CORSIA AND SUSTAINABLE AVIATION FUEL

Legal Brief | Perspectives for SAF producers: An analysis of international legal frameworks impacting emissions trading

Dr. Rosa Manzo


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Key Points
- Carbon offsetting, the process of purchasing carbon credits on the international or domestic market to “offset” emissions,
- SAFs: Sustainable Aviation Fuels
- CEFs: CORSIA eligible fuels are fuels which meet the CORSIA sustainability requirements namely that they emit at least 10% less than conventional fuels on a life cycle basis (LCA) and they should not be made from biomass obtained from land with high carbon stock.

Introduction

As identified in the Special Report on the Ocean and Cryosphere in a Changing Climate issued by the Intergovernmental Panel on Climate Change (IPCC), the rate of mean global sea level rise since the mid-19th century has been higher than during the previous two millennia. The Report states that global mean sea level will continue to rise with very high confidence during the 21st century due to increased ocean warming and subsequent glacial and ice sheet melting primarily from Greenland and the Antarctic. On this specific point, it is clearly stated in the Special Report that: “Mass loss from the Antarctic ice sheet over the period 2007-2016 tripled relative to 1997-2006. For Greenland, mass loss doubled over the same period.” It becomes clear from the statement that the Special Report puts a strong emphasis on the dramatic loss of ice mass and its consequences on the rise of the sea-level. According to the 2018 IPCC Special Report on Global Warming of 1.5 °C, it is estimated that human activities have caused approximately 1.0 degrees Celsius (°C) of global warming above pre-industrial levels. With high confidence the IPCC have stated that global warming is to reach 1.5 °C between 2030 and 2052 if GHGs emissions continue to increase at the current rate.

According to the International Civil Aviation Organization (ICAO), emissions from aviation accounts to 2% of the global carbon dioxide emissions, in particular emissions from international

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1 IPCC, ‘Summary for Policymakers’ in the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate’ (IPCC 2019). The IPCC was set by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) in 1988 following the UN General Assembly Resolution 43/53 of 6 December 1998 (paragraph 5). It is a scientific body, made up of scientists from all over the world. According to paragraph 10 of the UNGA Resolution 43/53, its initial task was to prepare a comprehensive review and recommendations regarding a) the state of knowledge of the science of climate and climate change: b) programs and studies on the social and economic impact of climate change, including global warming; c) possible response strategies to delay, limit or mitigate impact of adverse climate change; d) the identification and possible strengthening of relevant existing international legal instruments having a bearing on climate; e) elements for inclusion in a possible future international convention on climate. To date, the IPCC has produced 5 assessment reports: in 1990, 1995, 2001, 2005 and, 2014 and a set of special reports.

2 Art. 43 Convention on International Civil Aviation (also known as Chicago Convention), 7 December 1944.
Civil aviation counts for 2/3 of the total emissions from aviation\(^3\). While this may seem like a relatively small amount, the prospective growth of this sector has the concrete potential to undermine the climate goal of keeping the temperature rise well below 1.5 degree Celsius.\(^4\)

This policy brief explores the interaction of the UNFCCC climate change regime and the international aviation regime with an in-depth analysis of relevant provisions of both main treaties and their implementing documents. The plan of this brief is the following: section I and section II will give an overview of the international regime for climate change before and after the adoption of the Paris Agreement on Climate Change with a particular regard to the Paris Rulebook. Section III will follow the development of the international aviation regime from the adoption of the CORSIA scheme to its more recent amendments. A particular attention will be given to the Sustainable Certification Schemes under the CORSIA system. The brief will conclude by highlighting possible ways for enhancing transparency and equity within the CORSIA system in light with the Paris Agreement.

**International Law on Climate Change**

The 1992 UN Framework Convention on Climate Change (UNFCCC)\(^5\) was the first legal instrument that should be regarded as an immediate consequence of climate change awareness. The UNFCCC and the its Kyoto Protocol (KP)\(^6\) were the only two legally binding instruments in international climate change law until the adoption of the Paris Agreement (PA)\(^7\) in 2015 and its entry into force in 2016. None of the two instruments was supposed to solve global warming for good. The States Parties involved were aware that progressive steps had to be taken in order to “stabilize GHG concentrations at a level that would prevent dangerous anthropogenic interference with the climate change.” This is confirmed by the fact that the KP set a specific timetable from 2008 to 2012 in which Annex I parties to UNFCCC committed themselves to reducing their overall GHGs emissions by at least 5 percent below 1990 levels.

