

**ENVIRONMENTAL PROTECTION BY ICAO:
AN ASSESSMENT OF THE LEGAL FRAMEWORK TOWARDS MEASURES TO
REDUCE GREENHOUSE GAS EMISSIONS IN THE INTERNATIONAL CIVIL
AVIATION SECTOR**

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Abstract

Global climate change should be a concern of all mankind. If left unmitigated the effects will be catastrophic for continued life on Earth. International efforts through the climate change regime seek to address global climate change. The principle of common but differentiated responsibilities and respective capabilities (CBDRRC) is fundamental to State engagement in this regard. The principle, and its implementation, recognises differences between States in respect of their responsibilities to address climate change as well as their capacities to do so. Providing climate change mitigation measures in the international civil aviation sector proved to be an unanswerable conundrum for the climate change regime due to difficulties in deciding on appropriate emissions allocation. The responsibility for climate change efforts in the international civil aviation sector was transferred from the climate change regime to the International Civil Aviation Organization (ICAO) for resolution. Given the already established regulatory role in international aviation, the decision to do so seems apt. This is, perhaps, an oversimplification of a complex legal environment. ICAO was not founded with environmental considerations as a core concern and there are fundamental clashes between the legal framework in international civil aviation and CBDRRC, the latter having also undergone a dramatic evolution since the referral to ICAO. ICAO has recently introduced its regulatory response to the call of the climate change regime, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). This thesis will illustrate the evolution of the principle of common but differentiated responsibilities to arrive at its contemporary interpretation and discuss the measures delivered by ICAO to determine whether they accord with the principle of common but differentiated responsibilities and respective capabilities.

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1. Introduction

Human activities, predominantly through the combustion of coal or oil, have increased concentrations of greenhouse gases in the Earth's atmosphere and are changing its natural atmospheric greenhouse.¹ The consequences for this, if left unmitigated, are potentially disastrous with predictions of extreme weather patterns, rising sea levels and food scarcity to name a few.²

In 1988 and 1989 the United Nations General Assembly recognised climate change as a common concern of mankind and it urged governments, intergovernmental organisations, non-governmental organisations, and scientific institutions to collaborate to prepare a convention on climate change.³ Twenty-nine years on from this determination, and with an established global climate change regime well into its second decade of existence, significant steps towards addressing the impact of international civil aviation on climate change have only just begun. This thesis will evaluate measures through the International Civil Aviation Organisation (ICAO) in light of the principle of 'common but differentiated responsibilities and respective capabilities'.

1.1 Background

Human activities impact on climate change through the introduction of greenhouse gases into the atmosphere.⁵ Their effects are detected throughout the climate system and are considered, together with other drivers from human activity, as the likely dominant cause of global warming since the mid-20th century.⁶ The most notable greenhouse gases are water vapour and carbon dioxide, of which the atmosphere has experienced a 35% increase in carbon dioxide in the industrial era.⁷ This increase is known to be from human activities and primarily through the combustion of fossil fuels

¹ <https://climate.nasa.gov/causes/> (accessed 27 August 2017).

² *Ibid*

³ A/RES/43/53 (1988) and A/RES/44/207 (1989).

⁴ Sands and Peel (2012) 277.

⁵ IPCC (2007) Fourth Assessment Report: Climate Change at 97.

⁶ IPCC (2014) Synthesis Report at 4.

⁷ *Supra* n 5.

and deforestation.⁸ At 1992 levels, the aviation industry accounted for 2% of global anthropogenic carbon dioxide emissions and 13% of anthropogenic carbon dioxide emissions in the transport sector with its contribution expected to triple by the year 2050.⁹ Using more recent data, indicating that its greenhouse gas emissions contribution accounts for 2.5% of global greenhouse gas emissions, if the civil aviation sector (both domestic and international) was a country it would be the seventh largest polluter in the world with ICAO predicting a 155% to 300% increase in emissions by 2036 (using 2006 as the base year for comparison).¹⁰

Historically, environmental problems were analysed from an ecocentric perspective, concerned with the conservation of nature and individual eco-systems of concern (i.e. the extinction of certain species), as opposed to the global environment comprising of interdependent ecosystems and from the perspective of the human impact on the environment (the anthropogenic perspective).¹¹ Historic engagements also traditionally focussed on the environmental problems of developed countries but the realisation that the degradation of the global environment was a common problem of the international community encouraged the participation of developing countries.¹² The Stockholm Declaration was the first appraisal of the anthropogenic perspective and was an attempt to establish basic cohesion in efforts to address the preservation and enhancement of the human environment.¹³ The Stockholm Conference of 1972, from which the declaration emanates, emphasised the irreversible impact of humans on the environment and the need for protection and enhancement of the environment through collective efforts at all levels, domestically and internationally.¹⁴ The declaration is a non-binding document consisting of 26 principles, mostly broad environmental policy goals and objectives, which are reaffirmed in the preamble to the Rio Declaration (discussed below).¹⁵ The Stockholm Declaration inspired an increase in awareness of global environmental concerns and environmental law making, to such extent that the task of the Earth Summit+ (discussed below) was, in part, to

⁸ IPCC, *supra* n 5.

⁹ IPCC (1999) Special Report: Aviation and the Global Atmosphere, Summary For Policy Makers at 6.

¹⁰ Goncalves (2017) 39(2) *Contextio Internacional* 443 at 443.

¹¹ Halvorssen (2011) 39 *Denv. J. Int'l L. & Pol'y* 397 at 399.

¹² *Ibid* at 399 . 400.

¹³ <http://legal.un.org/avl/ha/dunche/dunche.html> (accessed on 9 June 2018).

¹⁴ Halvorssen (2011) 39 *Denv. J. Int'l L. & Pol'y* 397 at 400.

¹⁵ *Ibid*.

restate existing legal expectations but also to adopt a bold position in respect of sustainable development.¹⁶

In 1992, the international community gathered at the United Nations Conference on Environment and Development (UNCED), also known as The Earth Summit, in Rio De Janeiro, Brazil, with the expectation of creating an Earth Charter, a declaration of legal rights and obligations concerning the environment and development.¹⁷ Several legal instruments emerged from the Earth Summit, including the United Nations Framework Convention on Climate Change (UNFCCC).¹⁸ The Rio Declaration, a non-binding document although adopted by consensus, consists of 27 principles aiming to provide a framework in pursuit of sustainable development.¹⁹ ²⁰ Principle 7 of the Rio Declaration introduces the concept of "common but differentiated responsibilities" (CBDR):

States shall co-operate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

The final text is a compromise between developing countries' pursuit of an acknowledgment of responsibility by developed countries for global environmental problems versus developed countries' insistence that such an acknowledgment would be inappropriate without a similar acknowledgment by developing countries.²¹ Principle 7 is a reflection of CBDR that finds its roots in State practice prior UNCED.²²

¹⁶ *Supra* n 13.

¹⁷ *Ibid.*

¹⁸ Halvorssen (2011) 39 *Denv. J. Int'l L. & Pol'y* 397 at 402.

¹⁹ UN Doc A/CONF.151/26/Vol.1 (hereinafter Rio Declaration).

²⁰ *Supra* n 18.

²¹ Kovar (1993) 4 *Colo. J. Int'l Env'tl. L. & Pol'y* 119 at 129

²² Sands and Peel (2012) 233.

The only other international document that offers a definition and explanation of CBDR is the UNFCCC.²³ Common but differentiated responsibilities and respective capabilities (CBDRRC) is acknowledged in the pre-ambles and is articulated as a guiding principle of the UNFCCC and related documents.²⁴ Article 3(1) reads:

The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

The principle embodies two fundamental elements, first, the common responsibility of States for the protection of the environment and, second, the need to account for differing circumstances relating to States' contributions to the evolution of climate change and their respective capabilities to intervene.²⁵ Fundamental disagreement exists regarding the core content of the CBDRRC principle as well as the nature of its obligations.²⁶ Its implementation, however, is evidenced across the climate change regime, in most international environmental agreements entered into in recent decades, and it is considered the bedrock of the burden sharing arrangements in subsequent environmental treaties.²⁷

In the years following the UNFCCC, the need for more stringent emissions mitigation efforts became the focus of climate change efforts.²⁸ The Kyoto Protocol to the UNFCCC, agreed in 1997, contained binding targets and timetables for the reduction of greenhouse gas emissions by industrialised States during the commitment period of the years 2008 to 2012.²⁹ Emissions from international transport, however, proved to be a stumbling block for the negotiators of the Protocol, and the regulatory authority

²³ 74 Int'l L Ass'n Rep Conf (2010) 346 at 357.

²⁴ Bodansky, Brun e, & Rajamani (2017) 127.

²⁵ Sands and Peel, *supra* n 23; see also 74 Int'l L Ass'n Rep Conf, *supra* n 23.

²⁶ 75 Int'l L. Ass'n Rep. Conf. (2012) 432 at 442.

²⁷ *Ibid* at 443.

²⁸ Oberthur & Ott (1999) 95.

²⁹ *Ibid*.

to limit or reduce greenhouse gas emissions from international aviation was referred to the International Civil Aviation Organization (ICAO).³⁰

The referral of emissions regulation to ICAO is not as straight forward as might be imagined. Disputes regarding the core content of CBDRRC, its obligations, and its applicability within the international civil aviation regime reigned. The disputes within international civil aviation hold a more obvious context when it is realised that the international civil aviation regime holds equality between States at its core. Progress within ICAO towards emissions policy measures since referral has been slow but there has been progress in what ICAO refers to as a basket of measures. The basket of measures includes advancements in aircraft technology and standards, operational improvements, sustainable alternative fuels, and market-based measures.³¹

In October 2016, at the 39th meeting of the ICAO Assembly, the basis for the first global market-based measure in international civil aviation was agreed, known as the Carbon Off-Setting and Reduction Scheme in International Aviation (CORSIA).³² The CORSIA contains a preambular acknowledgment of CBDRRC and it was a guiding principle in its design.³³ The purpose of this study is, therefore, not to identify whether or not the principle is applicable to State engagements within ICAO but rather to explore its application in CORSIA. This will entail an appreciation of the legal framework within the climate change regime and the international civil aviation regime and an understanding of the principle of CBDRRC. At the heart of this discussion will be the climate change regimes implementation of CBDRRC for comparison with the measures undertaken within the CORSIA.

1.2 Critical Research Questions

The research questions are:

- What is the climate change regime?

³⁰ Oberthur & Ott (1999) 112.

³¹ ICAO (2016) On Board A Sustainable Future at 97.

³² A39-3.

³³ A39- 3 preamble and A38-18 (20) . (22).

- What is the legal framework for regulation in the international civil aviation sector?
- What is CDDRRC?
- How has CDDRRC been implemented in the climate change regime?
- What is CORSIA?
- Have States implemented CDDRRC in CORSIA?
- If so, how has CDDRRC been implemented in CORSIA?
- To what extent has CDDRRC been recognised in CORSIA?

1.3 Research Aims

The aim of this dissertation is to illustrate that ICAO has provided regulatory measures to address climate change that accord with the principle of common but differentiated responsibilities and respective capabilities.

1.4 Chapter Breakdown

The research aims and research questions will be addressed in the following chapters:

1.4.1 Chapter 2: The Climate Change Regime and the ICAO

This chapter will identify the legal framework within which the climate change regime and ICAO function. The legal framework provides context for the development and implementation of CDDRRC within the climate change regime as well as emissions mitigation measures within ICAO.

1.4.2 Chapter 3: Common But Differentiated Responsibilities and Respective Capabilities

This chapter will discuss the origins and development of CDDRRC seen through the lens of its implementation within the climate change regime. The interpretation of CDDRRC seen through this lens will then be used in the assessment of the emissions mitigation measures found in CORSIA.

1.4.3 Chapter 4: ICAO and the Environment

This chapter will identify and provide context for the emissions mitigation measures found in CORSIA with specific emphasis on their acknowledgment of CDRRC to determine the extent to which CORSIA caters to CDRRC.

1.4.3 Chapter 5: Concluding Remarks

The final chapter will draw on the conclusions of the preceding chapters to illustrate the hypothesis.

1.5 Limitations in the Scope of the Thesis

This thesis will not study the normative status of CDRRC, nor will it reflect on the efficacy of measures implemented by ICAO versus the objectives of the climate change regime.

1.6 Conclusion

This study will illustrate the regulatory framework for greenhouse gas emissions limitations or reductions in the climate change regime and the international civil aviation sector, identify the contemporary interpretation CDRRC through its implementation, and discuss the recognition of CDRRC in the measures taken by ICAO.

2. The Climate Change Regime and the ICAO

2.1 Synopsis

This chapter contains an overview of the climate change regime, the referral of emissions regulation in international civil aviation to ICAO, and the regulatory mechanisms at ICAO's disposal. In doing so it will unveil the legal framework within which the global regulation of greenhouse gas emissions, and from international civil aviation, is to occur and provide context for the referral.

2.2 Introduction

The climate change regime is the global platform for engagement on climate change.³⁴ Despite its deeply contested nature and legal status, CDBRRC is a fundamental principle of the climate change regime and States are obliged to give effect to it when interpreting their current obligations and in creating new obligations.³⁵ This chapter will provide a birds-eye view of the climate change regime and the regulatory environment found within ICAO. In so doing it will form the basis for discussion on the interpretation of CDBRRC and its implementation in CORSIA.

