

# From Disruption to Innovation in Air and Space: Legal Solutions for a Sustainable Future

Inaugural lecture spoken by

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## Introduction

Some might describe Air and Space Law as ‘niche’. Academically, that may also appear as such – for there are only two specialist institutes in the world that are exclusively devoted to advancement of the discipline. Leiden is one of them. Air Law has been taught at Leiden University since 1938. The Chair in Air Law was created in 1947 and extended to include Space in 1961. The International Institute of Air and Space Law was established in 1985. I am honoured to stand before you here today as Professor of Air and Space Law and the Institute’s Director, following humbly in the *cortège* of distinguished scholars in our field: Daniel Goedhuis, Henri Wassenbergh, Peter Haanappel and Pablo Mendes de Leon.

We air and space lawyers – academic and professional – have made and continue to make a huge impact globally. That is because Air and Space Law concerns public and private law at all conceivable levels. Air and Space Law research focuses on the matrix of interactions between State actors, non-State actors – and those in between, quasi-State actors and quasi-private actors. As the number of State and non-State actors in air and space rapidly increases, these complex interactions demand creative scientific and legal solutions relating to safety and security, exploration and navigation, manufacturing, financing and commercialisation, competition and the environment – all in an attempt to keep pace with the speed of technological change and facilitate commercial and market possibilities, increasingly with a firm eye on sustainability objectives. Air and Space Law enables air travel and space activity.

This afternoon, I intend to take you on a journey – it should be a one-way trip, but it may turn out to be a return, a round-trip... we shall see!

## Deregulation, liberalisation and innovative strategies

Air transport has radically transformed since the first scheduled commercial airline took to flight in 1914. The *regulatory* and *market* transformations of air transport that began in the United States (US) were followed by those we experienced here in the European Union (EU). The transformations have manifested through a movement from command-and-control, State regulation to deregulation and liberalisation of air transport markets, privatisation of airlines and airports, and followed by airline consolidation and different forms of industry innovation, such as cooperation between air carriers, new market entrants and differentiation.

### *US deregulation*

In 1926, US Congress passed the Air Commerce Act. That assigned for the first time to the Federal level of government, the US Department of Commerce’s Aeronautics Branch, later named the Bureau of Air Commerce, responsibility for regulatory tasks associated with civil air transport. In 1938, following the Civil Aeronautics Act, this duty was transferred to a new, independent agency, the Civil Aeronautics Administration. The Civil Aeronautics Board (‘the CAB’) was its governing body.

Under the CAB, the American air transport sector was subjected to a highly bureaucratic form of regulation. The CAB did not deal efficiently with requests from both incumbent and new airlines wishing to launch new routes or to increase capacity or frequency on an existing route. The CAB held the ‘regulatory’ authority to determine not only which routes airlines could operate but also oversaw an approvals process to set the airfares that airlines could charge. While this was an intrusive system of regulation, airlines also benefitted as they were effectively protected from market forces. As such, there was little incentive for boardrooms to develop strategies aimed at improving air transport services or serving consumers in a more cost-effective manner.

This system of command-and-control, or so it seemed, persisted until the mid 1970s. It turned out that private interests had been influencing the licensing process and thus regulatory capture was observed. Regulatory capture is a concept in which ‘regulated’ firms manipulate or outmanoeuvre the very State agencies that are meant to control them. Regulators identify with the interests of industry rather than those of the public. In turn, the regulator is captured. This is a risk to regulation. The reform came in 1978, when US Congress passed the Airline Deregulation Act. Almost overnight, airlines in the deregulated market were exposed for the first time to free market forces, bringing about major, lasting changes to the industry’s structure.<sup>1</sup>

4 The Chicago School of Economics has as its main tenants that in a free market resources are allocated by the market to the best producers, and thus little to no government intervention is needed. For air transport, free market forces generated sweeping consolidation by way of numerous mergers, bankruptcies and acquisitions by dominant air carriers of the time. The US air transport industry became market-driven, precisely what policymakers, and in part even the industry itself in the years leading up to deregulation, had hoped for. In this new market, consumer demand determined the level of output in the form of air service products and price. An immediate stumbling block, a limitation to this newfound freedom of airlines, was that the change in demand place pressure upon infrastructure: airports and air traffic management in particular, which remained tightly and bureaucratically government-controlled. After decades of consolidation, today there are four major US airlines that remain: American Airlines, Delta Air Lines, Southwest Airlines and United Airlines.

1 See Steven Truxal, ‘Deregulation, liberalization and re-regulation’ in *Competition and Regulation in the Airline Industry: Puppets in chaos* (Routledge 2012) 44-63.

