

Information

DISCUSSION PAPER TO SUBSTANTIATE THE AEA GLOBAL APPROACH PROPOSAL FOR INTERNATIONAL AVIATION EMISSIONS

April 20, 2009

SUMMARY

The AEA invites the GIACC to consider the following concrete measures to clarify and to substantiate some of the key elements of its Global Approach Proposal ('GAP' Paper):

- A three step process to strengthen the interaction between ICAO and UNFCCC;
- A proposed amendment of the current Article 2.2 of the Kyoto Protocol, to give ICAO a new mandate;
- The clarification and adaptation of the CBDR principle to the aviation sector;
- A selection of criteria to quantify the aviation markets and to assess their levels of maturity;
- The instruments to meet the objective of stabilisation of aviation emissions at 2005 levels for aviation markets of Bloc A;
- A Benchmarking method to achieve the objective of fuel efficiency for aviation markets of Bloc B;
- An Application of emissions reporting requirements to aviation markets of Bloc B;
- An Application of the lowest stringency for traffic between 2 different Blocs.

This discussion paper is an additional AEA contribution to the GIACC Members for their next meeting in May 2009,

INTRODUCTION

1. It should be recalled that the AEA 'GAP Proposal' for a global approach is based on the following key elements:

- International aviation to be included as a sector in any post-Kyoto multilateral agreement on climate change;
- ICAO to represent the aviation sector at the Copenhagen negotiations;
- Reconciliation of the Chicago principle of non-discrimination between operators and the Kyoto principle of differentiated responsibilities between countries;
- Countries to be grouped into 3 Blocs according to the maturity of their aviation activities and market;
- Differentiated target-setting for the 3 Blocs, but equal treatment of all air carriers operating within the same Bloc;
- Bloc A - Fixed emissions reduction target: carbon neutral growth, namely stabilization of aviation emissions at 2005 levels by 2020;
- Bloc B – Relative target of energy intensity, namely fuel efficiency;
- Bloc C – Neither absolute nor relative targets but an obligation to monitor, report and verify operators' emissions;

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- For traffic between 2 Blocs, application of the lowest target to all air carriers regardless of nationality;
- Targets and classification of countries within the Blocs to be reviewed and adjusted by ICAO over time.

2. The purpose of this paper is to present the concrete measures identified by AEA to clarify and substantiate some of the above key elements. The note constitutes an additional AEA contribution to the GIACC Members for their next meeting in May 2009.

ICAO - UNFCC INTERACTION

What do we propose to support the idea that ***‘International aviation should be included as a sector in any post-Kyoto multilateral agreement on climate change’***?

3. We envisage a three step process to strengthen the interaction between ICAO and UNFCCC:
- 2009: at the Copenhagen meeting ICAO obtains a new mandate from COP 15 to act on behalf of the **whole** aviation sector.
 - 2010: ICAO develops its climate change strategy and submits it to the General Assembly for adoption.
 - 2011 – 2012: ICAO reverts to UNFCCC for validation of its strategy. It will ensure that the regime proposed for the aviation sector is consistent with the overall objective of the UNFCCC and that aviation is duly incorporated within the post-Kyoto multilateral framework.

ACTION 1 - The AEA invites the GIACC to approve this 3 step process.

CLARIFICATION OF THE ICAO MANDATE

What do we propose to support the idea that ***‘ICAO should represent the aviation sector at the Copenhagen negotiations’***?

4. The current Article 2.2 of the Kyoto Protocol stipulates that:
- “The **Parties included in Annex I** shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively.”*
5. From a strictly legal point of view, only Annex 1 States are required to limit/reduce their aviation emissions. Therefore the non-Annex 1 countries may argue that the current ICAO mandate is limited to the international aviation activities of Annex 1 countries and that ICAO cannot act on behalf of the international aviation community as a whole.

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6. We believe that Article 2.2 should be amended to remove any ambiguity. ICAO is the regulatory body which represents the entire aviation sector, with no distinction between Annex 1 and non-Annex 1 countries. The new provision, to be adopted by COP 15, will clarify the ICAO mandate to enable it to develop a truly sectoral policy.