2.3 The Climate Change Regime

The climate change regime is comprised of the UNFCCC, the Kyoto Protocol, the Paris Agreement. The principles embodied in the Rio Declaration are not, for the most part, legally binding.³⁶ They are, however, central to the interpretation, implementation and development of CDBRRC within the climate change regime and therefore, climate change efforts within ICAO.³⁷ The discussion that follows will provide the regulatory context for the implementation of CDBRRC within the climate change regime and the referral of emissions mitigation efforts in international civil aviation to ICAO.

³⁴ Oberthur & Ott (1999) 33.

³⁵ Scott & Rajamani (2012) 23 EJIL 469 at 477.

³⁶ Halvorssen (2011) 39 Denv. J. Int'l L. & Pol'y 397 at 397.

³⁷ *Ibid.*

2.3.1 The United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the United Nations Headquarters on 9 May 1992.³⁸ The UNFCCC is subject to ratification, acceptance, approval or accession by States and by regional economic integration organizations and may be acceded to at any time by those that have not signed the Convention.^{39,40} The UNFCCC entered into force on 21 March 1994 and there are 196 State parties to the Convention at present.⁴¹

The UNFCCC is the accepted basis for international politics on climate change.⁴² It reflects a compromise between the pursuit by some States of specific targets and timetables for emissions reductions and the pursuit by others of a skeleton treaty to serve as the basis for future climate change engagements.⁴³ As the name suggests, the convention provides a framework, establishing procedures and institutions, for engagement on global climate change and obligations that provide the basis for subsequent development.⁴⁴ Its objective is to stabilise greenhouse gas concentrations in the atmosphere at levels that will prevent dangerous anthropogenic interference within the climate system and to do so within a time frame that allows eco-systems to adapt naturally to climate change, while also ensuring that food production is not threatened and that economic development proceeds in a sustainable manner.⁴⁵ The regulation of greenhouse gas emissions from various sectors fall under the umbrella of the UNFCCC.⁴⁶ The transport sector, and therefore international aviation, is one such sector.⁴⁷

The UNFCCC established the Conference of the Parties (COP).⁴⁸ It is the supreme body of the Convention charged with reviewing the implementation of the Convention

³⁸ <https://unfccc.int/process/the-convention/news-and-updates> (accessed 11 June 2018).

³⁹ UNFCCC art 22.

⁴⁰ *Supra* n 38.

⁴¹ *Ibid.*

⁴² Oberthur & Ott (1999) 33.

⁴³ Sands and Peel (2012) 278.

⁴⁴ Oberthur & Ott (1999) 34.

⁴⁵ UNFCCC art 2.

⁴⁶ UNFCCC art 4(1)(c).

⁴⁷ *Ibid.*

⁴⁸ UNFCCC art 7(1).

and related legal instruments adopted by the COP as well as taking decisions to promote the effective implementation of the Convention.⁴⁹

2.3.2 The Kyoto Protocol

While the UNFCCC was a progressive leap in global efforts to address the impact of anthropogenic emissions on climate change, the consensus was that the commitments of the UNFCCC were not specific enough to achieve the goals of the Convention.⁵⁰ It was agreed that the commitments of the parties included in Annex I of the UNFCCC would be reviewed at the first session of the COP using the best available scientific information.⁵¹ The first meeting of the COP, in Berlin in 1995, found that the commitments of Annex I parties were not adequate.⁵² The Berlin Mandate was adopted, outlining the process and time frame for the negotiation of a new legal instrument with more concrete obligations and time frames for greenhouse gas emissions reductions by Annex I parties.⁵³ From these negotiations, the Kyoto Protocol to the UNFCCC was adopted in Kyoto, Japan, in December 1997.⁵⁴ It is subject to ratification, acceptance, approval or accession by parties to the UNFCCC and entered into force on 16 February 2005.⁵⁵ The United States of America is the only State that has not ratified, approved, accepted, or acceded to the Protocol.⁵⁶

The Kyoto Protocol was concluded for an indeterminate period of time but had a first commitment period, from 2008 to 2012, for Annex I parties to ensure that their aggregate greenhouse gas emissions do not exceed their assigned limitation amounts.⁵⁷ In December 2012, the Doha Amendment of the Kyoto Protocol, among other things, provided the second commitment period of States from 1 January 2013 to 31 December 2020.⁵⁸ The amendment enters into force, for those parties indicating

⁴⁹ UNFCCC art 7(2).

⁵⁰ <https://unfccc.int/process/the-kyoto-protocol> (accessed 9 June 2018)

⁵¹ *Ibid.*

⁵² *Ibid.*

⁵³ *Ibid.*

⁵⁴ https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-a&chapter=27&clang=en (accessed 11 June 2018).

⁵⁵ *Ibid.*

⁵⁶ *Ibid.*

⁵⁷ Kyoto Protocol art 3(1).

⁵⁸ *Supra* n 50.

acceptance, on the ninetieth day after receipt of an instrument of acceptance by the Depository from at least three quarters of the parties to the Protocol.⁵⁹ The amendment is not yet in force.⁶⁰

The Kyoto Protocol contains differentiated binding targets for State parties and timetables for the reduction of aggregate greenhouse gas emissions by industrialised States.⁶¹ Emissions from international transport proved to be a stumbling block for negotiators of the Protocol with emissions allocation acting as the pivotal issue.⁶² Before the Kyoto engagements, the Subsidiary Body for Scientific and Technological Advice (SBSTA), a standing body established by the UNFCCC responsible for providing information and advice on scientific and technological matters relating to the UNFCCC, identified eight options to resolve the issue of allocation of emissions from marine bunker and aviation fuel.⁶³ This limitation of the scope of emissions allocations considerations did not result in agreement between States in negotiation of the Kyoto Protocol.⁶⁴ This was mainly due to the inequitable results from proposed allocations (i.e. to countries that are international transport hubs) and the conflict between the proposed allocations and international treaty arrangements already in place.⁶⁵ As a result of the lack of agreement, these emissions were included in national inventories, on the basis of fuel sold, for reporting purposes only and were not subject to emissions targets agreed in the Kyoto Protocol.⁶⁶ Negotiators agreed to transfer the issue to ICAO and the IMO, which was done through article 2(2), which reads:

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 through the International Civil Aviation Organisation and the International Maritime Organisation, respectively.⁶⁷

2.3.3 The Paris Agreement

⁵⁹ Kyoto Protocol art 20(4).

⁶⁰ *Supra* n 54.

⁶¹ Oberthur & Ott (1999) 95.

⁶² *Ibid* at 112.

⁶³ *Ibid* at 111.

⁶⁴ *Supra* n 62.

⁶⁵ *Ibid*.

⁶⁶ Romera & van Asselt (2015) 27 OJEL 259 at 262.

⁶⁷ Oberthur & Ott (1999) 112.

The Paris Agreement is the successor to the Kyoto Protocol post 2020. On 12 December 2015, at the twenty-first session of the Conference of the Parties to the UNFCCC, the Paris Agreement was adopted.⁶⁸ It entered into force on 4 November 2016 and there are 178 parties to the agreement at present (of 195 signatories).⁶⁹

The Paris Agreement does not include reference to international civil aviation. Instead, the COP invited ICAO to continue with progress reports to the SBSTA and ICAO has continued to do so in the spirit of co-operation.⁷⁰ ⁷¹ ICAO considers the lack of reference a vote of confidence in its previous and continued efforts to mitigate the impact of international aviation on climate change.⁷²

2.4 The International Civil Aviation “Regime”

The Convention on International Civil Aviation (the Chicago Convention), signed in Chicago on 7 December 1944, is the constitutive document of ICAO.⁷³ It was born from the technological advancements in international passenger travel and the identification of the many political and technical stumbling blocks of the time that required addressing for the international civil aviation industry to further develop.⁷⁴ The Chicago Convention envisages bodies within ICAO, namely the Assembly, Council, Air Navigation Commission “and such other bodies as may be necessary” for the organisation to exercise its regulatory mandate.⁷⁵ The ICAO structures relevant to the present discussion are that of the Assembly and Council.

2.4.1 The Assembly

⁶⁸ *Supra* n 54.

⁶⁹ *Ibid.*

⁷⁰ <https://www.icao.int/Newsroom/Pages/ICAO-Welcomes-COP21-Agreement.aspx> (accessed 8 July 2017).

⁷¹ https://www.icao.int/environmental-protection/Pages/A39_CORSA_FAQ6.aspx (accessed 8 July 2017).

⁷² *Supra* n 70.

⁷³ Chicago Convention art 43.

⁷⁴ <https://www.icao.int/about-icao/History/Pages/default.aspx> (accessed 18 June 2017).

⁷⁵ *Supra* n 73.

The Assembly is the plenary decision-making body of ICAO.⁷⁶ It consists of all 191 contracting states to the Chicago Convention.⁷⁷ ⁷⁸ Each contracting state holds a single vote that carries equal voting rights.⁷⁹ ⁸⁰ The Assembly meets at least once every three years and decisions are taken by majority vote.⁸¹ The presence of a majority of member States is required to constitute a quorum.⁸² The decisions of the Assembly, known as Assembly Resolutions, provide policy guidelines for the work of the other ICAO bodies.⁸³ Most of the substantive decisions taken by the Assembly are in the form of a resolution.⁸⁴ Although the binding nature of these resolutions is controversial the prevailing view is that they can bind the ICAO organs but generally not member States.⁸⁵ Nonetheless, their subsequent implementation by member States is not ordinarily controversial as they are adopted by consensus after thorough preparation.⁸⁶ The main policies of ICAO on environmental protection are defined by the Assembly.⁸⁷

2.4.2 The Council

The Council is a permanent body of ICAO and is responsible to the Assembly.⁸⁸ It is composed of thirty-six contracting states elected by the Assembly and is responsible for, among other things, the day to day governance of ICAO.⁸⁹ The Council is vested with extensive powers and duties which include a legislative function (or quasi-legislative function)⁹⁰ for the adoption of annexes to the Chicago Convention.⁹¹ The annexes lay down international standards and recommended practices (SARPs) which automatically bind member states unless impracticable to comply.⁹² While

⁷⁶ Shawcross and Beaumont (1977) 103.

⁷⁷ Chicago Convention art 48(b).

⁷⁸ https://www.icao.int/secretariat/legal/List%20of%20Parties/Chicago_EN.pdf (accessed 18 June 2017).

⁷⁹ Shawcross and Beaumont (1977) 102.

⁸⁰ Chicago Convention art 48(b).

⁸¹ Chicago Convention art 48(a).

⁸² Chicago Convention art 48(c).

⁸³ Hobe, v. Ruckteschell & Heffernan (eds.) (2013) 32.

⁸⁴ *Ibid* at 31.

⁸⁵ *Ibid* at 32.

⁸⁶ *Ibid*.

⁸⁷ <http://www.icao.int/ENVIRONMENTAL-PROTECTION/Pages/CAEP.aspx> (accessed 22 April 2017).

⁸⁸ Chicago Convention art 50(a).

⁸⁹ Chicago Convention art 50(a) and 54.

⁹⁰ Liu (2011) 4 CCLR 417 at 423.

⁹¹ *Supra* n 76.

⁹² Chicago Convention art 37 and 38.

Standards are binding, they do not hold the same binding authority as the convention, quite simply because they are not subject to the ratification process.⁹³ While States hold an obligation to comply with Standards, the alternate obligation is to notify ICAO when it is impracticable to comply with the new Standard in all respects and to set out the differences between that State's abilities and that established by the Standard.⁹⁴ Recommended Practices are not legally binding on States and carry no legal effect nor obligation on States.⁹⁵

2.5 Conclusion

The regulation of greenhouse gas emissions from international transport, and therefore international civil aviation, falls within the ambit of the UNFCCC. The Kyoto Protocol transferred this authority to ICAO and the parties to the Paris Agreement have chosen to abide by this referral. Within the confines of the Chicago Convention, the ICAO exercises regulatory authority within international civil aviation through the Assembly, by way of Assembly Resolutions, and the Council, through the Annexes. This regulatory authority is subject to the agreement of member States and cannot be imposed unilaterally.

⁹³ Hobe, v. Ruckteschell & Heffernan (eds.) (2013) 45.

⁹⁴ *Ibid.*

⁹⁵ *Ibid* at 46.

3. Common But Differentiated Responsibilities and Respective Capabilities

3.1 Synopsis

This chapter will discuss the principle of common but differentiated responsibilities and respective capabilities, both its basis as a legal principle as well as its implementation and development within the climate change regime. The aim is to establish a base for comparison with the application of CDRRC used within the CORSIA.

3.2 Introduction

Article 3 of the UNFCCC provides guiding principles for State parties to achieve the objects of the Convention. These guiding principles include inter and intra generational equity, common but differentiated responsibilities and respective capabilities, the specific needs and special circumstances of developing countries, the precautionary principle, sustainable development, and the duty to co-operate.⁹⁶ The principle of common but differentiated responsibilities and respective capabilities is at the core of the UNFCCC and climate change negotiations and has proved to be the most contentious of the guiding principles.⁹⁷ The meaning of CDRRC and the obligations of the parties flowing therefrom have long been the subject of dispute. Its initial formulation and implementation versus its most recent implementation under the Paris Agreement have seen a somewhat slow, but nonetheless drastic, evolution in the understanding of its meaning and interpretation, and therefore its implementation.

The CDRRC era during which greenhouse gas emissions regulation in international civil aviation was referred to ICAO by the Kyoto Protocol versus the present day CDRRC era of the Paris Agreement are worlds apart. Appreciating the nature of present day CDRRC, and the obligations of States in its implementation, requires and understanding of its origins and development. This chapter will provide the platform for understanding the nature CDRRC and its implementation within the climate change regime for comparison with parties' engagements within ICAO.

