also consider the implications of further limiting the cumulative noise and the noise that may be emitted at each of the three certification measurement points.

comment	*73* comment by: *Lufthansa German Airlines* Aim and purpose of the intended report are unclear. Therefore the purposed approach for sections 3.3. to 3.5. cannot be properly judged. Concerning in particular the Best Practice database the agency should make more clear whether the planned database analysis should for instance a) promote more refined operational restrictions b) and / or incentivise technology development or c) other.
response	*Noted* The Best Practice database is a subset of the ICAO NoisedB certification database containing all necessary information (aircraft configuration, noise levels etc.) of about 600 records representing manufacturers' best practices (current technology). In addition the Best Practice database contains (four) project aeroplanes, for which noise levels are available. The Best Practice database is used as a tool in order to analyze the state-of-the-art e.g. by comparing noise levels with certification limits. The analysis carried out by applying the Best Practice database and other data(bases) is not meant to promote more refined operational restrictions and/or incentive technology development. The purpose of the envisaged report is to review and analyse certification noise levels in order to support a conclusion whether or not a noise stringency increase for subsonic jet and heavy propeller-driven aeroplanes should be considered.

comment	*83* comment by: *Fraport AG* We think this is a useful approach. It is important to analyse the parameters of flyover, lateral and approach conditions separate. It is also important to look at the effect of mass. To analyse the effect of the implementation of Chapter 4 is also important.
response	*Noted* The Agency appreciates the comment of Fraport AG.

comment	*92* comment by: *CAA-NL* Yes!
response	*Noted* The Agency appreciates the comment of CAA-NL.

comment	*100* comment by: *Gulfstream Aerospace Corp* Section 3.3: The Best Practices Database needs to be evaluated to determine if it reflects noise gains in conjunction with other environmental concerns. If not, a supplemental method needs to be developed to ensure a balanced approach on all environmental goals in the trade-space. The analysis of lateral, flyover and approach to distinguish between two-, three- and four-engine aircraft is appropriate. The margins should be on a point-by-point basis. Gulfstream offers that the cumulative margin of the current Chapter 4 is confusing, and recommends that the next stringency should appropriately address each measurement point.

Section 3.4: Gulfstream concurs that this section is appropriate with one exception, as described in the following proviso: The next increase in stringency should revert to the previous models of limits for the individual noise measurement points. This should include a re-evaluation of the trade limits to ensure that these, too, are appropriate.

Section 3.5: Gulfstream concurs that this section is appropriate with one exception, as described in the following proviso: 3.5.1: The date of application for Type Design is the most appropriate for the technology standard. This gives the aircraft manufacturer the assurance to commit designs without the fear of changing standards. Most aircraft manufacturers already voluntarily comply with later emerging standards to ensure the acceptability of their products throughout their service life.

response *Noted*

Section 3.3: WG1 Project N.24 "state-of-the-art analysis" is limited by definition to review and analyse the situation concerning aircraft noise. However, other environmental concerns have to be taken into consideration by ICAO/CAEP, before a decision on the increase of noise stringency can be made. The Agency considers that the structure of the noise standards (such as the suggested reintroduction of limits for each measurement point) is outside the scope of Project N.24.

Section 3.4: The Agency considers that the structure of the noise standards (such as the suggested reintroduction of a trade-off) is outside the scope of Project N.24.

Section 3.5: The Agency appreciates the comment of Gulfstream Aerospace Corp. The "effect of time" to be investigated in Section 3.5.1 of the report will be analysed in some detail.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Question 4 p. 6

comment *4* ❖ comment by: *AIRBUS*

Answer to Questions 3, 4, 5, 6, 7: As active participant to the N24 CAEP WG1 study, Airbus intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Airbus representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study.

response *Noted*

The Agency's response to this comment, as follows, was already given to comment No. 4 above:

The Agency appreciates the support of Airbus in WG1 Project N.24 "state-of-the-art analysis" . At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment	*10* comment by: *CAA CZ* NO
response	*Noted* The Agency appreciates the comment of CAA CZ.

comment	*18* comment by: *Dassault Aviation* While it is useful to keep an open mind towards new points that may arise from the on going work, Dassault Aviation would strongly object to include in a "state of the art" study technologies with too low readiness levels, particularly those whose airworthiness and safety has not been demonstrated.
response	*Noted* The comment of Dassault Aviation is appreciated. Indeed, it is by definition not the intention of this report to study technologies with low technological readiness levels.

comment	*28* ❖ comment by: *ICCAIA* Response to Questions 3, 4, 5, 6 & 7: As active participants to the N24 CAEP WG1 study, ICCAIA certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. ICCAIA representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study
response	*Noted* The Agency's response to this comment, as follows, was already given to comment No. 28 above: The Agency appreciates the support of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment	*29* ❖ comment by: *ICCAIA* Response to Questions 1 & 8: ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx,

GHG).