The KP introduces a set of flexible mechanisms, including the emission trading system,\(^8\) the joint implementation,\(^9\) and the clean development mechanism (CDM)\(^10\), all of which involve purchasing or selling units representing GHG reduction in other countries.

With regards to aviation, the KP negotiations ended up by ordering to the States Parties to limit and/or reduce the GHG emissions from aviation working through the ICAO (see Art. 2 of the KP). As it has been noted, Annex I Parties agreed to leave the aviation sector out from the table of

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\(^3\) IATA, An Airline Handbook on CORSIA, August 2019, available at https://www.iata.org/contentassets/fb74546050c48089597a3ef1b9fe7a8/corsia-handbook.pdf

\(^4\) IPCC, Assessment Report (AR6), the Physical Science Basis, September 2021


\(^7\) Paris Agreement to the United Nations Framework Convention on Climate Change, 12 December 2015, Decision CP21, FCCC/CP/2015/L9 (Paris Agreement).

\(^8\) Art.3 (10) (11) KP

\(^9\) Art.6 KP

\(^10\) Art 12 KP
negotiations. The reason for this was mainly due to the fact that reporting under the UNFCCC and its Protocol follow the principle of territoriality meaning that emissions need to be reported by the country of their origin.\textsuperscript{11} Unlike pure emissions from domestic flights which are easily attributed to one country, emissions from cross boundary flights can’t be attributed to just one country. This explains why emissions from international aviation have so far not been covered under the UNFCCC and the Kyoto Protocol, and neither are directly covered under the PA. Given the huge impacts that emissions from aviation means to causing global warming and in the spirit of cooperation between the two international treaties, the UNFCCC and the ICAO work closely together. The UNFCCC keeps holding a special status as observer at the ICAO meetings.\textsuperscript{12} The ICAO has periodically reported its progress in addressing emissions from aviation fuels to the UNFCCC at the Subsidiary Body for Scientific and Technological Advice (SBSTA).\textsuperscript{13}

A brief description of the main features and the general design of the Paris Agreement will follow.

**The Paris Agreement and its core elements**

On 12th December 2015 the Conference of the Parties to UNFCCC adopted the Paris Agreement. The new climate agreement was reached after four years of negotiations which culminated during two weeks of negotiations held in Paris. The negotiations started one day before the announced schedule that took place at the 23rd plenary meeting of the ADP convened on Sunday 29th November.

The informal notes issued by the ADP on the 6th and 10th of November formed the main basis for the negotiations. The first draft was completed at the end of the first week of negotiations, on 5th December. It was followed by a second draft on 9th December, a third one on 10th and the final text on 12th December. The COP Decision adopting the Agreement contained some guidelines for the implementation of the Agreement.

The Paris Agreement is a legally binding treaty intended to come into force upon the ratification of, at least, 55 States Parties to the UNFCCC accounting in total for at least 55 percent of the total GHG emissions.\textsuperscript{14} These requirements were met less than one year after its adoption and the Agreement entered officially into force on 4th November 2016. The Agreement sets out the global long-term goal to a rise in global average temperature “well below 2 degrees Celsius” above the pre-industrial level and urges the Parties to work towards limiting the rise to 1.5 degrees. In addition to that, art. 2 calls the Parties to initiate the first global adaptation strategy and to make adequate flows of funds in order to fulfill the designed objectives. Art 2 paragraph 2 establishes as well that the Agreement will be implemented to reflect equity and the principle of common but differentiated responsibility and respective capabilities in light of different national circumstances.

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\textsuperscript{12} Ibid.

\textsuperscript{13} Ibid.