Exposed to the free market and given autonomy of a free market actor, the industry also innovated. Already by the mid-1980s, airlines began to get creative; they formed new tactical partnerships, such as ‘codesharing’.<sup>2</sup> Widely employed today by airlines around the world, a codeshare is an agreement between, using a current example, KLM as operating carrier and its partner Delta Airlines, under which a flight from Amsterdam Schiphol to New York JFK is operated by KLM as flight number KL641 and also has the Delta code DL9348. This form of cooperation allows for improved connectivity and overall efficiency, with marketing advantages too. In this example, Delta sells tickets on three non-stop flights between Amsterdam and New York, even though it operates only one and KLM the other two.

#### *European liberalisation*

Liberalisation of European air transport was different in terms of its execution when compared with deregulation of the American market. As US and European airlines compete on the lucrative transatlantic market, however, by the time that EU liberalisation began a decade later than the US process, similar competitive dynamics and structures had already developed on both sides of the Atlantic.

EU liberalisation brought together – within a *single* market – a number of distinct *national markets*, which were otherwiselinked through bilateral air service agreements. Prior to the Single European Act<sup>3</sup> that entered into force in 1987, domestic air services were governed by national rules including licensing controls and the regulation of fares by national governments or under the charge of the International

2 See Steven Truxal, ‘Development of tactical and strategic alliances’ in *Competition and Regulation in the Airline Industry: Puppets in chaos* (Routledge 2012) 119-158.

3 [1987] OJ L 169/1.

Air Transport Association (IATA), the representative body for airlines internationally.

The steps taken to liberalise the European sector were calculated and long-negotiated. Rather than attempting to abolish national markets in a single move, three so-called ‘liberalisation packages’ ensured a slow, managed transition to liberalisation in stages, the result: a single or internal market. As anticipated, the ‘Community air carrier’ concept, with common licensing criteria and the right of establishment anywhere within the EU, has led to a consolidation of incumbent large carriers in the market into three big groups:

- (1) Lufthansa German Airlines, SWISS, Austrian Airlines, Brussels Airlines and Eurowings in the Lufthansa Group;
- (2) Aer Lingus, British Airways, Iberia, Level and Vueling in the International Airlines Group (IAG); and
- (3) Air France, Air France HOP, KLM, KLM Cityhopper, Transavia and Martinair in the Air France-KLM Group.

Not only did deregulation and liberalisation lead to tactical and strategic alliances between airlines, it also enabled the successful launch of low-cost carriers. Competition on the market has led in general to greater efficiencies, lower prices, increased innovation and more consumer choice on the market. But there have been problems, too. When looking at the intense cooperation between airlines, for instance, one must wonder: is such cooperation allowed? Legal issues arose when airlines began to work together rather than compete as rivals. Antitrust and competition law forbid collusion and cartels; in the US, a company director who engages in such practices may commit a felony and be imprisoned. Over the past three decades, a range of different cooperative arrangements in the sector have been reviewed by competition authorities around the globe. Today’s transatlantic airline alliances, and thence, have received US antitrust immunity and EU block exemptions – albeit with various conditions

attached.<sup>4</sup> But what are the grounds for allowing legal exceptions?

The legislative approaches differ between the US and EU – with US antitrust immunity granted in the public interest – a potentially wide concept – and EU law’s focus being on consumer welfare – that is, that the consumer is allowed ‘a fair share of the resulting benefit’ of an agreement between two or more undertakings, public or private, under Article 101(3) of the Treaty on the Functioning of the European Union (TFEU).<sup>5</sup>

Until 2020, we observed that growth was strong in the global commercial aviation sector and competition was fierce. Things were looking prosperous.

While this lecture is dedicated to my specialisation, Air Law, my chair also covers Space Law, it is only appropriate for me to mention that in space things have also developed. There, we have seen a widening of actors: what was once exclusively a State activity – like major airlines and airports in the early days of air transport – in space we now have private actors: manufacturers, launch providers and spacecraft operators. The new space race is a ‘billionaire’ space race, in the private sector. Elon Musk, Jeff Bezos, Richard Branson have become household names. New technology is being developed and utilised. There are signs of a market emerging – space travel, space tourism, which just a few years ago might have been considered as ‘science fiction’. Space travel is no longer limited exclusively to States.

<sup>4</sup> See Steven Truxal, ‘American and European competition law and policy’ in *Competition and Regulation in the Airline Industry: Puppets in chaos* (Routledge 2012) 64-118.

<sup>5</sup> [2012] OJ C 326/47.

Thus, a whole new chapter is unfolding. There are many legal questions that need to be asked and answered. I will park this topic here; it's a subject for another day.