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response *Noted*

The comment is not related to Question 4. The Agency's response to this comment, as follows, was already given to comment No. 29 above:

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment *35* comment by: *Luftfahrt-Bundesamt*

Question 4: Again: Concerning the Working Group 1 work item 'to understand the current state-of-the-art of aircraft noise technology' this approach is a suitable basis; but bearing in mind the potential need for an increased noise stringency, the LBA proposes the following:

Almost all mentioned elements are describing backwards targeted procedures. The only forward looking aspect is the investigation of 'project aeroplanes, as appropriate, in order to demonstrate the state-of-the-art of the latest technology available'. From our point of view this retroactive approach is not enough and therefore the LBA proposes the investigation of future technologies as well, even though at the time being the expected improvement can not be quantified by an accurate value of the benefits.

response *Partially accepted*

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse the past and the present situation. Analysis of potential or projected noise reduction systems are outside the scope of the N.24 report. Project N.29 of the WG1 CAEP/8 work programme, however, will provide analysis of these subjects.

comment *36* comment by: *Air France*

Yes, additional element could be added to the database:

- the Technology analysis (§3.5.2) focuses on the engine: the wing/fuselage and landing gear technologies (aerodynamics) should be listed in the structure of the database as they largely influence side and approach noise.

- a new § could be added to assess interdependencies (Noise, NOx and CO2) as a given technology can improve noise but adversely affect NOx or CO2.

response

Partially accepted

The influence of the wing/fuselage will be discussed in the (new) Section 3.1.1 "Installation Effects". Advanced landing gear technologies, which reduce noise, are not yet state-of-the-art. Therefore, it is not planned to consider landing gear noise reduction systems in the envisaged report.

Within ICAO/CAEP WG1 is concerned with "noise technical" subjects. Consequently WG1 Project N.24 is limited to the review and analysis of certification noise levels and can not be expanded to address environmental interdependencies. However, other aspects such as interdependencies definitely have to be taken into consideration. This has to be done before a final decision on a possible noise stringency increase can be made.

comment

45 comment by: *BARIG e.V.*

The analysis of project aeroplanes in 3.4. should be merged with the technology assessment in 3.5.2. Furthermore "margin"-analysis of 3.4. makes sense if combined with technology- and operational issues in order to identify positive / negative trends in noise emissions. Thus conclusions can be drawn for future technology development. Due to the complexity of the field all relevant research institutions and research departments of manufactures should be include in the process to take advantage of their knowledge.

response

Partially accepted

Section 3.4 is a statistical analysis of recently certificated aeroplanes selected from the Best Practice database, while in Section 3.5.2 technological developments will be described and discussed. In Section 4 ("Comparison and summary of results") the outcome of different sections will be compared and summarized. This includes Sections 3.4 and 3.5.2 and consequently includes a comparison of the analysis of margins with technological developments. Operational issues, however, are outside the scope of this study.

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse the past and the present situation. Future technology developments are outside the scope of the N.24 report, but will be considered within Project N.29 of the WG1 CAEP/8 work programme. Therefore, it does not seem appropriate to officially include research institutions and research departments of manufacturers (ICCAIA) in the work of Project N.24. (However, on an informal basis contacts exist and are used to expand the knowledge of the members of the N.24 drafting group.)

comment

57 ❖ comment by: *Snecma*

As an active participant to the N24 CAEP WG1 study, together with EASA and other authorities and stakeholders, Snecma certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Our representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the A-NPA, considering the trends and key parameters that may develop in the course of the study.

response

Noted

The Agency appreciates the support of Snecma in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment

61 comment by: *ADV*

The analysis of project aeroplanes in 3.4 should be merged with the technology assessment in 3.5.2. Furthermore "margin"-analysis of 3.4 makes sense if combined with technology- and operational issues in order to identify positive / negative trends in noise emissions. Thus conclusions can be drawn for future technology development. Due to the complexity of the field all relevant research institutions and research departments of manufactures should be included in the process to take advantage of their knowledge.

response

Partially accepted

Section 3.4 is a statistical analysis of recently certificated aeroplanes selected from the Best Practice database, while in Section 3.5.2 technological developments will be described and discussed. In Section 4 ("Comparison and summary of results") the outcome of different sections will be compared and summarized. This includes Sections 3.4 and 3.5.2 and consequently includes a comparison of the analysis of margins with technological developments. Operational issues, however, are outside the scope of this study.

