Climate change is happening and has become a global challenge. According to the latest assessment report of the Intergovernmental Panel on Climate Change,

[w]arming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.\(^1\)

Climate change is no more an ambiguous scientific topic; it has become “a key item on the global political agenda”.\(^2\) States have concluded three multilateral environmental agreements, namely the United Nations Framework Convention on Climate Change (UNFCCC),\(^3\) the Kyoto
Protocol to the same,\textsuperscript{4} and the Paris Agreement,\textsuperscript{5} to reduce greenhouse gas (GHG) emissions, the principal human-made cause of climate change. Efforts to abate anthropogenic emissions of GHGs to combat climate change are in progress at local, national, regional, and global levels. Such efforts from various global sectors, e.g., aviation sector, can also be observed.

At the global level, the International Civil Aviation Organization (ICAO) and its Contracting States have been working on the issue of GHG emissions from international civil aviation for more than a decade. The issue has achieved more importance than before in the aviation sector and, more specifically, much discussion, controversy, and tension during the last two sessions – 37\textsuperscript{th} and 38\textsuperscript{th} sessions – of the ICAO Assembly revolved around the issue. However, the actions so far adopted in the aviation industry have failed to make any meaningful contribution to the global climate change mitigation actions. To date, the only substantial agreement to fight climate change reached by the ICAO Contracting States through a non-binding resolution is the agreement to develop a global market-based measure for international civil aviation, which will hopefully be implemented from 2020.\textsuperscript{6}

This slow progress (or no progress) at the global level has prompted action from the European Union (EU) whose all 28 Member States are also ICAO Contracting States. To reduce aviation’s contribution to GHG emissions, the EU has included aircraft from both EU Member States and non-EU States arriving at or departing from any aerodrome of the EU Member States in its emissions trading system (EU ETS),\textsuperscript{7} which is currently the largest market-based measure – in other words, carbon trading system – on earth, since January 2012.\textsuperscript{8} Nonetheless, this unilateral move from the EU has spurred strong opposition – with threat of


\textsuperscript{5} Paris Agreement, 12 December 2015 (not yet in force). To view the authentic text of the treaty, see online: UN Treaty Collection <treaties.un.org/doc/Treaties/2016/02/20160215%2006%3A7PM/Chhhh-7.pdf>.

\textsuperscript{6} See Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change, ICAO Assembly Res A38-18, 38th Sess, ICAO Doc 10022, 1-68 at 1-72, online: ICAO <www.icao.int/publications/Documents/10022_en.pdf> [Assembly Res A38-18].


retaliatory action and even with retaliation – from economically strong non-EU States, including the United States, the Russian Federation, China, and India. Such political resistance has caused the EU to suspend the application of the scheme to non-EU airlines in 2013, and to reduce the geographic scope of the scheme in 2014 to cover only emissions from flights within the European Economic Area for the 2013–2016 period. According to the EU, such temporary retreat from the original application of the EU ETS has been made to give time for negotiations at ICAO on a global market-based measure applying to emissions from international civil aviation.

Therefore, it appears that a significant measure to limit GHG emissions from aviation is yet to be in place. Negotiations under the auspices of ICAO have been continuing for more than a decade without minimal (or no) success. In such a circumstance, the following crucial question arises: what are the legal and policy challenges to reduce GHG emissions from international civil aviation that are hindering progress in the aviation sector? Dr. Alejandro Piera’s masterpiece, titled Greenhouse Gas Emissions from International Aviation: Legal and Policy Challenges, addresses this vital question. This is a timely initiative since ICAO contracting States are now seriously considering the issue of GHG emissions from aviation, particularly the design of a global market-based measure for international civil aviation, and the persons and organisations involved in this process will certainly be benefited from the valuable insights offered and knowledge generated in this book.

Dr. Piera’s book has extensively examined different aspects of the legal framework underlying the international civil aviation and climate change discourse in order to provide a number of recommendations that, if accepted, may facilitate the adoption and implementation of ICAO’s global market-based measure to reduce GHG emissions from international civil aviation.

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international civil aviation. To appropriately examine these aspects, the book has assessed ICAO’s relationship with the global climate change regime composed of the UNFCCC and the Kyoto Protocol, the mandate provided to ICAO by the Kyoto Protocol to reduce GHG emissions from aviation, and the interplay between the core principles of the climate change regime (e.g., the principle of common but differentiated responsibility and respective capabilities) and those of the international civil aviation regime (e.g., the principles of non-discrimination and equality of opportunities). Furthermore, the book has explored ICAO’s institutional setting and its suitability for dealing with the issue of climate change; has analysed the EU ETS, the schemes influence on the climate change discourse and the related legal issues; has evaluated the role of the major players engaged in the climate change discourse by resorting to the theory of norm entrepreneurship; and, has underscored issues that deserve careful consideration while designing a global market-based measure for international civil aviation.

To effectively perform these examinations, the book has been divided into nine chapters.

Chapter 1 particularly discusses the growth trends in the international civil aviation sector, its current and expected contribution to global GHG emissions, and the technological and operational efficiencies introduced by the industry. Chapter 1 essentially argues that, given its projected growth trends in the next 20-30 years, technological and operational efficiencies will not be sufficient to curb international civil aviation’s GHG emissions. Thus, this chapter sets the scene and is appropriately titled “Setting the Scene”.