### **Environmental sustainability**

In parallel to an increase in demand for air services and space activity, pressure has been mounting on the international community to reduce greenhouse gas emissions, limit increases to global temperatures, and mitigate the effects of climate change. While there is growing consensus globally on the need to tackle climate change, there is no clear agreement on how to go about it. Instead, there is an uncomfortable divide between developed and developing States, island nations, and industrialising States. But given recent events affecting all nations, this looks to be changing.

Air and space activities contribute to climate change. A global problem, climate change should not and cannot be addressed without the involvement of all stakeholders in international aviation: airlines, airports, air navigation service providers, manufacturers – and the wider ecosystem including small and medium-sized enterprises, research and innovation, infrastructure, commercial activities, catering and maintenance. The same may be said for space, at least in the years to come.

According to IATA, commercial aviation contributes to between 2–3% of global greenhouse gas emissions.<sup>6</sup> According to the European Commission, aviation emissions in 2017 accounted for 3.8% of the EU's total greenhouse gas emissions, a majority of which are understood to come from interna-

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<sup>6</sup> IATA, 'Climate Change', <https://www.iata.org/en/programs/environment/climate-change/>.

tional flights.<sup>7</sup> Before 2020, the International Civil Aviation Organization (ICAO), the UN special agency for international aviation, forecasted that international aviation emissions could triple by 2050, and that fuel consumption was estimated to grow between 2.2 and 3.1 times by 2045, compared to levels in 2015.<sup>8</sup> For space, in addition to the environmental and safety issues of space debris, emissions from rocket launches also contribute to greenhouse gas emissions.<sup>9</sup>

In response to aviation emissions, various national governments have taken the policy decision to introduce environmental taxes on travel by air. Governments' decisions to levy taxes intended to raise the cost of those emissions, and therefore change behaviour. They have been successful at raising tax revenue, yet so far appear to have had little to no real appreciable effect on passenger behaviour.<sup>10</sup>

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<sup>7</sup> European Commission, 'Reducing emissions from aviation', [https://ec.europa.eu/clima/eu-action/transport-emissions/reducing-emissions-aviation\\_en](https://ec.europa.eu/clima/eu-action/transport-emissions/reducing-emissions-aviation_en).

<sup>8</sup> See ICAO, 'CORSIA FAQs', <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-FAQs.aspx>; and ICAO, 'Working Paper 54: ICAO Global Environmental Trends – Present and Future Aircraft Noise and Emissions' (5 July 2019), [https://www.icao.int/Meetings/A40/Documents/WP/wp\\_054\\_en.pdf](https://www.icao.int/Meetings/A40/Documents/WP/wp_054_en.pdf).

<sup>9</sup> See The European Space Agency, 'ESA's Space Environment Report 2021' (27 May 2021), [https://www.esa.int/Safety\\_Security/Space\\_Debris/ESA\\_s\\_Space\\_Environment\\_Report\\_2021](https://www.esa.int/Safety_Security/Space_Debris/ESA_s_Space_Environment_Report_2021).

<sup>10</sup> See Steven Truxal and Rupert Dunbar, 'Evaluating Three Levels of Environmental Taxation in Aviation: Global limitation, EU determination and UK self-interest?' in Ana Yábar Sterling and others (eds), *Market Instruments and Sustainable Economy* (Instituto de Estudios Fiscales 2012).

At EU level, following the 2008 Directive to include ‘aviation activities’ in the EU Emission Trading System<sup>11</sup> (‘the EU ETS’), civil aviation came into the international spotlight.<sup>12</sup> Protection of the environment is one of the core values of the EU. This is also reflected in the European Treaties. Article 11 of the TFEU provides that: ‘environmental protection requirements must be integrated into the definition and implementation of the Union policies and activities, in particular with a view to promoting sustainable development.’ Article 191 of the TFEU refers to EU policies. They should ‘contribute to the pursuit of ... preserving, protecting and improving the quality of the environment ... [and] promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.’

It is against this backdrop that one can view the EU as taking the lead globally vis-à-vis the innovative ETS, as it – the institutions and Member States – put pressure on the wider international aviation community of States to make progress on an international scheme through ICAO.

The EU ETS is the world’s first international market-based, ‘cap-and-trade’ system of nationally allocated rights across the EU based on the proportion of industry in each EU Member State. The EU ETS covers the entire European Economic Area (‘the EEA’) and is linked to Switzerland’s ETS.<sup>13</sup> At its

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11 Directive 2008/101/EC of the European Parliament and of the Council of 19 Nov. 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community [2008] OJ L 8/3.

