Taxing Aviation Fuel in Europe. Back to the Future?

Report prepared by Bill Hemmings and expert contributors Eckhard Pache, Peter Forsyth, Gabriela Mundaca, Jon Strand and Per Kågeson.

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Chapter 1 - Executive Summary

The European Commission and Ecofin Finance Ministers are considering ways to remove the aviation fuel tax exemptions in the 2003 Energy Tax Directive (ETD) - to fight climate change and fairly apply fiscal policy. They are an anachronism - the EU already recognised nearly 20 years ago that *all* aviation fuel should be taxed once international obstacles to doing so were removed. Those obstacles are now gone for intra EU flights and fuel can be taxed even without amending the Directive which is more complex aero-politically to achieve today.

The EU is free to decide to tax kerosene for flights within the EU subject only to any exemptions in Air Service Agreements (ASAs) with foreign governments that the EU itself has concluded. The EU is not bound by the Chicago Convention nor by policies of ICAO not to do so, nor by fuel tax exemptions granted to foreign carriers in past ASAs by member states themselves. Removing the aviation tax exemptions in the 2003 ETD requires unanimity in Council although the Commission is again considering the possibility to do so via qualified majority voting (QMV), citing environmental and climate concerns. After 7 years of difficult negotiations, today's ETD was pushed through Council in early 2003 just before EU enlargement a year later would have made agreement even more difficult. Malta and Cyprus along with seven eastern bloc countries joined at that time.

Malta and Cyprus rely almost entirely on airlinks and oppose aviation taxes as may other peripheral member states. The EU27's smallest 13 emitters account in fact for just 10% of intra EU27 fuel burn/emissions while the top 6 EU27+ emitters – Germany, Spain, Nordics, Benelux, France and Italy – account for 72%. So why not just focus on the big emitters first? Which is exactly what the Commission proposed almost 25 years ago in March 1997; tax fuel on domestic flights, and on those within Europe bilaterally, and include the rest once international obstacles were overcome. That last provision was, however, vetoed by Spain and Ireland, fatefully converting the conditional tax exemption for flights to third countries into an absolute prohibition requiring tax unanimity to remove. Attention then turned to implementing the aviation ETS which was possible through qualified majority voting, QMV.

The new Commission could prepare guidelines on taxing fuel bilaterally. Afterall it had already suggested such soft law approaches coordinated with the European Parliament in a Communication back in 2001 and outgoing Commissioner Moscovici offered to prepare guidelines last summer. The main reason for not taxing fuel in the late 1990s was the fuel tax free pass accorded foreign carriers in historical ASAs for flights within Europe. These foreign carriers were then estimated to account for about 5% of intra EU traffic volume. All those foreign carriers, bar two, have largely disappeared from the market and a de minimis solution can exempt the remainder. The other obstacle, an ICAO resolution banning fuel taxation was even then not obligatory. Member states wishing to tax fuel in Europe today would need to - and are free to - opt out of ICAO's policy on fuel taxation.

Whether to tax fuel within Europe or pursue other options such as strengthening the ETS, abolishing free allowances, implementing Corsia or introducing more ticket taxes, is now for Europe to decide. This study recalls the history of fuel tax exemptions, past debate in Europe on the issue, draws on an extensive legal analysis, and sets out the ways now available to proceed with a fuel tax on flights within Europe. Experts assess likely impacts on demand, emissions, industry, passengers and the economy and suggest effective levels for such a fuel tax. Fuel tankering and Brexit are also considered.

The study was written and finalized before the Covid 19 virus brought aviation to a standstill.

Joint Conclusions

A decision in the Green Deal to remove the fuel tax exemptions in the ETD for flights within the EU will take time and might require exemptions, phase-ins and special conditions etc because of aeropolitical considerations and the Council's unanimity requirement. No change to the current fuel tax exemption for flights to third countries is needed to do so. The outcome might not look much different to member states agreeing to tax aviation fuel via bilateral or multilateral agreement.

Domestic aviation emissions account for about 41% of global aviation CO_2. Many countries already tax fuel uplifted for domestic aviation although tax rates are generally low and levied for revenue reasons – as an excise duty, a sales tax, or to cover issues such as oil tank maintenance. In the EU 27, four member states account for 87% of domestic fuel burn while many have hardly any domestic aviation. Member states have been free to tax fuel for domestic flights since 2003. To mandate domestic fuel taxation through a revised ETD makes sense but also presents political challenges.

The EU's single market is essentially Europe's "domestic" market. Aviation is subject to the ETS. Some argue that additional stronger measures are needed and fuel taxation could be one. A fuel tax, by reducing demand, will also reduce non-CO2 effects which are not directly addressed in the ETS.

No EU member state currently taxes aviation fuel though the option to do so for flights within the EU has been possible via bilateral agreement since 2003. Norway has taxed domestic kerosene CO2 for over 20 years. The top 6 EU+Norway emitting groups – Germany, Spain, Nordics, Benelux, France and Italy account for 72% of intra EU/Norway fuel burn whereas 13 member states account for 10%. The UK had the largest fuel burn/emissions within the EU 28 – 18% - and being able to tax fuel on flights to the UK in the future is an issue for Brexit.

Fuel taxation as an EU policy objective was effectively agreed not so long after being formally banned in 1992. Neither the Chicago Convention, nor ICAO's policy on fuel taxation nor fuel tax exemptions in old member state ASAs are obstacles to doing so for intra EU flights. Foreign carriers have effectively withdrawn from this market and a fuel tax de minimis can accommodate remaining exemptions.

The Commission could encourage large emitters to address aviation's climate impacts through bilateral fuel taxation agreements pending revision of the Directive and issue guidelines drawing on this study. Enforcing Regulation 847 2004 would require member states to abolish historical fuel tax exemptions within the EU for foreign carriers and future ASAs negotiated by the EU should avoid conferring a fuel tax exemption for such flights.

EU aviation is severely under-taxed and under-charged, for both its fuel consumption and its general economic activity. Optimally, Europe should levy fuel taxes, ticket taxes and/or VAT at higher than today's rates to address two separate "distortions"; GHG emissions and pollution etc and sub-optimal tax revenue raised.

Fuel taxation will reduce demand and emissions over time as well as provide a longterm incentive to improve efficiency. An optimal single fuel tax to cover climate and other externalities and to contribute fairly to tax revenues, would be set at 37 euro cents/litre

given a carbon cost of $40/t CO_2. Or 55 euro cents/litre at $80/t CO_2. Estimated annual EU tax revenues would then vary between €15-€34 billion or €26-€49 billion at $40 or $80/t CO_2. An optimal global fuel tax, imposed alone, could potentially raise up to €140 - €200 billion at a carbon cost of $40 - $80/t CO_2.

There is no general economic case to earmark the proceeds of a tax to spend on any other initiative. Nevertheless earmarking is often used and arguments continue to be made to do so to help the aviation sector address climate change.

Fuel tankering is widespread in European aviation. Fuel taxation should in itself discourage the practice by raising fuel costs, but the Commission could investigate measures to avoid fuel taxation aggravating the situation by, for example, introducing dual tax rates within the taxed countries.

Expert findings

Per Kågeson

Both VAT and ticket taxes only indirectly relate to fuel consumed so are weaker climate measures than a fuel tax. It makes sense to maintain and expand ticket taxes in the absence of VAT. Compared to all other policy instruments (but the ETS) fuel taxation will make all types of measures to cut CO2 more economically viable including fuel efficiency and partial electrification, and, together with a mandate, a switch to cleaner fuels. Norway and Sweden began implementing domestic CO2 taxes in the 1990s and a discussion is ongoing in the Nordic countries on broadening it to aviation.

To make a CO2 tax more acceptable to industry, some of the revenues could be recycled to accelerate decarbonisation projects. Even the largest and most profitable airlines will find it difficult to act in isolation. The Norwegian NOx-fund complies with state aid rules and allows ships and land-based NOx sources to avoid a tax by paying a slightly smaller fee to a fund which supports NOx reduction projects. The Nordic countries are in a politically good position to introduce carbon pricing for aviation perhaps in cooperation with states such as the Netherlands, France and Germany.

Eckhard Pache

EU member States are free to tax fuel for domestic aviation and set the tax rate themselves. Member states can also tax fuel on flights between them so long as they agree bilaterally/multilaterally to do so. They can individually set such tax rates – including below the EU minimum or even zero - and, with justification, set rates for specific areas. Where foreign carriers flying within the EU are still fuel tax exempt, a tax de minimis should apply and for this reason, freighter aircraft should be exempted or taxed differently.

The EU is free to tax kerosene across the European Common Aviation Area subject only to any exemptions in Air Service Agreements (ASAs) the EU itself has concluded with foreign governments. The EU is not bound by the Chicago Convention nor by policies of ICAO not to do so. Such a tax could be simply introduced by agreeing to remove the tax exemption for aviation in paragraph 14 of the Energy Tax Directive which would then mean that all fuel used for domestic, intra-Community or international flights would have to be taxed at the

EU minimum of 33 cents per litre. However because some Air Services Agreements concluded by the EU exempt the taxation of fuel uplifted for flights to third countries, a general exemption for these flights should remain until the EU has renegotiated these provisions or some other appropriate exemption scheme becomes available.

For an intra-Community fuel tax introduced under a revised Energy Tax Directive, a de minimis could be applied to ensure no tax incidence on foreign carriers, although member States have, since 2004, been required to remove any remaining intra EU fuel tax exemptions for foreign carriers in their Air Services Agreements. The EU is free to decide on a Community-wide minimum tax level, on transitional periods for all or certain member states and to take into account special national or regional situations and the specific transport needs of certain Member States when introducing different tax levels.

Peter Forsyth

Emissions reductions from fuel taxes are limited by pass-through rates. Full pass through in the short run is unlikely, but likely almost complete in the long run. Unlike ticket taxes, fuel taxes reduce emissions through both an impact on demand and on supply, with the latter likely to be larger in the longer term.

Countries generally impose taxes on outbound traffic though not inbound. Residents of the home country, and also of the foreign countries, will be subject to the tax. Countries gain when imposing taxes, because the tax exporting effect means visiting foreign residents pay (some of the taxes), though they lose to the extent that the wider economic benefits (WEBs) of aviation are reduced. They can gain or lose from impacts on tourism. At slot constrained airports, airlines are forced to absorb taxes and do not pass the costs on. There is still a supply response which lessens emissions.

A fuel tax levied when an ETS is in place will only reduce overall emissions via impacts on demand if the waterbed effect is addressed. The tax will still have a supply effect and will reduce non-carbon emissions. If Corsia is in operation, a fuel tax will lower emissions, the demand for offsets, and still have a supply effect.

Many studies claim that aviation taxes adversely impact the economy. Most can be dismissed since they use faulty techniques. Rigorous approaches suggest impacts are ambiguous.

Gabriela Mundaca and Jon Strand

The aviation sector is today severely under-taxed and under-charged, for both its fuel consumption and its general economic activity. Optimally, Europe should levy fuel taxes, ticket taxes and/or VAT at higher than today's rates to address two separate "distortions; GHG emissions and pollution etc; and sub-optimal tax revenue being raised.

If we consider just one tax, a fuel tax, to cover both distortions, and assuming a cost of carbon equal to \$40/t CO_2, then the optimal fuel tax is 37 euro cents/litre, or 55 euro cents/litre given a carbon cost of \$80/t CO_2. Estimated annual EU revenue from an optimal single fuel tax is €15-€34 billion or €26-€49 billion, at \$40 or \$80/t CO_2 respectively. An optimal global fuel tax, imposed alone, could potentially raise up to €140- €200 billion at a carbon cost of \$40-\$80/t CO_2

Taxing aviation fuel in a broader context.

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A number of economic policy instruments aimed at curbing CO2-emissions from civil aviation are currently being discussed for implementation in individual Member States or in the European Union. Some are already in use. Emissions from domestic aviation and intra-Europeans routes are subject to the cap of the EU ETS, and half a dozen Member States enforce ticket taxes. However, other forms of policy instruments are also being considered, among them a biofuel mandate, environmental differentiation of start/landing fees and a tax on kerosene. The aim of this short contribution is to discuss which type of combination of taxes and other policy instruments may potentially be optimal and to what extent the use of duplicate instruments may cause a redundancy of limited value.

A tax on tickets is only indirectly related to the fuel consumed and may therefore be considered a weak policy measure in the context of climate change. This is equally true for VAT, which currently is not enforced on tickets for international flights. Both tax part of the economic turnover of the airline, the only difference being that VAT on tickets has a broader tax base. So long as VAT is not enforced on international flights, it makes sense to maintain a ticket tax where such taxes are already in use and to introduce them in other Member States. The issue of whether or not tickets should be taxed is therefore not further considered in any of the combinations of policy instruments discussed below.

A fuel tax could be considered a market-based instrument that, in light of aviation emissions´ inclusion in the ETS, would not add much. A counter-argument may be that the current price of allowances, although much higher than two years ago, still does not reflect the long-term marginal cost of reducing European aviation emissions to zero by 2050 or 2060. Given the long lead-time for replacing the existing fleet (25-30 years), the development of airplanes that require less energy and run on alternative fuels needs to start very soon.