⁹⁶ UNFCCC art 3(1) to 3(5).

⁹⁷ Bushey *et al* (2010) 6 *Publicist* 1 at 1.

3.3 CDRRC – The Principle and its Development

Differentiation has been a central theme in the development of the climate change regime.⁹⁸ CDRRC is a departure from traditional treaty engagements that provide common obligations for all parties.⁹⁹ There is an important distinction between CDR, articulated in the Rio Declaration, and CDRRC found in the UNFCCC. CDR bases differentiation between States only on their differing contributions to global environmental degradation while CDRRC includes consideration of States' respective capabilities.¹⁰⁰ Setting the basis for differentiation in States' differing contributions would result in a regime that would change relatively slowly while using capabilities as the basis for differentiation allows for a more rapid evolution as States develop.¹⁰¹ The importance of the distinction will become more apparent as the discussion progresses through the development of CDRRC.

CDRRC finds its premise in, first, establishing that protection of the environment is a common responsibility of States but, then, considers the respective State contributions to environmental degradation and their capacities in determining levels of responsibility to act.¹⁰² The debates surrounding its core content are found in the expression of the reasons for the need to differentiate, which are generally found along divisions between developed and developing countries.^{103 104} One view being that differentiation is necessary due to differing levels of economic development (the capabilities argument, generally favoured by developed countries) and the other being that it is due to differing contributions to global environmental degradation (the responsibilities argument, generally favoured by developing countries).^{105 106} Consensus is found, at least, in relation to the common responsibility of all States that requires, according to the UNFCCC, that they co-operate in developing the climate change regime and work towards achieving the objective of the UNFCCC.¹⁰⁷

⁹⁸ Bodansky, Brun e, & Rajamani (2017) 26.

⁹⁹ *Ibid* at 27.

¹⁰⁰ *Ibid* at 127.

¹⁰¹ *Ibid* at 128.

¹⁰² 75 int'l L. Ass'n Rep. Conf. (2012) 432 at 442.

¹⁰³ *Ibid*.

¹⁰⁴ Bodansky, Brun e, & Rajamani (2017) 28.

¹⁰⁵ 75 int'l L. Ass'n Rep. Conf. (2012) 432 at 442.

¹⁰⁶ Bodansky, Brun e, & Rajamani (2017) 27.

¹⁰⁷ 75 int'l L. Ass'n Rep. Conf. (2012) 432 at 444.

Consensus is also found in the need to differentiate between States in respect of their obligations but little common ground exists on the criteria for differentiation as well as the criteria for graduation from differentiation.¹⁰⁸

While these fundamental differences exist, CDRRC has been consistently implemented within the climate change regime and it is this implementation that will be used for assessment purposes. Although CDRRC does not specify how differentiation is to take place, CDRRC norms can be categorised into central obligations, implementation, and assistance.^{109 110} The central obligations concern differentiation in respect of emissions reduction targets and timetables and reporting requirements.¹¹¹ Differentiated implementation is seen through delayed compliance schedules, permission to adopt subsequent base years, delayed reporting schedules, and softer approaches to non-compliance, and assistance is provided to developing countries through financial and technological means.¹¹² It is according to this categorisation that the implementation of CDRRC will be examined.

3.3.1 Differentiation: The UNFCCC

The Convention divides countries into three groups, namely, Annex I, Annex II and non-Annex I parties. The Annex I parties are industrialised countries that were OECD (Organisation for Economic Co-Operation and Development) members in 1992 and countries with economies in transition (to a market economy).¹¹³ The Annex II parties are only the OECD members of Annex I.¹¹⁴ The non-Annex I parties are those not listed in Annex I and are mainly developing countries, some of which are recognised as being especially vulnerable to the effects of climate change, including countries with low lying coastal areas, with areas prone to natural disasters, with areas liable to drought and desertification, with economies that are highly dependent on income generated from the production, processing and/or consumption of fossil fuels, and

¹⁰⁸ 75 Int'l L. Ass'n Rep. Conf. (2012) 432 at 445.

¹⁰⁹ Bodansky, Brun e, & Rajamani (2017) at 27.

¹¹⁰ Rajamani (2013) 14 Theoretical Inq. L. 151 at 154.

¹¹¹ *Ibid.*

¹¹² *Ibid.*

¹¹³ <https://unfccc.int/parties-observers> (accessed 25 June 2018).

¹¹⁴ *Ibid.*

small island countries.^{115 116} The Convention also recognises a separate category of developing countries, least developed countries (LDCs) for whom the parties were to take full account of their needs regarding funding and technology transfer.^{117 118}

All parties to the Convention, taking into account their CBDRRCs and domestic development priorities are required to develop State inventories, formulate climate change programmes, promote and co-operate in the development and transfer of technology, promote sustainable management, co-operate in preparation for adaptation to the impacts of climate change, take climate change considerations into account (to the extent feasible), promote and co-operate in research and development and in the exchange of information, promote climate change education and awareness, communicate with the Conference of the Parties as required.¹¹⁹ All parties are also required to communicate to the Conference of the Parties a national inventory of anthropogenic emissions, to the extent that their capacities permit, a general description of steps taken or envisaged in implementing the Convention, and any other relevant information.¹²⁰ These general commitments do not, for the most part, compel a particular action by the parties.¹²¹ In addition, they are subject to several qualifications in their implementation to make them acceptable to developing countries (i.e taking into account the parties' CBDRRCs, domestic development priorities, and capacities).¹²² The general commitments also recognise that economic and social development and poverty eradication are overriding priorities for developing countries, therefore the extent of developing country participation in implementing their Convention commitments is dependent on the effective provision of financial resources and the transfer of technology by developed countries.¹²³

The central obligations, in addition to the general commitments of all of the parties, are held by the Annex I parties who are required to adopt national policies and

¹¹⁵ UNFCCC art 4(8).

¹¹⁶ *Supra* n 113.

¹¹⁷ UNFCCC art 4(9).

¹¹⁸ Bodansky, Brun e, & Rajamani (2017) 121.

¹¹⁹ UNFCCC art 4(1)(a) . (j).

¹²⁰ UNFCCC art 12(1).

¹²¹ Bodansky, Brun e, & Rajamani (2017) 130.

¹²² *Ibid* at 131.

¹²³ UNFCCC art 4(7).

measures in mitigation of climate change with the aim of returning their greenhouse gas emissions levels to 1990 levels.¹²⁴ Accompanying this obligation are more detailed reporting obligations to provide information on policies and measures adopted and specific estimates of the envisaged effects of their mitigation measures.¹²⁵ The Convention also provides differentiation between the Annex I parties by affording a certain degree of flexibility by the Conference of the Parties to those undergoing economic transition in the implementation of their commitments.¹²⁶

The financial resources necessary for developing countries to undertake emissions reduction activities and adapt to the effects of climate change are provided by only Annex II parties.¹²⁷ Funding by Annex II parties is generally channelled through the Convention's financial mechanism.¹²⁸ The financial mechanism was created for the purposes of providing financial resources on a grant or concessional basis and for technology transfer.¹²⁹ The Convention provides the core financial provisions of States under the climate change regime.¹³⁰ These provisions have been supplemented by decisions of the COP that have established new climate funds, specified project eligibility requirements, and adopted political goals regarding the magnitude of funding.¹³¹ The existence of the financial mechanism is, however, not a barrier to the provision of financial resources by developed countries to developing countries through other means in order to implement the Convention.¹³²

These financial resources are provided to developing countries in order to meet the agreed full costs associated with the Conventions inventory and reporting requirements, to meet the agreed full incremental costs of implementing the general commitments of the Convention, and assist those that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to address those effects.¹³³ The primary focus of the funding provisions, however, is on reporting

¹²⁴ UNFCCC art 4(2)(a) and (b).

¹²⁵ UNFCCC art 12(2).

¹²⁶ UNFCCC art 4(6).

¹²⁷ *Supra* n 113.

¹²⁸ *Ibid.*

¹²⁹ UNFCCC art 11(1).

¹³⁰ Bodansky, Brun e, & Rajamani (2017) 137.

¹³¹ *Ibid* at 138.

¹³² UNFCCC art 11(5).

¹³³ UNFCCC art 4(3).

and mitigation, with Annex II parties holding weaker obligations in respect of adaptation assistance.¹³⁴ Annex II parties are also required to take all practicable steps to promote, facilitate and finance+ the transfer of environmentally sound technologies to all other parties.¹³⁵

Although all parties to the Convention hold obligations, the limited commitments of non-Annex I parties are subject to their capacities to do so or are contingent upon their receipt of resources and funding from Annex II parties. The central, assistance and implementation obligations of the Convention record distinct differentiation between Annex I and non-Annex I parties, with only Annex I parties holding obligations. The special circumstances of certain States in their vulnerability to the effects of climate change is a matter of primary concern in climate change engagements and it is inextricably linked to CBDRRC.¹³⁶ In the UNFCCC least developed countries (LDCs) are afforded special consideration due to their limited capacity to respond and adapt to climate change and its effects.¹³⁷ Their situation is to be accounted for in parties actions relating to funding and transfer of technology.¹³⁸

3.3.2 Differentiation: The Kyoto Protocol

At the first meeting of the COP in 1995 in Berlin it was agreed that more stringent measures were necessary to meet the objective of the Convention.¹³⁹ To this end, the Berlin Mandate was adopted.¹⁴⁰ The Berlin Mandate, *inter alia*, sought to strengthen the commitments of Annex I parties through a protocol or new legal instrument with the aim of adopting these commitments at the third session of the COP in 1997 (when the Kyoto Protocol was adopted).¹⁴¹ Specific emphasis was placed on not placing any further commitments on developing countries and the leadership role held by developing countries in combating climate change and its adverse effects.^{142 143}

¹³⁴ Bodansky, Brun e, & Rajamani (2017) 138 - 139.

¹³⁵ UNFCCC art 4(5).

¹³⁶ 75 Int'l L. Ass'n Rep. Conf. (2012) 432 at 453.

¹³⁷ *Supra* n 113.

¹³⁸ UNFCCC art 4(9).

¹³⁹ Halvorssen (2005) 16 Colo. J. Int'l Envtl. L. & Pol'y 353 at 361.

¹⁴⁰ *Ibid.*

¹⁴¹ U.N. Doc. FCCC/CP/1995/7/Add.1, Decision 1/CP.1, preamble read with section III, para. 6.

¹⁴² *Ibid.*, section II, para. 2(b)

¹⁴³ *Supra* n 139.

Naturally, considering the emphasis on Annex I commitments, the Kyoto engagements held a narrower focus than those associated with the Convention or, as will become evident, even the Paris Agreement.¹⁴⁴ Although there is limited reference to CDRRC in the Kyoto Protocol, the stark differentiation associated with its commitments is generally attributed to CDRRC and, particularly, developed country leadership.¹⁴⁵ It focused only on Annex I emissions.¹⁴⁶ While all parties are required to maintain their general commitments as per the Convention ~~making~~ taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances¹⁴⁷, only Annex I parties are required to take greenhouse gas mitigation measures during designated commitment periods.¹⁴⁸ During the first commitment period, Annex I States were required to reduce their aggregate emissions by 5% below 1990 levels and now, as proposed in the second commitment period, by at least 18% below 1990 levels.¹⁴⁹ They are also required to implement a national system for the estimation of anthropogenic emissions of all emissions not controlled by the Montreal Protocol.¹⁵⁰

Mitigation and reduction targets are to be met primarily through national measures but as an additional motivation the Kyoto Protocol created the carbon market by introducing market based measures that encourage the pursuit of emissions limitations or reductions.¹⁵¹ The carbon market operates like a commodities exchange, where greenhouse gas pollution allowances (certified emissions reduction (CER) credits) are bought and sold.¹⁵² States pursuing their emissions reduction or limitation commitments earn CER credits for engagement in the carbon market.¹⁵³ These credits can be bought, in circumstances where further pollution allowances are necessary, or sold, when surplus credits are held.¹⁵⁴ Market based measures financially incentivise activities that meet or exceed emissions reduction targets, and disincentivise those

¹⁴⁴ Bodansky, Brun e, & Rajamani (2017) 160.

¹⁴⁵ *Ibid* at 166.

¹⁴⁶ *Supra* n 144.

¹⁴⁷ Kyoto Protocol art 10.

¹⁴⁸ Kyoto Protocol art 3 and Doha Amendment para C.

¹⁴⁹ Kyoto Protocol art 3(1) and Doha Amendment para C.

¹⁵⁰ Kyoto Protocol art 5(1).

¹⁵¹ http://unfccc.int/kyoto_protocol/mechanisms/items/1673.php (accessed 9 July 2017).

¹⁵² Halvorssen (2005) 16 *Colo. J. Int'l Envtl. L. & Pol'y* 353 at 363.

¹⁵³ *Supra* n 151.

¹⁵⁴ *Supra* n 152.

that do not, with the aim of guiding the behaviour towards lowering emissions.¹⁵⁵ This engagement is pursued through the Clean Development Mechanism (CDM), by investing in emissions reduction or removal projects in developing countries, or through Joint Implementation (JI), by investing in emissions reduction or removal projects in other developed countries.¹⁵⁶¹⁵⁷

The purpose of the CDM is to assist non-Annex I parties to achieve sustainable development and contribute towards the overall objective of the Convention as well as assist Annex I parties to achieve compliance with their emissions limitation and reduction commitments.¹⁵⁸ This is to be achieved by non-Annex I parties benefitting from environmentally sound projects within their countries and the use of the CER credits accruing from these projects by Annex I parties towards compliance with their emissions limitation and reduction commitments.¹⁵⁹ A share of the proceeds from these project activities is also used to assist developing countries that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation.¹⁶⁰ The benefits accruing to developing countries include climate change mitigating technology, new investments, and assistance with capacity-building.¹⁶¹

The financial obligations of the Annex II parties as a source of funding to the financial mechanism of the Convention remain.¹⁶² The financial obligations are, however, specifically extended to provide additional resources to assist developing countries in the development, updating, and publication of national inventories of greenhouse gases.¹⁶³ Emphasis is also placed on the need for financial resources and technology transfer to developing countries to meet their general commitments in terms of the Convention.¹⁶⁴

¹⁵⁵ ICAO (2013) Secretariat Overview . Market Based Measures.

