

ICAO INTERNSHIP PROJECT:

**CONSIDERATION OF VOLUNTARY MARKET BASED MEASURES AS
PART OF STATE ACTION PLAN**

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1. INTERNATIONAL CONTEXT- AVIATION AND CLIMATE CHANGE

1.1 Overview

The primary driver of the aviation industry's growth has been international flights. Between 1990 and 2005, total international revenue tonne kilometres (RTK¹) increased by 141%, or approximately 6% per annum. In contrast, total domestic RTK rose by only 54%, Just under 3% per annum over this period. The surge in international flights has been from 58% in 1990 to 69% in 2005. This growth had a negative impact on the environment (Machintosh, 2008).

Aviation emits a number of pollutants that alter the chemical composition of the atmosphere, changing its radiative balance and hence influencing climate. The principal greenhouse gas pollutant emitted from aviation is CO₂. Between 1990-2005, international aviation CO₂ emission increased by 42% (Machintosh, 2008), and CO₂ emission represent only ~2.0 to 2.5% of total annual CO₂ emissions as presented in Figure 1. Other emissions from aviation that affect the radiative balance include nitrogen oxides (NO_x, where NO_x=NO+NO₂), sulphate and soot particles, and water vapour. (Lee, 2010).

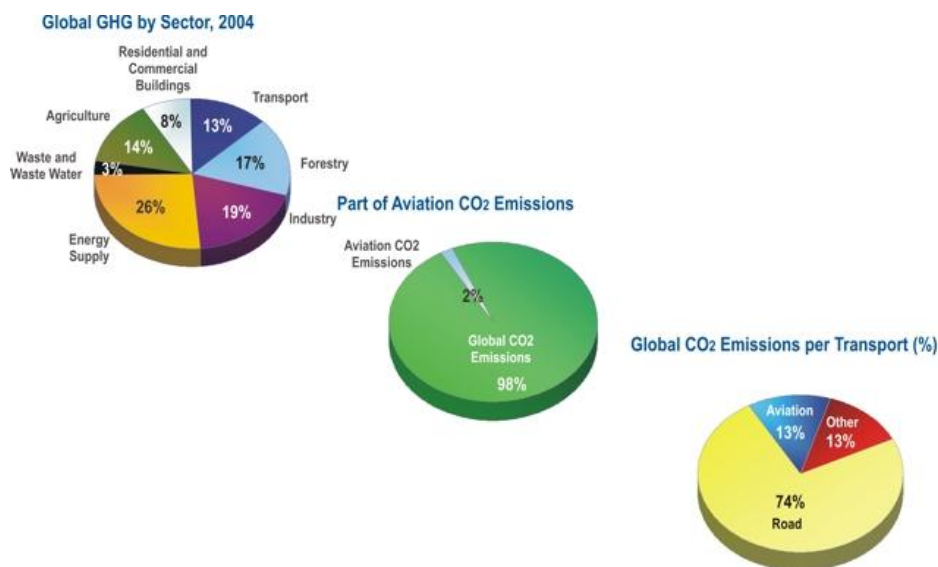


Figure 1: Global Greenhouse Gases by Sectors, 2004 (ICAO website, 2010)
http://www.icao.int/Act_Global/

¹ A tonne kilometre is equal to one tonne of load (passenger or cargo) transported one kilometre.

1.1.1 Kyoto Protocol (No obligation on non-Annex 1 countries)

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. These amount to an average of 5% against 1990 levels over the five-year period 2008-2012. The major distinction between the Protocol and the Convention is that while the Convention encouraged industrialised countries to stabilize GHG emissions, the Protocol commits them to reduce emission (Kyoto Protocol, 2010).

The Kyoto Protocol which enters into force in 16 February 2005, calls for developed countries (Annex I parties) to pursue limitation or reduction of greenhouse gases from "aviation bunker fuels" working through ICAO (Article 2.2 of the Protocol).

Developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity. The Protocol places therefore heavier burden than on developed nations under the principle of "common but differentiated responsibilities (CBDR)".

Under the Protocol, countries must meet their targets primarily through national measures. However, the Kyoto Protocol offers them an additional means of meeting their targets by way of three market-based mechanisms.

The Kyoto mechanisms are:

- Emissions trading
- Clean development mechanism (CDM)
- Joint implementation (JI).

The mechanisms help stimulate green investment and help Parties meet their emission targets in a cost-effective way (Kyoto Protocol, 2010).

1.1.2 International Civil Aviation Organization (ICAO)

The International Civil Aviation Organization (ICAO) establishes policies, adopts standards, and develops supporting guidance, that provide an internationally harmonized regulatory process for the implementation of measures to limit or reduce the impact of aviation greenhouse gas emissions on the global climate. ICAO called for emphasis to be placed on the use of technical solutions, operational measures as well Market Based Measures (Global Emission, 2007). Also and based on the Group on International Aviation and Climate Change (GIACC) final report of 2009, a complete information on measures from which States can choose (basket of measures) was included as a basis for consideration in an action plan. Market Based Measures (MBMs) are considered as among the most important measures addressed by ICAO today. Many debates are ongoing about whether to adopt such and have a

harmonization linking and agreement within the member States. MBM refers to policy tools as well as market and economic instruments and they include the following as possible approaches to address aviation emission:

- Emission Trading Scheme,
- Offsetting (e.g. CDM, Joint Implementation) and;
- Levies (taxes and charges)

Figure 2 elaborates on different MBMs available for the international aviation sector and their respective challenges. These mechanisms will be elaborated in detail in section 2 to give a better understanding of different opportunities that can be on used by States to reduce their carbon emission without setting individual obligations. Developing countries can get involved in on one of the programmes on a voluntary basis and in accordance with their circumstances.

1.2 OBJECTIVES

The specific objectives of this paper are

- To go through the economic measures available for international aviation and adopt the most suitable option to reduce its emission.
- Develop a proposed guidance for the economic market-based measures and allow the end user to have a general idea before adopting them as one of the basket of measures within ICAO action plan².

1.3 Approach

To achieve the Stated objectives, the major tasks that will be undertaken are outlined below.

1.3.1 Literature Review- Paper Structure

This task includes a review of available articles, laws, previous and recent studies conducted by ICAO, CAEP, Industries, and the Environment Report 2007 and 2010 to assess the structure of each market based measure.

In this paper, we will discuss the available emission reduction systems which were created and set up under Kyoto Protocol and by ICAO. We will look at the objective of each system, the approaches as well the mechanisms. Some comparison will be provided.

The paper is organized into four sections. This section describes the objectives and scope of work of this paper. Section two reviews the available MBMs which are one of the emission reduction systems. Section three provides information on the European Trading Scheme as a detailed example of one of the largest trading schemes established

² A detailed guidance on action plan is under consideration within ICAO.