12 See Steven Truxal, ‘Environment’ in *Economic and Environmental Regulation of International Aviation: From Inter-national to Global Governance* (Routledge 2017) 123-156.

13 *Agreement between the European Union and the Swiss Confederation on the linking of their greenhouse gas emissions trading systems* [2020] OJ L 322/3.

inception, the EU ETS was heralded as the ‘cornerstone’ of the EU’s climate change policy. It is an open trading scheme in which so-called ‘carbon credits’ are allocated as marketable rights, ‘licenses to pollute’, which are subsequently traded freely on the market irrespective of sector and in accordance with National Allocation Plans. Through the ETS, the EU hoped to achieve its Kyoto commitments while balancing which sectors and installations to include in it, and from when. This has been ramped up in light of the EU’s Paris Agreement commitments in 2015.

However, the decision to include aviation activities in the EU ETS was met with legal controversy owing to an alleged extraterritorial reach of the European legislation, which has as its original object to capture aviation emissions for flights to and from EU airports, for the entirety of the flight, including portions beyond sovereign airspace of the EU Member States. A major legal challenge was brought in the United Kingdom, at the time still an EU Member State, in the infamous *Air Transport Association of America* case.<sup>14</sup>

In an application for judicial review, the Air Transport Association of America, which has since changed its name to ‘Airlines for America’, argued along with American, Continental and United Airlines and others, that the EU ETS Directive as implemented into UK law, was an exercise of extraterritoriality by the EU to ‘capture the cost’ of the total emissions on a flight from, say, Amsterdam to New York, and thus breached certain principles of customary international law on sovereignty and jurisdiction, specifically State sovereignty over its airspace, sovereignty over the international waters of the high seas and the freedom to fly over the high seas, and provisions of international laws, namely the Chicago

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14 Case C-366/10, *Air Transport Association of America, American, Continental and United Airlines and Others v Secretary of State for Energy and Climate Change* [2011] OJ C 49/7.

Convention 1944, the Kyoto Protocol to the United Nations Framework Convention on Climate Change and finally, the US-EU Air Transport Agreement. When the English court referred the case to the Court of Justice of the European Union for a preliminary ruling, the European court found, in short, that the EU Law was in compliance with international law.

At the risk of a trade war erupting, the EU decisionmakers decided not to stand on the ruling and not to upset the, at the time on-going, progress of the international initiative in this area. Instead, it was felt wiser first to 'stop the clock' and subsequently to limit the geographic scope of the EU ETS to intra-EEA flights until 2024.

The problem of international aviation emissions has been high on the agenda of States at ICAO as evidenced by its appearance on the agendas of the past five triennial meetings of the ICAO General Assembly and through its being at the forefront of the interim work of ICAO Council, committees and working groups.

The 193 ICAO Member States have agreed to develop a market-based measure for achieving a reduction in carbon dioxide (CO<sub>2</sub>) emissions from international aviation through ICAO, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). This is to be distinguished from the EU ETS: CORSIA is built on offsets to 'neutralise' carbon emissions, whereas the EU ETS is a cap-and-trade system.

States agreed to work together in striving to achieve a collective medium-term global aspirational goal of keeping the global net CO<sub>2</sub> emissions from international aviation from 2020 at the same level in future; so-called 'carbon neutral growth from 2020'. The baseline in the short- to medium-terms is derived from an average of 2019 and 2020 emissions. Owing to the steep reduction in air traffic in the 2020 and 2021, the intended

baseline is of course problematic. The impact of this drop in traffic on international aviation fuel consumption is being evaluated and will be reported to the 41<sup>st</sup> ICAO Assembly in September 2022.

CORSIA has three phases: a pilot phase (2021-2023); a first phase (2024 – 2026); and a second phase (2027-2035). States' participation in the pilot phase and in the first phase is voluntary; the second phase will apply to all ICAO Member States. There are currently 107 States who have signed up to participate in the pilot phase, including all EU Member States.<sup>15</sup> Noting that the CORSIA applies only to emissions from *international* air services, airlines have been required already since 2019 to monitor emissions on all international routes and in future they will offset emissions from routes included in the scheme. To offset their emissions, airlines will be required to purchase emission units that are generated by products that reduce emissions in other sectors like renewable energy.

Up until the start of 2020, challenges existed, for instance on how to link the EU ETS and CORSIA systems, and others in development elsewhere in world. Nonetheless, with the European and international regimes in place, progress on addressing climate change from European and international aviation emissions looked to be well underway.

## Disruption

### *COVID-19 as disruptor*

The COVID-19 pandemic is a disruptor, across the board. For air transport, as States closed their borders demand dried

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<sup>15</sup> ICAO, 'Environment: CORSIA Frequently Asked Questions', <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-FAQs.aspx>.

up sharply to unprecedentedly low levels. The industry was brought to its knees.