¹⁵⁶ http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php (accessed 15 August 2017).

¹⁵⁷ http://unfccc.int/kyoto_protocol/mechanisms/joint_implementation/items/1674.php (accessed 15 August 2017).

¹⁵⁸ Kyoto Protocol art 12(2).

¹⁵⁹ Kyoto Protocol art 12(3).

¹⁶⁰ Kyoto Protocol art 12(8).

¹⁶¹ Halvorssen (2005) 16 *Colo. J. Int'l Envtl. L. & Pol'y* 353 at 355.

¹⁶² Kyoto Protocol art 11(2).

¹⁶³ Kyoto Protocol art 11(2)(a)

¹⁶⁴ Kyoto Protocol art 11(2)(b).

The reporting requirements of the Kyoto Protocol entail stringent annual reports submitted by Annex I parties to the secretariat to ensure compliance with their respective emissions obligations.¹⁶⁵ These reports are subject to expert review to assess the implementation of their respective commitments and to identify concerns in the fulfilment of these commitments.¹⁶⁶ It was further agreed that the first session of the Conference of the Parties serving as a meeting of the Parties to the Kyoto Protocol would approve measures to determine and address non-compliance issues relating to the Protocol.¹⁶⁷ The consequences of non-compliance include a penalty of 1.3 times the amount of excess emissions being deducted from the parties initial allocation and suspension from eligibility to participate in the carbon market.¹⁶⁸

3.3.3 Shifting Sands: The Annex I / non-Annex I Dichotomy

The differentiation techniques associated with the Convention and the Kyoto Protocol proved contentious, more so at Kyoto in relation to the central obligations.¹⁶⁹ Developed countries argue that the CBDRRC principle entails all countries being responsible for global environmental problems, just some more than others.¹⁷⁰ Recognising that all countries are responsible for climate change but not requiring emissions mitigation efforts by developing countries creates a double standard.¹⁷¹

During the Kyoto negotiations, developing countries refused to agree to emissions limitations until those responsible for the problem, developed countries, had substantially reduced theirs.¹⁷² Developing countries even fervently opposed any language that would call on voluntary emissions limitations by them.¹⁷³ The United States opposition was, however, equally ardent. In 1997, the United States Senate adopted the Byrd-Hagel Resolution that entailed the United States not being a signatory to any protocol or other agreement that did not have specific scheduled commitments to limit or reduce greenhouse gas emissions for developing

¹⁶⁵ Kyoto Protocol art 7(1) read with 7(3).

¹⁶⁶ Kyoto Protocol art 8(1) . (3).

¹⁶⁷ Kyoto Protocol art 18.

¹⁶⁸ U.N. Doc. FCCC/KP/CMP/2005/3/Add.3, Decision 27/CMP.1, section XV, para. 5(a) . (c).

¹⁶⁹ Rajamani (2013) 14 Theoretical Inq. L. 151 at 155.

¹⁷⁰ Harris (1999) 7 N.Y.U Env'tl. L.J. 27 at 30 . 32.

¹⁷¹ *Ibid* at 32.

¹⁷² *Ibid* at 33 . 34.

¹⁷³ *Ibid* at 34. See also Bodansky, Brun e, & Rajamani (2017) at 166.

countries¹⁷⁴.¹⁷⁵ One of the major arguments in favour of such action was the future development of affluent developing countries to the extent that they become unrestricted, significant greenhouse gas emitters.¹⁷⁶ According to Harris, the Byrd-Hagel resolution was not to be seen as a rejection of CDRRC but rather an interpretation that included common responsibility of developing countries and a call for their participation to the extent of their industrialisation.¹⁷⁷

From a contemporary perspective, the annex-based interpretation of CDRRC reflects an imbalance between competing interests, 'common responsibility' versus 'differentiated responsibility'.¹⁷⁸ Lee describes CDRRC through the use of a pendulum, with 'common responsibility' at one end and 'differentiated responsibility' at the other.¹⁷⁹ Because of the binary, annex-based methodology used in distinguishing between countries, responsibility is applied at the extreme conclusion of 'differentiated responsibility' with some parties having responsibilities and others having none.¹⁸⁰ The pendulum sits to the one side and does not account for States' 'common responsibilities'.¹⁸¹ If 'common responsibility' was applied at its extreme conclusion, it would require the allocation of equal obligations to all parties.¹⁸² While the fairness concerns of the extreme conclusion of 'common responsibility' are clear, the result associated with the binary differentiation in responsibility is the subsequent emergence of sizeable, developing economies that are among the largest global greenhouse gas polluters but remain without emissions reduction obligations.¹⁸³ Review of China's greenhouse gas emissions alone, using 2012 emissions statistics, reveal that its total aggregate greenhouse gas emissions have grown almost three-fold since 1994 and is the equivalent of 67.7% of the aggregate greenhouse gas emissions of all Annex I parties combined.¹⁸⁴ In practical terms, the net result heads toward a zero sum with

¹⁷⁴ Harris (1999) 7 N.Y.U. Envtl. L.J. 27 at 36.

¹⁷⁵ *Ibid.*

¹⁷⁶ *Ibid.* at 38.

¹⁷⁷ *Ibid.* at 42.

¹⁷⁸ Lee (2015) 17 Vt. J. Envtl. L. 27 at 31.

¹⁷⁹ *Ibid.*

¹⁸⁰ *Ibid.*

¹⁸¹ *Ibid.*

¹⁸² *Ibid.*

¹⁸³ *Ibid.* at 30.

¹⁸⁴ Greenhouse Gas Inventory Data . Detailed data by Party accessed at http://di.unfccc.int/detailed_data_by_party (20 July 2018). The comparison is done using China's emissions data (excluding LULUCF/LUCF) indicating 4,057,617.00 Gg CO₂ emissions in 2004, versus 11,895,765.00 Gg CO₂ emissions in 2012, versus 17,560,751.74 kt CO₂ emissions by Annex I parties

the obligatory emissions reductions of developed countries offset by the unregulated emissions of developing countries.¹⁸⁵ The conclusion is that effective implementation of CDRRC requires a balanced interpretation, accounting for differentiated responsibilities but recognising that it is in the best interests of all States to address a global problem, to which they have all contributed, with a global solution.¹⁸⁶

3.3.4 Post-Kyoto and the COP

Post-Kyoto climate change engagements through the COP have seen a shift in the interpretation and understanding of CDRRC, moving away from the binary interpretation towards a more inclusive approach. In the Bali Action Plan,¹⁸⁷ adopted in 2007, parties decided to launch a comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action up to and beyond 2012, in order to reach an agreed outcome and adopt a decision at its fifteenth session.¹⁸⁸ It called on both developed and developing country parties to consider nationally appropriate mitigation actions (NAMAs).¹⁸⁹ The differentiation between the parties is to be found in developed countries being required to implement measurable, reportable and verifiable mitigation commitments while developing countries were to frame their mitigation actions within the context of sustainable development.¹⁹⁰¹⁹¹ The Bali Action Plan therefore erodes the previous stark differentiation and has been viewed as a means to closing the central obligations gap.¹⁹²

The fifteenth COP, the deadline for the Bali Action Plan's agreed outcome, attracted immense attention in Copenhagen in 2009 but parties could not arrive at an agreed outcome.¹⁹³ A subset of the parties produced an agreement, titled The Copenhagen

in 2012.

¹⁸⁵ Lee (2015) 17 Vt. J Envtl. L. 27 at 30.

¹⁸⁶ *Ibid* at 32.

¹⁸⁷ U.N. Doc. FCCC/CP/2007/6/Add.1 (hereinafter Bali Action Plan)

¹⁸⁸ Bali Action Plan art 1.

¹⁸⁹ Bali Action Plan art 1(b)(i) . (ii).

¹⁹⁰ Bali Action Plan art 1(b)(i) . (ii).

¹⁹¹ Lee (2015) 17 Vt. J Envtl. L. 27 at 35.

¹⁹² Rajamani (2013) 14 Theoretical Inq. L. 151 at 156 . 159.

¹⁹³ *Ibid* at 159.

Accord¹⁹⁴, that facilitates voluntary emissions reduction pledges and permits self-selection of mitigation targets and actions, namely NAMAs.¹⁹⁵ Developed countries committed to emissions reduction targets while developing countries committed to undertake mitigation actions and the participation of LDCs and SIDS was contingent upon their receipt of funding.¹⁹⁶¹⁹⁷ The significance of developing countries making voluntary pledges suggests a shift in the interpretation of CBDRRC, even by developing countries.¹⁹⁸ Rajamani, however, criticises the self-selection of mitigation efforts by all parties as having fundamentally changed the differentiation regime, providing differentiation for all instead of differentiation in favour of developing countries and increasingly bring into question the relevance of differentiation.¹⁹⁹

The Copenhagen Accord went further than including developing countries in emissions mitigation efforts, the associated measuring, reporting, and verifying (MRV) requirements were also the subject of CBDRRC themed debate.²⁰⁰ It is a more nuanced argument in respect of the need for differentiation, by comparison with the central and assistance obligations, but it is intimately tied to accountability within the climate change regime.²⁰¹ Developed countries, seeking independent verification of developing country mitigation efforts, sought international MRV while developing countries sought domestic MRV that would be shared with the conference of the parties.²⁰² For developing countries, agreement to be included in NAMAs is already a considerable concession.²⁰³ To take this a step further and provide formal MRV requirements would represent a further step toward developing country responsibility to act.²⁰⁴ Supporters of the international MRV argued that it would merely ensure that emissions mitigation and reductions are verifiable.²⁰⁵

¹⁹⁴ U.N. Doc. FCCC/CP/2009/11/Add.1 at 5 - 9 (hereinafter ~~the~~ the Copenhagen Accord).

¹⁹⁵ Lee (2015) 17 Vt. J. Envtl. L. 27 at 35.

¹⁹⁶ Bushey *et al* (2010) 6 Publicist 1 at 5.

¹⁹⁷ Copenhagen Accord Articles 4 - 5.

¹⁹⁸ Lee (2015) 17 Vt. J. Envtl. L. 27 at 36.

¹⁹⁹ Rajamani (2013) 14 Theoretical Inq. L. 151 at 160.

²⁰⁰ Bushey *et al* (2010) 6 Publicist 1 at 6.

²⁰¹ *Ibid.*

²⁰² *Ibid.*

²⁰³ *Ibid.*

²⁰⁴ *Ibid.*

²⁰⁵ *Ibid.*

The solution was found in a compromise entailing a two-tiered MRV.²⁰⁶ The first tier is an international MRV for NAMAs supported by international finance and the second tier is a domestic MRV for domestically funded NAMAs.²⁰⁷ The domestic MRV, however, includes international consultations and analysis.^{208, 209} The net result for developing countries under the Accord is that they will be obliged to account in terms of the international MRV where their climate change efforts are supported by international finance.²¹⁰ There is then differentiation, even among developing countries, as those that make use of international finance in their mitigation actions will be subject to higher levels of scrutiny than those that are domestically funded.²¹¹

The compromise provides an opt out mechanism from the regimes emissions accounting system for developing countries and ensures that there can be no direct comparison between the mitigation and reduction efforts of developed and developing countries.²¹² This then reinforces the developing world's argument that the parties' responsibility to act is fundamentally different.²¹³ Given the intimate link between accounting and the central obligations, an accounting system that enables direct comparison between developed and developing parties' mitigation and reduction actions is a step toward blurred lines of differentiation and could result in quantified central obligations for developing countries.²¹⁴ The Copenhagen Accord illustrates an important step in shaping CBDRRC, although developing countries are able to avoid the international MRV, internationally funded mitigation projects will be accounted for in the international MRV and the domestic MRV still requires international consultation and analysis.^{215, 216}

The Copenhagen Accord also represented a significant shift in assistive climate finance for developing countries by replacing *ad hoc* commitments of finance with a

²⁰⁶ *Ibid.*

²⁰⁷ Bushey *et al* (2010) 6 Publicist at 7.

²⁰⁸ Copenhagen Accord, 5.

²⁰⁹ *Supra* n 200.

²¹⁰ *Supra* n 207.

²¹¹ *Ibid.*

²¹² *Ibid.*

²¹³ *Ibid.*

²¹⁴ *Ibid.*

²¹⁵ Copenhagen Accord 5.