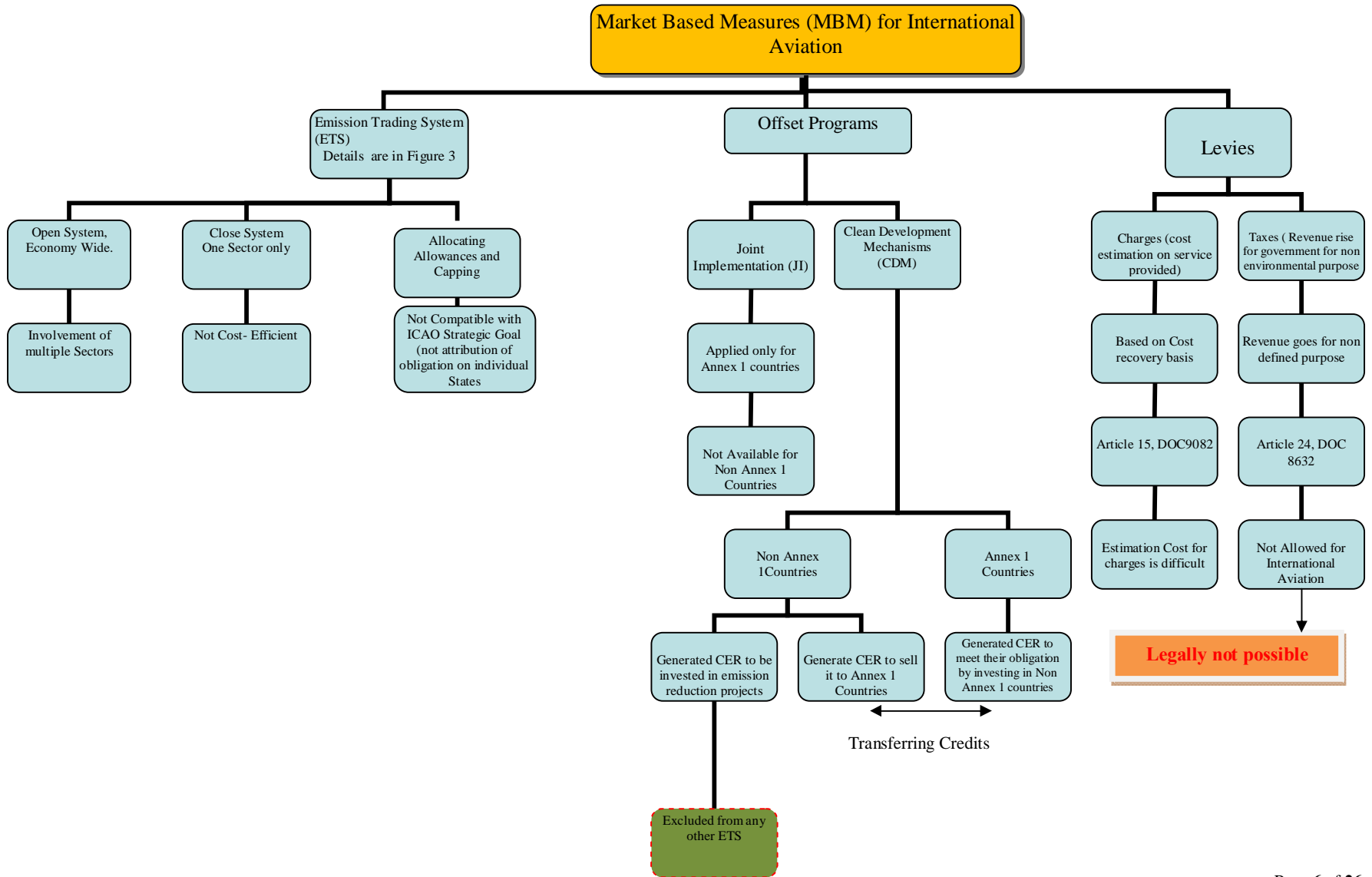


Figure 2: Climate Change Actions and Mechanisms within UNFCC, ICAO

in the world covering all the sectors. Section four present a basic structure for the implementation of a voluntary market based measures. Section five list of references used in this paper including research, articles, laws and personal communication used in the preparation of this document.

1.3.2. Data/Information Collection

The paper will describe the baseline information on Market Based Measures and their link to the international aviation framework for emission reduction, which could be used as a guide in the planning process. It will comprise:

- a) A description of a different systems
- b) A description of the legal framework for each system (if applicable)

2. EMISSION REDUCTION SYSTEMS- MARKET BASED MEASURES

Market-based measures are policy tools that are designed to achieve environmental goals at a lower cost and in a more flexible manner than the traditional command and control regulatory measures. ICAO based on that developed a guidance for States on the application of Market Based Measures aimed at mitigating the impact of aviation on climate change which as we mentioned, consist of Emission Trading Scheme, Offset (CDM and JI) and levies such as charges and Taxes (Global Emission, 2007). In this section a clear description will be giving on each system and the opportunities to contribute positively to the environment by an engagement to one of these Market Based Measures systems.

2.1 Emission Trading Scheme (ETS)

2.1.1 Overview

Emission trading schemes can be cost-effective measures to reduce CO₂ emissions. One approach sets an overall limit on emissions, then allows companies to buy and sell emission allowances to meet their reduction targets. ICAO in 2008 introduced a detailed guidance on the use of Emission Trading for Aviation, which covers various elements. Figure 3 gives in brief some of the existing and proposed ETS programmes from different regions.

2.1.2 Benefits (why?)

Legal and political obstacles prevent the use of fuel taxes and CO₂- related charges for international aviation. Regulators attention has turned to emission trading as a possible means to address the atmospheric impact of aviation emission. As a matter of fact, both ICAO and the European Commission have expressed a preference for addressing aviation CO₂ emission through emission trading (Hardeman, 2007).

The concept of emission trading provides regulated entities participating in a trading scheme with the flexibility to buy and sell emission rights (allowances) as needed, in order to meet their individual emissions reduction obligations (targets). The marginal cost of emissions control vary sufficiently across participants that emission trading tends to result in a more cost effective overall level of control than would be the case under more traditional fiscal approaches such as taxes and charges (Hardeman, 2007).

2.1.3 Differences between Open and Closed ETS

In open trading scheme allowances can be traded in and outside the given scheme or sector. For example, within an emission trading scheme for aviation, participants would be allowed to buy allowances from sectors outside the aviation emission trading scheme.

A closed trading scheme is designed to limit or reduce emissions within one sector only with no access to allowances or credits outside the scheme. Table 1 explains the differences between open and closed ETS (Guidance on the Use of ETS, 2008).