New body and wing designs may in combination with more efficient engines, partial electrification and reduced speed, cut fuel demand per km by about half, but during the period of introduction of these new technologies, air travel may double even if demand is held back somewhat by higher ticket prices. Biofuels cannot be sustainably produced in quantities required to substitute fossil energy in all sectors that currently rely on coal, gas and oil. Even in a case where electricity to a very large extent is replacing liquid fuels and natural gas in transport, industry and heating of buildings, bioenergy cannot alone cover the remaining demand. Therefore, in the long-term, hydrogen and electro fuels will marginally be needed. The long-term marginal cost of supplying aviation with energy may thus within a few decades reach a level far above the current cost of kerosene and several times the current price of emission allowances.

Introducing a tax on kerosene would be a way of providing airlines an early incentive to start asking for more fuel-efficient planes and to consider to replace part of their fossil energy demand by biofuels and/or electro-fuels. Compared to all other policy instruments (but the

ETS) it has the virtue of making all types of measures that help cutting CO2 more economically viable.

When deciding on the tax rate, provision could be made for taking the future price development of ETS allowances into consideration. Participating States could decide to adjust the tax rate in order to make the combined cost of the tax and purchasing emission allowances never exceed a certain level.

In principal the ETD sets out a minimum level of 330 Euro per 1,000 liters of kerosene. However, Article 14, § 2 states that "*Member States may apply a level of taxation below the minimum level set out in this Directive*". The directive also notes that Member States usually tax energy used in stationary equipment less than motor fuels. One reason for this may be that fuel taxation has traditionally been a way for treasuries to recover some of the costs of road infrastructure and the associated externalities that do not occur to the same extent as a result of using oil for heating of buildings or for electricity production. In this context, airlines could be expected to claim that they already pay most of the infrastructure cost and the cost of air traffic control through different types of airport and under-way charges, and should therefore not be made to pay the same amount per liter as road vehicles.

However, to make the comparison with road transport more complete, regard would also have to be taken of other relevant taxes and charges. Intra-European flight tickets are exempt of VAT, which for private travelers (who cannot deduct VAT) corresponds to a higher avoided cost compared to the impact on ticket prices from introducing a fuel tax set at the EU minimum rate. The climate impact of high-altitude greenhouse gas emissions may also need to be considered, however noting that flights below approximately 8,000 meters do not cause such emissions.

Chapter 2 - Introduction & background

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Calls to abolish aviation's tax exemptions are not new but have come into sharp focus following the publication of an EC commissioned report into aviation taxation in Europe, an unprecedented Finance Ministerial level conference on the issue in The Hague in June 2019 and explicit calls during the 2019 European elections to tax aviation fuel.

These developments may signal a turning point as regards taxing aviation. Not just because aviation emissions keep growing, or because of concerns about offsetting and Corsia, but because aviation is now increasingly exposed as a high emitting unregulated sector accounting for an estimated 5% of man-made global warming. Continued strong growth will, it is claimed, threaten to exacerbate the climate crisis significantly. This growth is fueled by low or non existent taxation levels amounting to tens of billions of dollars annually in fossil fuel subsidies. Public awareness and pressure to address aviation emissions has never been greater.

This study sets out in detail the likely issues that will need to be considered should flights within the EU be subject to a fuel tax. It is not a comparative study of taxation options nor indeed other possible measures to address aviation emissions. It does set out to answer any questions about how a fuel tax in Europe could work. It will recall the origins of exempting aviation fuel from taxation in Europe and consider the various options for moving forward; revising the 2003 Energy Tax Directive (ETD) and abolishing the exemption for intra EU flights, or by pursuing bilateral agreements between individual member states as the Directive already provides for. It identifies the likely impacts – on industry, emissions, the economy and passengers, and considers what level of taxation might be appropriate.

In 2017, coalition parties forming government in the Netherlands agreed to introduce a tax on aviation. Activity at Schiphol, Europe's largest airport by traffic, was restricted to 500,000 movements a year due to aircraft noise issues. Perhaps taxation, preferably at the European level, could help? In February 2019, Dutch State Secretary for Finance Menno Snel, announced a conference on aviation taxation would be held in The Hague that June. Papers were submitted by The Netherlands to the February Ecofin; by Belgium to the March EU Environment Council;and by Luxembourg to the June Transport Council. During the May 2019 European Parliament elections, top candidates called for aviation fuel to be taxed. Just before the Hague conference, a leaked study on aviation taxation for the European Commission revealed that aviation is undertaxed in Europe; that a fuel tax on all outbound flights would reduce EU aviation emissions by 11%; that aviation activity would shrink and CO2 emissions would fall, but that European economies overall would not be affected.

Over 120 Ministers, officials and experts from 31 European states attended The Hague. State Secretary Snel, Swedish Finance Minister Andersson, French Environment Minister Poirson, OECD Deputy Secretary General Schuknecht, and others, called strongly to close the wide

gap between the taxation of road fuels in Europe and the non-existent equivalent in aviation.

Finland as EU Council President, launched a further initiative on energy taxation at the 11 September 2019 Ecofin. On 7 November 2019, nine EU Finance Ministers called on the European Commission to propose an EU initiative on aviation pricing arguing that "aviation is not sufficiently priced…it is exempted from excise duties, no VAT is levied on international flights, there is no coordinated ticket tax and economic instruments … can be strengthened in the aviation sector… we are convinced that EU coordination on this matter is the most effective for all member states".

Conclusions from the 5 December 2019 Ecofin invited the Commission "to analyse and evaluate possible options for a possible revision of the 2003 Energy Tax Directive (ETD) … give particular consideration to the scope of the directive, minimum rates and specific tax reductions and exemptions… taking notably into consideration.. relevant sectors, such as aviation… their specificities and existing exemptions and international dimension".

The new European Commission's Green Deal of November 2019 declared (page 10) that fossil-fuel subsidies should end and, in the context of the revision of the Energy Taxation Directive, the Commission will look closely at the current tax exemptions including for aviation and maritime fuels and at how best to close any loopholes.

A brief history of fuel taxation

Exempting aviation fuel from taxation started well before the Chicago Convention – nearly 100 years ago in fact - when American states began taxing gasoline to fund roadbuilding while airports were still grassy fields. The nascent aviation industry, then mainly delivering mail, objected to these taxes and US states progressively introduced exemptions. The 1928 Pan American Convention on Commercial Aviation signed in Havana paved the way in Article 25 for operators like Pan Am to refuel enroute tax free, as was already established custom for ships refuelling at ports. ICAO likes to cite long-standing maritime practice as precedent. The final act of the 1939 London "Convention concerning Exemption from Taxation for Liquid Fuels and Lubricants used in Air Traffic" agreed but never ratified Article 2(1)(a) exempting the taxation of fuel on arrival, which effectively became Article 24(a) of the 1944 Chicago Convention. Daniel Meijers in Taxflight has written a fascinating account of this history.

After the war, hundreds of bilateral treaties initiated and negotiated by the US and European states (60-70 on average per EU member state according to COM 2002-649) helped pave the way for European aviation to recover and expand by exempting on a reciprocal basis the taxation of fuel uplifted for flights both within and beyond Europe. The EU even legislated to declare the taxation of aviation fuel illegal in the Council's first Directive 92/81 EEC on mineral oil excise duties. Then almost immediately afterwards had second thoughts, as concerns grew over the sector's environmental and climate change externalities. The question then became how to unravel the world wide web of fuel tax exemptions which Europe had so willingly helped the Americans create after the war to benefit their carriers. In February 1996, OECD Environment Ministers urged ICAO to explore air fuel taxation and efficiency standards. The OECD and IEA subsequently argued for Annex I fuel charges in the runup to the Kyoto Protocol. "The fight against global warming may require that advanced countries agree to a charge on aviation fuel that would result in higher airfares and reduced demand for air travel and freight". In its November 1996 review of Directive 92/81/EEC, COM (96) 549, the Commission concluded that Europe should reverse course and the Council require a kerosene tax on all carriers including those from third countries as soon as the international legal situation allowed.

The EU was, however, confronted by two obstacles of its own making – aviation had become a truly international business and so fuel was best taxed globally. And Europe had all along subscribed to ICAO policies not to tax fuel – reaffirmed in December 1996 in the runup to Kyoto. In March 1997, the Commission's revision to the 1992 Directive, COM 1997 30, proposed to exempt fuels used for commercial aviation "for as long as such products are obliged to be exempted under international obligations"; to allow domestic fuel taxation without restriction and in addition grant member states the flexibility to tax fuel uplifted for flights between them through bilateral agreement. See Jacob Klok. The ETD revision was finally agreed in early 2003, but not before Spain and Ireland has insisted on deleting from Article 14(b) the critical words "for as long as such products are obliged to be exempted under international obligations", thus making the exemption obligatory. Reacting to this, the remaining 13 of the then 15 EU members plus the Commission declared in a separate Council statement re 14(b) that "as a matter of principle, and in the interests of a consistent tax system, commercial aircraft fuel should be taxed on the same basis as any other fuel"; that the matter should continue to be pursued with ICAO; and that "when taxation of such products will be allowed at international level, the Council needs to decide, on the basis of a proposal from the Commission, whether to abolish the exemption". So Spain and Ireland locked the EU into its current dilemma.

Domestic and bilateral fuel taxation remains EU law but has effectively been ignored except by the Netherlands initially and non EU members Norway and Switzerland. COM 2000 110 called on EU members to pursue fuel taxation at ICAO's 2001 Triennial Assembly. Europe returned empty handed. But, importantly, the Assembly proposed an alternative, voluntary emissions trading which, although declared infeasible globally at the following Assembly in 2004, was left open for ICAO member states to pursue themselves or at a regional level. The rest is history. In 2008, the EU agreed to include aviation in the ETS from 2012, but was forced by international and local political and industry pressure to restrict the scope to intra EU flights barely months after implementation. For a fuller account see Annex II.

The ETS is now to be reviewed along with how Corsia can be implemented through the ETS. But debate is turning again to fuel taxation, against, however, a more complex political and now economic background than in the nineties. Meantime, many countries outside Europe have moved to impose a fuel tax on their domestic flights. How can that be achieved for flights within and between EU member states?

Domestic fuel taxation outside the EU

At least 42 countries tax domestic kerosene; Argentina, Australia, Armenia, Azerbaijan, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, DRC, Dominica, Ecuador, Ethiopia, Guatemala, Hong Kong SAR, India, Indonesia, Japan, Jordan, Kenya, Laos, Mexico, Myanmar, Nepal, Norway, Paraguay, Philippines, Peru, Rwanda, Saudi Arabia, South Africa, Sri Lanka, Switzerland, Taiwan, Tanzania, Tchad, Thailand, Uganda, USA, Venezuela, Vietnam.

See table Annex IV compiled by Fairosene – the citizens' initiative to tax aviation kerosene.

Fuel burnt on domestic flights accounts for about 41% of global aviation CO2 emissions and so well over 50% of aviation fuel uplifted for domestic flights is now taxed (typically for cost recovery purposes and at relatively low levels and not because of climate change) or subject to an ETS. The **US*** is by far the biggest domestic emitter (17% of global aviation CO2). EU "domestic" (ie EU ETS) is second (8.95%); then China ** (8.64%); **India** (1.4%); **Japan** (1.2%); **Australia** (0.89%); **Canada** (0.84%); Russia; (1.24%); **Brazil** (1.2%). New Zealand (ETS).

*In **bold** means has a domestic fuel tax. **China is developing a domestic aviation ETS.

Chapter 3 - Taxing Aviation Fuel in Europe (legal summary)

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Here we firstly show that under the current Energy Taxation Directive, Member States are free to implement a kerosene tax for domestic and for intra-Community flights. This legal possibility is based upon the European Union's multilevel system.

Secondly, we will show the possibilities for implementing kerosene fuel taxation at the European Union Level. We will set out which legal issues have to be considered and how such an EU-wide tax fuel tax could be designed by revising the Energy Taxation Directive.

A) Member States' legal options to implement an aviation kerosene tax under the current Energy Taxation Directive

European Law itself, especially the Energy Taxation Directive in its current version, does not oblige the Member States to introduce a kerosene taxation for flights within the European Union, except for private pleasure flights.

However, European Law does provide legal options to do so; because under the Directive, Member States are free to limit the scope of the aviation tax exemptions provided within the Directive to international and intra-Community transport.

Firstly, Member States are free to implement an excise tax on fuel uplifted for domestic flights on their own, without any further requirement.

Secondly, to establish a fuel tax applying to intra-Community flights, Art. 14 paragraph 2 of the Energy Taxation Directive provides for bilateral (or multilateral) agreements between two or more Member States to implement a tax on kerosene fuel uplifted for flights between their territories.