²¹⁶ *Supra* n 207.

centralised goal that represents a concrete, quantified commitment to pay on the part of developed countries^{217, 218}. In so doing, developed countries demonstrate their leadership role in taking responsibility to act by providing funding goals for new and additional resources to be provided to developing countries (relating to mitigation, adaptation, capacity building, technology development and transfer)²¹⁹ while adaptation funding was prioritised for the most vulnerable developing countries i.e LDCs, SIDS and Africa.^{220 221} Developed countries committed, collectively, to a goal of mobilising USD 30 billion for the period 2010 to 2012 and USD 100 billion by 2020.²²² To this end, funding is to be received from various public, private and international sources that would flow through the Copenhagen Green Climate Fund, an operating entity of the financial mechanism established by the Accord.²²³ Although the Copenhagen Accord is not considered to have legal authority in the UNFCCC processes, it is an influential document with 141²²⁴ parties having expressed their intention to be listed as agreeing to the Accord.²²⁵

At the sixteenth Conference of the Parties in 2010, the Cancun Agreements were adopted.²²⁶ The Cancun Agreements are, in essence, the formal adoption of the Copenhagen negotiation under the Convention's processes.²²⁷ The Cancun Agreement also established the Technology Mechanism to further facilitate the enhancement of climate technology development and transfer to developing countries.²²⁸ A brief history in this regard is necessary. At the seventh session of the Conference of the Parties in 2001, the Parties reached agreement on a technology transfer framework.²²⁹ The Expert Group on Technology Transfer (EGTT) was established to enhance the implementation of Annex II party obligations in promoting,

²¹⁷ Bushey *et al* (2010) 6 Publicist 1 at 8.

²¹⁸ *Ibid.*

²¹⁹ Copenhagen Accord 8 read with 10.

²²⁰ Copenhagen Accord 8.

²²¹ *Supra* n 217.

²²² *Supra* n 220.

²²³ *Supra* n 219.

²²⁴ <https://unfccc.int/process/conferences/pastconferences/copenhagen-climate-change-conference-december-2009/statements-and-resources/information-provided-by-parties-to-the-convention-relating-to-the-copenhagen-accord> (accessed 22 June 2018).

²²⁵ Rajamani (2013) 14 Theoretical Inq. L. 151 at 159.

²²⁶ U.N Doc FCCC/CP/2010/7/Add.1 (Hereinafter the 'Cancun Agreements').

²²⁷ Lee (2015) 17 Vt. J Envtl. L. 27 at 36

²²⁸ Cancun Agreements art 117 read with 124.

²²⁹ U.N Doc. FCCC/CP/2001/13/Add.1, Decision 4/CP.7.

facilitating and financing, and transferring technology and know-how between the parties, and particularly to developing country parties.²³⁰ The EGTT was funded by the financial mechanism of the Convention²³¹ and focused on the implementation of the technology transfer framework under key themes, namely, technology needs and needs assessments, technology information, enabling environments, capacity building (particularly in developing countries) and mechanisms for technology transfer.²³² The Cancun Agreement terminated the mandate of the EGTT and established the Technology Mechanism.²³³ The Technology Mechanism's policy body is the Technology Executive Committee (TEC) and its implementation body is the Climate Technology Centre and Network (CTCN).²³⁴ At the request of a developing country party, the CTCN provides technical advice and support and facilitates the deployment of technology.²³⁵ The functions of the TEC and CTCN support developing country efforts to address policy and implementation aspects of climate technology development and transfer.²³⁶

In 2011, the COP launched the Durban Platform for Enhanced Action.²³⁷ After noting the significant contrast between mitigation pledges by parties and mitigation measures necessary to meet the goals of the UNFCCC, the Durban Platform aimed to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties.^{238, 239} What was discernible from the Durban Platform was the likely fundamental departure from the interpretation of differentiation in the future regime.²⁴⁰ Developed countries were insistent that reference to CBDRRC ought to be interpreted in light of contemporary economic realities and that the future regime must be applicable to all.²⁴¹ Developing countries argued that this would be tantamount to an amendment of the Convention.²⁴² Resolution to this impasse was

²³⁰ Decision 4/CP.7, 2 read with Article 4(5) of the Convention.

²³¹ Decision 4/CP.7, 3.

²³² https://unfccc.int/resource/docs/publications/egtt_eng.pdf (accessed 15 July 2018)

²³³ Cancun Agreement art 117 read with 124.

²³⁴ <http://unfccc.int/ttclear/support/technology-mechanism.html> (accessed 5 July 2018).

²³⁵ *Ibid.*

²³⁶ *Ibid.*

²³⁷ U.N. Doc. FCCC/CP/2011/9/Add.1 (hereinafter the 'Durban Platform').

²³⁸ Durban Platform art 2.

²³⁹ Durban Platform preamble and art 2.

²⁴⁰ Rajamani (2013) 14 *Theoretical Inq. L.* 151 at 164.

²⁴¹ *Ibid.* See also Rajamani (2015-2016) 109 *AJIL Unbound* 142 at 144.

²⁴² *Ibid.*

found in drafting the text with reference to the Convention, thereby engaging its principles, but the absence of reference to equity and CBDRRC appeared to indicate a shift in the differentiation paradigm post 2020.²⁴³ Nonetheless, at the 2012 meeting of the Conference of the Parties in Doha, where a timetable for the adoption of a universal agreement by 2015 was agreed, particular emphasis was placed on CBDRRC in the shared vision for the Paris Agreement.²⁴⁴

3.3.5 Paris Agreement

The Paris Agreement aims to keep the increase in global average temperatures to well below two degrees Celsius above pre-industrial levels.²⁴⁵ It is guided by, and places emphasis on the implementation of, CBDRRC to reflect equity and common but differentiated responsibilities and respective capabilities in the light of national circumstances²⁴⁶ while pursuing the objective of the Convention.²⁴⁷ The additional qualification of in light of national circumstances is continued throughout.²⁴⁸ It represents the introduction of a dynamic element to CBDRRC i.e as national circumstances change, so too will the common but differentiated responsibilities.²⁴⁹ The preamble provides specific recognition of the specific needs and circumstances of developing countries, especially the most vulnerable and LDCs in relation to funding and technology transfer.²⁵⁰

Emphasising equity in relation to CBDRRC has a natural limiting effect on its interpretation, away from that seen in the Kyoto Protocol.²⁵¹ Intergenerational equity entails an interpretation of CBDRRC that requires preservation of the planet in a habitable state between all generations.²⁵² Although developed countries should be burdened with greater commitments, developing countries should commit to efforts

²⁴³ Rajamani (2013) 14 Theoretical Inq. L. 151 at 165.

²⁴⁴ Lee (2015) 17 Vt. J Envtl. L. 27 at 37.

²⁴⁵ Paris Agreement art 2(1)(a).

²⁴⁶ Paris Agreement art 2(2).

²⁴⁷ Paris Agreement preamble.

²⁴⁸ Paris Agreement preamble and art 2(2), 4(3) and 4(19).

²⁴⁹ Rajamani (2015-2016) 109 AJIL Unbound 142 at 144.

²⁵⁰ Bodle *et al* (2016) 2016 CCLR 5 at 19. See also: Paris Agreement, Preamble.

²⁵¹ Lee (2015) 17 Vt. J Envtl. L. 27 at 50.

²⁵² *Ibid* at 42.

that will at least not offset progress made by developed countries.²⁵³ This is reinforced by the precautionary principle.²⁵⁴ It intersects with intergenerational equity by requiring the prevention of irreversible damage to the environment, thereby preserving it for future generations.²⁵⁵ The same is to be said for an interpretation in light of sustainable development, although poor developing countries may continue to prioritise their development towards poverty eradication it must be done sustainably to ensure that the planet is still habitable for future generations.²⁵⁶ Intragenerational equity is significant in the climate change sphere since the countries that contributed the least to climate change are likely to be the most impacted by it.²⁵⁷ While these principles feature in the Convention, they are formulated differently in the Paris Agreement.²⁵⁸ While there is general consensus that developing countries should receive special treatment and bear the least responsibility, their predicament should not be cause for benefit to large developing States simply because they have been classed together as *developing*.²⁵⁹

Replacing the binary distinction between developed and developing countries, the Paris Agreement requires all parties to take action towards achieving its purpose.²⁶⁰ Differentiation occurs through *self-differentiation* with a commitment by all countries to develop and implement *nationally determined contributions* (NDCs) towards their climate change efforts.²⁶¹ The NDCs are to be communicated to the COP every five years and each party's successive NDC will be a progression on its, at the time, current NDC to reflect its highest possible ambition and reflecting its CBDRRCs in the light of national circumstances.²⁶² The progressive increase in commitments is tempered with an acknowledgment that developing countries will need support to effectively implement their commitments.²⁶³ Although the annex-based reference to *developed* and *developing* countries is not present in the Paris Agreement, the Annexes will

²⁵³ Lee (2015) 17 Vt. J Envtl. L. 27 at 42.

²⁵⁴ *Ibid* at 45.

²⁵⁵ *Ibid*.

²⁵⁶ Lee (2015) 17 Vt. J Envtl. L. 27 at 46.

²⁵⁷ *Ibid* at 43.

²⁵⁸ Bodansky, Brun e, & Rajamani (2017) 221.

²⁵⁹ Lee (2015) 17 Vt. J Envtl. L. 27 at 44.

²⁶⁰ Paris Agreement art 3 and 4(2).

²⁶¹ Bodansky, Brun e, & Rajamani (2017) 223.

²⁶² Paris Agreement art 4(3) read with 4(9).

²⁶³ Paris Agreement art 3.

remain an important point of reference for interpretation as the terms 'developed countries' and 'developing countries' are used without being defined.²⁶⁴ Developed countries are required to take the lead by undertaking economy-wide absolute emission reduction targets, while developing countries are encouraged to continue enhancing their mitigation efforts, working towards economy-wide absolute emission reduction targets.²⁶⁵ LDCs and Small Island Developing States (SIDS) are not required to develop NDCs for their low greenhouse gas emissions development, but they may do so reflecting their special circumstances.²⁶⁶ While the Paris Agreement implements CBDRRC through the use of self-differentiation, thereby treating States equally, it sets expectations for the types of actions developed and developing countries should take and recognises the need for support and flexibility by developing countries.²⁶⁷

Monitoring, reporting and verification is to be performed through the enhanced transparency framework (ETF) established in the Paris Agreement.²⁶⁸ The MRV provisions are premised on State capacities, not their categorisation as either developed or developing.²⁶⁹ With States holding differentiated mitigation obligations, differentiation in MRV is found in the associated reporting.²⁷⁰ All parties are to report regularly on national emissions inventories, provide information needed to track their implementation progress, and information related to climate change impacts and adaptation.²⁷¹ Developed countries are required to report on support given to developing countries while developing countries are to report on support received.²⁷² The information reported will be the subject of expert review to determine compliance with the Paris Agreement and to identify the assistance needs of developing countries in capacity building.²⁷³ The ETF is to provide flexibility to developing countries in implementing its provisions in light of their capacities.²⁷⁴ To this end support is to be

²⁶⁴ Bodle *et al* (2016) 2016 CCLR 5 at 19.

²⁶⁵ Paris Agreement art 4(4).

²⁶⁶ Paris Agreement art 4(6).

²⁶⁷ Bodansky, Brun e, & Rajamani (2017) 224.

²⁶⁸ Paris Agreement art 13(1).

²⁶⁹ *Supra* n 267.

²⁷⁰ Bodansky, Brun e, & Rajamani (2017) 225.

²⁷¹ Paris Agreement art 13(1) read with 13(7) and 13(8).

²⁷² Paris Agreement art 13(9) and 13(10)

²⁷³ Paris Agreement art 13(11) and 13(12).

²⁷⁴ Paris Agreement art 13(2).

provided by developed countries to developing countries to implement their reporting commitments.²⁷⁵ For compliance purposes, the Paris Agreement established a compliance mechanism.²⁷⁶ It will be an expert-based committee that is functioning will be transparent, non-adversarial and non-punitive²⁷⁷, and the committee is required to pay particular attention to the respective national capabilities and circumstances of the parties.^{278, 279} The previous softer approach to non-compliance appears to have been retained although there is no specific reference to developed or developing countries.²⁸⁰

The financial assistance obligations of the Paris agreement are similar to those found in the Convention and the financial mechanism has been retained.²⁸¹ The assistance obligations remain the preserve of developed countries, although donor funding has been expanded to include the encouragement of voluntary support from other parties²⁸², presumably developing countries.²⁸³ Developed countries succeeded in excluding a quantitative value being assigned to their financial assistance commitments in the Paris Agreement but the accompanying COP decision continues their commitment to provide USD100 billion annually by 2020 and increase this amount after 2025.²⁸⁴ Developed countries also maintain their leadership role in mobilising climate finance.²⁸⁵

The technology provisions of the Paris Agreement apply to all parties but with support (including financial support) provided to developing countries.²⁸⁶ The use of the technology mechanism of the Convention is maintained and a technology framework is established to provide guidance in facilitating enhanced technology development and transfer.²⁸⁷ All parties are required to co-operate to enhance the capacity of

²⁷⁵ Paris Agreement art 13(14) and 13(15).

²⁷⁶ Paris Agreement art 15(1).

²⁷⁷ Paris Agreement art 15(2).

²⁷⁸ *Ibid.*

²⁷⁹ Paris Agreement, Article 15

²⁸⁰ Bodle *et al* (2016) 2016 CCLR 5 at 19.

²⁸¹ Bodansky, Brun e, & Rajamani (2017) 225.

²⁸² Paris Agreement art 9(2).

²⁸³ Bodansky, Brun e, & Rajamani (2017) 226. See also: Paris Agreement, Article 9.

²⁸⁴ *Ibid* at 241.

²⁸⁵ Bodle *et al* (2016) 2016 CCLR 5 at 19. See also: Paris Agreement, Article 9(3).

²⁸⁶ *Ibid.* See also: Paris Agreement art 10.