The Forecasting and Economic Analysis Support Group (FESG) in their analysis suggested that open trading emission permits would likely be the most efficient and effective measure to meet Kyoto Protocol targets. Impacts on cost and the growth of

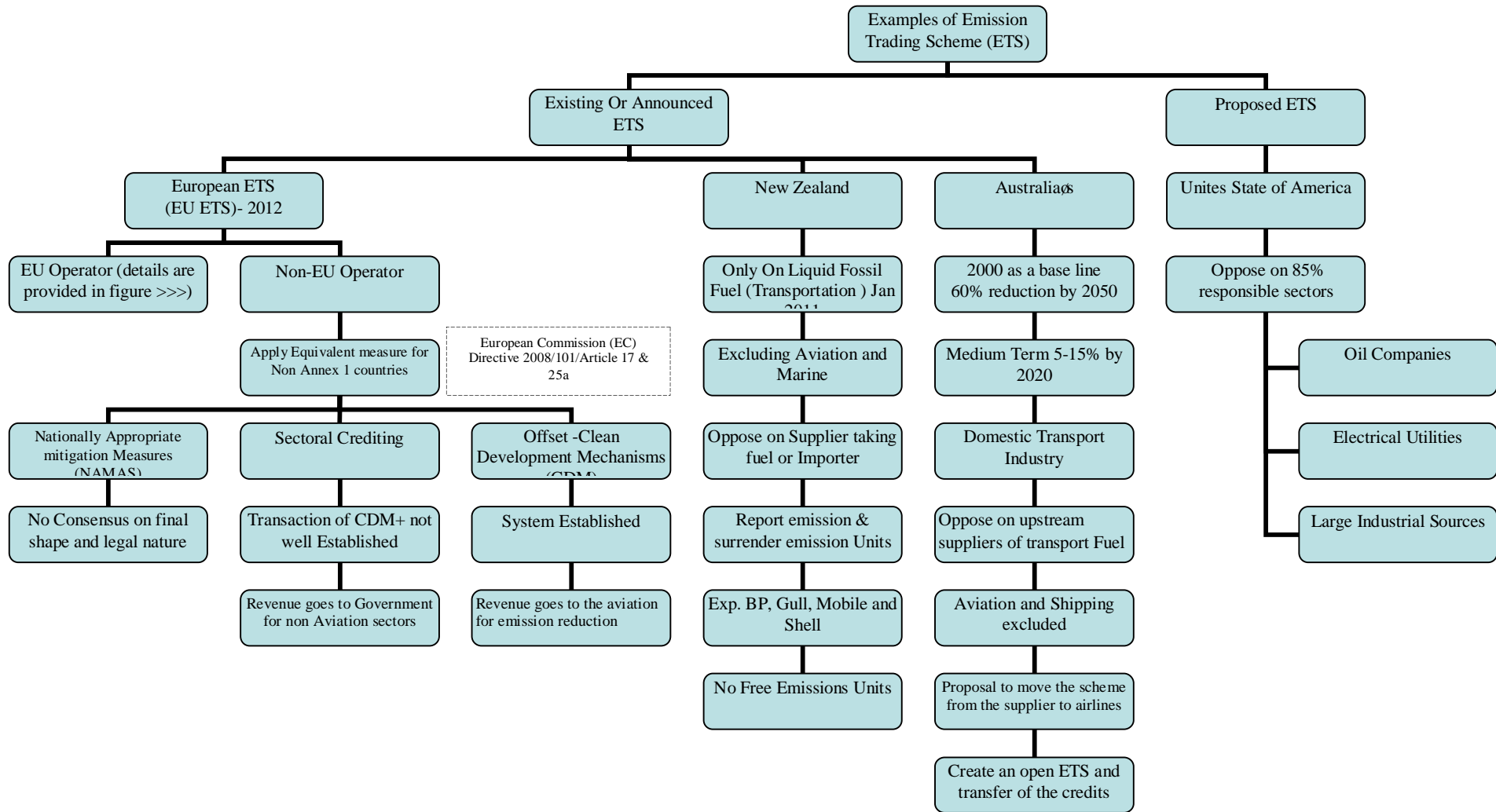


Figure3: The Existing and Proposed ETS Schemes in Different Regions

aviation would be lower than all the other options, provided the required emission permits could be purchased from other sectors at the prices used in the analysis.(\$5/tCO₂, \$10/tCO₂, \$15/ tCO₂, \$25/tCO₂, \$45/tCO₂, \$100/tCO₂).

Because of the high relative costs of aviation technology and the lack of substitute energy sources, the permit price for an open trading system would be substantially lower than under a closed trading system. Under these assumptions, open trading would be the only option likely to achieve the Kyoto target of a 5 per cent reduction in emissions below 1990 levels in 2010 (GIACC/4/IP7, 2010).

Table1 : Comparison between Open and Closed ETS.

Elements	Open ETS	Close ETS
Sectors	Include multiple sectors within the States	Only one sector
Caps	Difficult to set one cap for different sectors	Easier within one sector
Allowances Trading	It is economically wider and allowances can be transferred between sectors	No allowances generated from outside the sector
Cost Benefit (s)	Less cost for participant to meet the limits of emission reduction	Limited transfer of credits and allowances

2.1.4 Who is Eligible for ETS?

Parties with commitments under the Kyoto Protocol (Annex B Parties) have accepted targets for limiting or reducing emissions. These targets are expressed as levels of allowed emissions, or "assigned amounts," over the 2008-2012 commitment period. The allowed emissions are divided into "assigned amount units" (AAUs). Emissions trading, as set out in Article 17 of the Kyoto Protocol, allows countries that have emission units to spare - emissions permitted them but not "used" - to sell this excess capacity to countries that are over their targets. Thus, a new commodity was created in the form of emission reductions or removals. Since carbon dioxide is the principal greenhouse gas, people speak simply of trading in carbon. Carbon is now tracked and traded like any other commodity. This is known as the "carbon market" (Emissions Trading, 2010).

2.1.5 ETS Mechanisms for International Aviation

The 35th Session of the ICAO Assembly in 2004 endorsed the further development of an open emissions trading system for aviation, and requested the preparation of guidance for use by Contracting States to incorporate emissions from international aviation into their trading systems. To respond to this request, the Guidance on the Use of Emissions Trading for Aviation (Doc 9885) was prepared by the Committee on Aviation Environmental Protection (CAEP). That document identifies options and recommendations on various elements of a trading scheme including accountable entities, emissions to be covered, trading units, types of trading systems, allowance distribution, monitoring and reporting, and geographical scope (Economic Instrument, 2010). Figure 4, is a brief description on general emission trading scheme ³which was built on ICAO guidance on the Use of Emission Trading for Aviation of the year 2008.

³ Additional elements and description can be found on the original copy of the guidance.