I. The Law which Member States have to respect when implementing a kerosene tax

The fact that the European Union has competence to rule on the taxation of kerosene fuel for aviation incorporates this legal issue into the European multilevel system of European, national and international law. These sources of law are inseparably interwoven. So long as Member States are entitled to act on their own to implement kerosene taxation either for domestic or for intra-Community flights, as set out in Art. 14 paragraph 2 of the Energy Taxation Directive, then they have to ensure the compatibility of such taxation with firstly their obligations deriving from their membership in the European Union. And secondly, they have to respect their own national law. If the European Law conflicts with Member States' national law, the principle of primacy provides that European Law supersedes Member States' national law.

Air-Service Agreements concluded by the European Union itself (as distinct from those concluded individually by member states) become part of European Law and, therefore, these agreements are binding upon the Member States and are part of the primacy of European Law, cf. Art. 216 TFEU.

Member States' international obligations have to be considered as national law and not as European Law.

Hence, by implementing taxation for domestic flights, or for intra-Community flights, Member States have to respect all tax exemption clauses which are part of European Law, in other words all Air-Service Agreements concluded by the European Union which contain such tax exemption clauses. Therefore, Member States have to ensure that operators falling under such fuel tax exemptions in EU Air-Service Agreement are excluded from any taxation burden.

As Member States also have to ensure that they act in accordance with their national laws - including as well – their own international obligations Member States have also to act in accordance with the Chicago Convention and with any Air-Service-Agreements that they themselves have concluded. All Member States of the European Union are parties to the Chicago Convention. The Convention text itself does not ban the taxation of kerosene fuel uplifted but ICAO subsequently established its' *"policy on taxation for international aviation"*. With regard to this policy, Convention States are not entitled to impose a tax on kerosene fuel uplifted within their territories. To solve this issue, there are two aspects to be considered:

Firstly, as long as such a taxation obligation of kerosene fuel by a revised Energy Taxation Directive would de facto only affect Member States of the European Union, the "*ICAO Policy on Taxation*" does not have any legal impact: Even if Member States of the European Union are in relation to each other Convention States to the Chicago Convention, they cannot enforce their rights deriving from the Chicago Convention as long as the concerned Member State fulfils its' rights and obligations deriving from the European Law.

In relations between Member States of the European Union, European Law supersedes the Chicago Convention and protects Member States from any international liability in relation to other Member States. As long as all other operators from third countries which are convention parties to the Chicago Convention are free from any taxation burden, Member States are absolutely free to implement such a taxation, even if it is not in accordance with the wording of "*ICAOs Policy on Taxation*". Hence, a tax which does not affect third countries' operators which are parties to the Chicago Convention cannot be considered as a violation of "*ICAOs Policy on Taxation*".

To give an example, if Member State A and B introduce a taxation on the basis of a bilateral agreement, Member State C cannot enforce any potential right deriving from the "*ICAO's*

Policy on Taxation" in the relation to Member State A or B because they only perform on the basis of European Law. In relation between the Member States the European Law supersedes any obligation deriving from the Chicago Convention. Therefore, as long as third non-European Union operators are de-facto excluded from any taxation burden, by a De-Minimis clause or a freight exemption clause, the "*ICAO's Policy on Taxation*" does not have any legal impact.

Secondly, if Member States intend to implement a kerosene tax which affects operators from third countries which are not Member States of the European Union but Convention States of the Chicago Convention, then Member States are allowed to opt-out from *"ICAO's policy on taxation"* to avoid a conflict with this international obligation. Member States are not obliged to opt-out from the whole ICAO policy. On the contrary, they might limit the opt-out only to the resolution on taxation which deals with uplifted kerosene fuel.

Finally, it appears that only a few foreign operators, which mostly are already covered by an Air-Service Agreement concluded by the European Union today, operate intra-Community flights. Those operators have to be exempted in any case from fuel taxation due to the existing EU-Air-Service Agreement. If those operators are excluded anyway, no conflict with ICAO's policy on taxation can arise. An opt-out is legally possible but in this case at the moment not strictly necessary.

In conclusion, Member States are obliged to exempt carriers from a fuel tax which fall under the scope of an Air-Service Agreement concluded either by the European Union or by the Member States themselves if the concerned Air-Service Agreements contain tax exemptions.

II. How to exempt operators benefiting from an international agreement which contains fuel tax exemptions?

To avoid conflicts with existing European and international law, Member States should exempt as necessary those foreign carriers which are exempted from taxation for uplifted kerosene fuel by any international Air Service Agreement. Therefore, it is necessary to observe the market to find out how many foreign operators fall under an international tax exemption as mentioned above. Thus, Member States should implement De-Minimis Clauses which are applicable for all operators equally.

The same applies if the Member States are not willing to opt-out from parts of the *"ICAO policy on taxation"* and if they nevertheless intend to tax operators from non- EU-Member States which are benefiting from a fuel tax exemption. In this case one has to ensure that the number of those operated flights falls under the scope of the De-Minimis clause as well.

With regard to the current market situation, it seems that only few passenger flights are offered as intra-Community flights by foreign operators. Hence the required number of exempted flights will not be significant. For freight flights it is quite the opposite, as many intra-Community flights are performed by US-airlines which benefit from the EU-US Open Skies Agreement. Therefore, it seems an appropriate approach to exclude freight flights from any kerosene taxation, as otherwise the required number of exempted flights would have to be set at an unrealistic level and the kerosene tax would not lead to any regulatory effect anymore.

Such a differentiation between passenger and freight operators would not lead to an unlawful unequal treatment, as there is a legitimate interest which justifies an unequal treatment. Furthermore, such a differentiation would not be unlawful, since all operators which perform intra-Community freight flights are excluded, and all operators performing intra-Community passenger flights benefit from the same number of exempted flights no matter in which state the operator is registered.

III. Member States' freedom to implement a kerosene Tax. Member States are free to design themselves the fuel tax arrangements.

If a Member State introduces fuel taxation for its domestic flights, the Member State can design the tax rate on its own. The Member State can even decide on a tax rate below the minimum level as set by the Energy Taxation Directive, because Art. 14 paragraph 2 of the Energy Taxation Directive states that *"in such cases, Member States may apply a level of taxation below the minimum level set out in this Directive"*. The legislator did not expressively limit the scope of this option grammatically to the case of a taxation agreement between the Member States. On the contrary, the term in plural, *"in such cases"*, clarifies the legislator's intention to address both options. The legislator understood that *"Energy prices are key elements of (…) environment policies"*,[1] and therefore the Community legislator gave Member States this incentive to make them use their taxation options. Hence, this clause allows for taxation below the minimum level for a fuel tax based on a bilateral agreement and for domestic flights as well.

If Member States conclude a bilateral/multilateral agreement, they are to a great extent free as to its design. They can agree on equal, similar, or different tax rates within the agreeing states. They can even agree on a taxation level down to zero for one or both of the contracting states, or even just on the fact that they will introduce a kerosene tax without determining any fix tax range. Furthermore, it is possible to implement transitional periods or anything comparable, as the international law principle of the freedom of contract has to be considered here as well.

In conclusion, Member States are entitled to impose themselves a kerosene tax for domestic flights or in the case of intra-Community flights by concluding a taxation agreement with one or more Member States. To act in accordance with existing European and international obligations, Member States should implement De-Minimis clauses and exempt freight operators. Finally, Member States remain free to decide on the design of such a tax arrangement.

B) Revision of the Energy Taxation Directive by the EU

The EU can introduce a kerosene tax for intra-EU-flights in accordance with its international obligations if the relevant provisions exempt a certain number of passenger flights for all operators and exempt all freight only flights from taxation.

I. The Law the EU has to respect when implementing a kerosene tax

For the European Union things turn out differently: By implementing a kerosene tax at the pure European level without any further action taken by the Member States, it is important to realize that the only standard by which Union legal instruments are measured is the Union Law itself.[2] This means that conflicting Member States' national laws, including Member State's international obligations, in principle do not affect any taxation at the European Union's Level. Only in the case where European Law itself sets out that national Law has to be taken into account, is the Union obliged to act in accordance with Member States international obligations. If this is not the case, the European Law supersedes any national law by the principle of supremacy.

In respect of this multi-level system one has to see, that every entity of international law is in principle solely obliged under its own international agreements: One has therefore to distinguish between Member States' and the European Union's international obligations. The European Union is in principle only bound by its own international obligations, mainly Air-

[1] Directive 2003/96/EC of 27th of October 2013 restructuring the Community framework for the taxation of energy products and electricity, recital 12.

[2] *Ruffert* in Calliess/Ruffert, EUV/AEUV, 5th Edition 2016, Art. 288, para. 8.

Services Agreements concluded by the European Union which become part of the European Law, cf. Art. 216 TFEU.

It is important to understand that the European Union is not a party to the Chicago Convention and therefore not obliged to act in accordance with its provisions. On the contrary, Member States are obliged to fulfil their obligations arising from their Membership in the European Union. And as Art. 351 TFEU states, Member States are obliged to take all appropriate steps to eliminate incompatibilities between their international obligations and the European Law.

Therefore, from a legal perspective, the European Union is not somehow bound by the rules set out by the Chicago Convention. It is the obligation of Member States to fulfill their obligations deriving from European Law, even if this would oblige them to terminate an international agreement. Hence, the EU in general from a legal perspective, does not have to give any respect to Air-Service Agreements concluded by its Member States.[3]

As, on the other hand, the European Union is legally bound by its' own international agreements, the European Union itself has to act in accordance with those provisions, e. g. the EU-US Open Skies Agreement. As long as such agreements include tax exemptions for operators falling under the scope of such an Air Service Agreement, the European Union has to respect these existing international obligations. Those benefiting operators have to be exempted from any tax burden. Any legal act on the European Level would be unlawful if an Air-Service Agreement concluded by the European Union is violated. If a European act causes a violation of an Air-Service Agreement concluded by the Member States, then the European Union's act would still be lawful.[4]

II. EU options to revise the Energy Taxation Directive

The European Union could implement a tax on uplifted kerosene fuel for domestic and Intra-Community flights with marginal legislative effort. Therefore, the European Union should limit the scope of the tax exemption provided in Art. 14 of the Energy Taxation Directive to extra-Community flights only.

A deletion of the existing kerosene fuel taxation exemption clause as regards domestic and intra-Community flights is possible as long as de minimis rules are implemented, because a revision of the Energy Taxation Directive as related to domestic and intra-Community flights has to comply with Air Service Agreements concluded by the European Union.

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[3] In the case at hand, it is to be mentioned that the European Union set out in its' regulation Member States have to amend their national Air-Service Agreements. There it is stated that Member States are obliged to renegotiate tax exemption clauses to ensure the possibility of an implementation of a kerosene taxation on European Level in accordance with the current version of the Energy Taxation Directive. If Member States don't act in accordance with this regulation, they are not worthy of protection and the European obligations supersede Member States international obligations. Therefore, Member States should observe the European Legislation to declare an opt-out from parts of the "ICAO's Policy on Taxation" to avoid any international liability. But Member States are not entitled to forbid a taxation for kerosene fuel on European level.

[4] For clarification it is to be mentioned that the fact that the European Union is in principle not bound by Member States international obligations does not free Member States from any international liability in relation to the third country. But solving such a conflicting duty is not European Union's inherent obligation. It is the Member States obligation to amend their international agreements in accordance with European Law.

As long as no operators from third countries and hence, only Member States are de facto taxed, the ICAO's policy on taxation does not have any legal impact in relation between the Member States. The European Law supersedes Member States obligations in relation to other Member States deriving from the policy.

As regards flights between the EU and third countries, since there exists a relevant number of Air Service Agreements concluded by the European Union containing tax exemption clauses for flights operated by carriers falling under the scope of those Agreements i. e. between the EU and these 3rd countries then, kerosene uplifted for those flights may not be taxed. For this reason, international flights should generally be exempted from taxation. Firstly because too many international flights falling under such an agreement have to be exempted from fuel taxation so a de minimis clause is not reasonable. And secondly because any revision of the Energy Taxation Directive which contained a blanket removal of the fuel tax exemption for flights between the EU and 3rd countries without a de minimis clause or other tax exemption schemes would conflict with provisions in those Union Agreements with 3rd countries which contained a fuel tax exemption clause.

For these reasons, a revision of the Directive should only remove the tax exemption for domestic and intra-Community flights. A general exemption for international flights should remain, as long as Air Services Agreements which are in accordance with European Law have not been renegotiated in such a way as to remove the tax exemption clauses therein or as long as there is no other appropriate exemption scheme for those operators available.

By doing so all other flights, namely domestic and intra-Community flights, would automatically fall under the scope of the Energy Taxation Directive which sets out a minimum taxation of 330€ per 1000 liters kerosene.

Hence, Member States would be obliged to implement a tax for uplifted kerosene fuel for intra-Community flights without any further legislative action at the European Level. As the rules set out by the Excise Duty Directive are applicable, Member States would be obliged to introduce an excise duty on uplifted kerosene fuel for intra-Community flights.