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse the past and the present situation. Future technology developments are outside the scope of the N.24 report, but will be provided within Project N.29 of the WG1 CAEP/8 work programme. Therefore, it does not seem appropriate to officially include research institutions and research departments of manufacturers (ICCAIA) in the work of Project N.24. (However, on an informal basis contacts exist and are used to expand the knowledge of the members of the N.24 drafting group.)

comment

74 comment by: *Lufthansa German Airlines*

The analysis of project aeroplanes in 3.4 should be merged with the technology assessment in 3.5.2. Furthermore "margin"-analysis of 3.4 makes sense if combined with technology- and operational issues in order to identify positive / negative trends in noise emissions. Thus conclusions can be drawn for future technology development. Due to the complexity of the field all relevant research institutions and research departments of manufactures should be include in the process to take advantage of their knowledge.

response

Partially accepted

Section 3.4 is a statistical analysis of recently certificated aeroplanes selected from the Best Practice database, while in Section 3.5.2 technological developments will be described and discussed. In Section 4 ("Comparison and summary of results") the outcome of different sections will be compared and summarized. This includes Sections 3.4 and 3.5.2 and consequently includes a comparison of the analysis of margins with technological developments. Operational issues, however, are outside the scope of this study.

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review

and analyse the past and the present situation. Future technology developments are outside the scope of the N.24 report, but will be provided within Project N.29 of the WG1 CAEP/8 work programme. Therefore, it does not seem appropriate to officially include research institutions and research departments of manufacturers (ICCAIA) in the work of Project N.24. (However, on an informal basis contacts exist and are used to expand the knowledge of the members of the N.24 drafting group.)

comment *82* comment by: *Fraport AG*

The analysis of project aeroplanes in 3.4 should be merged with the technology assessment in 3.5.2. Furthermore "margin"-analysis of 3.4 makes sense if combined with technology- and operational issues in order to identify positive / negative trends in noise emissions. Thus conclusions can be drawn for future technology development. Due to the complexity of the field all relevant research institutions and research departments of manufactures should be included in the process to take advantage of their knowledge.

response *Partially accepted*

Section 3.4 is a statistical analysis of recently certificated aeroplanes selected from the Best Practice database, while in Section 3.5.2 technological developments will be described and discussed. In Section 4 ("Comparison and summary of results") the outcome of different sections will be compared and summarized. This includes Sections 3.4 and 3.5.2 and consequently includes a comparison of the analysis of margins with technological developments. Operational issues, however, are outside the scope of this study.

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse the past and the present situation. Future technology developments are outside the scope of the N.24 report, but will be provided within Project N.29 of the WG1 CAEP/8 work programme. Therefore, it does not seem appropriate to officially include research institutions and research departments of manufacturers (ICCAIA) in the work of Project N.24. (However, on an informal basis contacts exist and are used to expand the knowledge of the members of the N.24 drafting group.)

comment *93* comment by: *CAA-NL*

A tool for total analysis is missing.

response *Noted*

At this stage there does not exist one tool for "total analysis" within ICAO/CAEP. However, there exist different tools in order to analyse different aspects (noise, economic measures, interdependencies etc.). ICAO/CAEP will apply these tools, before a decision on a possible increase of noise stringency will be made.

comment *101* comment by: *Gulfstream Aerospace Corp*

Concerning section 3.5.5.2, Gulfstream requests clarification whether other airports or airport authorities are considering noise regulating systems that can also affect design of new aircraft?

response *Noted*

The Agency will take this proposal into account. It is envisaged that the N.24 report will provide clarification on this issue.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Question 5 p. 7

comment

4 ❖ comment by: *AIRBUS*

Answer to Questions 3, 4, 5, 6, 7: As active participant to the N24 CAEP WG1 study, Airbus intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Airbus representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study.

response

Noted

The Agency's response to this comment, as follows, was already given to comment No. 4 above:

The Agency appreciates the support of Airbus in WG1 Project N.24 "state-of-the-art analysis" . At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment

11 comment by: *CAA CZ*

YES……concerning with assessment of the differences between results noise level measured by Chapter 3 and by Chapter 4 (Annex 16/I) , we think , that the envisaged report may be to provide sufficient information as regard of the state-of-the-art analysis.

response

Noted

The Agency appreciates the comment of CAA CZ.

comment

19 comment by: *Dassault Aviation*

Questions 5, 6&7: It is reminded that Independents Experts Reports are an integral part of the current process of drafting a state of the art report (N24 task).

response

Partially accepted

ICAO/CAEP has established the Independent Experts Review as a separate work item, Project N.29, of the WG1 work programme as follows: "Under the independent expert process, with the assistance and cooperation of other bodies of the organisation and of other international organizations, to examine and make recommendations for noise, with respect to aircraft technology and air traffic operational goals (aspects that relate to aircraft based technologies) in the mid term (10 years) and the long term (20 years)". That means that within WG1 Project N.29 future technology developments are investigated, while Project N.24 is concerned with the past and the present. Both projects complement each other, however, Project N.29 is not an integral part of

Project N.24.

comment

28 ❖ comment by: *ICCAIA*

Response to Questions 3, 4, 5, 6 & 7: As active participants to the N24 CAEP WG1 study, ICCAIA certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. ICCAIA representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study

response

Noted

The Agency's response to this comment, as follows, was already given to comment No. 28 above:

The Agency appreciates the support of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment

29 ❖ comment by: *ICCAIA*

Response to Questions 1 & 8*:* ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG).