ACTION 2 - The AEA invites the GIACC to endorse the following text to replace article 2.2 of the Kyoto Protocol

“The Parties agree that the International Civil Aviation Organisation (ICAO) shall take measures to pursue limitation or reduction of greenhouse gases not controlled by the Montreal Protocol from the international aviation sector in its entirety”.

CLARIFICATION OF THE CONCEPT OF CBDR AS APPLIED TO AVIATION

What do we propose to ***‘Reconcile the Chicago principle of non-discrimination between operators and the Kyoto principle of common but differentiated responsibilities between countries’?***

7. The concept of CBDR was adopted in the early 1990s to reflect countries’ varying stages of economic development as well as their historical responsibilities in terms of pollution. Because of their past actions, the industrialised countries bear a larger responsibility.
8. However, since 1992 (date of the Rio Declaration and the setting up of the UNFCCC), the world economy has evolved significantly and some formerly ‘developing’ countries are rapidly catching up with the ‘industrialised group’. More importantly, they are becoming the big emitters of the future and will even overtake some ‘legacy polluters’ in the near future.
9. In the GAP paper, we assume that the UNFCCC will either set up a new classification of countries to better reflect the actual state of global emissions or redefine the concept of CBDR, so as to adapt the differentiated obligations of countries / regions according to their respective levels of pollution.
10. In this perspective we feel it necessary to clarify the way in which CBDR should apply to aviation. The aviation sector is a young industry. Although the very first airlines were set up in 1919, the real development of commercial aviation started after the Second World War, and particularly after the adoption of the Chicago Convention in 1944. (The list of the GIACC Members and their ‘national carriers’ can be found in the Annex.)
11. This means that the notion of ‘historical responsibility’ is not particularly relevant for our sector because all worldwide aviation activities started at practically the same moment or within a short period of time. Furthermore, it is not necessarily the case that all Annex1 countries will have mature aviation markets while those of non-Annex1 countries will be less mature.

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12. In fact, from an aviation standpoint the main differentiation could be fleet size, the volume of traffic, the capacity to invest in new technology, etc. If CBDR were to apply to aviation, the only criterion to be taken into account is the maturity of the aviation markets, as this is the most valid parameter for differentiation. Against the above background, we hold that the concept of CBDR applied to aviation does not entail the same conclusions as that applied under the UNFCCC.

ACTION 3 - The AEA acknowledges the importance of CBDR but urges GIACC to adapt the concept of CBDR when applied to aviation, by recognising that:

- Because worldwide aviation activities started at practically the same moment, the notion of historical responsibility is less relevant.
- The current categorisation between developing and developed countries based on Annex 1 is not relevant as it does not reflect the different degrees of maturity of aviation markets.
- The maturity of the aviation markets is the appropriate criterion for defining CBDR and could be the basis for a differentiation in target setting.

POSSIBLE INDICATORS TO CHARACTERISE AVIATION ACTIVITY

What do we propose to develop the idea that ***‘Countries should be grouped into 3 Blocs according to the maturity of their aviation market’?***

13. The first step is to determine the size and the importance of the aviation activities of a country or a group of countries. By aviation activities we mean all the air connections to, from and within that country or group of countries. The following list is not exhaustive, and the selected criteria could be used either in isolation or jointly:
- Number of passengers and cargo to, from and within a given country;
 - Number of flights to, from and within a given country;
 - Number of direct (non-stop) city-pairs to, from and within a given country;
 - Number of connecting points.
14. In addition to the above, it may be necessary to set up a proper database on Origin-Destination traffic. The existing ICAO and Member State databases provide valuable information on OD traffic - both direct flights and connecting flights operated by the same air carrier (code-share flights are also easily identifiable). However, this data is not exhaustive and is probably not accurate enough to identify OD traffic in cases where passengers use different operators or purchase separate flight coupons. Further work should be undertaken, a task that could be performed by ICAO.