As already mentioned, such a revision would be lawful if it does not violate European Law, especially Air-Service Agreements concluded by the European Union itself. Therefore, a revised Energy Taxation Directive, as proposed here, has to respect the rights of all operators benefiting from such an Air-Service Agreement which was concluded by the European Union. Hence, a revised Energy Taxation Directive should contain a De-Minimis clause for operators which are performing passenger flights within the European Union falling under the scope of an Air-Service Agreement concluded by the European Union and a separate exemption clause for freight operators as well.

The European Legislator is not obliged somehow to implement an equal tax level of 330€ per 1000 liters for all Member States. The European legislator is free to decide on a lower tax rate or even on a differentiated taxation rate between different Member States as well.

Here many different possibilities have to be taken into account. As the European legislator already mentioned in other legal acts, there might be a justified interest for some Member States to avoid their mobility being restricted by taxing aircraft fuel and thus increasing their mobility costs. The legislator stated in Directive 2009/28/EC *"that Cyprus and Malta, due to their insular and peripheral character, rely on aviation as a mode of transport, which is essential for their citizens and their economy"*.[5] In the Directive 2012/27/EU *"on Energy Efficiency"* the European legislator quoted this motive again. Hence, it has to be noted that a differentiation between Member States may be justified within the transport sector, as some Member States rely on certain means of transport. Besides a differentiated taxation rate, the European Union could implement differentiated transitional periods to facilitate the implementation of a kerosene tax within the European Union.

[5] Directive 2009/28/EC of the 23th of April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, recital 33.

Chapter 4 - Fuel taxation in the EU

Bill Hemmings

Domestic fuel taxation by EU member states was first permitted in the 2003 Energy Tax Directive - which was a revision of the original 1992 Directive on mineral oil excise duties. Netherlands did so for a period until commercial domestic flights there were phased out. Road fuel taxation is mandatory under the ETD. As explained by Prof Pache, the 2003 ETD provides that Member states *may* tax domestic aviation fuel but it is not mandatory to do so, and such domestic fuel taxation does not have to observe the road fuel minimum of 33 cents per litre.

EU28 CO2 emissions from domestic aviation fuel burn totalled 10.32Mt (2018). This figure excludes 4.12Mt of CO_2/fuel burn on flights to, from or between Europe's outermost territories - Canaries, Azores, Curacao, Guadeloupe etc. Norway's domestic emissions were 0.96Mt.

Domestic fuel burn in half of the EU28 is essentially zero – table 1. The top 6 domestic emitters Italy, France, Germany, Spain, the UK and Sweden account for almost 94% of domestic EU28 fuel burn. Norway has had a CO_2 tax on domestic aviation fuel since the late 90s. Would it make sense to seek to mandate domestic fuel taxation via any future revision of the ETD given that well over half of today's EU27 states account for just 1% of domestic fuel burn? Or better, focus on encouraging a coalition of willing Finance Ministers from the top domestic emitters to tax kerosene based on the argument, forcefully made at The Hague, to establish a more level playing field with road transport?

States with little domestic flights nevertheless levy domestic VAT at high rates - eg Hungary 27%. The UK is the only state which zero rates VAT on domestic flights. All the other big emitters charge at the reduced rate of 10% (Sweden charges 6% and Germany 19%). Are there good reasons why EU states should not tax fuel uplifted for domestic flights? Except that the EU ETS already regulates them?

Table 1: CO_2 emissions from domestic aviation

Rank	Country	Domestic CO_2 (Mt)	Cumulative Emissions
1	Italy	2.52	24%
2	France	1.92	43%
3	Germany	1.79	60%
4	Spain	1.51	74%
5	United Kingdom	1.43	88%
6	Sweden	0.50	93%
7	Greece	0.25	95%
8	Finland	0.14	97%
9	Poland	0.10	98%
10	Denmark	0.07	98%
11	Portugal	0.06	99%
12	Romania	0.04	99%
13	Croatia	0.03	99%
14	Austria	0.03	100%
15	Bulgaria	0.02	100%
16-28	Remaining countries	0.00	100%
	Total EU28	10.43	

Outermost Regions[1]	4.12
Norway	0.96

[1] Domestic CO_2 emissions for Outermost Regions include flights departing from the outermost regions and going to the related member state, as well as flights departing from a member state and going to a related Outermost Regions (e.g. Both Spain to Canary Islands and Canary Islands to Spain are included in Domestic Outermost Regions).

Source; Transport and Environment 2020

Taxing fuel on intra EU flights - Foreign carriers and equal treatment

In the years leading up to the revised ETD in 2003, determination within the EU grew to tax aviation fuel at least for flights within Europe. But fuel tax exempt foreign carrier operations on these so-called fifth freedom routes - foreign carriers have no rights to operate domestic flights - posed the problem of equal treatment and potential market distortion if they were not taxed; even though a 1999 study by Resource Analysis Delft (findings summarized in Commission Communication COM 2000 110) estimated that these foreign carrier flights only amounted to 5% of intra EU traffic. The Commission concluded that "*Taxation of Community air carriers only [ie exempting the 5% of foreign carrier traffic] would not only affect their competitive position but also worsen the ratio between environmental benefit and socio-economic impact for the Community aviation industry* ... **This alternative**, (see also COM

1999 640) *though legally feasible, is unacceptable in the Commission's view…. Principally for 'economic' reasons, it would not be practicable or desirable for the Community as a whole to introduce taxation of aircraft fuel targeting exclusively intra-Community flights operated by Community air carriers at the present time". It would not strike the delicate balance between environmental, economic and internal market requirements which is necessary for a coherent policy in this area*". Introducing a fuel tax within Europe would, as COM 2001 370 of September 2001 noted, "demand equal treatment vis-à-vis non-Community carriers operating intra-Community flights".

As postwar commercial aviation expanded and aircraft range increased, more foreign carriers commenced operations to Europe utilizing the 5th freedom rights accorded in their bilateral ASAs with European states. These rights enabled them to operate to multiple cities, combining traffic and picking up additional revenue traffic within the EU making the expansion of long distance travel more commercially viable. These 5th freedom rights had been granted in exchange for European carriers being permitted to operate "beyond" services to third countries, by, for example, after landing in Canada or the US, continuing on to Mexico. Or in the case of Asia, flying to Hong Kong or Singapore and continuing on to Asean destinations or Australia, combining traffic and picking up new passengers on the way. Ironically, as the Commission noted in COM 2002 649 "these fifth freedoms are of relatively little value on the American side of the Atlantic, given that there are relatively few viable onward destinations. However, in parts of the World where there are many international markets in close proximity, such as the EU, they are more useful. In effect, these 5th freedom rights give American carriers access to Europe's "domestic" single market, while the US domestic market remains firmly closed to foreign operators. These rights are currently used in particular by American cargo companies to provide intra-EU parcel services."

The solution to being able to apply a fuel tax to foreign carriers flying within Europe arose because of an unresolved issue between member states and the Commission on the question of which EU carriers were accorded traffic rights in ASAs. The issue went to court and ECJ judgements in November 2002 ref cases C-466/98, C-467/98, C-468/98, C-469/98, C-471/98, C-472/98, C-475/98 and C-476/98) recognised Union exclusive competence in certain key aspects of aviation, principally the designation of EU registered carriers; if bilateral agreements member states had concluded with third countries only permitted designation of companies owned and controlled by nationals of that EU Member State and not all member states, then such discrimination would breach EU law as all EU registered carriers had a legal right to a share of such traffic rights. COM 2002 649 also made clear that there were other areas additional to those identified by the ECJ where the Community has exclusive competence, including airport slots, computer reservation systems, intra-Community fares and rates….and as well "Customs duties, taxes and (user) Charges covered by Council Directive 92/12/EEC of 25 February 1992 and Council Directive 92/81/EEC of 19 October 1992 on the harmonisation of the structures of excise duties on mineral oils."

Regulation 847 2004 preamble 6 states that "all existing bilateral agreements between Member States and third countries that contain provisions contrary to Community law should be amended or replaced by new agreements that are wholly compatible with Community law". The ASAs could either be amended through bilateral negotiations or, alternatively, as provided by Article 5 of the Treaty, the Community may adopt measures in accordance with the principle of subsidiarity". A 2005 Info note explained that member states had mandated the European Commission to conclude "Horizontal" Agreements, amending relevant

provisions of all existing bilateral ASAs in the context of a single negotiation at EU level with the aviation partner. Or member states could amend the ASAs themselves.

The Commission's website includes a 2013 list of all bilateral ASAs brought into conformity with the ECJ judgments of 5 November 2002 regarding designation. It is not clear, however, whether these amended agreements also dealt with the provision to abolish fuel tax exemptions for foreign carriers operating within the EU. Commission Decision in 2005 on ASA standard clauses made a distinction between standard clauses that needed to be included in revised ASAs and recommended clauses such as that on the foreign carrier fuel tax exemption for flights within Europe, for which there was no legal obligation to remove the exemption. Taxing fuel through bilateral agreements was regarded as a future possibility not a "done deal". We do know from internal T&E analysis that a good many bilateral ASAs have been so amended and at least some EU Horizontal Agreements contain no intra EU fuel tax exemption clause. It would help for the Commission to clarify the situation as to which bilateral member state ASAs and which "Horizontal" agreements include the amendment and which new EU "Comprehensive" Agreements with third countries also do. Particularly as the 2007 EU US Open Skies and 2009 EU/Canada Comprehensive agreements did not respect this requirement. Prof Pache looks at this issue in Annex I and concludes that any ASAs contracted by member states with third countries which have not been adjusted would be illegal under EU law if member states decided to tax aviation fuel under an amended ETD. Whereas exemptions granted under the EU/US and EU/Canada agreements need to be respected because they are EU, not member state, law.

Issue of the de Minimis

Recent analysis of air traffic patterns in Europe by T&E suggests that there has been a very large reduction in intra EU fifth freedom operations by foreign carriers since the Resource Analysis work in 1999. Foreign carrier fuel tax exempt traffic was then estimated at 5% of all intra EU traffic and it was felt that taxing only EU carriers risked market distortion. Since then, twin engined longhaul aircraft better sized to serve individual markets have almost entirely replaced flights serving multiple European destinations.

Given this, the 2018 CE Delft study into Taxing aviation fuels in the EU identified a feasible solution to the problem of respecting the rights of those remaining tax exempt foreign carriers; apply a de minimis to the fuel tax. Prof Pache (Annex I) shows how a fuel taxation de minimis could be applied either when taxing fuel through bilateral agreements or if an EU-wide fuel tax was agreed.

The complication with applying a small de minimis fuel tax exemption for all carriers operating intra EU flights is that the American registered all-cargo carriers UPS and Fedex enjoy special provisions under the 2007 EU/US Open Skies Agreement permitting hub operations within Europe. Both carriers have all-cargo aircraft permanently stationed in Europe and operate freighter aircraft throughout the EU. T&E analysis of 2018 intra EU flight data, indicates that Fedex may operate about 155 flights per week within the EU and UPS about 127. Fifteen or so foreign airlines represent the bulk of foreign carrier operations within the EU and together account for 1% of total intra EU CO2/fuel burn. Fedex and UPS together represent half of this 1%. The others range from Emirates (about 38 flights per week), Ethiopean (32), Korean (21), Air Bridge Cargo (21), Qatar (20), Atlas Air Cargo (16), Latam Airlines (16), Air China (15), Asiana (13), CAL Cargo (12), MNG Cargo (9), Cathay and Singapore (8) and Turkish (7). The remaining 200+ foreign carriers operate

very infrequently within the EU and combined, account for a further 0.2% of intra EU CO2/fuel burn.

Fedex and UPS operations within the EU are covered by a Union agreement and are fuel tax exempt under the EU/US Open Skies Treaty unless otherwise agreed by both parties through the agreement's joint committee should fuel be taxed by member states bilaterally. Setting a de minimis to exempt these all-cargo carriers from an EU fuel tax would mean exempting at least 155 flights a week operated by all carriers flying within the EU. This is unrealistic, hence the recommendation discussed by Prof Pache to exempt the entire all-cargo fleet within the EU from a fuel tax. The Rutte government is now proposing legislation to the Dutch Parliament for all-cargo flights departing The Netherlands to be subject to a per flight tax. Since all freighter aircraft operating in Europe are currently not subject to ticket taxes on departing passengers, levying such a per flight tax on all freighter operations within the EU could be seen as contributing to the equal treatment of all carriers.

This would then mean setting a de minimis for an EU wide fuel tax on passenger aircraft at about 40 flights per week to ensure the largest operator, Emirates was not taxed – assuming none of the Emirates flights were all-cargo. Apart from Fedex and UPS, none of the top carriers operating 7 flights a week or more are covered by ASAs negotiated by the EU but operate under various historical ASAs with individual member states. As do all the rest. To limit the extent of such a de minimis provision, member states could, as laid down in Regulation 847 2004, proceed as quickly as possible to align their ASAs with the intention of the Regulation. Particularly as fuel taxation is under active consideration at EU level.