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.
ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response

Noted

The comment is not related to Question 5. The Agency's response to this comment, as follows, was already given to comment No. 29 above:

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment

37 comment by: *Luftfahrt-Bundesamt*

Question 5: Concerning the Working Group 1 work item 'to understand the current state-of-the-art of aircraft noise technology' this approach is a suitable basis.

response

Noted

The Agency appreciates the comment of LBA.

comment

41 comment by: *Air France*

Yes, the envisaged report should provide sufficient information or at least good information.

response

Noted

The Agency appreciates the comment of Air France.

comment

46 comment by: *BARIG e.V.*

No. We are afraid that the intended report will only turn out to be a useful technical paper if the process and considerations made under question 4 are sufficiently regarded. In addition to address the complexity to the aircraft noise issues this stakeholder process should be retained.

response

Partially accepted

The N.24 report is intended to become a useful technical report analysing the state-of-the-art of aircraft noise certification levels, taken into account the past and the present. Further aspects are or will be considered elsewhere in the WG1 work programme (e.g. WG1 Project N.29 on future technology) or within ICAO/CAEP (e.g. economic measures). Therefore, the complexity of aircraft noise issues is addressed, however, can not be taken care of within the Project N.24. The aim of A-NPA 2008-21 is to solicit comments and to get input from stakeholders on the envisaged N.24 report.

comment

57 ❖ comment by: *Snecma*

As an active participant to the N24 CAEP WG1 study, together with EASA and other authorities and stakeholders, Snecma certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Our representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the A-NPA, considering the trends and key parameters that may develop in the course of the study.

response

Noted

The Agency appreciates the support of Snecma in WG1 Project N.24 "state-of-

	the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment	*62* comment by: *ADV* No.
response	*Noted* The Agency notes the position of ADV.

comment	*75* comment by: *Lufthansa German Airlines* No. We are afraid that the intended report will only turn out to be a useful technical paper if the process and considerations made under question 4 are sufficiently regarded. In addition, to address the complexity to the aircraft noise issues this stakeholder process should be retained.
response	*Partially accepted* The N.24 report is intended to become a useful technical report analysing the state-of-the-art of aircraft noise certification levels, taken into account the past and the present. Further aspects are or will be considered elsewhere in the WG1 work programme (e.g. WG1 Project N.29 on future technology) or within ICAO/CAEP (e.g. economic measures). Therefore, the complexity of aircraft noise issues is addressed, however, can not be taken care of within the Project N.24. The aim of A-NPA 2008-21 is to solicit comments and to get input from stakeholders on the envisaged N.24 report.

comment	*84* comment by: *Fraport AG* No.
response	*Noted* The Agency notes the position of Fraport AG.

comment	*94* comment by: *CAA-NL* The database will give a proper insight for the parties concerning the certification procedures. Other use is not foreseen.
response	*Noted* The Agency appreciates the response of CAA-NL. The Agency does not envisage any further use of the Best Practice database than to review and to analyse aircraft noise certification levels.

comment	*102* comment by: *Gulfstream Aerospace Corp* Gulfstream offers that the inclusion of an analysis based on the state-of-the-art database plus the best practices data base, with due consideration of the impacts to emissions and fuel efficiency, should be sufficient.
response	*Partially accepted*

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse aircraft noise certification levels in the past and the present. Consideration of the impacts to emissions and fuel efficiency are outside the scope of this study. ICAO/CAEP, however, will consider these aspects during the process. ICAO/CAEP will do this, before a decision on a possible noise stringency increase can be made.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Question 6 p. 7

comment

4 ❖ comment by: *AIRBUS*

Answer to Questions 3, 4, 5, 6, 7: As active participant to the N24 CAEP WG1 study, Airbus intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Airbus representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study.

response

Noted

The Agency's response to this comment, as follows, was already given to comment No. 4 above:

The Agency appreciates the support of Airbus in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment

28 ❖ comment by: *ICCAIA*

Response to Questions 3, 4, 5, 6 & 7**:** As active participants to the N24 CAEP WG1 study, ICCAIA certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. ICCAIA representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study

response

Noted

The Agency's response to this comment, as follows, was already given to comment No. 28 above:

The Agency appreciates the support of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment

29 ❖ comment by: *ICCAIA*

Response to Questions 1 & 8: ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international

regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG).