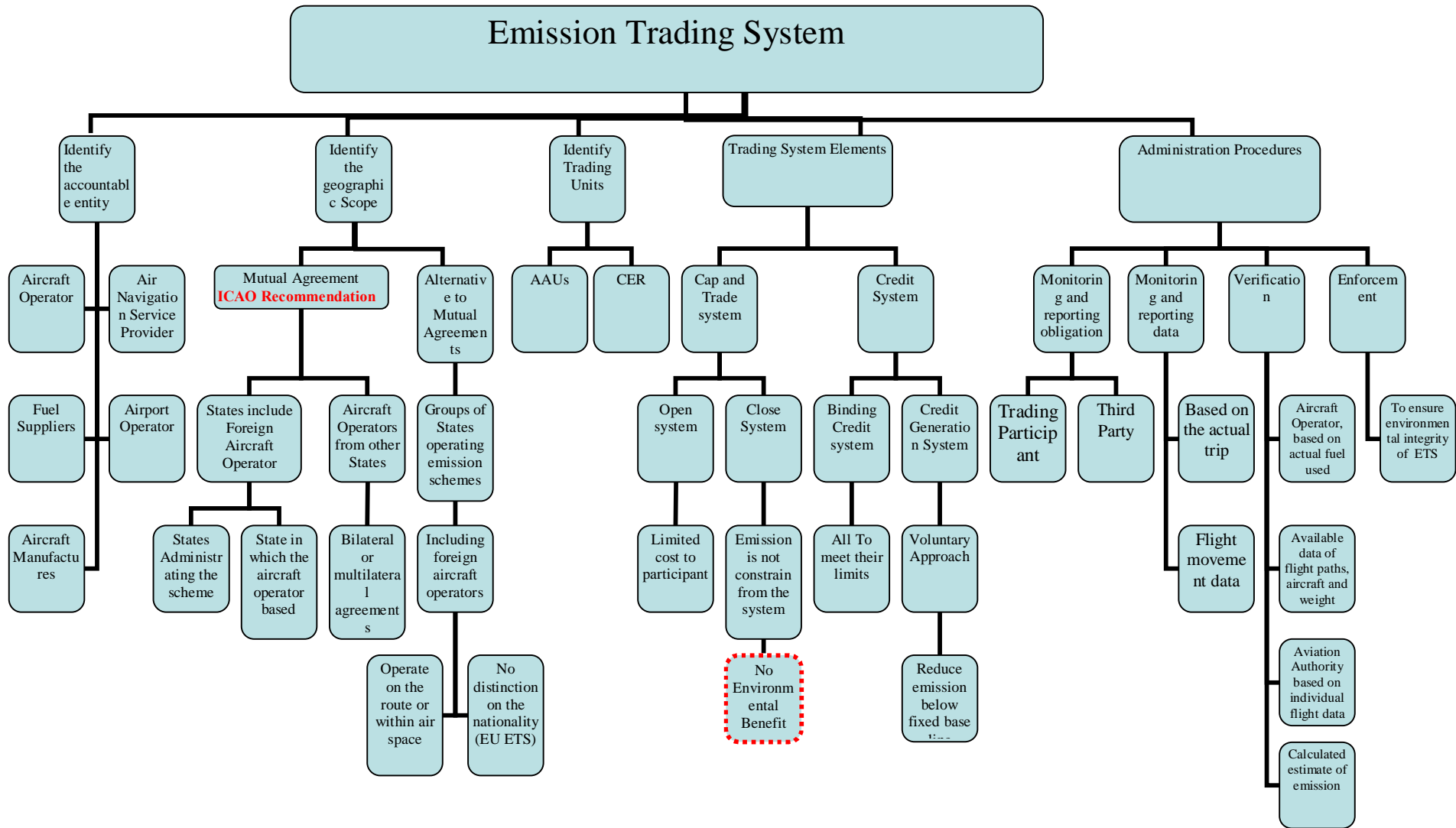


Figure 4: The ETS Design Based on ICAO Guidance on the Use of Emission Trading for Aviation of the Year 2008.

2.2 Offsetting Programmes

2.2.1 Overview

In general terms offset is a compensation equivalent. As an activity, offsetting is the cancelling out or neutralising of emission from a sector like aviation with emission reductions achieved in a different activity or location and rigorously quantified and verified. Offsetting can occur in either a regulatory or non-regulatory context. In a non-regulatory context offsetting is an idealistically or politically motivated action. In a regulatory context offsetting is an action by companies or nations to achieve compliance with a mandatory emission commitment. Offset credits are quantified in units of CO₂e (one tonne of CO₂ equivalent emission reductions) and can be traded (CAEP/8, 2010). Also the offset should be distinguished from emission trading as each system has its own mechanisms. Table 2 shows a simple comparison between the ETS and Offset programmes.

Table 2: Comparison between ETS and Offset Programmes

Elements	ETS	Offset Programmes
Credit Transfer	Within the ETS sectors	Credits from outside the ETS
Participation	Meeting an obligations	Voluntary
Caps	Requires setting caps and allowances	Offset emission by producing emission credits with no caps
Geographical Scope	Required geographical scope	An open Carbon Market
Set obligation on parties	Applied mainly for developed countries by Kyoto Protocol- Developed Countries will comply with Kyoto Protocol	Applied for developed and non developed countries- Developing countries will be the main targets and hosts

Carbon Calculator:

The correct estimation of emissions specifically from air travel is essential to identify the amount of emissions to be offset. With a view to providing appropriate and harmonized information on CO₂ emissions from air travel and thus avoiding the proliferation of various different methodologies, ICAO developed a globally accepted Carbon Emissions Calculator, which is available on the ICAO website (Economic Instrument, 2010).

ICAO Emission Calculator can be used in the case study or any other equivalent software to calculate the emission. It allows passengers to estimate the emissions attributed to their air travel. It is simple to use and requires only a limited amount of information from the user.

The methodology applies the best publicly available industry data to account for various factors such as aircraft types, route specific data, passenger load factors and cargo carried (Carbon Calculator, 2010).

The modelling exercise will be used to assess the emission for the chosen case study. Also an additional effort will be made to assess the future level, and help in choosing the best measure to mitigate the emission for short, medium and long term.

Figure 4 demonstrates the methodology of the Carbon Calculator, which was built by using a database constructed from several data sources⁴.

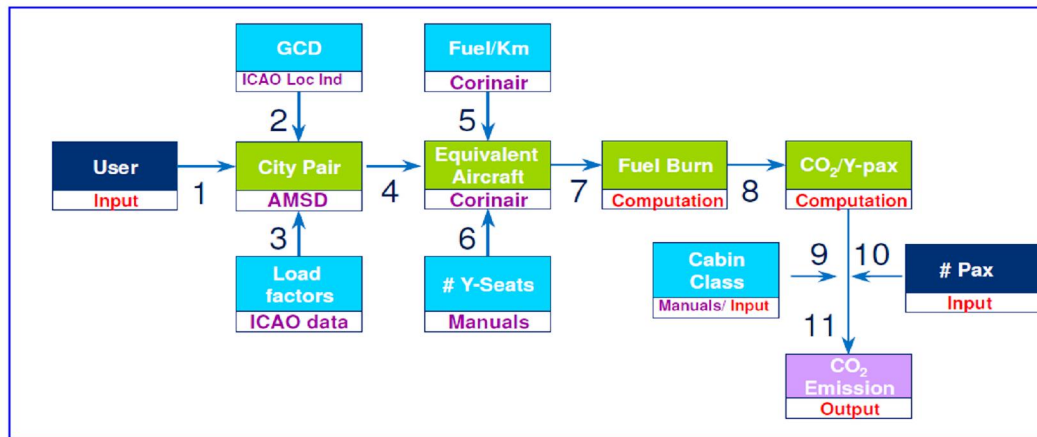


Figure4: ICAO Carbon Calculator Methodology (Carbon Emission Calculator, 2010)

Examples of Offset Projects

General:

- Increasing energy efficiency in energy production and consumption
- Using waste energy in cogeneration;
- Fuel switching to reduce emissions of greenhouse gases generated by burning of fossil based fuel e.g. generating electricity from renewable sources such as wind, solar, small hydro, geothermal and biomass energy
- Sequestering of carbon dioxide in forests and agricultural soils
- Capture and storage of CO2 from power plants and industry;
- Destruction of potent greenhouse gases such as halocarbons.