As Prof Pache has explained, once the intra EU tax exemption is removed from the Energy Tax Directive, any provisions in ASAs exempting foreign carriers from fuel taxation in the EU become illegal (unless they are agreements entered into by the EU itself or by member states with the consent of the EU) and member states are obligated by loyalty to Union law to amend or cancel these agreements.

The Commission could also, as noted by Prof Pache, report on market conditions to identify which carriers operating which frequencies remain exempt today for fuel uplifted for flights within the EU. And in the meantime, Europe should avoid entering into any agreements with any of these carriers' home governments to conclude an EU agreement that conferred a fuel tax exemption for flights within Europe. EU agreements with Asean and China are underway or in preparation. Should in the meantime two or more member states agree to tax fuel on passenger flights between them, the frequency of foreign carrier flights between them is likely to be very low and could easily be handled by a local de minimis pending any renegotiation of ASAs.

So can we now tax fuel uplifted on intra EU Flights?

Table 2 shows that intra EU 28 fuel burn (excluding domestic) produced 51.59 Mt CO2 in 2018. The top 6 emitters, UK, Germany, Spain, Italy, France and the Netherlands, account for 65% of intra EU fuel burn and thus emissions. The top 14, 89%. Adding in Finland (0.87Mt) brings the figure to 90.7%. The bottom 12 emitters, account for just 8% of intra EU 28 emissions (table 2).

Table 2 : CO_2 emissions from intra EU28 aviation (domestic excluded)

Rank	Country	Intra EU28 CO_2 (Mt)	Cumulative Emissions
1	United Kingdom	9.51	18%
2	Germany	6.85	32%
3	Spain	6.59	44%
4	Italy	4.49	53%
5	France	3.77	61%
6	Netherlands	2.42	65%
7	Greece	2.16	69%
8	Portugal	2.04	73%
9	Sweden	1.51	76%
10	Poland	1.49	79%
11	Ireland	1.44	82%
12	Belgium	1.36	85%
13	Denmark	1.28	87%
14	Austria	1.03	89%
15	Romania	0.91	91%
16	Finland	0.87	92%
17	Hungary	0.59	94%
18	Czech Rep	0.57	95%
19	Cyprus	0.56	96%
20	Bulgaria	0.50	97%
21	Croatia	0.40	98%
22	Malta	0.38	98%
23	Lithuania	0.22	99%
24	Latvia	0.21	99%
25	Luxembourg	0.19	100%
26	Estonia	0.10	100%
27	Slovakia	0.10	100%
28	Slovenia	0.06	100%
	Total EU28	51.59	

Outermost Regions	2.83
Norway	1.25

Source. Transport & Environment 2020

When one considers the EU27 after Brexit, Table 3, the picture is just as concentrated. The top 6 EU27 emitters, Germany, Spain France, Italy, The Netherlands and Portugal account for 63% of emissions/fuel burn. And the top 14, 90%. The top 6 emitting EU+ Norway state groupings – Germany, Spain, Nordics, Benelux, France and Italy - account for more than 70% of intra EU27-plus-Norway fuel burn. These figures suggest that a series of bilateral agreements focusing on the top intra EU emitters, combined as necessary by a small fuel

tax de minimis, offers an immediate pathway to introducing fuel taxation in Europe pending agreement to revise the 2003 ETD.

Table 3: CO_2 emissions from intra EU27 aviation (domestic excluded)

Rank	Country	Intra EU27 CO_2 (Mt)	Cumulative Emissions
1	Germany	6.02	18%
2	Spain	4.75	32%
3	France	3.22	42%
4	Italy	3.62	52%
5	Netherlands	2.02	58%
6	Portugal	1.58	63%
7	Greece	1.54	68%
8	Sweden	1.32	71%
9	Belgium	1.29	75%
10	Denmark	1.09	79%
11	Poland	1.07	82%
12	Ireland	1.02	85%
13	Austria	0.90	87%
14	Finland	0.76	90%
15	Romania	0.72	92%
16	Czech Rep	0.46	93%
17	Hungary	0.46	95%
18	Bulgaria	0.36	96%
19	Croatia	0.30	97%
20	Malta	0.25	97%
21	Cyprus	0.24	98%
22	Luxembourg	0.17	98%
23	Latvia	0.16	99%
24	Lithuania	0.15	99%
25	Estonia	0.09	100%
26	Slovakia	0.06	100%
27	Slovenia	0.04	100%
	Total EU27	33.67	

Outermost Regions	1.74
Norway	1.11

Source; Transport and Environment 2020

Brexit

Air traffic from the UK to the EU 27 in 2018 (table 2) produced 9.51 Mt CO2. So the combined traffic to and from the UK to the EU 27 accounted for double this; 19.02 Mt CO2. This represents some 57% - ie a very significant percentage - of all the CO2 generated by flights between the EU 27 countries (ie excluding domestic flights) themselves which totaled 33.67Mt in 2018 (Table 3).

This 19.02 Mt of CO2 plus emissions to and from the UK, Switzerland, Norway, Iceland and Lichtenstein represent over 30% of CO2 regulated under the aviation EU ETS in 2018 (in which outermost regions like the Canaries are excluded). So excluding all these flights and emissions related to the UK from the current aviation ETS after Brexit will reduce the environmental coverage and impact of the ETS dramatically. Plans currently being discussed in the UK to develop its own ETS system and link it to the EU ETS could ensure these emissions remain covered. Another possibility might be to cover this shortfall with a fuel tax or apply a fuel tax on routes to/from the UK in addition as a way to raise climate ambition.

Were the EU27 to agree a fuel tax on intra EU27 traffic either upon revising the ETD or bilaterally, then fuel uplifted for flights from the EU27 to the UK would not be taxed. And could not be taxed, because, after Brexit, the UK is a third country and fuel uplifted in the EU for flights to 3rd countries is exempt under the ETD.

The EU has already announced that one of its objectives in any post Brexit agreement with the UK will be to ensure there are no fuel tax exemptions in the agreement. Doing so would, however, still leave the third country fuel tax exemption in the ETD. So unless the EU 27 acquires the legal right to tax fuel at least from the EU27 to the UK as a third country, then flights from continental Europe to the UK would seemingly remain free from any potential fuel taxation after Brexit. Could this ultimately create a market distortion?

If the tax rate for an EU27 wide fuel tax was significant, then airlines might seek to carry more EU 27 originating traffic over UK hubs, onward to destinations in the EU 27 with a fuel tax free price advantage, potentially creating a market distortion vis a vis European carriers flying direct. In addition, tankering might be exploited on those flights originating in the UK and operating to successive destinations on the continent. For example, a flight from Luton to Paris to Geneva and return might well tanker as much untaxed fuel as possible to get to Paris, Geneva and possibly back to Paris without refuelling. Fuel taken up in Paris for the last leg back to Luton would be tax free in this example.

Chapter 5 - Economic Impacts of Fuel Taxation

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Contents

Introduction

This report provides an introduction to the role of fuel taxes in aviation. It explains the nature of fuel taxes, explores the effects on air transport outputs and emissions, and analyses the problem aspects and the economic impacts of them. The objective is not so much to set out a case for or against them so much as provide information which can be used in policy setting. It is recognised that developing a set of policies to address climate change issues of aviation will require more than simply imposing fuel taxation – choosing the best policy mix is beyond the scope of the report. This report can be seen as a contribution to the broader policy discussion.

In 2019, the European Commission published a report on aviation taxes, and made an estimate of the effects of a fuel tax levied by all of the EU country members on all outbound traffic (European Commission, 2019). It modelled a 330 Euro per kilolitre tax, which would raise the price of fuel by about 60-70%. It estimated that that this would raise air fares by about 10%, raising the average fare from 304 Euro to 333 Euro. It estimated that this tax would reduce flights by 11% and passenger numbers by 11%. It would lead to an 11% reduction in emissions from air transport.

This estimate provides, in a nutshell, what might be expected from implementing a fuel tax. It is an estimate of what might happen if all outbound flights from the EU are taxed. In the discussion here, the case of a fuel tax levied on EU flights only is considered (intra EU impact estimates which are comparable to the estimates mentioned above are not available). This paper discusses what lies behind – how the tax works, what problems it will face, and what its economic impact might be. As with any estimates, the estimate embodies a number of assumptions. Some of the key ones are:

- It is a medium run estimate of effects, allowing for a full response of demand to prices;
- It assumes full pass through of taxes to passenger air fares;
- It assumes no change in aircraft mix;
- It assumes no airport slot constraints;
- It assumes that the "waterbed" effect of the Emissions Trading Scheme has been addressed effectively;
- It assumes that there is no additional fuel tankering by airlines in response to the fuel price increase;
- It assumes that there is no improvement in aircraft fuel efficiency over the period; and
- It does not allow for supply responses in terms of less emissions-intensive fuels and improved aircraft technology.

These various effects of the fuel tax option are explained in the sections below.

Markets

Fuel Taxes and the Airline Market

It is useful to distinguish between two distinct aspects of how fuel taxes will affect airline markets, such as the European market. They are:

- How a fuel tax affects airline operations and costs, and
- How airlines pass through the tax to passengers.

A fuel tax will increase the price of fuel. The effect on the price paid by the airline and ultimately the passenger will depend on what aircraft the airline is using and its load factor. Some categorisation will be needed to provide useful results.

One possible categorisation is between different types of carrier, such as:

- Hub or Full Service carriers;
- Low Cost Carriers (LCCs); and;
- Regional carriers.

The difficulty is that there is too much variation within these carriers – a hub carrier like Lufthansa operates A320s within and beyond Europe, A380s and regional jets.

An alternative categorisation is by aircraft used, such as:

- A new A321 (as used by a LCC);
- A five year old regional jet; and
- A five year old A320, as used by a hub carrier.

It is possible to estimate fuel use and emissions for specific types of flight.

Key characteristics will determine fuel use:

- Load factor;
- Aircraft age;
- Aircraft type and age, and:
- Route served.

The other factor which determines what price is charged to the passenger is the class of travel. A business class seat occupies more of the aircraft than an economy class seat, and different airlines operate with higher seat densities than others. The most practical way of

handling this is to suppose representative seat configurations and apportion the share of fuel paid by the passenger on an area occupied basis.

Pass through to passengers

It is questionable to assume that the airlines are able to pass on the whole of the fuel tax they pay to their passengers, at least immediately. It is often argued that airlines, because of market conditions, are unable to pass on the full amount. It is necessary to recognise under what conditions this may be the case. There are other situations in which pass-through may be impeded – one of these is where airports are slot constrained. This is an important case which is discussed below.

There are two main ways of exploring the pass-through issue. One is to conduct an empirical study, and the second is to model it theoretically. There are very few empirical studies of pass through in airlines. One is that by Ozmen (2011) which is based on US data and concludes that airlines were able to pass on 10% to 50% of fuel price increases over five to six years.

Theoretical studies rely on results of specific market structures and firm strategies. If the airline market is competitive, it is a standard result that airlines will be able to pass on the full tax increase. In this case, airlines must pass on all the cost increase or they will be forced to go out of business. If the market is a monopoly, they will be able to pass on, in simple models, half (monopolies have the ability to raise prices more, but they lose sales and profits by doing so). If there are several airlines, the pass-through depends on the number of firms and their strategies. Several writers have set up models of pass-through and derived the percentage of pass through under assumed conditions (for some discussion, see European Commission, 2019). It is possible to relate pass-through to market conditions. LCCs are typically assumed to be operating in competitive conditions for at least a major part of their market. Hub or full service carriers are often in oligopoly conditions, and less than full pass-through would be typical. Many regional carriers operate in monopoly markets, and for them, pass-through may be low.

These theoretical results are of value but they do not tell the whole story. Typically, they assume a fixed number of airlines. There are reasons for believing that airlines may be able to pass through most or all of the tax increase to passengers in the longer term. If airlines are faced with a cost increase due to the imposition of the tax, their profits will fall. Since airlines are rarely profitable when the cost of their capital is taken into account, it is unlikely that they can absorb the cost of the taxes in the long run. In a given market, one or two airlines will exit, making it possible to restore profitability, and airlines will drop less profitable routes. Both of these strategies will increase pass-through. These are responses which lie beyond the scope of the theoretical models used so far to analyse pass - through. Over the decades, airlines have faced persistent increases in the real costs of their labour, and yet they have been able to stay (admittedly barely) profitable. The same should be true with other cost increases.

The net result of these considerations is that it may not be too far off the mark to assume that airlines will be able to achieve close to full pass through of long term cost increases in the longer term. In the shorter term, full pass-through is unlikely however.

Demand, Supply and Emissions

Fuel Taxes – Impacts on Demand, Supply and Emissions

Unlike ticket taxes, fuel taxes have an impact on emissions through both demand and supply effects. A demand effect is where the tax reduces demand, and thus airline output and

emissions. A ticket tax will do the same. A supply effect is where the cost of production is affected. Over time, airlines will have an incentive to reduce costs by changing aircraft, reducing fuel use and using better technology. This effect will not be present with a ticket tax.