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response

Noted

The comment is not related to Question 6. The Agency's response to this comment, as follows, was already given to comment No. 29 above:

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment

38 comment by: *Luftfahrt-Bundesamt*

Question 6: See answer to Question 3: A thorough investigation must be carried out on the analysis of potential or projected noise reduction systems. Furthermore we think that particular attention should be given to an incentive for the optimization of the noise levels of future projects.

response

Partially accepted

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse the past and the present situation. Therefore, a projection into the future to elaborate trends based on anticipated technological breakthroughs is outside the scope of the envisaged N.24 report. However, Project N.29 ("[...] to examine and make recommendations for noise [...] in the mid term (10 years) and the long term (20 years)") within the WG1 CAEP/8 work programme will provide such projection.

comment

47 comment by: *BARIG e.V.*

See 4 and 5. Trade-Off issues - like gaseous emissions (local and global) - may

not be ignored when conclusions on noise issues are intended to be drawn.

response *Partially accepted*

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse aircraft certification noise levels. Therefore, investigating trade-off issues (interdependencies) like gaseous emissions (local and global) are outside the scope of the envisaged N.24 report. ICAO/CAEP, however, will consider these aspects during the process. ICAO/CAEP will do this, before a decision on a possible noise stringency increase can be made.

comment *51* comment by: *Air France*

No comment

response *Noted*

This comment of Air France is in line with the comment towards Question 5.

comment *57* ❖ comment by: *Snecma*

As an active participant to the N24 CAEP WG1 study, together with EASA and other authorities and stakeholders, Snecma certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Our representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the A-NPA, considering the trends and key parameters that may develop in the course of the study.

response *Noted*

The Agency appreciates the support of Snecma in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment *63* comment by: *ADV*

Trade-Off issues - like gaseous emissions (local and global) - may not be ignored when conclusions on noise issues are intended to be drawn.

response *Partially accepted*

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse aircraft certification noise levels. Therefore, investigating trade-off issues (interdependencies) like gaseous emissions (local and global) are outside the scope of the envisaged N.24 report. ICAO/CAEP, however, will consider these aspects during the process. ICAO/CAEP will do this, before a decision on a possible noise stringency increase can be made.

comment *76* comment by: *Lufthansa German Airlines*

See answers to questions 4 and 5. Trade-Off issues - like gaseous emissions (local and global) - may not be ignored when conclusions on noise issues are intended to be drawn.

response *Partially accepted*

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse aircraft certification noise levels. Therefore, investigating trade-off issues (interdependencies) like gaseous emissions (local and global) are outside the scope of the envisaged N.24 report. However, standard practice is that ICAO/CAEP will consider these aspects before a decision on a possible noise stringency increase can be made.

comment

85 comment by: *Fraport AG*

Trade-Off issues - like gaseous emissions (local and global) - may not be ignored when conclusions on noise issues are intended to be drawn.

response

Partially accepted

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse aircraft certification noise levels. Therefore, investigating trade-off issues (interdependencies) like gaseous emissions (local and global) are outside the scope of the envisaged N.24 report. ICAO/CAEP, however, will consider these aspects during the process. ICAO/CAEP will do this, before a decision on a possible noise stringency increase can be made.

comment

95 comment by: *CAA-NL*

The database will give a proper insight for the parties concerning the certification procedures. Other use is not foreseen.

response

Noted

The Agency appreciates the response of CAA-NL. No further use of the Best Practice database than to review and analyse aircraft noise certification levels is envisaged.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Question 7 p. 7

comment

4 ❖ comment by: *AIRBUS*

Answer to Questions 3, 4, 5, 6, 7: As active participant to the N24 CAEP WG1 study, Airbus intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Airbus representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study.

response

Noted

The Agency's response to this comment, as follows, was already given to comment No. 4 above:

The Agency appreciates the support of Airbus in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment	*12* comment by: *CAA CZ* NO……. In Czech Republic no designed (and certificated, too) any subsonic jet aeroplanes or heavy propeller-driven aeroplanes since.
response	*Noted* The Agency appreciates the response of CAA CZ.

comment	*28* ☐ comment by: *ICCAIA* Response to Questions 3, 4, 5, 6 & 7*:* As active participants to the N24 CAEP WG1 study, ICCAIA certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. ICCAIA representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the NPA, considering the trends and key parameters that may develop in the course of the study
response	*Noted* The Agency's response to this comment, as follows, was already given to comment No. 28 above: The Agency appreciates the support of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment	*29* ❖ comment by: *ICCAIA* Response to Questions 1 & 8: ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG). Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far. ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.
response	*Noted*

The comment is not related to Question 7. The Agency's response to this comment, as follows, was already given to comment No. 29 above:

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment

39 comment by: *Luftfahrt-Bundesamt*

Question 7: See answer to Question 4. The LBA proposes the investigation of future technologies as well, even though the expected improvement can not be quantified by an accurate value of the benefits.