In response, States granted financial aid. In Europe, this proceeded in the form of emergency State aid, as rescue packages including capital injections, revolving credit facilities, loan guarantees and deferrals of tax payments. This entailed a temporary loosening of an otherwise strict EU State aid prohibition. A Temporary Framework allowed Member States ‘to use the full flexibility of state aid law to act quickly when time [was] of the essence, such as in the present crisis.’<sup>16</sup> These initiatives absorbed ‘the economic shock in the air transport sector and beyond, and at the same time limit the impact on States.’<sup>17</sup> However, the unprecedented levels of support offered to aviation industry stakeholders came with a price tag. It is noteworthy to observe in this regard that some States ‘have seized the opportunity to promote the green agenda with climate targets’ and restrictions on night flights to reduce noise pollution ‘attached as conditions to state aid, whereby accelerating green innovation in air transport.’<sup>18</sup>

This instance of State intervention in the market via the COVID measures will come to an end – measures under the Temporary Framework should be granted by 31 December 2021, and the end date for deferrals is 31 December 2022.<sup>19</sup>

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16 Steven Truxal, ‘State Aid and Air Transport in the Shadow of COVID-19’, 45(SI) *Air & Space Law* (2020) 80.

17 *Ibid.*

18 *Ibid.*, 81.

19 The Temporary Framework has been amended five times. See European Commission, ‘Communication from the Commission Fifth Amendment to the Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak and amendment to the Annex to the Communication from the Commission to the Member States on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to short-term export-credit insurance’ [2021] OJ C 34/6.

The ‘normal’ European State aid rules, once they return, and ongoing work on targeting foreign subsidies may make the EU vulnerable in overseas markets and lead to tensions in international trade. This is something to keep an eye on. The search for the elusive ‘level playing field’, which we heard repeatedly until 2020, will resume – though this time it will include not only ‘fair competition’ but also sustainability, a possible ‘carbon border’.

In the face of the COVID-19 disruptor, one risk was collapse of airlines, of air transport, mobility, jobs and associated economic benefits; other sectors could have collapsed, too. Again, the COVID-related State aid is temporary; the unprofitable cannot hide behind the State forever, not if they’re not economically sustainable. State intervention through financial injections for ‘survival’ is not desirable, otherwise we run the risk of inviting a return to the old times of State control of industry and artificial protection of incumbents through tough re-regulation and State interference.

While COVID-19 is the most recent disruptor we have seen, it is however not the only one we have witnessed in semi-recent times. Take the 2007-2008 Global Financial Crisis, as an example. Are disrupters more than ‘one offs’? I believe that not to be the case. We – politicians and rule-makers, the industry and its consumers as well as academics – all learn lessons from each disruption and change our views accordingly.

### *Regulation and Market*

In addressing future environmental and economic sustainability, which are inextricably linked in my view, there are two possible paths to take for aviation now and space in due course: (1) through regulation; and (2) reliance on the market.

The first path is through regulation. Regulation may be used to achieve consumer protection aims, such as with Regulation

261/2004 establishing common air passenger rights.<sup>20</sup> Through an intervention, however, ex ante regulation ('before the event') can also be used as a tool to address market failures or failures of competition law enforcement, earlier, before the damage is done. The administrative nature of ensuring compliance with ex ante regulation may lead to greater certainty and predictability when compared with the case-by-case approach of judicial and quasi-judicial ex post ('after the event') enforcement.

Through ex post enforcement, sustainability could be harnessed as a new economic goal to replace consumer welfare. There is already notable progress here in the Netherlands, with the Dutch competition authority, the *Autoriteit Consument en Markt* ('the ACM'), recognising the importance of sustainability in enforcement – and thus leading the way in Europe. The notable example in which no cartel exemption was given by the ACM was in its 2015 assessment of the *Kip van Morgen*, Chicken of Tomorrow agreement.<sup>21</sup>

In September 2021, there was an amendment to the Austrian Federal Cartel Act. The EU exemption criteria, as provided for in Article 101(3) of the TFEU, tell us that agreements, decisions and concerted practices 'which contribute to improving the production or distribution of goods or to promoting technical or economic progress, *while allowing consumers a fair share of the resulting benefit*' may be allowable. The new Austrian criteria reads:

<sup>20</sup> Regulation(EC) No 261/2004 of the European Parliament and of the Council establishing common rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights, and repealing Regulation (EEC) No 295/91, [2004] OJ L 461.