For but not limited to Aviation:

- Renewal of a carrier fleet prior to the point at which aircraft would normally retired.
- The replacement of the older, less fuel efficient aircraft with newer (CAPE/8, 2010)
- Reduce their carbon footprint at the ground services level and/or at operational and procedural levels (see below for details)

As far as **CDM projects** in the aviation sector are concerned, project activities reducing emissions resulting from the reduced consumption of bunker fuels⁵ are not eligible under the CDM (Executive Board 25, paragraph 58)⁶. This means that aviation and maritime are not eligible for CDM or JI, and they should use credit from other sectors yet it is subject to the State's approval. Currently there are various

⁴ A detail methodology guidance is available on the following ICAO website:
<http://www2.icao.int/en/carbonoffset/Pages/default.aspx>

⁵ Bunker fuels are defined as fuels sold to any air or marine vessel engaged in international transport

⁶ The Board agreed to confirm that the project activities/parts of project activities resulting in emission reductions from reduced consumption of bunker fuels (e.g. fuel saving on account of shortening of the shipping route on international waters) are not eligible under the CDM.

opportunities to reduce the carbon footprint of an aviation fleet; they include high investment. Others are more related to improved maintenance procedures and operational measures:

- (i) Improvement in engines and combustion process
- (ii) Improvements to aircraft frame
- (iii) Implementation of operational measures:
 - Lowering cruising altitudes, reducing cruising speeds or changing flight routes
 - Improving the efficiency of air traffic control systems;
 - Modifying the distribution of airspace
 - Changing the landing and take-off cycle in and around airports

Reduced fuel consumption reduces the carbon footprint significantly; 3.1 kg of carbon dioxide is avoided for every kilogram of fuel saved (El Malik, personal Communication, 2010).

In the 8th meeting of the Committee of Aviation Environment Protection (CAEP/8) a full report of the offsetting program and guidance was created with details of the offset mechanisms and credit productions. In general Kyoto Protocol allows Annex 1 parties to meet their Kyoto targets by financing greenhouse gas emission reductions projects in developing countries. The main offset programs are Clean Development Mechanism and Joint Implementation. However it can be voluntary measures for developing countries to reduce their emission and create an environment fund beside a transfer of trading credits.

2.2.2 Clean Development Mechanism (CDM)

Clean Development Mechanism (CDM), which is a flexible mechanism, is intended to be supplemental to a country's primary focus of reducing greenhouse gas emission internally. CDM projects generate emission credits called Certified Emission Reductions or CERs- Each CER is equal to one tonne of carbon dioxide equivalent. CDM executive boards established under the United Nation Framework Convention on Climate Change (UNFCCC) (CAEP8, 2010). Accordingly, CDM National Committees in the member States/ parties of Kyoto Convention established. Figure 5 gives a demonstration of CDM Cycle (top) and final approval of CDM project; the figures are extracted from UAE CDM website as an example of CDM. Each State will have its own CDM process based on its national requirements, and standards established by Kyoto CDM Council .

2.2.3 Joint Implementation (JI)

Joint Implementation (JI) is also a project-based mechanism under the Kyoto Protocol, in JI the host country is not a developing nation but another Annex1 country. The tradable units from JI projects are called Emission Reduction Units (ERUs). JI is credited in developed countries under their own or under the authority of Joint Implementation Supervisory Committee. The credits are issued by the Kyoto Party. To avoid double counting of emission reductions achieved an equivalent number of AAUs must be cancelled when the ERUs are issued. JI starts much later than CDM program (CAEP8, 2010). Table 3 is a SWOT analysis for both CDM and JI which seems to suggest that the CDM is the more useful program for developed as well non developing countries.

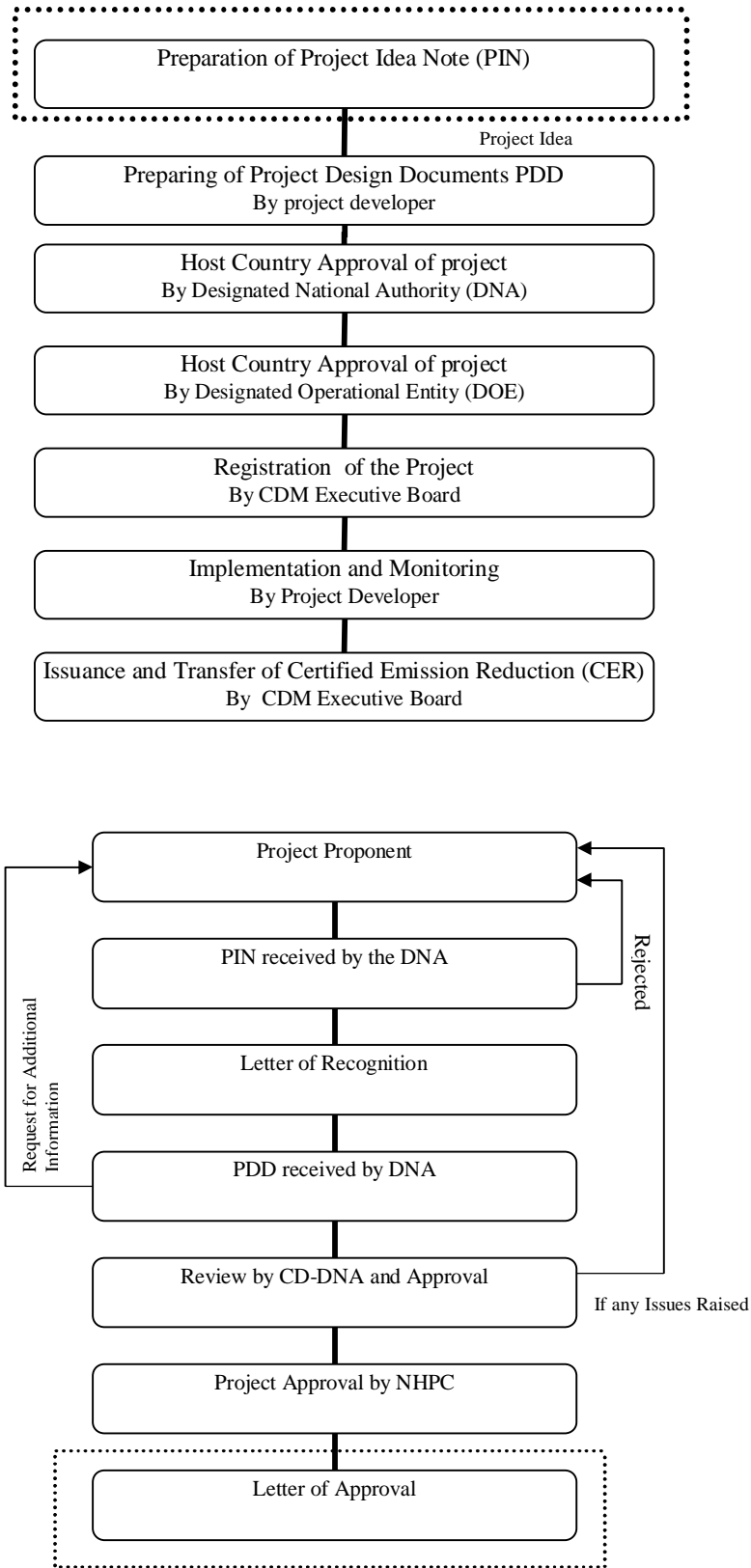


Figure 5: CDM Cycle (Top) and Final Approval (bottom), (UAE CDM, 2010)