²⁸⁷ Paris Agreement art 10(3) . 10(4).

developing countries to implement adaptation and mitigation actions, however, developed countries are required to enhance their support for capacity building action in developing countries through appropriate institutional arrangements.^{288, 289} To contribute to the mitigation of greenhouse gases and support sustainable development,²⁹⁰ the Paris Agreement creates a sustainable development mechanism (SDM).²⁹¹ The goal of the SDM is to provide a post-Kyoto CDM.²⁹² As with CDM, a share of the proceeds from these project activities will assist particularly vulnerable developing countries in meeting the costs of adaptation.²⁹³ There is also a strong focus on adaptation, the goal of which is to enhance adaptive capacity, strengthening resilience and reducing vulnerability to climate change.²⁹⁴ Support for such activities in developing countries is to come from developed countries.^{295, 296}

Although the Convention prescribed general obligations to all parties, the Paris Agreement is a watershed agreement in differentiation between developed and developing countries.²⁹⁷ All parties now hold obligations in order to achieve the goals of the Paris Agreement and of the Convention. As is evident, a central theme to the obligations of developing countries is the provision of assistance to them in order to meet these obligations.

3.4 Conclusion

CBDRRC is a consistent guiding principle of the climate change regime across more than twenty years of development. It is its interpretation and, therefore, implementation that has seen significant change in this time. When the issue of emissions reduction and mitigation from international civil aviation was first referred to ICAO, CBDRRC represented a dichotomy between developed and developing countries. Developed countries were tasked with the full brunt of emissions reduction and mitigation efforts

²⁸⁸ Paris Agreement art 11(5).

²⁸⁹ Paris Agreement art 11(1) read with art 11(3) and 11(5).

²⁹⁰ Paris Agreement art 6(4).

²⁹¹ Okonkwo (2017) 21 Kor. U. L Rev. 21 at 32.

²⁹² *Ibid.*

²⁹³ Paris Agreement art 6(6).

²⁹⁴ Paris Agreement art 7(1).

²⁹⁵ Paris Agreement art 9(1).

²⁹⁶ Okonkwo (2017) 21 Kor. U. L Rev. 21 at 34.

²⁹⁷ Bodle *et al* (2016) 2016 CCLR 5 at 19.

while developing countries held limited obligations, none of which included reduction and mitigation measures. With changing national circumstances, and the realisation that to meet the objective of the Convention and address climate change will require a global effort, has come the change in CDBRRC.

The contemporary central obligations of States now require participation by all, except LDCs and SIDS, reflecting their highest possible ambition, tempered by their national circumstances. Developed countries take the lead by undertaking large scale emissions reductions and developing countries continue to enhance their efforts, the levels of participation are, however, nationally determined. While developing countries are not necessarily required to provide immediate reductions in their emissions, they are required to ensure that steps are taken to develop sustainably, and their commitments will increase over time.

Participation by all includes reporting by all to track implementation and identify non-compliance concerns with specific emphasis on flexibility to developing countries and their assistance needs. Central to developing country participation is the acknowledgment that they will require assistance, both financial and technological, to build capacity and meet their commitments, and undertakings by developed countries to provide and facilitate this assistance. LDCs and SIDS remain particularly vulnerable to the threat posed by climate change and their special circumstances remain acknowledged throughout the regime. They are not required to provide mitigation or reduction commitments and hold an elevated status in the provision of assistance. This is the interpretation of CDBRRC will be used in assessing the measures introduced by ICAO to combat climate change.

4. ICAO AND THE ENVIRONMENT

4.1 Synopsis

This chapter will introduce the difficulties associated with implementing CDDRRC in international civil aviation to contextualise the methods used in its implementation. The further discussion will focus on CORSIA and the differentiation techniques used. This will serve as the basis for the assessment of the implementation of CDDRRC. It will argue that the CORSIA effectively implements CDDRRC in accordance with the contemporary interpretation of CDDRRC found in the climate change regime.

4.2 Introduction

The primary function of the international civil aviation regime is to facilitate traffic growth in an orderly manner.²⁹⁸ The Chicago Convention records agreement to *“certain principles and arrangements”*²⁹⁹ for the further development of international civil aviation and to the creation of ICAO with its core mandate being *“to achieve the highest possible degree of uniformity in civil aviation regulations, standards, procedures, and organisation”*³⁰⁰.³⁰¹ ICAO is not an environmental organisation and the direct interests of the organisations main stakeholders are not directly associated with environmental protection.³⁰²

Neither the principles underlying the Chicago Convention nor the ICAO mandate in terms of the Convention expressly address environmental protection.³⁰³ ICAO does not have direct regulatory authority in the greenhouse gas emissions context and, yet, has introduced emissions standards and multiple Assembly Resolutions that address environmental protection.³⁰⁴ The environmental protection measures by ICAO have been undertaken under article 44(d) of the Chicago Convention which records the

²⁹⁸ Macintosh (2008) The Australian National University Centre for Climate Policy CCLP Working Paper Series 2008/2 at 5.

²⁹⁹ Chicago Convention preamble.

³⁰⁰ <https://www.icao.int/about-icao/History/Pages/default.aspx> (accessed 18 June 2017).

³⁰¹ *Ibid.*

³⁰² Oberthur (2003) 3 Climate Policy 191 at 194.

³⁰³ Chicago Convention preamble and art 44.

³⁰⁴ Havel & Sanchez (2012) 36 Harv. Envtl. L. Rev. 351 at 358.

objective of developing international air transport so as to meet the needs of the peoples of the world for safe, regular, efficient, and economical air transport.³⁰⁵ ³⁰⁶ Where ICAO has exercised regulatory authority regarding environmental concerns, its regulatory competence has been accepted by ICAO members, supported by the climate change regime, and is beyond dispute.³⁰⁷ More critically, it is the design and structure of the international aviation regime as a facilitator of growth for the industry and not the accommodation of environmental concerns that has placed strain on its ability to readily deliver results in the climate change arena.³⁰⁸

The 39th meeting of the Assembly in 2016 introduced the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) through Assembly Resolution A39-3.³⁰⁹ The Council will oversee the functioning of the CORSIA.³¹⁰ Its purpose is to address the annual increase of total carbon dioxide emissions in international civil aviation above 2020 levels.³¹¹ It entails emitters compensating for these emissions through investment in emissions reductions projects elsewhere (carbon offsetting), similar to the CDM established under the Kyoto Protocol.³¹² Carbon offsetting, from an international civil aviation perspective, entails compensating for the emissions associated with international civil aviation by reducing emissions elsewhere.³¹³ The rationale for offsetting flows from climate change being a global issue and, therefore, carbon reduction projects may occur anywhere in the world.³¹⁴ It is a convenient mechanism to use when a sector, such as aviation, is not able to achieve significant immediate emissions reductions.³¹⁵ The rapid growth of the international civil aviation sector is critical to the projected increase in size of its carbon footprint and the difficulty in pursuing mechanisms that do not entail offsetting.³¹⁶ Participants of the scheme will purchase emissions credits from outside of the aviation sector, generated from mechanisms under the UNFCCC and Paris Agreement, and use these credits to offset

³⁰⁵ Chicago Convention art 44(d).

³⁰⁶ Oberthur (2003) 3 Climate Policy 191 at 195.

³⁰⁷ *Ibid.*

³⁰⁸ Macintosh, *supra* n 298, at 7.

³⁰⁹ A39-3.

³¹⁰ A39-3(20)(i).

³¹¹ A39-3(5).

³¹² ICAO (2016) Environmental Report: On Board A Sustainable Future at 146.

³¹³ ICAO (2007) Environmental Report at 164.

³¹⁴ *Ibid.*

³¹⁵ *Supra* n 312.

³¹⁶ Avila *et al* (2016) CCLR 134 at 134 - 135.

their emissions that are above those generated in the base year, subject to certain eligibility criteria to avoid issues such as double counting.³¹⁷

To fully appreciate the CORSIA and its implementation of CDRRC, it is necessary to contextualise the difficulty associated with CDRRC and the international civil aviation regime. This will form the point of departure for this chapter before introducing CORSIA and the assessment of the implementation of CDRRC.

4.3 The Chicago Convention and CDRRC: Addressing Differentiation Within a Framework Requiring Equality

CDRRC was included as a guiding principle in the design and implementation of ICAO's proposed market based measures.³¹⁸ Its implementation was envisaged through *de minimis* exemptions from, or phased implementation for, the application of an MBM to particular routes or markets with low levels of international aviation activity, particularly those serving developed States.^{319, 320} It was further evidenced though the recommendation to apply revenues generated to, among others, providing support and assistance to developing States.^{321, 322} 48 member States entered reservations against CDRRC as a guiding principle.³²³ Australia did not support a distinction between developed and developing States.³²⁴ Canada held the view that the principle is incompatible with the international civil aviation regime.³²⁵ The European Union argued against the application of the principle because it would result in market distortions by distinguishing between carriers of different States.³²⁶ And the

³¹⁷ A39-3(21).

³¹⁸ A38-18 Annex.

³¹⁹ A38-18 (21)

³²⁰ Romera *et al* (2015) 27 OJEL 259 at 279.

³²¹ A38-18(24) read with Annex par (n).

³²² *Supra* n 320.

³²³ Summary Listing of Reservation to Resolution A38-18.

³²⁴ The Australian Representative on the Council of the International Civil Aviation Organization *Reservation by Australia to Resolution A38/17/2 on international aviation and climate change*.

³²⁵ Permanent Mission of Canada to the International Civil Aviation Organisation *Statement of Canada's Reservations regarding the 38th International Civil Aviation Organization General Assembly Resolution: Consolidated Statement of Continuing ICAO Policies and Practices Related to Environmental Protection – Climate Change*.

³²⁶ *Written Statement of Reservation by Lithuania on behalf of the Member States of the European Union and 141 other Member States of the European Civil Aviation Conference (ECAC) with regard to ICAO Assembly Resolution A38-18*.

United States and Korea did not support the application of CBDRRC within the international civil aviation regime at all.^{327 328}

The challenge for international aviation emissions regulation is providing differential treatment between developed and developing States in a sector characterised by equality in treatment that has expressly agreed to avoid discrimination between States.³²⁹ The preamble to the Chicago Convention refers to the establishment of international air services on the basis of equality of opportunity.³³⁰ The Convention also specifically addresses ICAO's obligations to ensure that every contracting State has a fair opportunity to operate international airlines³³¹ and to avoid discrimination between contracting States³³². The difficulty for ICAO can be seen in Assembly Resolutions consistently recording acknowledgement of CBDRRC and the leadership role of developed countries and immediately thereafter acknowledging the principles of non-discrimination and equal and fair opportunities to develop international aviation set forth in the Chicago Convention.^{333 334 335}

There are, however, methods of designing the law to provide *prima facie* equal treatment while providing differentiation. This is best illustrated using the distinctions between legal norms hypothesised by Magraw.³³⁶ Magraw distinguishes between three types of international norms, namely differential, contextual, and absolute norms.³³⁷ Differential norms are those that directly differentiate between developed and developing States, most likely providing more favourable treatment to the latter.³³⁸ Contextual norms, at face value, provide identical treatment to all States but consider

³²⁷ United States Mission to the International Civil Aviation Organization *Statement of the United States of America regarding the 38th International Civil Aviation Organization General Assembly Resolution: Consolidated Statement of Continuing ICAO Policies and Practices Related to Environmental Protection – Climate Change*.

³²⁸ Permanent Mission of the Republic of Korea to the International Civil Aviation Organization *Statement of Reservation of the Republic of Korea Regarding Resolution A38-17/2: Consolidated Statement of Continuing ICAO Policies and Practices Related to Environmental Protection – Climate Change*.

³²⁹ Romera *et al* (2015) 27 OJEL 259 at 259.

³³⁰ Chicago Convention preamble.

³³¹ Chicago Convention art 44(f).

³³² Chicago Convention art 44(g).

³³³ A38-18 preamble.

³³⁴ *Ibid*.

³³⁵ Romera *et al* (2015) 27 OJEL 259 at 272.

³³⁶ *Ibid* at 267.

³³⁷ Magraw (1990) 1 Colo. J. Int'l Envtl. L. & Pol'y 69 at 73 - 76.

³³⁸ *Ibid* at 73 and 98.

characteristics that will vary according to a State's economic development.³³⁹ And absolute norms do not provide any differentiation between States.³⁴⁰ Using contextual norms to provide differentiation will, therefore, maintain the requisite equality between States. The implementation of CDBRRC in accordance with contextual norms will become more apparent in the discussion and assessment of CORSIA to follow.

4.4 The CORSIA

It was widely accepted that there should be differentiation between States in their participation in the early phases of CORSIA.³⁴¹ There was, however, no agreement on the determination of the initial participants.³⁴² Negotiators were faced with several suggestions i.e that it should be premised on levels of international aviation activity (expressed in %Revenue Tonne Kilometres+or RTKs); that it should be a combination of RTKS and gross national income per capita, and a proposal that developed countries should go first.³⁴³ Notably, the latter option was rejected on the foundation that several developing States have high international aviation activity and the Paris Agreement having moved beyond the dichotomy of the Kyoto Protocol.³⁴⁴ Ultimately, agreement was found using an opt-in approach.³⁴⁵

CORSIA will be implemented in a phased approach, in order to %accommodate the special circumstances and respective capabilities of States, in particular developing States+³⁴⁶ The pilot phase, applicable from 2021 to 2023, and the first phase, applicable from 2024 to 2026, are voluntary with slight changes between the offsetting requirements in each phase.³⁴⁷ There was general agreement that all States would participate in CORSIA after the pilot phase and first phase except those that ought to be exempt.³⁴⁸ The second phase, applicable from 2027 to 2035, requires the participation of all States whose Revenue Tonne Kilometres (RTKs) exceed 0.5% of

³³⁹ Magraw (1990) 1 Colo. J. Int'l Envtl. L. & Pol'y 69 at 74 and 98.