<sup>21</sup> Autoriteit Consument en Markt, 'Welfare of today's chicken and that of the "Chicken of Tomorrow"', (1 Sept. 2020), <https://www.acm.nl/en/publications/welfare-todays-chicken-and-chicken-tomorrow>.

'consumers are granted a fair share of the benefit resulting from the improved production of goods, its distribution or the promotion of the technical and economic progress if the agreement *significantly contributes to an ecologically sustainable and climate neutral economy*.'<sup>22</sup>

Thus, while there is no corresponding provision in EU Law – yet – change is already underway in the Member States as regards reviewing the enforcement of competition law in light of European environmental objectives.

The second path is reliance on the market. There are a number of market-based measures which can be utilised financially to incentivise industry stakeholders to pollute less and in turn to become more sustainable actors. These include taxes and levies, carbon markets (e.g. the EU ETS), and mandatory and voluntary offset markets (e.g. CORSIA). Such market-based measures have the potential to drive investment and innovation via the market – in contrast to command-and-control economic and environmental policy through direct regulation and its prohibitions and permissions, set standards and enforcement.

The Chicago School of Economics, which made sense in the deregulated market, has since fallen out of fashion after the Global Financial Crisis – another disruptor, as we have identified. This therefore raises questions about the ability of the market to correct itself in the absence of meaningful regulation – in this case the banking sector. While regulation was perceived in the 1980s and 1990s as a threat to competition, the Global Financial Crisis taught

<sup>22</sup> See Florian Reiter-Werzin and Maria Dreher, 'Amendment of the Austrian competition law strengthens role of sustainability' (23 Sept. 2021), <https://sustainability.freshfields.com/post/102h6wl/amendment-of-austrian-competition-law-strengthens-role-of-sustainability>.

us that you cannot leave it to the market alone; competitive markets can fail. And the COVID-19 pandemic has also taught us something: that exemptions are needed to correct the immediate damage caused by the crisis – even in a fiercely competitive global market.

COVID-19 may be the recent disruptor we have seen. It is however by far, not the only one we have witnessed through times. Are the disrupters more than one offs? I believe that is not the case. We – politician and rule makers, the industry and its consumers as well as academics – learn lessons every time. And apply what we learn as we innovate.

### **Future legal solutions**

While there is still much uncertainty surrounding the extent to which the COVID-19 pandemic will impact on air travel in the short-term, IATA's *20-year Air Passenger Forecast* suggests, taking the pandemic into account, that *global* air passenger growth could be in the range of 1.5 to 3.6% in the next 20 years.<sup>23</sup> Demand is expected to reach 40% of pre-pandemic 2019 levels in 2021; and 61% in 2022.<sup>24</sup> So far, IATA estimates the financial loss to the sector will be €201bn across 2020-2021. There is still a long way to go. We are in a recovery phase. States and industry are 'building back better' – a concept

used by the Organisation for Economic Cooperation and Development (OECD), the White House, and the Hague.<sup>25</sup>

Looking towards the future, we may see more regulation, greater state intervention to pursue sustainability aims and to address climate change. In Europe, the economy is being reshaped to meet the Union's environmental objectives. The European Climate Law creates a legally binding target of net zero greenhouse gas emissions by 2050, the goal set out in the European Green Deal to become climate neutral by 2050.<sup>26</sup> The target is to reduce net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. The Climate Law is the new 'cornerstone' of the European Green Deal. The European Commission has proposed a revision of the aviation ETS rules, noting that aviation 'is an integral part of EU's "Fit for 55" package. The revision includes implementation of CORSIA through the EU ETS Directive.'<sup>27</sup>

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23 IATA, '20 Year Passenger Forecast', <https://www.iata.org/en/publications/store/20-year-passenger-forecast/>.

24 <https://www.iata.org/en/pressroom/2021-releases/2021-10-04-01/>

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25 OECD, 'Building back better: A sustainable, resilient recovery after COVID-19' (5 June 2020), <https://www.oecd.org/coronavirus/policy-responses/building-back-better-a-sustainable-resilient-recovery-after-covid-19-52b869f5/>; The White House, 'The Build Back Better Agenda', <https://www.whitehouse.gov/build-back-better/>; Rijksoverheid, 'Kamerbrief over duiding van het concept Build Back Better' (3 Mar. 2021), <https://www.rijksoverheid.nl/documenten/kamerstukken/2021/03/03/kamerbrief-over-duiding-van-het-concept-build-back-better>.

26 Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law') [2021] OJ L 243/1.