2.2.4 Quality Assurance

To better ensure the quality of offset credits, a variety of formal standards and certification for carbon offset credits have emerged, including the voluntary carbon standard, International Organization for Standardization (ISO) 14064 series and the Gold Standard. The latter expands upon the CDM requirements of the Kyoto Protocol. The Gold Standards will only recognize clean energy and energy efficiency projects that meet their additionality definition and that have sustainable development benefits (such as supporting committees). Both voluntary offset projects and CDM/JI projects could be recognized under the Gold Standard. However, contrary to requirements for many regulatory programmes, there is no standard for the level of verification required for a project, and no accreditation for third party verifiers (CAEP8, 2010).

Table 3: SWOT Analysis between CDM and JI Programmes

Element	CDM	JJ
Strengths	<ul style="list-style-type: none"> - Easy to implement - Allocation of money to aviation sector - Voluntary, simple system - No cap required - Within the aviation system - The credits can be reinvested within the aviation sector - Monitored by CDM Executive Board 	<ul style="list-style-type: none"> - Easy to Implement - Allocation of money - Voluntary, simple system - No cap required - Within the aviation system - The credits can be reinvested within the aviation sector - Monitoring system is within the two States
Weakness	<ul style="list-style-type: none"> - Voluntary measure, no enforcement to meet any emission reduction obligations (Uncertainty regarding compliance with targets). - Inadequate participation of aviation stakeholders 	<ul style="list-style-type: none"> - Voluntary measure, no enforcement to meet any emission reduction obligations. - Inadequate participation of aviation stakeholders - Insuring the emission reduction - Uncertainty regarding compliance with targets. - Started later compared to CDM and few ERUs are produced
Opportunities	<ul style="list-style-type: none"> - Between developed and developing Countries - Developing countries can adapt it as a voluntary offset program to reduce their emission - Create credit Transferring System between Developed and developing countries 	<ul style="list-style-type: none"> - Only between Developed Countries. - Generate ERUs and cancel the AAUs
Threats	<ul style="list-style-type: none"> - The commitment of the operator to such program 	

2.3. Levies: Taxes and Charges

2.3.1 Overview

Economists have been promoting the use of pricing with the aim of internalizing the external socio-economic costs stemming from the unregulated use of the global atmosphere. Such mechanisms include fuel and/or energy taxes, greenhouse gas (especially CO₂) charges and emission trading.

Taxes

As described in figure 2, taxes and charges are mechanism of levies which was under consideration and study by ICAO as one of the Market Based Measures. ICAO defines taxes as a levy to raise general national and local governmental revenues that are applied to non-aviation purpose.

Charges

ICAO Council strongly recommends that any environmental levies on air transport which States may introduce should be in the form of charges rather than taxes. Charges are fundamentally different from taxes in that they must be based on the cost of providing an airport or air navigation service or facility and the related cost must be directly attributable to the operator. In addition, the funds collected should be applied in the first instance to mitigation of the environmental impact of the emissions, for example by addressing the specific damage caused by these emissions, if that can be identified ((Hardeman, 2007)

2.3.2 The Legal Point of View

The legal discussion has concentrated about abatement measures in market measures (i.e., emission taxes, charges and ETS). Four main legal matters have been raised:

1. The right of a State to impose a carbon price requirement in relation to fuel used or emission by foreign aircraft outside of its airspace (often referred to as the "geographic scope" question).
2. Whether the imposition of a carbon price requirement on foreign aircraft would contravene Article 12 of the Chicago Convention, which relates to the "rules of the air".
3. Whether the imposition of a carbon price requirement on foreign aircraft would contravene Article 15 of the Chicago Convention, which prohibits the imposition of fees, dues and charges in respect solely of the right of transit over, or entry and exit from, the territory of the State.
4. Whether the imposition of a carbon price requirement on foreign aircraft would contravene Article 24 of the Chicago Convention and other similar requirements in bilateral air services agreements concerning the rights of States to impose taxes and charges on fuel used in relation to the provision of international aviation services (Macintosh, 2008)

Therefore, the issue of levies is still facing many legal arguments which won't be solved unless there is a common agreement between the States on a global framework.

3. EUROPEAN UNION EMISSION TRADING SCHEME (EU ETS)

3.1 Overview

In January 2005 the European Commission launched the world's first large-scale emission trading scheme (EU ETS). The scheme is a key instrument for the EU to meet its obligations under the Kyoto Protocol, under which the EU is required to reduce its emissions in the period 2008-2012 by 8% compared to 1990 level. The EU ETS covers about 12,000 industrial facilities across EU member States in sectors that are particularly energy-intensive. In line with the principle of the Kyoto Protocol, the scheme applies without distinction to facilities within the EU that are owned or operated by companies based in the EU or in third countries (Hardeman, 2007)..

In 2005, both the European Commission and the European Council announced their preference for including aviation emissions in the EU ETS. The EU on December 20, 2006 announced the details of its legislative proposal to amend Annex 1 of Directive 2003/87/EC such that in the first year of trading for aviation (2011), obligations would only apply to flights that both depart from and arrive at EU airports. From the second year (2012), however, all flights that arrive at or depart from an EU airport would be included (Hardeman, 2007).

3.2 Directive 2008/101/EC

In order to mitigate the climate impacts of aviation, European Union has introduced legislation to include aviation in the EU emissions trading scheme (EU ETS). Directive 2008/101/EC to include aviation into the EU Emissions Trading Scheme (ETS) was published in the Official Journal on 13 January 2009 (Aviation and Climate, 2010).