Demand impacts

Taking the demand effects first, if a fuel tax is imposed, there will be a reduction in demand, as airlines seek to recover the cost increase. Unless this has been foreshadowed for a long time and airlines have had time to adjust, the initial effect will be a fall in load factors, but not a large fall in emissions, which depend on flights, not passengers. However, this situation will not last for long, and airlines will reduce flights to restore their load factors. Emissions of carbon and all the non-carbon gases will then fall, as will noise and local emissions. It is likely that load factors will come back to their original levels, since the factors determining load factors (classes of traffic, valuation of passenger convenience) will be unchanged. Passengers switch to alternative modes and some cease flying.

As is usual with price changes, the long run response will be greater than the short run response. Passengers will seek out alternatives to air travel, such as rail and car. With price increases which are small compared to the overall ticket price, the demand response will be small in the short run, and slightly larger in the long run, especially for longer distance flights where air travel is the dominant option, with likely lower price elasticities – with short distance flights, there are more alternative modes to choose from.

There is an apparent qualification to this rule which is noted by the Resource Analysis study of fuel taxes (1999). This study observes that over time, aircraft become more fuel efficient. Over time, with a given rate of taxation of fuel, (e.g., 330 Euro per kilolitre) the impact on passenger fares will fall, and thus the negative effect on demand will fall. At the same time, emissions per passenger will fall, because passengers will be using less emissions intensive aircraft.

Supply impacts

A fuel tax will have an effect through the supply side, and airlines will have an incentive to reduce tax payments by using less of the fuel which is subject to tax, and thus they will generate less emissions. The impact is likely to be small in the short run (the next five or so years) when technology options are almost fixed, but it can be very substantial over the very long term (thirty years or so) when technology can change dramatically.

One supply response is that airlines can be moderately quick to change their fleets to use less fuel intensive aircraft. The most obvious way in which they can do this is through using newer aircraft. For the worldwide airline industry, this is not a quick option, since the overall aircraft fleet will not change by much over the short term – there is too much capital tied up in the fleets. There will be a price response, rather than a quantity response, and older, less fuel efficient aircraft will become cheaper relative to newer aircraft. However, if one region, say Europe, takes the initiative and imposes a fuel tax and other regions do not, European airlines will reduce their emissions by switching to more fuel efficient aircraft. The downside of this is that other regions will switch to less fuel efficient aircraft because they are now cheaper. Even though the foreign airlines are not directly affected by a fuel tax, they will be indirectly affected in the aircraft market. The fuel tax will lead to a reduction in emissions worldwide, but it will be less than less than what might have been expected from the response of the European airlines. If global emissions are the problem,

it will be misleading to look at only one region. The response of the European airlines in reducing their emissions will be greater than the global response.

Another supply response to the imposition of a tax can be a change in the use of tankering. Airlines often operate with more than the necessary fuel on board, possibly for operational reasons and possibly to reduce costs (Resource Analysis, 1999). A fuel tax may induce more tankering. This is relevant if there is an agreement by two countries to impose a fuel tax between them. Firstly, such a tax can induce some airlines to fly via third countries to avoid the tax, and this will result in airlines and passengers paying less. In this case of leakage, tax revenues will be less, passenger demand will be greater, and the emissions reduction will be smaller than if the airlines used direct routes. In addition, if aircraft are carrying higher fuel loads to avoid having to uplift taxed fuel, then they are generating more emissions (Commission of the European Communities, 2000). If all countries in the EU were to impose the fuel tax, the scope for the additional use of tankering would be minimised.

In the medium to longer term, there are many technological improvements, such as sustainable fuels and engine and airframe improvements, which will reduce emissions. A fuel tax will give the incentive for their development. Airlines respond to actual policies, such as fuel taxes, and expected policies. Sustainable fuels are currently very expensive, but airlines are experimenting with them in the expectation that they may need to use them. Technological progress depends on what all regions are doing – Europe will gain if other regions foreshadow policies to reduce emissions since there will be more research and development spurred by the need for airlines, both in Europe and elsewhere, to adapt to these policies (and other countries gain if Europe invests in R and D). One thing which is clear, is that it is very difficult to forecast the technological progress in reducing aviation emissions. This may be unexpectedly rapid, as was the case with the solar electricity industry, or disappointingly slow. Implementing a fuel tax creates incentives to reduce emissions, but it is not possible to estimate how strong these incentives will be. New technologies do not happen by their own accord – incentives such as those set up by fuel taxes are needed to encourage them.

Summing Up:

The demand effect is fairly predictable, since it depends on how large demand elasticities are. In the short run, the supply response is likely to be limited, because technology is relatively fixed. In the long run, the supply effect is likely to be greater than the demand effect, since there is more scope to reduce fuel use and develop new technologies than change travel patterns. In the light of this, a fuel tax should be seen as a long run policy rather than a policy which promises quick dividends in terms of emissions reductions.

Table 1 a

Demand Response

	Pass Through	Switch to Other Modes	Switch to No Travel
Immediate (within 1 year)	None	None	None
Short Run	Partial	Small	Small
Long Run	Full	Moderate	Small to moderate

Table 1 b

Supply Response

	Aircraft Mix	Fuel Options	Technology Options
Immediate (within 1 year)	Slight switch to newer aircraft	Experiments with fuels	Very limited
Short Run	Full switch to newer aircraft	Some switch to sustainable fuels	Small advances
Long Run	As above	Moderate to full switch to sustainable fuels	Small to major advances

Outbound and Inbound Traffic and Tax Exporting

Outbound and Inbound traffic

The analysis so far has been of where a country imposes a fuel tax on air transport, and there has not been any discussion of networks and different policies of different countries. This has been a simplification which masks some relevant issues. A simple network is where two countries exchange air services. Flights go back and forth between the countries. Suppose one of them, country A (e.g. Germany), imposes a fuel tax on what it can control, namely outbound traffic to B (e.g. Greece) and fares rise for flights departing A from 100 Euro to 110 Euro. Suppose that the fare from B to A is also 100 Euro. Since A cannot impose a tax from B to A, and B does not want tax, the fare from B to A will remain at 100 Euro. The round trip fare rises from 200 Euro to 210 Euro, an increase of 5%.

The fact that most (though not all) flights fly from one country and then back again means that each country has the same taxing power, namely the power over outbound flights, which is the same number as the inbound flights. This will be so regardless of the nationality of the airlines or the passengers. If most passengers originate from B, and use B's airlines (or other countries' airlines), country A still has the taxing power over its outbound sector. In a region such as Europe, were the ownership of the airlines is not related to the routes they fly, where the airlines come from does not affect the taxes they pay. If a country sets a tax which results in an a% fare increase on outbound traffic, the result will be an a/2 % rise in the round trip price. If both countries impose a tax of the same amount, the result will be an a% increase in the round trip fare.

Tax exporting

If a country imposes a tax on tickets or fuel in international air transport, it will be exporting some of its taxes (Keen, et al, 2013). Suppose that one country imposes a tax and other countries do not. Fares will rise to both residents who travel and visitors. The country is thus shifting some of the burden of its taxes away from residents and on to visitors. Other things equal, the country imposing the tax will gain by increasing its tax revenues. There is a cost to this, in that the tax raises the costs of visits, and leads to less inbound tourism – the country is likely to be a net gainer unless tourism is extremely profitable (perhaps bringing wider economic benefits – see below).

If a country is exporting its taxes in this way, it is possible for other countries to retaliate by imposing taxes of their own. These will shift the balance away from the country originally imposing the tax (this is an aspect which is relevant to the idea of countries forming coalitions to impose fuel taxes). The countries will share the tax revenues, and the passengers will pay the taxes. This effect needs to be compared to the benefits from or costs of tourism, along with the wider economic benefits of aviation, which are lessened if there are taxes.

Factors Affecting Demand, Supply and Emissions

Fuel Taxes and Slot Limited Airports

The presence of slot constrained airports highlights the importance of distinguishing demand effects and supply effects of the imposition of fuel taxes.

Many airports in Europe are slot constrained. Capacity at European airports is rationed by slots – an airline needs to have a slot to use an airport at a specified period. Some airports, such as London Heathrow are fully slot constrained all of the time – there are no spare slots at any time of the day (Czerny et al, 2008; Gillen and Starkie, 2016). The more common situation for slot constrained airports is for the airport to have no spare capacity during some of the day, and spare capacity at other times. When there is excess demand for slots, some rationing device must be used. Most likely, slots will be allocated by "grandfathering" of slots, but there are "grey" markets for slots, and in London, for Heathrow and Gatwick airports, there is an open market. When slots are limited, air fares are set by what the market will bear, rather than airline costs. Airlines gain revenues above their costs. However, when their costs rise they are not able to pass - through the cost increase to passengers since airfares are set by what the market will bear.

If a fuel tax is imposed on a market which uses a slot constrained airport (during the periods for which slots are scarce), there will not be any increase in airfares. The airlines will be forced to absorb the tax (see OXERA, 2003). Thus, there will not be any demand effect - the amount of air travel will be unchanged, and the emissions of carbon and non-carbon gases will be unchanged. In Europe, many of the larger airports are slot constrained for all or part of the day. Given that larger airports account for a disproportionate share of the traffic, this means that fuel taxes will have no demand effect on a significant proportion of the traffic. The same will go for ticket taxes.

However, the supply effect will still be present. Airlines will still have an incentive to reduce their costs by reducing their fuel costs – indeed they have a strong incentive because they cannot pass the tax on. As noted, before, there are some ways in which airlines can reduce their costs in the short run – notably by using less fuel intensive aircraft. Over time, new technologies will become available which enable airlines to use less fuel, and sustainable fuels.

Table 2

Responses in Slot Constrained and Non-Constrained Markets

	Slot Constrained Markets	Non Slot Constrained Markets
Demand Response	None	Full
Supply Response	Full	Full

Fuel Taxes and the EU Emissions Trading Scheme

Fuel taxes work in similar, though not identical, ways to ETSs. It can be questioned why a country/region might impose both of these. They can be a revenue raising device, or a means of (partially) addressing the non-carbon emissions of aviation. Fuel taxes are not inconsistent with the ETS, but they can have a distinct impact on how the ETS works. In particular, there is the "waterbed" problem. Unless taken into account through some specific mechanism, an ETS sets a fixed allowable level of emissions. If other additional policies are introduced, such as a fuel tax, they may well reduce aviation emissions, but they will not have an impact on overall emissions, which is what is important, not the emissions from any specific industry such as aviation. In the case of an ETS covering multiple industries, an aviation fuel tax will lead to less aviation emissions, but more emissions from other industries, and no change in overall emissions (see Fankhauser et al, 2011). Aviation will buy fewer allowances from other industries, and these industries will use more of the total allowances, which are fixed in supply, and thus overall carbon emissions remain unchanged.

In the case of the EU ETS, there is a specific mechanism which moderates the waterbed problem, the Market Stability Reserve (MSR) (see Hepburn et al, 2016). This mechanism, as its name suggests, was introduced in 2019 to lessen the volatility of allowance prices. However, it goes further than this, by reducing the number of allowances available permanently under certain prescribed conditions. This means that if a fuel tax is imposed, there would be a reduction in allowances available, reducing or perhaps cancelling out the waterbed effect. At this stage, it is not clear to what extent the MSR will lead to a reduction in the waterbed effect – some experts consider that it will lead to an effective elimination of the effect, while other experts consider that it will lead to only a minor reduction. It would be a straightforward matter to model the MSR and determine the extent that it would reduce the waterbed effect rising from specific policies, such as the introduction of a fuel tax, though we are unaware of any such modelling. In the meantime, one cannot be sure what effect on emissions the introduction of a fuel tax will have.

One impact of an aviation fuel tax which is additional to an ETS, which will be present whether or not the waterbed effect is present, is on non-carbon emissions. A fuel tax will reduce all emissions, including non-carbon emissions. It may be that the waterbed effect is present, and that the net effect on carbon emissions is zero, but the tax will still reduce non-carbon emissions. Currently, the EU ETS only covers carbon emissions, and non-carbon emissions are not controlled. This is a limitation which the EC is aware of, and it is researching ways to cover non-carbon emissions. Until non-carbon emissions are covered by the ETS, the fuel tax has a useful effect in reducing non - carbon emissions.

Fuel Taxes and CORSIA

If a fuel tax is introduced and CORSIA is operating, it will have the effect of reducing the output of the air transport industry. As a result, fares will rise and demand, carbon and other emissions will be reduced. However, a further effect of the reduction in demand will be that airlines will need to purchase fewer (carbon) offsets to comply with CORSIA, though not any other forms of offsets for non-carbon emissions. How this is seen will depend on how one assesses offsets- there is considerable debate on whether offsets are genuinely effective (see Becken and Pant, 2019; Warnecke et al, 2019). If the view of offsets is that they offset carbon emissions perfectly, the net result of imposing a fuel tax will be that emissions will fall, but the total of emissions plus offsets will be unchanged. Carbon emissions plus offsets will remain the same, though non-carbon emissions will be reduced by the tax. In this situation, the imposition of the fuel tax does not reduce net carbon

emissions (carbon emissions less offsets). If the view is that offsets are a poor substitute for actual emission cuts, there will be an effective reduction in carbon emissions, as well as non-carbon emissions. If this is the case, there is a case for a fuel tax to strengthen the effect of CORSIA.