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POSSIBLE CRITERIA TO ASSESS THE LEVEL OF MATURITY OF AVIATION MARKETS

15. The second step is to assess the level of maturity of aviation markets applying both quantitative and qualitative criteria. By aviation markets we mean all air connections between country pairs. The following list is not exhaustive, and the selected criteria could be used either in isolation or jointly:
- % of the country's traffic versus total international traffic;
 - Journeys per capita;
 - Prospects for traffic growth;
 - Number of airlines and their existing and projected fleet;
 - Number and size of existing airports;
 - Existence of aerospace industry in the country;
 - Government strategy regarding promotion of air transport: infrastructure planning and development.

CRITERIA TO CLASSIFY MARKETS INTO BLOCS

16. The third and last step is the classification of markets into 3 Blocs. It should be underlined that these Blocs are not groups of countries divided into geographical zones. The criteria to be used should combine both the maturity of aviation markets and the general economic development of the countries that make up the Blocs. There should be a certain degree of homogeneity in order to minimise both discrimination and risk of carbon leakage.

ACTION 4 - The AEA invites the GIACC to consider the above criteria, which constitute an additional contribution to expanding and substantiating the initial GAP proposal. It also invites the GIACC to recommend that ICAO develop an adequate methodology to collect data on OD traffic and/or to calculate the volume of this type of traffic at worldwide level in the most effective way.

THE CONCEPT OF BLOCS AND DIFFERENTIATED LEVELS OF STRINGENCIES

What do we mean by *'Differentiated target-setting for the 3 Blocs, but equal treatment of all air carriers operating within the same Bloc'*?

17. In the GAP paper we proposed that ICAO, within the general framework of its Climate Change strategy, should define 3 Blocs with 3 related levels of stringency. The main characteristic is that each of the markets which make up the different blocs could be upgraded or downgraded, depending on its evolution over time.
18. The lowest stringency is assigned to Bloc C, namely the least mature markets. Operators serving the markets of this Bloc, regardless of their nationality, will only be required to report their emissions.
19. The medium stringency is assigned to Bloc B, namely nearly mature markets. Operators serving the markets of this Bloc, regardless of their nationality, will be required to comply with a 'standard of fuel efficiency'.

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20. The highest stringency is assigned to Bloc A, namely the mature markets. Operators serving the markets of this Bloc, regardless of their nationality, will be assigned a fixed emissions reduction target – i.e carbon neutral growth. In other words, stabilisation of emissions at 2005 levels by any means.

WHO DEFINES THE STRINGENCIES?

21. ICAO should claim the right to define the stringencies for the whole international aviation sector. As mentioned earlier, Article 2.2 of Kyoto should be modified to extend the ICAO mandate to the entire sector (see Action 2). When ICAO defines the 3 stringency levels, Member States should accept that the stringencies should also cover domestic traffic.

22. Even though ICAO is responsible for defining the 3 stringency levels for aviation, the aviation sector should nevertheless be included in the post-Kyoto framework. In other words, the aviation sector should have the same access to the international carbon market as the other sectors, including CDM and JI credits or comparable future instruments.

ACTION 5 - The AEA invites the GIACC to confirm the leadership of ICAO and to endorse the concept of Blocs and the related differentiated levels of stringency.

STRINGENCY OF 'BLOC A' MARKETS

What do we propose to meet the **'Bloc A' stringency - Fixed emissions reduction target: carbon neutral growth, namely stabilization of aviation emissions at 2005 levels'**?

23. ICAO should propose a common approach based on a four pillar strategy (technology – including bio fuels, infrastructure, operations and market based instruments) to enable Bloc A countries to comply with the stringency.

24. As far as market based instruments are concerned, we are in favour of a global and open cap and trade system for the markets of Bloc A. By global we mean that all countries of Bloc A would be subject to the same cap. By open we mean that aviation would be able to trade freely with the other sectors. Such a system would include the following elements:

- Reference Year: 2005
- Cap: stabilisation of aviation emissions at 2005 levels
- Objective: carbon growth neutrality to be achieved by 2020 or 2025
- No auctioning: if any, it should be very moderate to cover only administrative costs of the system

25. We prefer a long trading period from 2013 to 2025, with two sub-periods of 7 and 6 years respectively. This would allow an assessment after the first period and, if necessary, an adaptation of the markets between the blocs according to their traffic development. In other words, some Bloc B markets could join Bloc A.