response

Partially accepted

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse the past and the present situation. Therefore, the analysis of potential or projected noise reduction systems is outside the scope of the N.24 report. This analysis, however, will be provided within Project N.29 of the WG1 CAEP/8 work programme.

comment

48 comment by: *BARIG e.V.*

See 2, 4, and 5.

response

Noted

Please see the Agency's responses to BARIG e.V. comments on Questions 2, 4 and 5.

comment

50 comment by: *Air France*

The analysis could be complemented by a projection into the future to elaborate trends based on anticipated technological breakthroughs. This kind of projection needs input from manufacturers which might however consider this kind of information as "proprietary".

response

Partially accepted

By definition WG1 Project N.24 "state-of-the-art analysis" is limited to review and analyse the past and the present situation. Therefore, a projection into the future to elaborate trends based on anticipated technological breakthroughs is outside the scope of the envisaged N.24 report. However, Project N.29 ("[...] to examine and make recommendations for noise [...] in the mid term (10 years) and the long term (20 years)") of the WG1 CAEP/8 work programme will provide such projection incorporating input from manufacturers (ICCAIA).

comment

57 ❖ comment by: *Snecma*

	As an active participant to the N24 CAEP WG1 study, together with EASA and other authorities and stakeholders, Snecma certainly intends to contribute in making the study as complete and informative as need be. However, the study should at this stage be considered as work in progress. Our representatives in WG1 have supported the proposed structure and will keep an open mind about the issues raised in Questions 3 to 7 of the A-NPA, considering the trends and key parameters that may develop in the course of the study.
response	*Noted* The Agency appreciates the support of Snecma in WG1 Project N.24 "state-of-the-art analysis". At this stage the study indeed is considered as work in progress. Trends and key parameters that may develop in the course of the study will be taken into account.

comment	*64* comment by: *ADV* It is very important to integrate the views of the stakeholder in a transparent way.
response	*Noted* The Agency appreciates the comment of ADV. Indeed, it is very important to integrate the views of the stakeholders in a transparent way. That is the reason why stakeholders actively participate in this project in ICAO/CAEP WG1. In addition that is the reason why A-NPA 2008-21 was launched. However, one has to be aware that the envisaged report is supposed to be a technical report containing technical review and analysis.

comment	*77* comment by: *Lufthansa German Airlines* See answers to questions 2, 4, and 5.
response	*Noted* Please see the Agency's responses to Lufthansa German Airlines comments on Questions 2, 4 and 5.

comment	*86* comment by: *Fraport AG* It is very important to integrate the views of the stakeholder in a transparent way.
response	*Noted* The Agency appreciates the comment of Fraport AG. Indeed, it is very important to integrate the views of the stakeholders in a transparent way. That is the reason why stakeholders actively participate in this project in ICAO/CAEP WG1. In addition that is the reason why A-NPA 2008-21 was launched. However, one has to be aware that the envisaged report is supposed to be a technical report containing technical review and analysis.

comment	*96* comment by: *CAA-NL* No Comment!
response	*Noted*

comment	*103* comment by: *Gulfstream Aerospace Corp* Gulfstream believes that this is adequately covered in the above responses.
response	*Noted* The Agency appreciates the comment of Gulfstream Aerospace Corp.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Need to increase noise stringency for subsonic jet and heavy propeller-driven aeroplanes? p. 7

comment	*22* comment by: *FAA* With regard to A-NPA 2008-21, while the state-of-the-art analysis report developed by ICAO/CAEP will provide useful information on aircraft noise levels, from FAA's standpoint, question 8 is not structured to elicit sufficient information to consider stringency under ICAO's balanced approach. It is not simply whether one favors an increase in stringency but what data exists to identify the noise problem being solved and the costs and benefits that would result from increased noise certification stringency compared to other measures under the ICAO Balanced Approach. We would encourage EASA to solicit more complete information with respect to the issue of noise stringency as it would provide a better basis for discussion and assessment at ICAO.
response	*Partially accepted* The Agency appreciates the response of FAA towards Question 8. The Agency agrees that other aspects such as economic measures and interdependencies have to be taken into account. Together with other organisations active in ICAO/CAEP process, such as the FAA, the Agency will solicit more complete information with respect of noise stringency within WG1 and within CAEP. This will be done, before a decision on a possible increase in noise stringency can be made. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010. The Agency, however, is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment	*29* ❖ comment by: *ICCAIA* Response to Questions 1 & 8: ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx,

GHG).