Impacts on Demand Impacts of Fuel Taxes: Summary

Several factors have been suggested as leading to a reduction of the effectiveness of fuel taxes in reducing emissions. These are summarised in Table 3 below.

Table 3

Factors Limiting the Demand Effects of Fuel Taxes

	Short Run Carbon Emissions	Short Run Non-Carbon Emissions	Long Run Carbon Emissions	Long Run Non-Carbon Emissions
Pass-Through	Partial Reduction	Partial Reduction	Full Reduction	Full Reduction
Airport Slots	Partial Reduction	Partial Reduction	Partial Reduction	Partial Reduction
ETS-no MSR	No Reduction	Close to full Reduction	No Reduction	Close to Full Reduction
ETS-with MSR	Partial or Full Reduction	Close to Full Reduction	Partial or Full Reduction	Close to Full Reduction
CORSIA- Effective Offsets	Minimal Reduction	Full Reduction	Minimal Reduction	Full Reduction
CORSIA- Ineffective Offsets	Partial or Full Reduction	Full Reduction	Partial or Full Reduction	Full Reduction

Table 3 takes as its starting point fuel taxes having an effect on emissions, and lists the factors which detract from their full effectiveness in reducing emissions.

- Incomplete pass-through lessens the effect of taxes reducing emissions (carbon and Non-Carbon) but only in the short run;
- Airport slot constraints lessen the effect of taxes of all types in the short and long run;
- The ETS eliminates the effect of the tax on overall carbon emissions in the short and long run (the waterbed effect) but the effect of the fuel tax is still present with non-carbon emissions;
- The waterbed effect can be partially or fully eliminated by the MSR;
- If the offsets used in the CORSIA are effective, a fuel tax does not reduce net carbon though it reduces non-carbon emissions; and
- If the offsets used are ineffective, the tax reduces carbon and non-carbon emissions.

Market Distortions and Impacts

Possible Market Distortions

Whether a market distortion exists depends of the effects of a tax, and whether welfare (in the sense of the overall economic benefit to the community) falls or rises as a result of imposing it. In the case of a fuel tax on air transport, it can be argued that the tax is imposed to lessen an existing distortion. Welfare will be increased if the tax is paid by all passengers, but the welfare gain is less if only some passengers pay the tax. It is often argued that air transport is under-taxed in terms of its contribution to revenue and externalities (Keen et al, 2013). This presupposes that substitute modes such as rail and car are taxed correctly – for present purposes assume that they are. Analyses of leakages in air transport are rare – a study of taxes and carbon leakage for a single country is found in Air Transport Analytics Ltd and Clarity Ltd (2018).

Three cases of geographical coverage are considered here. The first is where there is a fuel tax covering the whole of the EU, the second is where a country taxes domestic air transport and the third considers a case of two countries reaching an agreement to both tax flights between themselves. While there is some scope for substitution between EU and non-EU flights, this can be regarded as an effectively minimum distortion case.

With a domestic fuel tax, there is the possibility of substitution between domestic and international flights. A passenger can avoid paying the tax by choosing an international flight rather than a domestic flight to a nearby destination. This will create a leakage from an efficient tax rather than a distortion. Such flights would be short haul in the main. Assuming rail and car are taxed correctly in international markets, leakages from domestic to international will not be a problem. There can be some leakage to international air transport for business and leisure connecting flights. It is not likely that there would be large leakages to international leisure flights.

A bilateral fuel tax presents more possibilities for leakage. This will depend on how close the two countries are. If the two countries are widely separated, for example Sweden and Austria, there are more chances that passengers will hub using third countries for example, Germany, and this would avoid the tax. With countries which are close together, direct flights will mainly be used, avoiding the likelihood of leakage.

The practical ideal is one of minimum leakage – in this case, a Europe wide fuel tax. Other options involve leakage, which lessen tax receipts and lead to a less efficient allocation of traffic (once full costs of travel, including externalities are taken into account). There will be effects on an individual airline's competitiveness. There may be some effect on emissions of these leakages as a result of taxes encouraging flights through hubs rather than direct flights.

What Should be done with the Tax Proceeds?

There is no general economic case for earmarking the proceeds of a tax levied for a specific purpose to be spent on any other initiative. Nevertheless, earmarking is often used. This may be because it is regarded as fair that the industry or consumers which contribute the tax gain the benefit from it. It may be a matter of political economy – an industry may have political power, and if it is to be taxed for some good reason, for example to lessen an externality, the government needs to offer it a quid pro quo. Earmarking the tax proceeds to be spent on an initiative which benefits the industry is a way of doing this. The air transport industry is not in favour of ticket taxes such as the UK APD, but it argues (in this

case so far unsuccessfully) that the proceeds should be spent on aviation initiatives which it finds merit in.

A fuel tax might be levied for several reasons, one of which would be raising revenues from a source which is currently taxed too low (for example if all other goods are taxed but air transport is not - see Keen et al, 2013)). If this were the case, it would make sense to rectify the situation, and use the proceeds to fund general expenditure or reduce taxes on other goods. There would be no particular reason to spend the funds on the industry being taxed, unless there was some other market failure which needs to be addressed by some initiative.

Another possibility is that the tax is levied to correct some externality associated with the production of a good or service- a good example is a fuel tax to discourage production of a negative externality, such as carbon emissions. If this is the case, there is no general case for earmarking of revenues. It is clearly possible that the tax proceeds could be used to encourage research and development of ways to reduce carbon emissions. If there are no externalities associated with this use of funds, there is no particular reason for using the funds in this way, and they could equally well be spent on other desirable initiatives.

However, it is quite possible that there are indeed positive externalities associated with research to develop ways of reducing carbon emissions of air transport. It is generally argued that R and D generates externalities which can be positive or negative, and need not be anything to do with the environment - a firm makes an invention, but other firms (in addition to the original firm) can take advantage of it. When firms and research centres develop new ideas, they find it difficult to capture the full benefit, in revenue terms, of those ideas. Thus, they do not invest as much on R and D as would be optimal. Thus, there is a case for using the proceeds of a fuel tax on R and D in ways to reduce emissions. This does not amount to a carte blanche to spend fuel tax receipts on any proposal. The investment should be a well-developed project which has a tangible chance of success, and one which will result in valuable effects.

Fuel Taxation and the Wider Economic Benefits of Air Transport

Over the past ten or so years, there has been increasing discussion of the wider economic benefits (WEBs), and wider economic impacts (WEIs) of air transport. The idea behind these is that air transport has wider economic benefits than those previously accounted for. There are several sources of these benefits, such as those from increased connectivity. If policies such as implementation of fuel taxes are to be assessed correctly, it is necessary that WEBs and WEIs be taken into account.

The idea of WEBs and WEIs was first suggested in the context of ground transport (Vickerman, 2013). There were various effects which had not been taken account of in traditional evaluations. These include effects on agglomeration, frequency, tax effects and effects which arise from the use of market power. To obtain a comprehensive assessment of the benefits, costs and broader impacts of projects, it is necessary to include WEBs or WEIs. There is an important difference between WEBs and WEIs. WEBs refer to benefits and costs measured in the same way that benefits and costs are measured in cost benefit analysis (for a discussion of this, see de Rus, 2010). They can be added to the results of a cost benefit analysis. WEIs are a broader term, encompassing a range of economic impacts, such as impacts on output and GDP, employment, interest rates and industry output. Estimates of these cannot be added in to a cost benefit analysis.

Research on the WEBs of air transport is less developed than that on ground transport. As research has gone on, estimates of the level of WEBs in ground transport has been reduced, and it is not uncommon for a figure of 10% to be added to the estimates of traditional

benefits to cover WEBs. Research on WEBs of air transport has not yielded many reliable magnitudes, and suggestions of how large they are differ widely. The notion of WEBs and WEIs has been recognised in evaluation in air transport and perhaps the most significant example has been the use of WEIs by the Airports Commission for London (Airports Commission for London, 2014). There were a number of WEIs discussed in the report of the Commission. One of the more significant of these was connectivity benefits.

There has been much interest in a WEI of air transport, namely that of connectivity. There are gains to be made if airports or cities are better connected. There are now several studies of the gains from greater connectivity (Pearce and Smyth, 2007). Most of these show that there are gains in GDP, productivity or employment when air transport adds to connectivity, as measured by one of a number of indexes of connectivity. Interpreting these is not always easy, and there can be economic problems. The London Airport Commission paid special attention to connectivity and used measurements of it in its assessment of WEIs from expanding air transport from London (Airports Commission, 2014). Connectivity studies are often at the heart of policy studies. For example, they are one of the key drivers of the studies of the effects of ticket taxes by PwC (these studies argue that countries lose from imposing ticket taxes even though they gain government revenue – see PwC, 2013; PwC, 2017).

It is important to realise that connectivity studies typically estimate WEIs, not WEBs. They cannot be used, unadjusted, in a cost benefit study. Positive impacts on GDP would normally be significantly greater than the net benefits of WEBs because additional GDP almost always has additional costs, including additional costs of labour. The WEB is the net gain where the costs of gaining additional output has been subtracted from the benefits of additional output (GDP). The relationship between the (broad) WEIs from greater connectivity and the (very specific) WEBs has not been analysed, and the large WEIs (e.g. on GDP) which are reported cannot be translated as large WEBs (the benefits of gaining the extra output less the costs of providing the inputs to enable the extra output). However, there do seem to be positive benefits from greater connectivity, even if they are not as great as popularly supposed. A fuel tax will lessen the WEBs of aviation due to its effect on demand, but the supply side effects will not lessen the WEBs from aviation.

The Economic Impacts of Fuel Taxes

The main claimed disadvantage of aviation fuel taxes is their impact on the economy imposing them. It is argued that the government gains revenue but at a large cost in terms of output of the economy, GDP, and employment. There is a plethora of studies which claim that countries will be severely worse off if they impose a tax on air transport. The majority of these studies have been for interested parties, such as IATA (see IATA, 2006). On the face of it, they constitute a potent objection to fuel taxes.

There is a good reason why these studies come up with the results they do. They use a seriously flawed evaluation technique. Almost all these studies use a version of economic impact assessment (EIA). This is a technique which is commonly used in popular literature but which is increasingly recognised to be quite misleading and incomplete. There are a number of problems with EIA – it ignores the cost of resources such as labour, ignores crowding out and impacts on other industries and it ignores the effects of price changes (Niemeier, 2001). A relevant EIA study which does recognise the spending side as well as the revenue side of taxes is European Commission (2019). Scientific literature recommends that EIA not be used to evaluate policy.

The alternatives to EIA are cost benefit analysis (CBA) and computable general equilibrium (CGE) modelling. Of these, CBA is a partial technique, and it has problems in evaluating effects which are spread throughout the economy. For example, it cannot assess whether an economy gains or loses by having more tourism income. CBA has been used occasionally in the context of emissions policies (CE Delft, 2019). The alternative is to use CGE modelling. This has the advantage that it can take account of all industries and markets in the economy. There have been a small number of studies of air transport taxes which have used CGE modelling, but the use of CGE models can be expected to grow. Given that it is the most comprehensive means of evaluating impacts and benefits/costs, it is the approach which can be recommended.

In summary, the gains and losses to an economy from imposing an air transport fuel tax can be summed up as following. The country gains from the tax export effect of getting residents of other countries to pay some of its taxes. The main effect on the outputs of the economy are the effects on tourism, and the country gains from inbound tourism and loses from outbound tourism. These effects can be measured. The tax will lessen the wider economic benefits of air transport, and this needs to be taken into account. In addition, a tax will lessen greenhouse gas emissions. These effects, including the effects on emissions, can all be taken into account using a CGE model (Adams et al, 2000). A study of the UK APD (PwC, 2013) concluded that the UK lost from imposing the APD, and a study of the Passenger Movement Charge in Australia (Forsyth et al, 2014) concluded that Australia gained from the charge. The UK study assumed that the WEBs from air transport were very large, and the Australian study did not take into account any WEB.

The most difficult problem to come to grips with is the impact on employment. If a study estimates that a tax will have a significant (negative) effect on employment, this will have a flow on effect on output and on the net benefit or loss from the tax, and typically these are large, dominating other impacts. However, it is not clear what effect a tax could be expected to have on employment. The tax itself will have a negative effect on output and employment, but there will be a reverse effect when the proceeds of the tax are spent. There will be some negative effect in the short run as markets are adjusting, but this is not likely to be sustained. If there is significant unemployment in the economy when the tax is imposed, there can be effects on unemployment, though their effects can go either way. If the home economy is an inbound tourism market, imposing a tax can increase existing unemployment, but if the country is a net generator of outbound tourism, for example German tourists travelling to Greece, it is likely that it will *reduce* unemployment. A further complication in Europe is that many nations are part of the Eurozone, and they do not operate with their own exchange rate. This weakens a key adjustment mechanism, and transfers some of the impact of the tax to other countries within the one.