\textsuperscript{14} PA Art. 21
The core of the Agreement is made up of the *nationally determined contributions* (NDCs) which the Parties to the Agreement are obliged to communicate every 5 years. The Paris Agreement was adopted by consensus of opinion by all negotiating States. By adopting a common text, States proved to be able to reach a compromise among all the negotiating Parties. The PA is a treaty in accordance with article 2 VCLT. It is open to signature and deposited at the United Nations Headquarters in New York. The Agreement contains specific provisions for regulating its entry into force, the adoption of further amendments and annexes, reservation and withdrawal. In addition to that, the Agreement gives a mandate to the establishment of a compliance mechanism with the aim of facilitating implementation and promoting compliance.

The PA has been designed on a hybrid approach. This type of approach consisting of the Parties proposing sets of commitments which must comply with a set of parameters or modulators which have been internationally determined. Art. 3 of the PA invites the Parties to undertake and communicate nationally determined contributions (NDCs) which will represent a progression over time will reflect their highest possible ambition, as well as reflect common but differentiated responsibilities and respective capabilities in light of different national circumstances. By stating so, Art. 3 and art. 4 introduce a set of modulators including “equity,” “highest possible ambition,” “progression,” and “CBDR/RC,” “in light of different national circumstances.”

The Monitoring Review and Verification (MRV) mechanism follows a hybrid approach as well. Art. 13 establishes an enhanced transparency framework which ensures the review of the information provided by the Parties. Article 14 introduces an innovative tool: the global stocktaking of Parties’ progression in achieving the purpose of the agreement and its long-term goal.

Paragraph 2 of article 6 is of particular importance in setting the rules for cooperation. According to paragraph 2 Parties shall, where engaging on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes (ITMOs) promote sustainable development and ensure environmental integrity and transparency, including in governance, and shall apply robust accounting to ensure, inter alia, the avoidance of double counting. According to Art. 6 PA Parties are allowed to either establish direct bilateral or multilateral cooperation (paragraph 2) or to make use of the new mechanism, which is a successor of the Kyoto Protocol’s Clean Development Mechanism (CDM) and will be overseen by the newly established Supervisory Body. In addition to these two market-based approaches, Article 6 paragraph 8 envisages the development of so-called “non-market” approaches (NMA). Art. 6 PA does not provide more details on how to define “cooperative approaches” which allows arguing that CORSIA could provide a good example of “cooperative approach” under paragraph 2.

Rules for the implementation of the PA, including Art. 6, have been negotiated in the later years.

The Paris Rulebook has been adopted on the occasion of the COP 24 held in Katowice from 2 to 14 December 2018 through the decision of the Conference of the Parties serving as the meeting.
of the Parties to the Paris Agreement to the PA (CMA) 1.3. The Paris Rulebook represents the main component of the Katowice package. The Rulebook is made up of 18 decisions, regarding compliance, climate finance, the adaptation fund, the technology mechanism, further guidance in relation to the mitigation section, the enhanced transparency framework and global stocktaking. Paris Rulebook after long negotiations – started in 2018- has been finalized at COP 26 held in Glasgow in November 2021. 18

At COP 26 key decisions were agreed finalizing the key aspects of the Paris Rulebook related to the market and non-market mechanisms. These decisions provide further arguments in favor of the use of CORSIA under Art. 6 PA.

The Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) has passed two distinctive decisions providing guidance on cooperative approaches as referred in Article 6.2 and Article 6.4.19 The Parties to the CMA agreed to common definition of ITMOs in terms of “emission reductions and removals, including mitigation co-benefits resulting from adaptation actions and or economic diversification plan or the means to achieve them, when internationally transferred.” CORSIA fits without particular restraints under the above definition being a global carbon offsetting mechanism.

The accounting rules included in the Article 6.2 and Article. 6.4 guidance require Parties to account for all emission reductions authorized and used by applying so-called “corresponding adjustments.” Making a corresponding adjustments means that the seller adds the quantity of emission reductions transferred to its emissions balance while the buyer subtracts the respective emissions from its emissions balance. With this approach, double counting of emission reductions is effectively avoided. Robust accounting is required for transfers under Article 6.2 as well as for those under the Article 6.4 mechanism and irrespective of whether the underlying mitigation activity is covered by the scope of the NDC or not. In addition to that, each Party shall submit an initial report which describes how each cooperative approach ensures environmental integrity and how social and environmental safeguards have been applied. In this regards, State Parties should provide information regarding how the Party considers transfers offsets and reductions are fair and ambitious in light of its national circumstances as formulated in the Paris Rulebook. By submitting detailed information, the additional nature of credits is secured.