³⁴⁰ *Ibid* at 76.

³⁴¹ Biniiaz (2017) Sabin Center for Climate Change Law, Columbia Law School at 3.

³⁴² *Ibid* at 3

³⁴³ *Ibid* at 3 . 4.

³⁴⁴ *Ibid* at 4.

³⁴⁵ *Ibid*.

³⁴⁶ A39-3(9).

³⁴⁷ A39-3(9)(a) and (b).

³⁴⁸ Biniiaz, *supra* n 341, at 6.

the total RTKs or whose share in the list of States ranked from highest to lowest RTKs reaches 90% of the total RTKs, except Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) unless they volunteer their participation.³⁴⁹ Although ICAO encourages the participation of all States in the pilot phase, those developed States that volunteered in the pilot phase are considered to be taking the lead.³⁵⁰ By 29 June 2018, 72 States, representing 75.95% of international aviation activity, had indicated their intention to participate in the CORSIA from inception with the pilot phase.³⁵¹

The flight route is the determining factor in the application of CORSIA. The scheme is only applicable to international flights on routes between participating States.³⁵² Where one or both States are not included in the CORSIA, they are exempt from the offsetting requirements but maintain simplified reporting requirements.³⁵³ Once the scheme is applicable to a State, the offsetting requirements of operators are calculated using a universally applicable calculation that is based on their respective emissions covered by CORSIA, the aviation sector's growth, and the operator's growth during a specific year.³⁵⁴ These commitments increase progressively with increasing emphasis placed on the respective operator's individual emissions as opposed to the sectoral growth.³⁵⁵ During the pilot phase, participating States will calculate operators' offsetting requirements using their emissions from the respective year, or their emissions covered by CORSIA in 2020, and multiplying that by the sector's growth factor.³⁵⁶ The sector's growth factor is determined using the average emissions covered by CORSIA between 2019 and 2020 as the baseline for comparison.³⁵⁷ During the first phase, the same calculation applies, however, the choice of year for operators' emissions is removed and is based on the year in question.³⁵⁸ The individual operator's growth does not feature in the calculation of its offsetting requirements until 2030, when the

³⁴⁹ A39-3(9)(e).

³⁵⁰ A39-3(9)(c).

³⁵¹ <https://www.icao.int/environmental-protection/CORSIA/Pages/state-pairs.aspx> (accessed on 4 August 2018).

³⁵² A39-3(10).

³⁵³ *Ibid.*

³⁵⁴ A39-3(11).

³⁵⁵ A39-3(11)(e)(i) . (v).

³⁵⁶ A39-3(11)(e)(i).

³⁵⁷ A39-3(11)(b) . (c).

³⁵⁸ A39-3(11)(e)(ii).

calculation changes to incorporate at most 80% sectoral growth and at least 20% operator growth, and from 2033 to 2035, at most 30% sectoral growth and at least 70% operator growth.³⁵⁹ On analysis of the possible costs, ICAO's Committee on Aviation Environment Protection (CAEP) and its Global MBM Technical Task Force (GMTF) estimate the total offsetting costs in 2025 varying between USD1.5 and USD6.2 billion, and in 2035 between USD5.3 and USD23.9 billion, depending on the carbon price.³⁶⁰ This would amount to between 0.2 and 0.6% of total revenues from international aviation in 2025, and between 0.5 and 1.4% in 2035.³⁶¹ By comparison with the cost of jet fuel, the estimated offsetting cost in 2030 is the equivalent of a USD2.6 rise in the per barrel price.³⁶² Over the previous ten years, the standard deviation of the jet fuel price annually has been almost USD40 per barrel and airlines have coped with such volatility.³⁶³

CORSIA acknowledges the special circumstances and respective capabilities of States (SCRC) by acknowledging the status of developing States, in terms of vulnerability to the impacts of climate change, economic development levels, and contributions to international aviation emissions, among other things³⁶⁴ but tempers this acknowledgment with the need to [minimise] market distortion^{365, 366}. In addition to phased implementation, SCRC is seen through the exemption of LDCs, SIDS and LLDCs based on socio-economic indicators and fuel consumption based exemptions relative to the individual share of international aviation.³⁶⁷ New entrants³⁶⁸ are also exempt from the application of the CORSIA for three years or until the entrant's annual emissions exceed 0.1 per cent of total 2020 emissions, whichever occurs earlier, in which case it will be included in the scheme the following year.³⁶⁹ The scheme is also not applicable to low levels of international aviation activity (emitting less than 10,000

³⁵⁹ A39-3(11)(e)(iv) . (v).

³⁶⁰ ICAO (2016), *supra* n 312, at 141.

³⁶¹ *Ibid* at 142.

³⁶² *Ibid*.

³⁶³ *Ibid*.

³⁶⁴ A39-3(8).

³⁶⁵ *Ibid*.

³⁶⁶ *Ibid*.

³⁶⁷ ICAO Sky Talks Workshop *Environmental Protection – Global Market Based Measure Scheme*.

³⁶⁸ A39-3(12) defines a new entrant as any aircraft operator that commences an aviation activity falling within the scope of the scheme on or after its entry into force and whose activity is not in whole or in part a continuation of an aviation activity previously performed by another aircraft operator. +

³⁶⁹ A39-3(12).

metric tonnes of CO₂ emissions from international aviation per year) or aircraft with less than 5,700 kg of Maximum Take Off Mass (MTOM), or humanitarian, medical and firefighting operations.³⁷⁰

Critical to State obligations in terms of CORSIA is to ensure that once the scheme is applicable to its operators, that there are effective mechanisms in place for effective participation. At the time of agreement in CORSIA, the Council had not completed its work on the MRV system to be used but this work was to be completed as soon as possible and include provisions for capacity building and assistance.³⁷¹ Nonetheless, all States hold reporting requirements, even if exempt from participation in the CORSIA.³⁷²

The core focus of assistance-based provisions of the CORSIA relate to capacity building for its effective implementation.³⁷³ However, general climate change assistance is provided to developing countries by the promotion of the use of emissions units (i.e through the CDM) that benefit developing countries.³⁷⁴ In implementation capacity building, States are to take all necessary actions to provide capacity building and assistance and building partnerships for the implementation of CORSIA but specific emphasis is placed on the implementation of the MRV system and the establishment of Registries.³⁷⁵ The Council is to expand the provision of capacity building and assistance to States and, where needed, facilitate the provision of financial support for the implementation of the MRV system and establishment of registries by States.³⁷⁶ The Council is also required to expand the provision of capacity building and assistance for the preparation of Member States action plans (this would include seminars and training) and, where needed, facilitate financial support to these ends.³⁷⁷

³⁷⁰ A39-3(13).

³⁷¹ A39-3(15).

³⁷² A39-3(10).

³⁷³ A39-3(22).

³⁷⁴ A39-3(24).

³⁷⁵ A39-3(22)(a) and (c).

³⁷⁶ *Ibid.*

³⁷⁷ *Ibid.*

Beyond CORSIA, ICAO has recognised, and taken steps to provide for, the assistance needs of States. Through its Technical Co-Operation Programme, ICAO provides advice and assistance in developing and implementing, among other things, environmental protection projects and the sustainable development of civil aviation.³⁷⁸ The Technical Co-Operation programme is, however, 95% funded by recipients.³⁷⁹ Assembly Resolution A38-18 requests the continued provision of information, guidance and technical assistance to enhance capacity building and technology transfer.³⁸⁰ The resolution goes further to include instruction to the Council to develop a process of mechanisms that will facilitate the provision of technical and financial assistance, technology transfer and capacity building to developing countries and continue to initiate specific measures to this end.³⁸¹ ICAO has also partnered with the EU and the United Nations Development Programme (UNDP) in a joint assistance project.³⁸² The EU joint assistance project, Capacity Building for CO₂ Mitigation from International Aviation, is an EU funded project to assist fourteen selected African and Caribbean States to, among other things, develop and submit their action plans, set up Aviation Environmental Systems (AES) to establish emission inventories and monitor carbon dioxide emissions from aviation, and implement mitigation measures to reduce aviation emissions, including feasibility studies.³⁸³ The UNDP joint assistance project is financed by the Global Environment Facility (GEF) and is aimed at supporting developing states and SIDS in their international civil aviation emissions mitigation efforts.³⁸⁴ It is a global capacity building programme that assists developing States and SIDS in assessing the costs and benefits associated with the mitigation measures selected in their action plans, to enhance the regulatory and organizational structures to support environmental policy and decision-making, provide an online technical platform for knowledge-sharing, and includes a solar-at-gate pilot project in Jamaica to reduce aircraft emissions while parked at gate.³⁸⁵

³⁷⁸ <https://www.icao.int/secretariat/TechnicalCooperation/Pages/default.aspx> (accessed 11/08/2018)

³⁷⁹ <https://www.icao.int/secretariat/TechnicalCooperation/Pages/projectfunding.aspx> (accessed 11/08/2018)

³⁸⁰ A38-18(31)(a)

³⁸¹ A38-18(31)(c) . (d)

³⁸² <https://www.icao.int/environmental-protection/Pages/Assistance.aspx> (accessed 11/08/2018)

³⁸³ *Ibid.*

³⁸⁴ https://www.icao.int/environmental-protection/Pages/ICAO_UNDP.aspx (accessed on 11 August 2018)

³⁸⁵ https://www.icao.int/environmental-protection/Documents/EmissionReductions_Brochure-web-1up.pdf (accessed on 11 August 2018)

4.5 The CORSIA and CDDRRC

The contemporary emissions mitigation theme found in the climate change regime, that addressing climate change requires the participation of all parties, is certainly carried into the central obligations of the CORSIA. Adopting a pilot phase and first phase, in which the participation of States is elective, allows delayed participation in accordance with a States national circumstances and providing SCRC exemptions is reflection of CDDRRC that is consistent with the climate change regime. While there is an appearance of rigidity in applying the same method of calculation to be used in calculating an operators binding commitments, irrespective of a States development status, further flexibility (and therefore the ability to differentiate) is found in the pilot phase by the adoption of a base year of choice for measurement.

The distinguishing features between CORSIA and the contemporary climate change regime are the equal treatment of States once the scheme is applicable to them and the, by comparison, rapid timeline for compulsory equal participation. The immediate difference in a central obligations comparison is the difference between State action, required under the climate change regime and, in part, operator action required under CORSIA. The central obligations flowing from CORSIA (i.e emissions reduction targets and active participation in the scheme) apply to the operators themselves. The obligations of States entail MRV requirements, the establishment of registries, and ensuring the necessary infrastructure and capacity is in place for the effective participation of operators once the scheme is applicable. The MRV and registries requirements of CORSIA are the natural result of implementing a global market-based measure and, too, for the implementation of the *de minimis* exclusions. Without this information, the CORSIA would be inoperative. States may delay their participation within the scheme until 2027, allowing time to those that need it to build capacity and infrastructure, and assistance is to be provided to this end by Member States through partnerships and through facilitation by the Council in both the technical and financial spheres.

Requiring participation by all with the exception of those States that hold special status due to their special circumstances is consistent with the contemporary interpretation of CDDRRC found in the climate change regime. This consistency is further reflected

in the recognition that developing country participation will require assistance, both financially and technically, and the implementation of projects to this end. Divergence is found in the comparatively rapid timeline before all States are to be treated equally within CORSIA. This, however, is likely best ascribed to the context of international civil aviation as a sector and the obligations flowing to States as opposed to an interpretation of CDRRC. The CORSIA, nonetheless, contains a preambular proviso that it does not set a precedent for States engagements within the climate change regime or other international fora.³⁸⁶

4.6 Conclusion

The international civil aviation regime's preclusion of the use of the same differentiation methods used within the climate change regime has not deterred the recognition and implementation of CDRRC in mitigation efforts within ICAO. While the resulting agreement is one that treats all States equally, it allows differentiation between States that accords with the contemporary interpretation of CDRRC found in the climate change regime.

³⁸⁶ A39-3 preamble.

5. CONCLUDING REMARKS

The purpose of this thesis has been to show that States have given effect to the principle of CDDRRC in their climate change engagements through ICAO, the CORSIA in particular.

This thesis has illustrated the nature of CDDRRC, its implementation and its development within the climate change regime to its contemporary interpretation. This was then used as a means of comparison with the implementation of CDDRRC in the CORSIA.

Despite State wrangling over the application of CDDRRC within international civil aviation, it is argued that the implementation of CDDRRC within the CORSIA, nonetheless, accords with the contemporary interpretation of CDDRRC.

6. BIBLIOGRAPHY

Treaties and Conventions

United Nations Framework Convention on Climate Change, Signed at New York on 9 May 1992

Kyoto Protocol to the United Nations Framework Convention on Climate Change, Signed at Kyoto in December 1997

Paris Agreement, Signed at Paris on 12 December 2015

Convention on International Civil Aviation, Signed at Chicago on 7 December 1944.