The main points of the directive are summarized as following:

- The EU ETS is applicable to all flights (by all carriers) to, from and within the EU.
- It will be effective as from 1 January 2012.
- In 2012, an EU-wide cap on aviation emissions is set at 97% of the average annual emissions for the years 2004-2006. This is lowered to 95% as from 2013.
- Airlines will have to buy 15% of their allowances under this cap through an auction. They will initially receive 85% free of charge.
- Additional allowances (to cover growth) will also have to be purchased.
- No requirement exists for States to put auctioning revenues back in to the industry or even towards climate change initiatives.
- Aviation's inclusion into the EU ETS will be reviewed in 2014.
- The directive to include aviation has been incorporated in the consolidated version of the general EU ETS directive (Dir 2003/87/EC) (Aviation Environment, 2010)

Included Flights:

- All flights that arrive or depart from an aerodrome situated in the territory of an EU Member State are included. However, note that the following flights are exempted:
 - Public Service Obligation (PSO) flights within outermost European regions or on PSO routes with a capacity offered of fewer than 30,000 seats per year.
 - Flights performed by commercial airlines operating fewer than 243 flights (to/from/within the EU) per period (for three consecutive 4-month periods), or flights (to/from/within the EU) with total annual emissions lower than 10,000 tonnes per year.
 - Flights by aircraft with a certified maximum take-off mass of less than 5,700 kg.
 - Other exemptions such as flights under visual flight rules (VFR), flights for humanitarian reasons, emergency and medical services, police and military flights, cockpit crew training flights, and scientific research flights.
- On 8 June 2009, the Commission issued a detailed interpretation of the aviation activities listed in Annex 1 to Directive 2003/87/EC

All the airlines that are included must take the following steps:

- Step 1: To Contact the competent authority of your administering Member State to double-check their inclusion and to find out about any stakeholder meetings and /or consultations that they may be organizing.
- Step 2: To Start preparing their company's monitoring plan.
- Step 3: To Start monitoring Their company's tonne-kilometre and CO₂ emissions data from 1 January 2010 (Aviation Environment, 2010)

Figure 5, describe in brief the time schedule of State as well the European Commission to establish the ETS and allocating the required allowances within the system.

3.3 Article 25 (a) Third Country Measures to Reduce the Climate Change Impact of Aviation

Many Non Annex 1 operators are concerned that, although excluded from emission reductions under Kyoto Protocol still they are now being required to meet such obligations under EU ETS within EU Directive.

However Article 25(a) under EU ETS clearly allows third countries to establish their equivalent measures and, on that basis to be excluded from EU ETS. Presumably they will also be excluded from any other ETS program.

Where a third country adopts measures for reducing the climate change impact of flights departing from that country which land in the Community, the Commission, after consulting with that third country, and with Member States within the Committee referred to in Article 23(1), shall consider options available in order to provide for optimal interaction between the Community scheme and that country's measures.

Accordingly, EU will:

- Ensure optimal interaction between measures
- Amend its legislation to enable arriving flights to be exempted from the scope of the EU ETS.
- In Case of agreement EU will amend the directive as necessary (Directive 2008/101/EC, 2008).

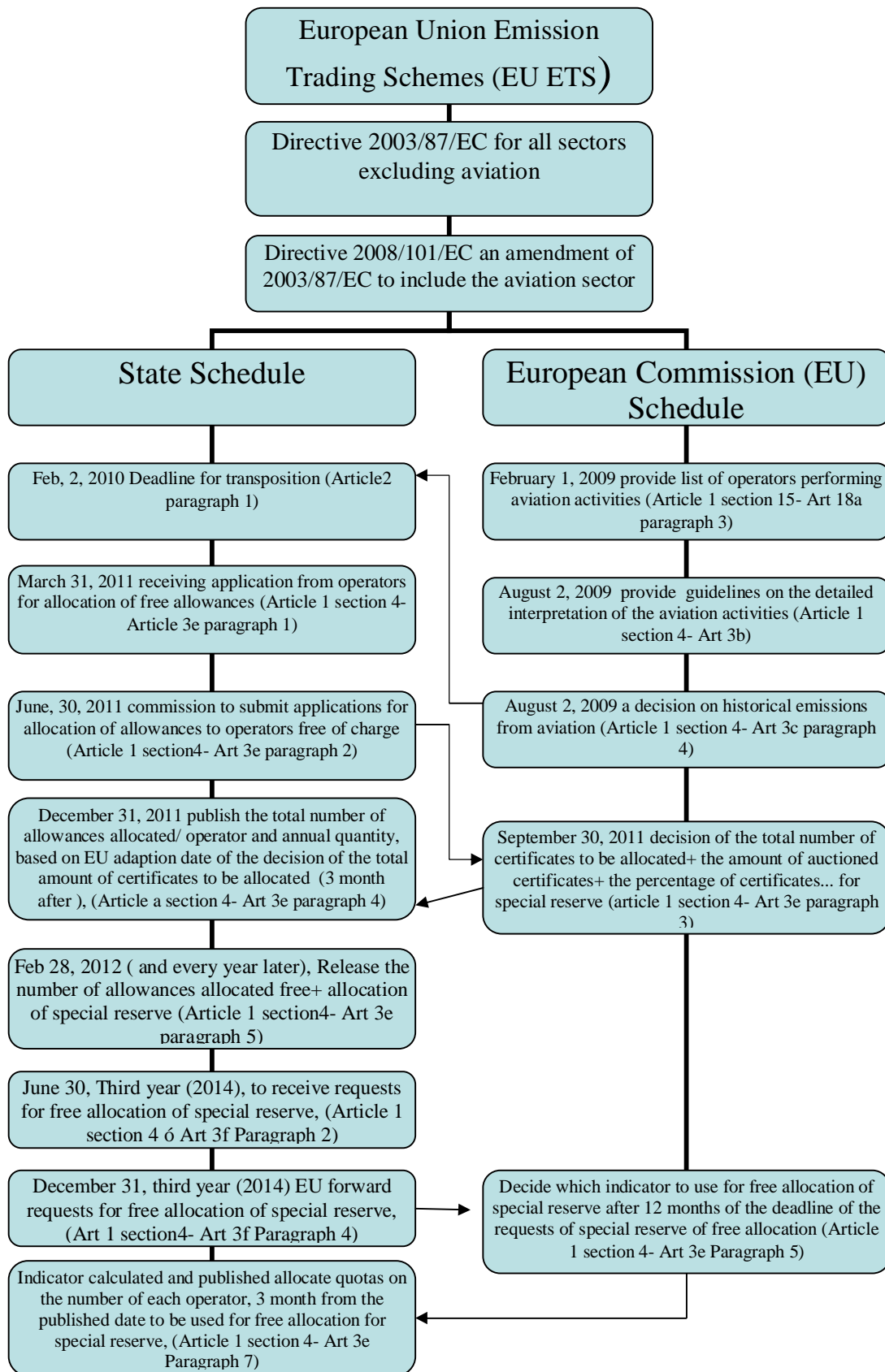


Figure 5: Time Schedule of States as Well the European Commission for EU ETS

3.4 Legal Point of View of EU ETS

Article 11 of Chicago Convention

Many parties oppose the EU's view that the imposition of emission charges on foreign aircraft in relation to extraterritorial emission charges does not contravene the rights of other States. Most of the published material on the geographic scope question concerns the EU proposal to include international aviation in its ETS in 2010.

In this context, EU States have argued that the non-discrimination principle contained in Article 11 requires that, if a carbon price is introduced for international aviation, it must be applied to all aircraft regardless of whether the relevant States have consented to its imposition. Article 11 provides that the laws and regulations of a State

relating to the admission to or departure from its territory of aircraft engaged in international air navigation, or to the operation and navigation of such aircraft while within its territory, shall be applied to the aircraft of all contracting States without distinction as to nationality” (Macintosh, 2008).