27 European Commission, 'Proposal for a Decision of the European Parliament and of the Council amending Directive 2003/87/EC as regards the notification of offsetting in respect of a global market-based measure for aircraft operators based in the Union', COM(2021) 567 final, [https://ec.europa.eu/info/sites/default/files/notification-carbon-offsetting-and-reduction-scheme-international-aviation-corsia\\_en.pdf](https://ec.europa.eu/info/sites/default/files/notification-carbon-offsetting-and-reduction-scheme-international-aviation-corsia_en.pdf).

Will regulation require that aging aircraft are replaced, not for safety reasons but because their engine emissions are too high? The answer is: yes. ICAO adopted a CO<sub>2</sub> emissions standard in 2017; it already applies to new aircraft type designs and will from 2023 apply to aircraft designs already in production.<sup>28</sup> There may be a demand for even more efficient and environmentally friendly aircraft, post-pandemic. Can we improve airport and air traffic management systems and procedures? Yes, but how? The answer in Europe lies in the success of the Single European Sky legislative framework and the Total Airport Management project.<sup>29</sup>

Will sustainability be regulated for? It is already. If the sector does not respond and embrace the need for innovative solutions, we may, at least from a European perspective, a transformation, a re-regulation of how airlines and consumers fly. With that we risk going back to where we started – albeit from another perspective – but again to the disadvantage of the sector, limiting the freedom to make business decisions, to differentiate, to cooperate and to innovate.

But we are also likely to feel a push from within the market itself. The demand for sustainable travel choices and transport modes that have sustainable operations, use sustainable fuels and electricity, will only increase. This means that the status quo is not an option. In Europe, there is a push already from the grassroots to use rail for travel. As consumer focus shifts to sustainability, it is becoming less popular to travel by air. ‘If airlines do not become “greener”, they could risk being

28 Volume III, Annex 16 to the Convention on International Civil Aviation (‘Chicago Convention’) 1944, <https://www.icao.int/security/sfp/pages/annex17.aspx>.

29 European Parliament, ‘Air Transport: Single European Sky’, <https://www.europarl.europa.eu/factsheets/en/sheet/133/air-transport-single-european-sky>; Eurocontrol, ‘Total airport management’, <https://www.eurocontrol.int/project/total-airport-management>.

replaced by other forms of transport on short haul markets.<sup>30</sup> Consider the 2018 *flygskam* (‘flight shame’) movement that began in Sweden – and connected thereto, the concept: *tågskyr* (‘train brag’). In late-October 2021, the same week at the English Football League launched an environmental sustainability scheme, a Premier League team, Manchester United flew by air to their match at Leicester City.<sup>31</sup> It was a ten minute flight covering 160km. We should not dismiss these as mere social media happenings. There is clearly an undercurrent to recognise and to heed; policymakers and the market are listening and will adjust accordingly.

Within the market, industry stakeholders have been working on sustainability for quite some time; there are recent, ambitious developments. At the start of the year, IATA published its *Waypoint 2050* blueprint to achieve this – relying not only on market-based measures but a move away from reliance on fossil fuel to be replaced by sustainable fuels, introduction of critical new technologies and operational improvements.<sup>32</sup> In October 2021, IATA, Airport Councils International (ACI), the International Coordinating Council of Aerospace Industries (ICCAIA) and the Civil Air Navigation Services Organization (CANSO) gave commitments to ‘Net zero by 2050’, so as to achieve net-zero carbon emissions

30 *Ibid.*, 81.

31 Donnachadh McCarthy, ‘how can Manchester United defend their 10-minute flight to Leicester?’, *The Independent* (19 Oct. 2021), <https://www.independent.co.uk/climate-change/opinion/manchester-united-fly-to-leicester-climate-crisis-b1940551.html>.

32 IATA, ‘Waypoint 2050’ (27 Jan. 2021), <https://www.iata.org/en/programs/environment/sustainable-flying-blog/waypoint-2050/>; See also Air Transport Action Group, ‘New Analysis Details Aviation Climate Pathways’ (29 Sept. 2020), <https://www.atag.org/component/news/?view=pressrelease&id=120>.

by 2050.<sup>33</sup> Airbus intends to develop the world's first zero-emission aircraft using hydrogen propulsion by 2035, the 'ZEROe' project on developing the world's first zero-emission commercial aircraft.<sup>34</sup> Just to add, the World Economic Forum reports that the space sector is also working on 'Space and Net Zero'.<sup>35</sup>

Economic and environmental regulation – and the interaction with regulation and the market – is highly political internationally. There are likely to be frictions with some of our key trading partners. Within the international civil aviation community, however, States are already coming together in the ICAO forum. At a high-level conference on COVID-19 held in October 2021, under the theme 'One Vision for Aviation Recovery, Resilience and Sustainability beyond the Global Pandemic', ministers adopted after nine days of 'virtual multilateralism' a Declaration 'supported by political will and commitments of States, to enable the safe and efficient recovery of aviation from the COVID-19 crisis and building

a foundation to strengthen resilience in aviation and make it more sustainable in the future.'<sup>36</sup> This sounds promising.