Conferences and Decisions of the Conferences of the Parties

United Nations Conference on Environment, Rio De Janeiro, Brazil, June 3 . 14, 1992, *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/26/Vol.1 (12 August 1992)

United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties on its First Session held in Berlin, from 28 March to 7 April 1995*, U.N. Doc. FCCC/CP/1995/7/Add.1 (6 June 1995), Decision 1/CP.1

United Nations Framework Convention on Climate Change, Report of the Conference of the Parties on its seventh session, held at Marrakesh from 29 October to 10 November 2001, Addendum, Part Two: Action Taken by the Conference of the Parties, U.N Doc. FCCC/CP/2001/13/Add.1 (21 January 2002)

United Nations Framework Convention on Climate Change, *Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, First Session, Montreal 28 November to 9 December 2005* U.N. Doc. FCCC/KP/CMP/2005/3/Add.3 (3 August 2005), Decision 27/CMP.1

United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties held in Bali, Indon, from 3 to 15 December 2007*, U.N. Doc. FCCC/CP/2007/6/Add.

United Nations Framework Convention on Climate Change, Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009, U.N. Doc. FCCC/CP/2009/11/Add.1 (30 March 2010)

United Nations Framework Convention on Climate Change, Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010, U.N Doc FCCC/CP/2010/7/Add.1 (15 March 2011)

United Nations Framework Convention on Climate Change, Report of the Conference of the Parties on its seventeenth session, held in Durban from 28 November to 11 December 2011, U.N Doc. FCCC/CP/2011/9/Add.1 (15 March 2012)

United Nations General Assembly Resolutions

A/RES/43/53, 70th plenary meeting, 6 December 1988

A/RES/44/207, 85th plenary meeting, 22 December 1989

International Civil Aviation Organization Assembly Resolutions

International Civil Aviation Organization, Assembly . 37th Session, held at Montreal 28 September . 8 October 2010 (A37)

International Civil Aviation Organization, Assembly . 38th Session, held at Montreal 24 September . 4 October 2013 (A38)

International Civil Aviation Organization, Assembly . 39th Session, held at Montreal 27 September . 6 October 2016 (A39)

Reservations to ICAO Assembly Resolutions

Permanent Mission of Canada to the International Civil Aviation Organisation
 Statement of Canada's Reservations regarding the 38th International Civil Aviation
 Organization General Assembly Resolution: Consolidated Statement of Continuing
 ICAO Policies and Practices Related to Environmental Protection . Climate Change+
https://www.icao.int/Meetings/a38/Documents/Resolutions/Canada_en.pdf (accessed
 on 10 September 2017)

Permanent Mission of the Republic of Korea to the International Civil Aviation
 Organization Statement of Reservation of the Republic of Korea Regarding
 Resolution A38-17/2: Consolidated Statement of Continuing ICAO Policies and
 Practices Related to Environmental Protection . Climate Change+
https://www.icao.int/Meetings/a38/Documents/Resolutions/Korea_en.pdf (accessed
 on 10 September 2017)

Summary Listing of Reservations to Resolution A38-18+
https://www.icao.int/Meetings/a38/Documents/Resolutions/summary_en.pdf
 (accessed on 2 September 2018)

The Australian Representative on the Council of the International Civil Aviation
 Organization Reservation by Australia to Resolution A38/17/2 on international
 aviation and climate change+
https://www.icao.int/Meetings/a38/Documents/Resolutions/Australia_en.pdf
 (accessed on 10 September 2017)

United States Mission to the International Civil Aviation Organization Statement of the
 United States of America regarding the 38th International Civil Aviation Organization
 General Assembly Resolution: Consolidated Statement of Continuing ICAO Policies
 and Practices Related to Environmental Protection . Climate Change+
https://www.icao.int/Meetings/a38/Documents/Resolutions/United_States_en.pdf
 (accessed on 10 September 2017)

Written Statement of Reservation by Lithuania on behalf of the Member States of the
 European Union and 141 other Member States of the European Civil Aviation

Conference (ECAC) with regard to ICAO Assembly Resolution A38-18+
https://www.icao.int/Meetings/a38/Documents/Resolutions/Lithuania_en.pdf
 (accessed on 10 September 2017)

Books

Bodansky D, Brunne J, & Rajamani L (2017) International Climate Change Law
 Oxford University Press (1st Edition)

Hobe, v. Ruckteschell & Heffernan (eds.) (2013) Cologne Compendium on Air Law In
 Europe Carl Heymans Verlag

Oberthur S & Ott H (1999) The Kyoto Protocol: International Climate Policy for the 21st
 Century Springer Berlin

Sands P & Peel J (2012) Principles of International Environmental Law 3rd Edition
 Cambridge University Press

Shawcross and Beaumont (1977) Air Law London: Butterworths

Articles

Atapattu S Climate Change, International Environmental Law Principles, and the
 North-South Divide+(2017) 26 Transnational Law & Contemporary Problems 247

Avila R *et al* REDD+ in ICAO: Ready for Take Off+(2016) Carbon and Climate Law
 Review 134

Bodle R, Donat L, Duwe Matthias The Paris Agreement: Analysis, Assessment and
 Outlook+(2016) 2016 Carbon and Climate Law Review 5

Bushey D, Jinnah S Evolving Responsibility . The Principle of Common But
 Differentiated Responsibility in the UNFCCC+(2010) 6 Publicist 1

Goncalves V %Climate Change and the International Civil Aviation Negotiations+(2017) 39(2) Contextio International 443

Halvorssen AM %International Law and Sustainable Development . Tools for Addressing Climate Change+(2011) 39 Denver Journal of International Law and Policy 397

Halvorssen AM %The Kyoto Protocol and Developing Countries . The Clean Development Mechanism+(2005) 16 Colombia Journal of International Environmental Law & Policy 353

Havel B, Sanchez G %Toward an International Aviation Emissions Agreement+(2012) 36 Harvard Environmental Law Review 351

Harris PG %Common But Differentiated Responsibility: The Kyoto Protocol and the United States Policy+(1999) 7 NYU Environmental Law Journal 27

Kovar JD %A Short Guide to the Rio Declaration+ (1993) 4 Colombia Journal of International Environmental Law & Policy 119

Lee J %Rooting the Concept of Common But Differentiated Responsibilities in Established Principles of International Environmental Law+(2015) 17 Vermont Journal of Environmental Law 27

Liu J %The Role of ICAO in Regulating Greenhouse Gas Emissions of Aircraft” (2011) 4 CCLR 417

Magraw DB %Legal Treatment of Developing Countries: Differential, Contextual, and Absolute Norms+(1990) 1 Colombia Journal of International Environmental Law & Policy 69

Oberthür S %Institutional interaction to address greenhouse gas emissions from international transport: ICAO, IMO and the Kyoto Protocol+(2003) 3 Climate Policy 191

Okonkwo T %From the Copenhagen Accord to the Paris Agreement: Reaching Concord on a Single Document+(2017) 21 Korea University Law Review 21

Rajamani L %Differentiation in the Emerging Climate Regime+(2013) 14 Theoretical Enquiries In Law 151

Rajamani L %The Papal Encyclical & the Role of Common but Differentiated Responsibilities in the International Climate Change Negotiations+(2015 . 2016) 109 American Journal of International Law Unbound 142

Romera B, van Asselt H %The International Regulation of Aviation Emissions: Putting Differential Treatment into Practice+(2015) 27 Oxford Journal of Environmental Law 259

Scott J, Rajamani L %EU Climate Change Unilateralism+(2012) 23 The European Journal of International Law 469

Reports

International Law Association %Legal Principles Relating to Climate Change+ *Sofia Conference* (2012) 75 Reports of Conferences 432

International Law Association %Legal Principles Relating to Climate Change+ *Hague Conference* (2010) 74 Reports of Conferences 346

ICAO %Environmental Report+(2007)

ICAO %Environmental Report: On Board A Sustainable Future+(2016)

ICAO Secretariat %Overview . Market Based Measures+(2013)

Intergovernmental Panel on Climate Change (IPCC) %Fourth Assessment Report: Climate Change+(2007)

Intergovernmental Panel on Climate Change (IPCC) "Special Report: Aviation and the Global Atmosphere Summary For Policy Makers+(1999)

Intergovernmental Panel on Climate Change (IPCC) %Synthesis Report+(2014)

Websites

%Assistance to States+

<https://www.icao.int/environmental-protection/Pages/Assistance.aspx> (accessed on 11 August 2018)

Biniarz, S %Beg to Differ: Taking Account of National Circumstances under the Paris Agreement, the ICAO Market-Based Measure, and the Montreal Protocol's HFC Amendment+(2017) Sabin Center for Climate Change Law, Columbia Law School
<https://ssrn.com/abstract=2897024> (accessed on 2 September 2018)

%Committee on Aviation Environmental Protection (CAEP)+

<http://www.icao.int/ENVIRONMENTAL-PROTECTION/Pages/CAEP.aspx> (accessed on 22 April 2017)

%CORSIA States for Chapter 3 State Pairs: Updated information on the States that Intend to Voluntarily Participate in CORSIA from its outset+

<https://www.icao.int/environmental-protection/CORSIA/Pages/state-pairs.aspx>
(accessed on 4 August 2018)

%Funding of ICAO Technical Cooperation Projects+

<https://www.icao.int/secretariat/TechnicalCooperation/Pages/projectfunding.aspx>
(accessed on 11 August 2018)

%Greenhouse Gas Inventory Data . Detailed data by Party+

http://di.unfccc.int/detailed_data_by_party (accessed on 20 July 2018)

Handl G %Introductory note, Declaration of the United Nations Conference on the Human Environment Stockholm, 16 June 1972, Rio Declaration on Environment and

Development Rio de Janeiro, 14 June 1992+
<http://legal.un.org/avl/ha/dunche/dunche.html> (accessed on 9 June 2018)

ICAO %Transforming the Global Aviation Sector: Emissions Reductions from International Aviation+
https://www.icao.int/environmental-protection/Documents/EmissionReductions_Brochure-web-1up.pdf (accessed on 11 August 2018)

%ICAO Welcomes COP21 Agreement, Will Continue to Provide Leadership and Coordinate Action on International Aviation's Environmental Goals+
<https://www.icao.int/Newsroom/Pages/ICAO-Welcomes-COP21-Agreement.aspx>
 (accessed on 8 July 2017)

%List of Parties+
https://www.icao.int/secretariat/legal/List%20of%20Parties/Chicago_EN.pdf
 (accessed on 18 June 2017)

Macintosh A %Overcoming the Barriers to International Aviation Greenhouse Gas Emissions Abatement+ (2008) The Australian National University Centre for Climate Policy CCLP Working Paper Series 2008/2
https://law.anu.edu.au/sites/all/files/wp2_2008_-_overcoming_barriers_to_international_aviation_emissions_abatement.pdf
 (accessed on 2 September 2018)

NASA %Global Climate Change: Vital Signs of the Planet+
<https://climate.nasa.gov/causes/> (accessed on 27 August 2017)

%Sky Talks Workshop, Environmental Protection . Global Market Based Measure Scheme+
<https://www.icao.int/Meetings/a39/workshops/Documents/A39%20Workshop%20-%20GMBM.pdf> (accessed on 7 September 2017)

%Technical Co-Operation Bureau+
<https://www.icao.int/secretariat/TechnicalCooperation/Pages/default.aspx> (accessed

on 11 August 2018)

The History of ICAO and the Chicago Convention+ <https://www.icao.int/about-icao/History/Pages/default.aspx> (accessed on 18 June 2017).

Top 3 Misconceptions About CORSIA+ https://www.icao.int/environmental-protection/Pages/A39_CORISIA_FAQ6.aspx (accessed on 8 July 2017).

TC: Clear Technology Mechanism+ <http://unfccc.int/ttclear/support/technology-mechanism.html> (accessed on 5 July 2018)

UNFCCC: Clean Development Mechanism+ http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php (accessed on 15 August 2017)

UNFCCC: Joint Implementation (JI)+ http://unfccc.int/kyoto_protocol/mechanisms/joint_implementation/items/1674.php (accessed on 15 August 2017)

UNFCCC Process: KP Introduction+ <https://unfccc.int/process/the-kyoto-protocol> (accessed on 9 June 2018)

UNFCCC: Status of Ratification of the Convention+ <https://unfccc.int/process/the-convention/news-and-updates> (accessed on 11 June 2018)

UNFCCC: The Mechanisms under the Kyoto Protocol: Clean development mechanism, joint implementation and emissions trading+ http://unfccc.int/kyoto_protocol/mechanisms/items/1673.php (accessed on 9 July 2017)

United Nations Climate Change Information provided by Parties to the Convention relating to the Copenhagen Accord+ <https://unfccc.int/process/conferences/pastconferences/copenhagen-climate-change-conference-december-2009/statements-and-resources/information-provided-by->

[parties-to-the-convention-relating-to-the-copenhagen-accord](#) (accessed on 22 June 2018)

United Nations Climate Change: Parties and Observers+ <https://unfccc.int/parties-observers> (accessed on 25 June 2018)

United Nations Development Programme (UNDP) with the Global Environment Facility (GEF) financing: Transforming the Global Aviation Sector: Emissions Reductions from International Aviation+ https://www.icao.int/environmental-protection/Pages/ICAO_UNDP.aspx (accessed on 11 August 2018)

United Nations Framework Convention on Climate Change: Expert Group On Technology Transfer, Five Years of Work+ https://unfccc.int/resource/docs/publications/egtt_eng.pdf (accessed on 15 July 2018)

United Nations Treaty Collection, Status of Treaties, Doha Amendment to the Kyoto Protocol+ https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-7-c&chapter=27&clang=en (accessed on 11 June 2018)

United Nations Treaty Collection, Status of Treaties, Kyoto Protocol to the United Nations Framework Convention on Climate Change+ https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-a&chapter=27&clang=en (accessed on 11 June 2018)

United Nations Treaty Collection, Status of Treaties, Paris Agreement+ https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&lang=en&clang=en (accessed on 22 June 2018)