Information provided by the party shall be made public on the centralized accounting and reporting databased and shall be reviewed by the technical expert review team.

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17 Decision-/CMA.1 Modalities and procedures for the effective operation of the committee to facilitate implementation and promote compliance referred to in Article 15, paragraph 2, of the Paris Agreement. UNFCCC/CP/2018/L.5
18 The so called Paris Rulebook has been adopted on the occasion of the 24th COP held in Katowice from 2 to 14 December 2018 through the decision of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement to the PA (CMA) 1.3. The Paris Rulebook represents the main component of the Katowice package. The Rulebook is made up of 18 decisions, regarding compliance, climate finance, the adaptation fund, the technology mechanism, further guidance in relation to the mitigation section, the enhanced transparency framework and global stocktaking.
19 FCCC/PA/CMA/2021/L.18, FCCC/PA/CMA/2021/L.19
20 FCCC/PA/CMA/2021/L.18, Annex, Section I
Article 6 also has an overall objective to promote sustainable development (SD). The Glasgow decision makes SD reporting under Article 6.2 mandatory. Participating parties have to provide information on how each cooperative approach is consistent with the sustainable development objectives of the host Party, how negative impacts are minimized and avoided as well as how human rights and other rights are respected.

One issue which still open pertains to the application of corresponding adjustment by countries that have adopted a single-year target in their NDC. Since corresponding adjustments cannot be directly applied to such single-year targets, an additional method must be applied. The Article 6 Guidance allows countries to ‘averaging’. This method has been criticized for its potential to lead to double counting of emissions. CMA has requested the SBSTA to elaborate further guidance on averaging in order to ensure the avoidance of double counting. Other open issues concern possible levies on the transfer of emission reductions in order to generate income for adaptation measures. The PA only foresees this “share of proceeds” being applied to Article 6.4. The Glasgow decision maintains this differentiation by “strongly encouraging Parties” under Article 6.2 to commit resources for adaptation, while the share of proceeds for Article 6.4 measures is set at 5% of Article 6.4 emissions reductions at issuance, complemented by a monetary contribution, to be set by the Article 6.4 Supervisory Body. In addition to that, it has been set that any administrative surplus of the mechanism is to be donated periodically to the Adaptation Fund.

International Aviation Regime
The 1944 Chicago Convention on International Civil Aviation establishes a set of core principles for international air transport, including the principle of non-discrimination between contracting states and equal and fair opportunities to developed international aviation as set forth in art. 44 of the Convention. However, the Chicago Convention does not seems well-equipped to deal with the climate change problem as such. Neither the PA addresses directly the emissions from international transportations.

With this concern in mind the 39th ICAO Assembly adopted a resolution for the establishment of a global market-based measure in the form of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), to reduce or offset CO2 emissions from international civil aviation above 2020 level. CORSIA is a reduction and offsetting scheme which implies that emissions can grow when they are compensated by offsets rather than reduced (through the use of SAF notably). It is the ONLY global offsetting mechanism. The scheme is open to all and countries are asked to join on voluntary basis during a 6 years pilot projects from 2021 to 2026. In line with the UNFCCC,

21 Chicago Convention on International Civil Aviation, 7 December 1944
22 ICAO, 2016, Resolution 39. CORSIA does not apply to fights for humanitarian, medical evacuation, or fire-fighting purposes; military, state o police flights.
developed countries are asked to take the lead. From 2027, CORSIA will apply to all international flights except flights to or from small island developing states, least developed countries, landlocked developing countries and countries with low levels of aviation activities. Other exemptions refer to emissions from small aircraft (MTOM below 5.7 tons), small emitters (below 10,000 tons of CO2 annually) and from flights conducted for humanitarian, medical and firefighting reasons. Military and governmental flights are completely excluded as they do not fall under the Chicago Convention and, hence, are not within the scope of ICAO. CORSIA adopts a route-based approach as only emissions from flights between participating states are subject to reduction or offsetting. However, Monitoring, Reporting and Verification (MRV) under CORSIA is mandatory for all ICAO contracting states, irrespectively of any voluntary or mandatory participations to CORSIA.