Chapter 2 performs a thorough investigation of the implicit mandate that Article 2(2) of the Kyoto Protocol gave to ICAO to limit or reduce GHG emissions from international civil aviation. However, Professor Dempsey argues, with whom I concur, that Article 2(2) provides a clear, not implicit, mandate to ICAO. As part of the thorough

13 See Md Tanveer Ahmad, “Environmental Effectiveness of ICAO’s Basket of Mitigation Measures to Arrest Emissions from International Civil Aviation” (2014) XXXIX Ann Air & Sp L 75 at 80–81 [Ahmad, “Environmental”].
14 Kyoto Protocol, supra note 4, art 2(2):
The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively.

investigation, Chapter 3 examines the practical and operational implications of this mandate, studying the apparent conflict between the UNFCCC’s principle of common but differentiated responsibility (CBDR) and the Chicago Convention’s principle of non-discrimination. An attempt has been made to reconcile these two principles. The author aptly notes the importance of reconciling these two principles to ensure extensive participation of States in any global measure, e.g., a global market-based measure, for international civil aviation to reduce this sector’s environmental impact. In reality, the apparent conflict between these two principles is one of the main reasons why States are reluctant to agree on a global market-based measure for the aviation sector.15

Chapter 3 addresses ICAO’s engagement in climate change. The Chapter evaluates ICAO’s institutional setting, particularly its governance structure and institutional objectives, and its suitability to deal with the issue of climate change. An appropriate examination of the climate change governance in international civil aviation is essential to appreciate what ICAO may achieve and what corrective measures may be effected to contribute towards the success of a global market-based measure for aviation. Chapter 3 performs this task.

Chapters 4, 5, and 6 address EU’s decision to include international civil aviation in its ETS. Chapter 4 provides, inter alia, a background information including the rationale for EU’s such decision, a description of the EU ETS as applied to aviation, the opposition it encountered from non-EU States, and the schemes status (i.e. temporary suspension) with respect to international civil aviation at the time of writing. To better understand the EU ETS debate, it is necessary to know these information.

Chapter 5 deals with the issue of extra-territorial application of the EU ETS. The Chapter addresses relevant principles of international law on jurisdiction to answer the question whether or not such application of the scheme is permitted under international law. It also considers the question whether the doctrine of State responsibility exonerates the EU ETS. These answers are crucial since the issue of extraterritorial application of the scheme was the main reason why non-EU States objected to the inclusion of aviation in the EU ETS.16

16 See e.g. Ines Litzenberger, “Trade War in the Skies: Air Transport Association of America and others v Secretary of State for Energy and Climate Change”, Case Comment, (2012) 13:2 Business
Chapter 6 concentrates on other legal issues relevant to the EU ETS. These include unilateralism, the issue of charges and tax under Articles 15 and 24 of the Chicago Convention, respectively, and the scheme’s compliance with the World Trade Organization rules.

As noted above, this book evaluates the role of the major players engaged in the climate change discourse in international civil aviation by resorting to the theory of norm entrepreneurship. Chapter 7 performs that evaluation. This novel approach of resorting to the theory of norm entrepreneurship enables the identification of conditions under which normative change is likely to happen and of requirements for norm internalisation (e.g., acceptance of such change). This also facilitates the identification of helpful measures which may have to be considered for a successful global market-based measure for international civil aviation.

Certain issues are presented in Chapter 8 which must be taken into consideration in the design of the global market-based measure for international civil aviation. Again, the apparent conflicting principles of CBDR and non-discrimination are considered. Chapter 8 suggests the adoption of a route-based approach where different routes will be phased-in according to a set of criteria. A number of potential legal tools, which have to be used in adopting such a global measure, their advantages and disadvantages, and their viable enforcement mechanisms have been comprehensively examined in Chapter 8. Chapter 9 provides a conclusion with few remarks.

It can be observed from the above review that this excellent book addresses almost all issues of significant relevance to climate change discourse in international civil aviation. When States are struggling to reach a feasible and effective solution to limit or reduce GHG emissions from international civil aviation that contribute to climate change, this book provides some guidelines that can be used to achieve that objective. Most importantly, this book’s discussion on a global market-based measure for international civil aviation can provide a useful guidance to

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actors, especially States, who are currently dealing with the development of such a measure. The next session, i.e. 39th session, of the ICAO Assembly, scheduled to be held at the end of 2016, should witness extensive use of this book among the policymakers, since, according to Assembly Resolution A38-18, the ICAO Council will report the results of the work concerning global market-based measure(s) for international civil aviation for decision by the 39th session of the Assembly. To end, I would like to quote from the preface written by Professor Dr. Michael Milde, a highly regarded authority on air and space law:

Alejandro made an audacious and innovative step in analyzing the problem and seeking the “truth” in particular solutions. Many will still keep asking “what is truth”? There is probably a long way to go to reach a practical solution. Confucius is recorded as having said that “a journey of 1000 miles begins with one step…” Alejandro Piera has made several thousands of steps on this road.

17 Assembly Res A38-18, supra note 6 at I-72–I-73.