ICAO

The majority of ICAO Member States reject this position, and re-iterate previous recommendations concerning the unilateral implementation of environment measures. The 36th Session of the ICAO Assembly urged contracting States:

Not to implement an emission trading system on other Contracting States' aircraft operators except on the basis of mutual agreement between those States

The draft Guidance on the Use of Emission Trading for Aviation published by ICAO in 2007 makes specific mention of the disagreements about the question of geographical scope, and reiterates the Assembly's call for States to refrain from unilateral action (Macintosh, 2008).

3.5 Equivalent Measures for Developing Countries

The directive (Article 17 & 25a) has requested third countries/ developing countries to consider options available in order to provide for optimal interaction between the Community scheme and those countries' measures.

The last Environment colloquium in May 2010, Philip Good, the Director General for Climate Change within the European Commission, illustrated what are the equivalent measures (as described in Figure 2) for developing countries so they can be excluded from EU ETS. Equivalent measures are:

1. Offset (e.g. CDM), which was explained previously
2. Sectoral Crediting Mechanism (SCM): This expands the coverage of CDM from a project-by-project level to a sector-wide level (Baron, 2006). Table 4 illustrates the differences between SCM and CDM, CDM may currently be

the best choice because it is uncertain whether SCM can be adapted as a flexible mechanism under Kyoto Protocol. Also SCM is not covered by ICAO mechanism.

3. National Appropriate Mitigation Measures (NAMAS), is one method for dealing with emissions but there is still no consensus on the final shape and legal nature of NAMAS (El Malik, personal communication, 2010).

Table4: Comparison between CDM and Sectoral Crediting (Schneider, 2009)

Item	SCM	CDM
Which emission sources/entities are covered	All in the sector	One entity or source/several (programmatic)
Who receives the credits	Government	Private entities
What is the baseline?	Analysis of trends & projections in the sectors	Historical emissions/economically/benchmark

Figure 6, demonstrates a general guidance on equivalent measures procedures. Also the figure shows how to initiate a study that will ultimately help the States to establish a measure equivalent to EU ETS. ICAO as a recommendation is requested to prepare a detailed guidance on equivalent measures similar to the one which is done on the Emission Trading Scheme.

4. ICAO is considering guidance for the preparation of State action plans which intends to unify the formats of the submission and introduce on online templates to allow all member States to have easy access to electronic submission.

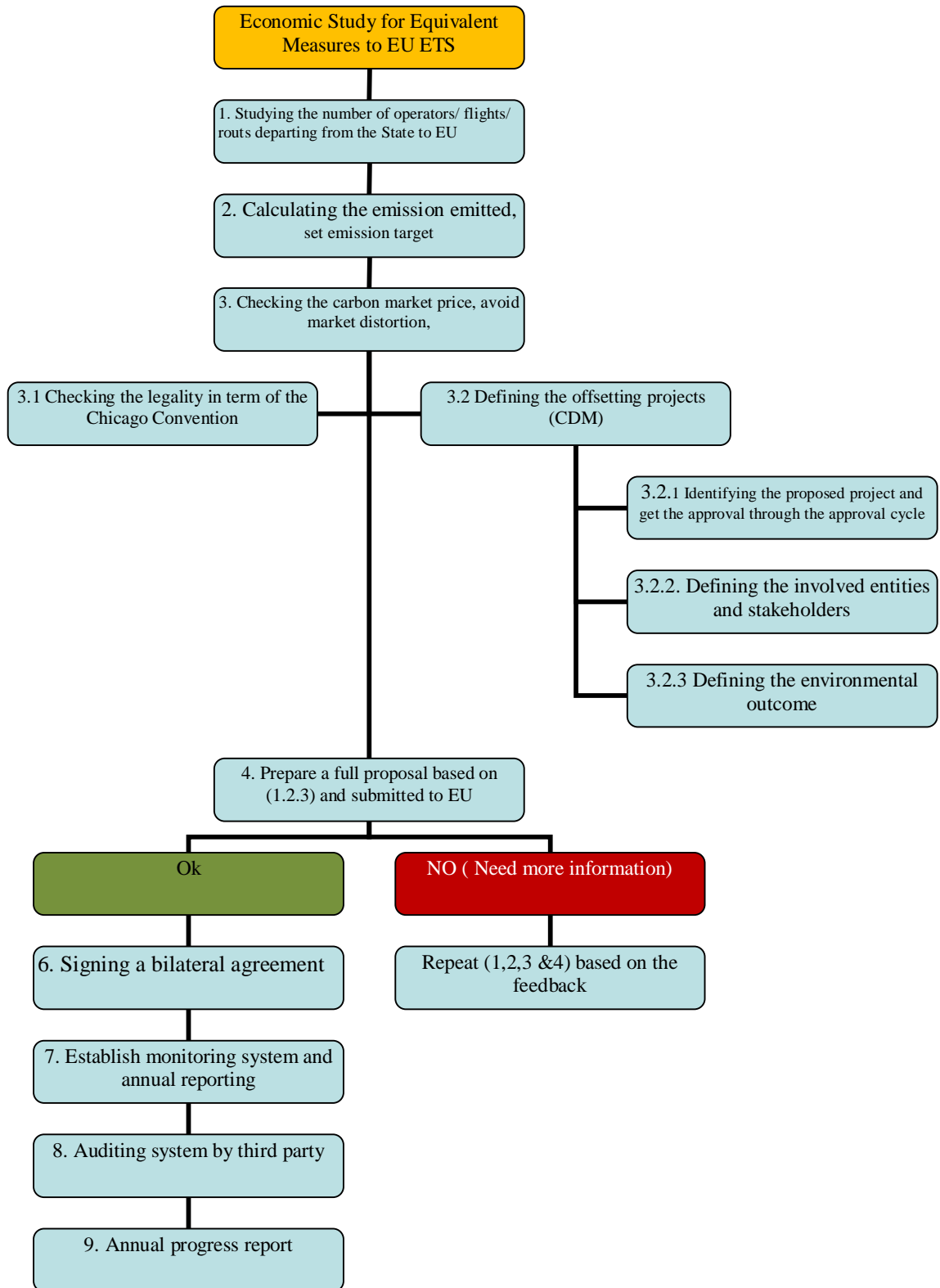


Figure 6: General Guidance on Equivalent Measures Procedures.

5. INITIAL STRUCTURE PROPOSAL FOR A CASE STUDY IN UAE

4.1 UAE History/ Contribution in Environment/ International Aviation Environment

4.2 Aviation Data and Forecast

- a. Number of aircraft landing and departing to EU
- b. Number of total routes, practically for EU
- c. Emirates
- d. Etihad
- e. Air Arabia
- f. Fly Dubai
- g. RAK Air

4.3 Impact of EU ETS on UAE Operators

4.4 Proposal for an Offset including CDM

- h. Scope (voluntary work, offsets, excluding from EU ETS, reduction targets)
- i. Approaches (map of the flights route between UAE and Europe)
- j. Stakeholders
- k. Administration
- l. System design (process chart)
- m. Next step

5. CONCLUSION

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