Without a doubt, the air transport industry will be radically transformed again – the green transformation is well underway, accelerated by COVID as a disruptor. State investment and financing tools are available through the EU Green Deal to support sustainable mobility. So, enter innovation!

The *regulatory* and *market* transformations that are beginning here in the EU may well be followed elsewhere. Transformations require innovation, from industry but also from law, legal solutions. Before concluding, allow me to share a quote – published in 2017:

'As seen from an economic standpoint, international civil aviation is shedding its flag-obsession to become more global. It can be said that in some parts of the world the days of prestige and political power associated with national flag carriers has subsided. *There are fewer national airlines owned and controlled by States, and protected at all costs from the risks and opportunities associated with the free market.* Instead one can witness an increase in the number of new and diverse multinational airlines operating on the global market as major global businesses.

'Growth is strong in the sector. In many respects, the global market for aviation is booming. But competition is also fierce — particularly in liberalized and deregulated markets in which market entry is unrestricted, and innovative low-cost and low-fare business strategies flourish. Yet, on the global market fair competition is often more theory than praxis. In an inherently cooperative airline industry,

33 IATA, 'Our Commitment to Fly Net Zero by 2050' (3 Oct. 2021), <https://www.iata.org/en/programs/environment/flynetzero/>; ACI, 'Net zero by 2050: ACI sets global long term carbon goal for airports' (8 June 2021); <https://aci.aero/2021/06/08/net-zero-by-2050-aci-sets-global-long-term-carbon-goal-for-airports/>; ICCAIA, 'ICCAIA Joins Aviation Industry Partners to Reach Net-Zero Carbon Emissions by 2050' (5 Oct. 2021), <https://aci.aero/2021/06/08/net-zero-by-2050-aci-sets-global-long-term-carbon-goal-for-airports/>; CANSO, 'Air Traffic Management industry supports 2050 net-zero carbon goal' (6 Oct. 2021), <https://canso.org/air-traffic-management-industry-supports-2050-net-zero-carbon-goal/>.

34 Airbus, 'ZEROe: Towards the world's first zero-emission commercial aircraft', <https://www.airbus.com/innovation/zero-emission/hydrogen/zeroe.html>.

35 World Economic Forum, 'White Paper: Space and Net Zero' (30 Sept. 2021), <https://www.weforum.org/whitepapers/space-for-net-zero>.

36 The draft Declaration may be found here: <https://www.icao.int/Meetings/HLCC2021/Pages/reference-documents.aspx>.

there has been a prevalence of regional and global price-fixing cartels. The highly competitive market also gives way to instances of price discrimination, and increasingly, *allegations of State guarantees and subsidies*.<sup>37</sup>

The quote is from the Preface of my last book, observing the then-shift in aviation from inter-national to global governance using economic and environmental regulation as examples; and on reflection today, clearly some things I got wrong, especially about State intervention. Admittedly, I did not foresee such a huge disruptor, or how it would accelerate the sustainability agenda. Are we going to roll back on liberalisation and deregulation to return to a pre-1980s command-and-control form of direct regulation, there where we began our journey this afternoon? No, the free market has learned. While we have seen greater State presence, in support of the environment and market, industry actors are also fully on board. And consumers have a view on the matter, too.

Did I take you on a one-way trip or a return, a round-trip? I hope the answer is clear: it is a one-way journey to a new chapter of regulation and a new type of market – both these raise many issues and interesting questions to consider. I am looking so much forward to the future: working together with the air and space team, university colleagues and students, to pursue and make contributions – here from Leiden – as we provide answers to these questions and apply legal solutions to the issues.

### **Thank you**

I wish to extend my thanks to the Executive Board of Leiden University and the Faculty Board of Leiden Law School for appointing me in this Chair. In particular, I would like to

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To my family, especially my parents and grandparents, and my dearest friends, who all follow the mantra: ‘you can be whatever you want to be’ – yes, indeed! Thank you for always being there, and especially for being here today – in person or online.

Last but not least, to my spouse, my sparring partner and my best friend, Christian. Tak for alt du er og alt du gør. I know you said ‘no more books’, but there are definitely more books for me to write!

*Ik heb gezegd.*

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<sup>37</sup> Steven Truxal, *Economic and Environmental Regulation of International Aviation: From Inter-national to Global Governance* (Routledge 2017) xviii-xix (emphasis added).