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26. We have identified some basic principles to be respected:

- A global open cap and trade system should be transparent, non-discriminatory and applicable to all airlines.
- Such a system should be open across sectors; this may require linkage mechanisms between different trading schemes at worldwide level.
- Any trading mechanism should be established in accordance with the ICAO Guidelines on ETS.

ACTION 6 - The AEA invites the GIACC to support the objective of stabilisation of aviation emissions at 2005 levels for aviation markets of Bloc A. AEA recommends that ICAO develop a common approach to include a global open cap and trade system.

STRINGENCY OF 'BLOC B' MARKETS

What do we propose to achieve the '**Bloc B**' stringency – *Relative target of energy intensity, namely fuel efficiency*'?

27. A number of potential metrics could be considered for determining energy intensity, including the ratio of fuel consumption to tonne kilometres transported, the ratio of fuel consumption to tonne kilometres made available, or an aircraft technology index. **The Metric** described in this paper to measure efficiency is the ratio of fuel consumption/tonne-kilometres transported.

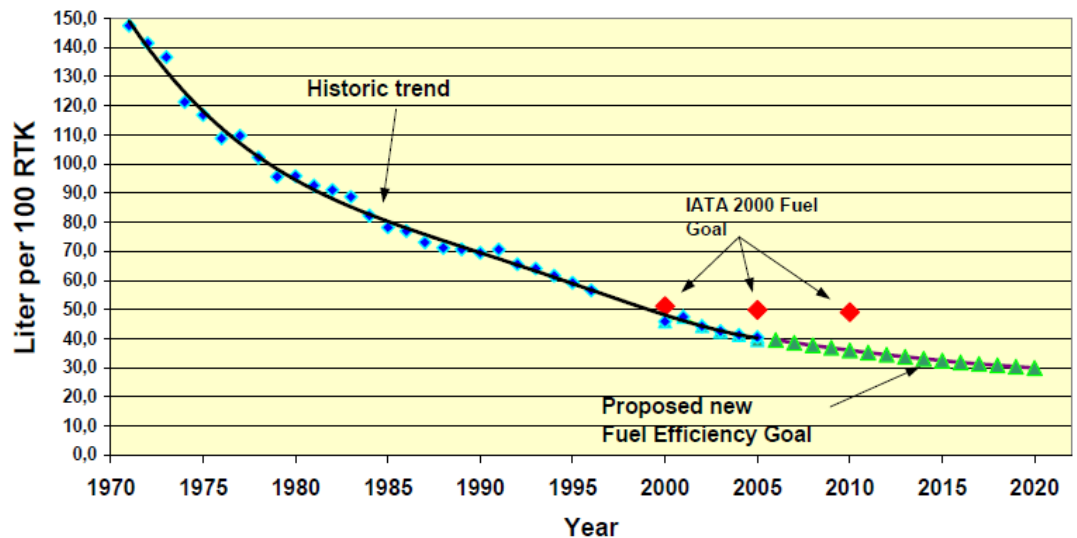
- Fuel: measured from individual flight data or fuel bill
- Tonne Kilometre Transported: freight payload and/or passengers including baggage, using the ICAO Standard which states that 'passengers' are all persons on board except for the crew.
- Distance: Great circle distance plus 200km (to compensate for inefficiencies of the ATC system)

28. **Benchmark:** all airlines / flights falling under Bloc B should be measured against one common benchmark. This could be the IATA fuel-efficiency goal.

- Flight: Operation of aircraft between one take-off and landing
- Scope: All flights within Bloc B and between Bloc A and Bloc B
- Airlines have to sample data from each flight and calculate the overall **F**uel **C**onsumption (FC_{real}), the overall **T**onne **K**ilometre **T**ransported (TKT_{real}) and the overall **S**pecific **F**uel consumption (SF_{real}).
- The data has to be reported to a competent authority for monitoring and verification on an annual basis.
- In order to avoid excessive discrimination between dedicated business models a maximum and minimum threshold should be established above and below the benchmark.