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response *Noted*

The Agency's response to this comment, as follows, was already given to comment No. 29 above:

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

A. Explanatory Note - V. Content of the advance notice of proposed amendment - Question 8 p. 7

comment *1* comment by: *GHayward*

response *Noted*

comment *2* ❖ comment by: *AIRBUS*

Answer to Questions 1 & 8: Airbus is fully committed to the ICAO CAEP process and has a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, Airbus supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. fuel burn). The potential impact of new technologies (such as Open Rotors) should be considered when considering increased noise stringency.

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by Airbus to draw any conclusion on

any of the scenarios formulated in Question 8 as (a), (b), (c) and (d) as no sufficient justification have been developed so far.

Airbus considers the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response *Partially accepted*

The Agency's response to this comment, as follows, was already given to comment No. 2 above:

The Agency appreciates the support of Airbus as a member of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". Indeed, in addition to the state-of-the-art analysis report other aspects such as environmental interdependencies and the potential impact of new technologies have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The response towards Question 8 is noted. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment *13* comment by: *CAA CZ*

We are in favour of (b).

response *Noted*

The Agency appreciates the response of CAA CZ.

comment *20* comment by: *Dassault Aviation*

CAEP/8 will not decide an increase in noise stringency. CAEP/8 has a clear mandate in noise matters: to set the various information, database and tools in order to manage the future scenario and to finalize the CAEP/9 works.
So it is premature to define without any results of studies the trend of a possibly increased stringency.

Dassault Aviation is not in favour of an imperial decision about an increased noise levels stringency without studying a technology both economically reasonable and feasible. This is the point of the state of the art approach being studied.

response *Partially accepted*

The Agency appreciates the response of Dassault Aviation towards Question 8. The Agency agrees that other aspects such as economic measures and interdependencies have to be taken into account. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on the way forward. However, it is of the opinion of the Agency that it is useful to ask stakeholders about their opinion as of today.

comment *29* ❖ comment by: *ICCAIA*

Response to Questions 1 & 8:ICCAIA member companies are fully committed to the ICAO CAEP process and have a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, ICCAIA supports a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG).

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable by ICCAIA to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

ICCAIA consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response

Noted

The Agency's response to this comment, as follows, was already given to comment No. 29 above:

The Agency appreciates the response of ICCAIA towards Question 1. The Agency agrees that in addition to the state-of-the-art analysis report other aspects have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The Agency notes the response towards Question 8. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment

40 comment by: *Luftfahrt-Bundesamt*

Question 8: See answer to Question 1. Noise certification limits should be regularly updated and the LBA supports that technological advances have to be reflected in current ICAO requirements. It is well known that a 50% noise reduction is expected by 2020 and we see an urgent need that the certification limits represent an incentive for the optimization of the noise emission values of future projects. However increasing noise stringency requires careful consideration.

response

Noted

The Agency agrees that technological advances have to be reflected in the ICAO noise requirements. The Agency also agrees that increasing noise stringency requires careful consideration including aspects, which are outside the remit of the scope of the envisaged WG1 N.24 report. This includes economic measures, interdependencies and future technologies. While it is too early to speculate on a decision to be made at the CAEP/8 meeting in early

2010 on the way forward, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment

49 comment by: *BARIG e.V.*

d) technology approach:
1) How are the noise properties of older technologies?
2) What are the relative contributions of different technologies to take-off, sideline and approach noise levels?
3) How can future technologies reflect the findings of 2) in order to identify the most efficient way to reduce noise either at source or in operational flight procedures.

response

Noted

Instead of increasing stringency BARIG e.V. proposes a "technology approach" considering different aspects. Within the envisaged report Question No. 1 of BARIG will be addressed by analysing the effect of time (see Section 3.5.1 of the report). Question No. 2 of BARIG will to some extent be addressed in the (new) Section 3.1.3 on installation effects. Question 3 of BARIG should certainly be investigated in detail. However, this is outside the scope of the present study. In addition it will be difficult to get access to relevant, but sensitive information, since these are owned by manufacturers.

comment

52 comment by: *Air France*

A decision for a stringency increase should be based ONLY on future technologies and the certainty that an anticipated technology will be AVAILABLE and PROVEN. A decision for stringency based on historical data seems to be not sensible as historical data give no indication on future breakthroughs or improvements.

Historical data can be used to determine where research and development efforts should be focussed.

response

Not accepted

The Agency does not agree that a decision for a stringency increase should be based only on future technologies. Before a decision on noise stringency increase can be made, many aspects have to be taken into account and weighted against each other such as state-of-the-art technology, future technology, economic measures, interdependencies etc.

comment

54 ❖ comment by: *Snecma*

As an engine manufacturer, Snecma is fully committed to the ICAO CAEP process and has a history of contributing in a constructive manner to the technical debate governing the evolution of the international regulatory framework. As such, we support a regular evaluation of the state-of-the-art as one useful contributor to the general mechanisms with which CAEP assesses environmental goals and performs cost / benefit analysis of stringency proposals. To remain consistent with CAEP's terms of reference requiring it to take into account technical feasibility, economic reasonableness and environmental benefit of noise certification standards, the need for increased stringency must be considered within the larger picture of the balanced approach and environmental interdependencies. In assessing whether

increased noise stringency is environmentally beneficial, the impact on environmental characteristics other than noise should be considered (e.g. NOx, GHG). The potential impact of new technologies (such as Open Rotors) should be considered when considering increased noise stringency.