According to the 39th ICAO resolution, the ICAO Council will conduct a review of implementation of CORSIA every 3 years starting in 2022 and will keep discussing the introduction of new criteria in order to ensure both the sustainable development of international aviation sector and the effectiveness of the aviation scheme.

On June 2018 ICAO adopted the International Standards and Recommendation Practices (SARPs), including 14 ICAO documents for the implementation of CORSIA. Each document corresponds to 5 ICAO CORSIA Implementation Elements.

The particular importance for the present analysis is the ICAO document 8 and the ICAO document 9. The first lists the following eligible offset credit criteria: 1. being additional. 2. being based on a realistic and credible baseline. 3. being quantified, monitored, reported, and verified. 4. having clear and transparent chain of custody. 5. representing permanent emissions reductions. 6. being able to assess and mitigate against potential increase in emissions elsewhere. 7. being only counted once towards a mitigation obligation. 8. doing no net harm.

The ICAO document 9 identifies eight Emissions Unit Programmes which are approved by the ICAO Council to supply CORSIA Eligible Emissions Units, including the Clean Development Mechanism (CDM) in use under the UNFCCC regime. Each emission unit programme must demonstrate that they employ specific procedures to ensure identification and tracking of the emissions units in order to ensure it being additional and avoid double counting. In addition to that, a Verification Body will check whether the operator has used the unit cancelled for CORSIA to offset any other emission. As a part of the implementation of CORSIA, the ICAO Assembly endorses the adoption of sustainable alternative fuels (SAF), also known as CORSIA eligible fuels (CEF). CEFs do not generate credits. By using CEFs, an aeroplane operator can seek benefits in terms of reductions in CORSIA CO2 offsetting requirements. Sustainable aviation fuels are reported to have the potential to cut

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23 ICAO Resolution A40-19, paragraph 9 letter c
24 Annex 16 — Environmental Protection, Volume IV — Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) was adopted by the Council of ICAO on 27 June 2018
GHG emissions by up to 80%. Examples of SAFs are Power to Liquid Fuel, a synthetically produced liquid hydrocarbon.

CORSIA eligible fuels must meet a set of sustainability requirements including that they emit at least 10% less than conventional fuels on a life cycle basis (LCA) and they should not be made from biomass obtained from land with high carbon stock. Not all SAFs are CEFs. The Sustainability Certification Schemes (SCS) certifies which SAFs are CEFs. The SCS systems is made up of organizations that certify economic operators against the sustainability criteria, and ensure that economic operators calculate actual life cycle emissions values using the agreed methodology. A list of default life cycle emissions values has been approved by the ICAO Council: to each fuel feedstock, such agricultural residues or palm oil, corresponds a LCA emission value which differ on the basis of the fuel conversion process adopted. An example of The Fischer-Tropsch (FT) process, originally developed by Franz Fischer and Hans Tropsch in early 1920s, is a series of chemical reactions that involve the conversion of hydrogen and carbon monoxide into liquid hydrocarbons by using a catalyst. The CEFs which are not the results of the pre-approved fuel convention processes must get their fuel conversion process approved through the SCS.

CORSIA in light of 1.5 climate target

The 39th ICAO resolution makes clear that CORSIA aims to contribute to the achievement of the goals set out in the Paris Agreement without imposing inappropriate economic burden on international aviation in light of the spirit of the Chicago Convention. The underlying relation between PA and CORSIA deserves further considerations in terms of ambition and overall environmental integrity of CORSIA, including its general ambition in relation to targets under the Paris Agreement, the level of participation, its enforceability, transparency, the penalties for non-compliance, the processes for public input, the quality of offset credits, monitoring, reporting and verification of emissions, registries.

Given the common goals of CORSIA and PA it is reasonable to question whether CORSIA complies with the main principles inspiring the PA, in particular with the aforementioned principle of “highest possible ambition,” “equity,” “progression,” and “CBDR/RC,” “in light of different national circumstances,” “best available science” “best available technologies.”