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Fuel Efficiency Development World Commercial Airline Fleet



29. Methodology to assess efficiency

The figures represent the deviation between the given goal and actual fuel consumption:

$$\text{CARBON}_{\text{efficiency}} = (\text{SF}_{\text{goal}} - \text{SF}_{\text{real}})$$

SF: Specific Fuel consumption (Litres fuel/100Tonne-kilometres)

With the $\text{CARBON}_{\text{efficiency}}$ and the given transported volume (TKT_{real}) the amount of CO_2 emissions resulting from a deviation with respect to the given efficiency goal can be calculated.

30. Results of efficiency assessment

- ⇒ Where the number $\text{CARBON}_{\text{efficiency}}$ **is zero**, the efficiency goal is achieved and no action is necessary.
- ⇒ Where the number $\text{CARBON}_{\text{efficiency}}$ **is positive** (better than the goal) airlines should be rewarded. The volume of CO_2 emissions saved by undercutting the given efficiency goal should be credited. The credits can be banked for further use during the next period.
- ⇒ Where the number $\text{CARBON}_{\text{efficiency}}$ **is negative** (worse than the goal) airlines should compensate the amount of CO_2 which exceeds the given threshold. In practice, they would have to buy credits from the carbon market to offset the surplus emissions.

The system should take into account and incentivise the use of alternative fuels with reduced fossil carbon content.

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The offsetting process can be done on an annual basis or for a given trading period. It might be appropriate to harmonize the procedures of the fuel efficiency target of Bloc B and the global cap and trade system of Bloc A.

ACTION 7 - The AEA invites the GIACC to support the objective of fuel efficiency for aviation markets of Bloc B.

STRINGENCY OF 'BLOC C' MARKETS

What do we propose to comply with ***'Bloc C' stringency – Neither absolute nor relative targets but an obligation to monitor, report and verify operators' emissions?***

31. Rules for emissions reporting have already been defined by ICAO and should be implemented by the competent national authorities of the countries falling within Bloc C. However, it would be useful if ICAO could provide a general oversight, so as to ensure a certain level of homogeneity between the countries within the bloc. Emissions reporting would also offer an opportunity to set up an inventory of aviation emissions on a worldwide scale.
32. Some countries of this Bloc could be upgraded to Bloc B depending on the evolution of their traffic over time.

ACTION 8 - The AEA invites the GIACC to support the requirement of emissions reporting for aviation markets of Bloc C.

LOWEST STRINGENCY BETWEEN TWO BLOCS

What do we propose to ensure that ***'For traffic between 2 Blocs, the lowest target should apply to all air carriers regardless of nationality?***

29. This requirement is essential to respect the principle of non-discrimination between operators serving markets which are subject to different stringencies. In practice, this means that each operator should clearly identify the routes linking different blocs and apply to them the stringency corresponding to the lowest one.

ACTION 9 - The AEA invites the GIACC to agree to the application of the lowest stringency for traffic between 2 different Blocs.

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ANNEX

GIACC Member	Airline (or CAA)	Originally established
FRANCE	Air France	1933
GERMANY	Lufthansa	1926
SWITZERLAND	Swissair (now Swiss)	1931
UK	British Airways	1919
NETHERLANDS	KLM	1919
RUSSIA	Aeroflot	1923
CANADA	Air Canada	1937
UNITED STATES	United Airlines ' predecessor National Air Transport (NAT)	1926
BRAZIL	Varig	1927
MEXICO	Aeromexico	1934
NIGERIA	Nigeria Airways est. as West African Airways Corporation	1948
SOUTH AFRICA	South African Airways	1934
SAUDI ARABIA	Saudi Arabian Airlines	1945
INDIA	Air India	1932
CHINA	CAAC established as airline Air China	1949 1988
JAPAN	Japan Air Transport	1922
AUSTRALIA	Qantas	1920