Pending the complete evaluation process involving all the above elements have been achieved it is not deemed desirable to draw any conclusion on any of the scenarios formulated as a), b), c) and d) as no sufficient justification have been developed so far.

We consider the CAEP process of maintaining and developing environmental standards as appropriate to provide such recommendations to regulating bodies.

response

Noted

The Agency's response to this comment, as follows, was already given to comment No. 54 above:

The Agency appreciates the support of Snecma as a member of ICCAIA in WG1 Project N.24 "state-of-the-art analysis". The Agency agrees that in addition to the state-of-the-art analysis report other aspects such as environmental interdependencies and the potential impact of new technologies have to be considered. This has to be done before a final decision on a possible noise stringency increase can be made.

The response towards Question 8 is noted. The Agency agrees that it is too early to speculate on a decision to be made at the CAEP/8 meeting in early 2010 on how to proceed. However, the Agency is of the opinion that it is useful to ask stakeholders about their opinion as of today.

comment

65 comment by: *ADV*

d) We consider an appropriate approach, where the present fleet is reflected and the future development is regarded: a considerable stringency increase for all cases/configurations where the margin to the present noise limits is reasonable large and an appropriate stringency increase for all cases/configurations where the margin is small.

response

Noted

The Agency appreciates the response of ADV.

comment

69 comment by: *ERCD, UK CAA*

A stringency increase is required, but not regardless of margins to present limits. The case must be based on what is technically feasible in order to provide an incentive for state-of-the-art technology to be incorporated into next generation aircraft designs. Some of the aircraft designs with the least margin are new airframes introduced into service after the decision was taken on Chapter 4, yet they do not include so-called state-of-the art features. The implication is that they were designed down to meet existing noise standards. Whilst there are tradeoffs between noise and other environmental considerations, there is a clear need to identify what state-of-the art technologies can provide across a full range of aircraft sizes rather than only looking at what has been achieved in the past.

response

Noted

The Agency appreciates the comment of ERCD, UK CAA, and will take it into consideration.

comment

78 comment by: *Lufthansa German Airlines*

We clearly favour d) technology approach:
1) How are the noise properties of older technologies?
2) What are the relative contributions of different technologies to take-off, sideline and approach noise levels?
3) How can future technologies reflect the findings of 2) in order to identify the most efficient way to reduce noise either at source or in operational flight procedures.

response

Noted

Instead of increasing stringency Lufthansa German Airlines proposes a "technology approach" considering different aspects. Within the envisaged report Question No. 1 of Lufthansa will be addressed by analysing the effect of time (see Section 3.5.1 of the report). Question No. 2 of Lufthansa will to some extent be addressed in the (new) Section 3.1.3 on installation effects. Question 3 of Lufthansa should certainly be investigated in detail. However, this is outside the scope of the present study. In addition it will be difficult to get access to relevant, but sensitive information, since these are owned by manufacturers.

comment

87 comment by: *Fraport AG*

d) We consider an appropriate approach, where the present fleet is reflected and the future development is regarded: a considerable stringency increase for all cases/configurations where the margin to the present noise limits is reasonable large and an appropriate stringency increase for all cases/configurations where the margin is small.

response

Noted

The Agency appreciates the response of Fraport AG.

comment

97 comment by: *CAA-NL*

CAA-NL is in favour of more stringent rules for all aircraft based on the current problems we have with aircraft noise in The Netherlands.

response

Noted

The Agency will take the position of CAA-NL into account when the decision on a possible noise stringency increase will be made.

comment

104 comment by: *Gulfstream Aerospace Corp*

Gulfstream offers that no action on increased noise stringency is unacceptable for the continued growth in air traffic. The expectation should be option (a), unless in some cases, the option (b) is required. Gulfstream contends that any possibility for an option (d) should preserve the current strategies
for noise certification, to ensure comparability to past noise compliance.

	However, under the existing scheme, there is no credit for such noise benefits as Continuous Descent Approaches (CDA). Gulfstream recommends that there should be a consideration of additional noise measurement points to reflect the benefits to the airport community.
response	*Noted* The Agency appreciates the comment of Gulfstream Aerospace Corp. In the past an additional noise measurement point was taken into consideration within ICAO/CAEP. After technical investigation, however, ICAO/CAEP came to the conclusion not to introduce another measurement position during approach. This decision might be worth to be reconsidered.