The above CORSIA description shows a discrete implementation of the PA principles.

Under Art.6 PA, State Parties are encouraged to employ “cooperative approaches,” in a manner that will lead to transfers of mitigation outcomes, promote sustainable development, ensure environmental integrity and transparency, and apply robust accounting measures to avoid double

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26 IATA, An Airline Handbook on CORSIA; August 2019 p 4
27 Annex 16 — Environmental Protection, Volume IV — Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).
28 ICAO, 2016, Resolution 39.13
counting. The provision does not provide more details on how to define “cooperative approaches” which allows arguing that CORSIA provides a good example of “cooperative approach.”

Article 6.3 specifies that the use of ITMOs towards NDCs is to be voluntary, which seems to be the case for CORSIA offsets and reductions which cannot be included in NDCs. On this point, the ICAO website has made clear that emissions from international aviation are not covered by the PA and so they are not included in the NDCs. However, being regarded as a cooperative approach CORSIA should comply with the aforementioned principles of PA, in particular with the one regarding transparency and fairness. The avoidance of double counting (Art. 6.2) and deliver an overall mitigation in global emissions (Art.6.4) are set as guiding principles for designing a robust accounting framework. In this regards, State Parties should provide information regarding how the Party considers transfers offsets and reductions based on CEFs are fair and ambitious in light of its national circumstances as formulated in the Paris Rulebook.

The CEFs can be read as a way of complying with the principle of the best available technologies endorsed by the PA. However, the lack of specific CEFs targets together with what has been judged as an insufficient quality assessment of their sustainability, threatens the ability of the scheme of prompting the overall ambition level of actions and progression. In other words, it seems that CORSIA falls short in enhancing the overall level of ambition by setting the Participating States free from reaching specific targets in terms of sustainable fuels in use. Yet, it is unclear where penalties for non-compliance are in place and how States which show interest in the scheme will be supported in the process of joining.

An important as factor under both Article 6.2 ITMOs and 6.4 emission reductions (ERs) are the requirement for a corresponding adjustment when used. This marked a welcome outcome by those concerned about integrity: on accounting and double counting, with both the 6.2 guidance/6.4 RMPs providing a very strong framework whereby any transfer or authorization of 6.2 ITMOs or 6.4ERs for use towards other international mitigation purposes require a corresponding adjustment.

Article 6.4ERs are now classified as ITMOs, and they can only be counted once, whether towards an NDC or to meet the CORSIA baseline. A share of proceeds related to the overall mitigation in global emissions (OMGE) will only be applied to 6.4ERs automatically, however, whereas for ITMOs created under Art. 6.2 the contribution is voluntary with Parties are only “strongly encouraged to commit to.” It remains uncertain if there will be any administrative fee under 6.2, because there is no centralized governance instance such as the 6.4 Supervisory Body, but this is for Parties to decide.

Use of ITMOs for domestic purposes, CORSIA and any future (potential) IMO scheme for shipping are expected to be a major source of demand for Article 6 units, and when applied towards e.g.

31 Art. 10 PA
CORSIA the units would become unavailable for other purposes. However, nobody in the market is seriously concerned about a supply shortfall – with even CORSIA now having a pandemic-adjusted baseline – the fairly large demand projected thereunder has shrunk dramatically, and overall, the market in recent years has already been suffering from a supply/demand imbalance, making it extremely long with increased demand helping incentivize Article 6 activities and resuscitate the international carbon market.

In this context it is interesting to note that CORSIA exempts developing countries from the mandatory adoption of the mitigation scheme. Whereas it is feasible to understand the reasons behind this exception in terms of historical participation of developing countries in causing the global warming, it is less clear why CORSIA do not take into account the updated interpretation of equity in terms of diversified differentiation on the basis of common and current contributions to the fight to global warming.
Contact Information

Centre for International Sustainable Development Law (CISDL)
Chancellor Day Hall, 3644 Peel Street
Montreal, Quebec H3A 1W9, Canada
Tel +1 438-795-1522
Fax +1 514-398-4659
www.cisdl.org