The economic (as opposed to the environmental) aspects of aviation fuel taxes are a key aspect of the overall picture. The debate about them has so far generated more heat than light. A large part of the confusion stems from the use of faulty evaluation techniques. When rigorous techniques are used, the results are less dramatic and less clear cut. These do not provide a single answer to the evaluation question, but they point to the key variables which affect the answer, such as how big the WEBs of air transport are, and how big the benefits and costs of inbound and outbound tourism are. With the right tools, the question of how large the economic impacts of aviation fuel taxes can be answered.

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Chapter 6 - European Aviation: How should it be Taxed?

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Contents

1. Introduction

The aviation sector is today severely under-taxed and under-charged, for both its fuel consumption and its general economic activity. Our position is that the aviation sector needs to take the responsibility for paying its fair tax share which will help to reduce its fuel consumption and greenhouse gas (GHG) emissions and the externalities it creates; and contribute fairly to raising general public revenue alongside other sectors.

There is hardly any significant taxation of aviation fuel consumption today, neither in Europe nor any other country. Domestic and intra-EU flights are part of the EU-ETS, which by today however does not seem to be the appropriate setting for providing sufficient incentives to this sector to reduce fuel consumption and consequently CO_2 in a meaningful manner. The global CORSIA scheme will be implemented later (fully from 2027), but it is not designed to directly dissuade airlines from raising their fuel consumption, or charge them correctly for this consumption. The viability of this scheme will also depend on the future existence of relevant offset markets (something that currently appears as very uncertain), and its impacts and costs for the aviation industry could be limited.

Most European countries have today also low taxes on other aspects of aviation activity than fuels, in terms of VAT and/or ticket taxes. Hardly any country today charges VAT on international flights. Several European countries have VAT on domestic flights but rates vary. Some countries have meaningful ticket taxes. The UK has the highest ticket tax rates; but no other European country has close to optimal rates from our calculations.

2. Important facts about the aviation sector: globally and in Europe

The global passenger revenue in commercial aviation is for 2019 estimated at approximately $800 billion; about 1% of the global GDP. In addition comes global revenue from commercial airfreight of approximately $150 billion. The sector's global fuel consumption for 2019 was predicted to be about 360 billion liters. This implies global CO2 emissions from aviation of about 900 million tons in 2019. The total climate impact of aviation is however larger. We assess other climate forcing factors to add 50% to the carbon emissions impact, leading to a total climate forcing impact in 2019 of 1350 million tons of CO_2 equivalents; or about 3% of global greenhouse gas (GHG) emissions.

The assessed European share of total airline activity in revenue terms (not counting Russia+CIS states) is 27%. The European total airline fuel consumption as share of global consumption is slightly lower, about 25%.

3. What are "optimal" aviation taxes, and tax rates, in Europe?

What should be the "correct" types, and levels, of taxation of the aviation sector in Europe today? Such an assessment needs to consider *both fuel taxes, and also airline activity taxes*. Taxes on general aviation activity can be in the form of *VAT*, and/or *ticket taxes*. Intra-EU air travel, between EU countries, and international travel out of the EU area, are both more significant in Europe than domestic air travel, but are not subject to VAT. Second, ticket tax/es exist in several European countries, but raise relatively low revenues (except in the UK), as discussed in section 5 below.

In principle, optimal aviation taxes should include both fuel taxes and ticket taxes and/or VAT at higher than today's rates.

The reason why we need two taxes is that the aviation sector generates two separate "distortions". *Distortion One* is due to the *environmental externalities* caused by GHG emissions and pollution (carbon taxes can be assumed to correct for this distortion). A fuel tax could alleviate this externality by covering the "social cost of carbon." *Distortion Two* is due to *sub-optimal tax revenue raised from the aviation sector than from other sectors in the economy*. This last distortion could be corrected by ticket taxes and/or VAT. It is well known from economic theory that when one has two separate policy targets, one needs two independent policy variables to meet both targets (see Tinbergen 1952): an aviation fuel tax; and an aviation activity tax.

Ticket taxes are in our view the preferable aviation activity tax over VAT, for at least two reasons. Ticket taxes can be charged to all flights, while VAT cannot. First, VAT is not charged on individual countries' exports. All international flights, between EU countries and out of the EU area, are today technically considered as exports, and thus not subject to VAT. This automatically exempts most aviation activity in Europe from the VAT. Secondly, business activity is not subject to VAT. The reason for this is that as air trips are deducted from businesses' corporate taxes, they are passed forward as an expense, and in effect exempted. This makes the VAT less effective in deterring business air travel. About 30% of trips by air in Europe are business motivated; while business-motivated travel (which includes most travel on business class, but also a good share of travel on economy class) provides a larger share of airlines' revenues (closer to 50%).

a. Fuel taxes

Most of this note will however deal with fuel taxes, which is the politically relevant policy to consider today. We will consider two possible optimal carbon tax levels: Tax A = $40; and Tax B = $80, per ton CO_2. $40-80 is the range proposed as the "globally correct" carbon tax level for 2020, by Stern, Stiglitz et al (2017), who argue that such a tax level on all carbon emissions ought to be implemented by all (both high- and low-income) countries.

While a carbon tax of $40-80 per ton CO_2 on aviation fuels is substantial, it turns out to be lower than the general EU carbon tax on fossil fuels, of 33 euro cents per liter. This tax level is equivalent to about 130 euros, or $145, per ton of CO_2. Our tax examples A and B are in that sense on the "conservative side", relative to European carbon taxation standards.

b. Tax on externalities caused by pollutants

We have also added two factors which usually are not considered when calculating the EU fuel tax, namely non-carbon climate forcing factors of aviation activity, and other types of pollution caused by aviation, focusing on noise pollution at and around airports.

Aviation fuels contributes about 2% to global GHG emissions in terms of its carbon emissions alone. The total climate impact of aviation emissions is however higher due to other climate forcing impacts of emissions from aircraft. These include high-altitude emissions of NO_x, contrails, cirrus clouds, and several other emissions components. How much additional climate forcing these factors imply is uncertain. According to Lee et al (2009), aviation emissions were in 2005 responsible for 4.9% of the global climate forcing impacts of all greenhouse gases, of which CO_2 represented 1.6%, and other emissions 3.3%. These calculations may also have underestimated the climate forcing impacts of NO_x by a factor up to 6; see Grewe et al (2019). Most of the non-carbon forcing factors are however much shorter-lived in the atmosphere than CO_2. This speaks for a relatively lower discounted global climate impact of these other factors relative to carbon. A conservative (and in our view credible) estimate, made by Azar and Johansson (2012), is that these additional forcing factors add 50% to the CO_2 impact, in the sense of the discounted present value of future climate damage from aviation emissions, using a 3% discount rate. Some European countries however use higher mark-up factors than 50% for other forcing factors; and some scientists (such as Kärcher 2018) argue that the non-carbon factor should be higher.

In our calculations in this paper we embody Azar and Johansson's assessment. Considering an emissions tax on aviation, we assume that the fuel tax to correct for all GHG emissions from aviation should be set 50% higher than the "pure" carbon tax. We are here ignoring the possibility that all climatic effects of aviation activity (including its non-carbon impacts) can be regulated in other ways than through a single fuel tax, for example by embedding the impacts into the CORSIA offsetting scheme, which will take effect from 2021 on; see Scheelhaase (2019).

c. Tax on other non-climate externalities

Aviation also causes other negative non-climate externalities the most important component of which are probably noise and congestion at and near airports. In our calculations we only include noise pollution, using our best assessment of 3 euro cents per liter.

d. Estimation of the optimal aviation fuel tax

Tax A ($40 per ton of CO_2) is equivalent to an externality cost of 18 US cents per liter of (fossil-based) aviation fuels, or the same as 16 euro cents per liter. This fuel tax also takes into account the two other externality factors we have mentioned, namely non-carbon climate forcing impacts of aviation fuels, and noise pollution near airports.

Tax B (a carbon tax of $80 per ton of CO_2) is in our context (when also correcting for other climate forcing factors, and for noise) equivalent to a fuel tax of 29 euro cents per liter.

How high should these taxes be? In the following we will present some calculations which try to indicate optimal tax levels, based on the carbon prices considered above, and a parameter which represents a country's "need" for tax revenues. Our calculations are largely based on the methodologies used by Keen and Strand (2007), and Keen, Parry and Strand (2013), but are updated to new and higher optimal carbon taxes, and adjusted to recent developments in Europe and globally.

Table 1 shows optimal aviation fuel tax calculations based on a carbon tax of $40 per ton of CO_2 being optimal. The "need" for tax revenues is represented by the parameter "marginal cost of public funds" (MCPF). The analysis of MCPF has a long history in economics, stemming from Pigou (1948). When MCPF is above unity, this expresses the degree of fiscal inefficiency in the tax system and its capacity to raise public funds to provide public goods, from all sectors of the economy in a fair way. When MCPF is unity, there is no inefficiency and no particular need to raise tax revenues from the aviation sector, nor any other sector. (This is a "benchmark" case but not realistic; it would correspond to a case where the government has no particular need to raise revenue from ordinary taxes such as the VAT or the income tax.) When MCPF is higher, it is desirable to raise more tax revenue from aviation taxes: the "tax revenue need" is higher. The higher fuel tax then helps to compensate for the fact that other "normal" (non-environmental) taxes, on economic activity in this sector, such as the VAT, are missing, We apply two alternatives, 1.1, and 1.25, both relatively conservative. (The higher level, probably realistic for Europe, corresponds to an "optimal" VAT level of 20%, close to the actual rate in most European countries).

Table 1 presents two sets of calculations. The first set, in the two first columns, indicates optimal tax rates given that both a ticket tax (as percentage of the ticket value) and a fuel tax (in Euros per liter) are used optimally. We see that the optimal fuel tax does not vary much between the alternatives, but is slightly lower for higher MCPF. (The reason is that a positive MCPF value leads to a "discounting" of the carbon tax value to be applied in these calculations). The optimal ticket tax depends strongly on MCPF.

The second set of calculations, most relevant for us (and in italics), as we are considering to impose only a fuel tax, is found in the rightmost two columns of Table 1. Here we assume that only the fuel tax can be imposed, and ask: What is the *constrained optimal fuel tax level given that this is the only tax imposed on aviation*? The fuel tax must now accomplish more than one purpose: it must both correct for environmental distortions, and at the same time raise an optimal tax revenue. The single (constrained) optimal fuel tax will then be higher than when it is imposed together with the activity tax, given that the MCPF is greater than one. This is a rather strong effect for the fuel tax, which we find to be much higher in the case of MCPF = 1.25.

The difference between the two rightmost columns is related to the "revenue-raising ability" of the fuel tax. This ability is greater, and the constrained optimal fuel tax rate higher, when the substitution elasticity between fuels and other factors in the production of aviation services is lower.

Table 1: Optimal aviation tax rates: ticket taxes (% of ticket value) and fuel taxes (euros per liter). Global cost of carbon = $40/t CO_2.

	Optimal fuel and ticket tax combined is available		Only one tax available		
Marginal cost of public funds (MCPF)	Ticket tax (%)	Fuel tax, euro per liter	Ticket tax (%)	Fuel tax, euro/liter (Substitution el = 1)	Fuel tax, euro/liter (Substitution el = 0.5)
1	0	0.16	0.08	**0.16**	**0.16**
1.1	0.09	0.15	0.14	**0.20**	**0.27**
1.25	0.20	0.13	0.22	**0.28**	**0.37**

We see that the optimal fuel tax rates when only the fuel tax can be used, in the two last columns of Table 1, are higher than the fuel tax rates when both taxes can be used (in the third column of Table 1). The reason is that the fuel tax is given two objectives: both to correct for externalities (represented by the third column); and also to raise revenue. The revenue-raising motivation is greater when the MCPF is higher. A low substitution elasticity means that a higher fuel price does little to distort the aviation production structure. The revenue-raising ability of the fuel tax then ought to be used to a high degree when public revenue needs from the aviation sector are great.[6]

We now see that the optimal fuel tax when MCPF has the reasonable value of 1.25, is 37 euro cents per liter, and thus *slightly higher* than the minimum road fuel tax set by the EU.

Table 2 provides similar calculations for the case of a twice as high carbon externality, $80 per ton of CO_2. All figures related to the optimal fuel tax are here higher than in Table 1 (in most cases near the double), while the "pure" ticket taxes are not affected when these can be applied together with the fuel tax. Correspondingly, the optimal single fuel tax rates (italicized in the table) are now substantially higher than the EU fuel tax rate when MCPF = 1.25.

Note here finally that in all cases of a single optimal fuel tax, the "non-carbon" climate forcing component in the fuel tax is 5 euro cents per liter given a carbon cost of $40, and 10 euro cents per liteer given a carbon cost of $80. Thus, if one elects to not include the

[6] The substitution elasticity expresses the "ease" by which fuel and other inputs can be combined by airlines. When substitution of other factors (labor and capital) for fuel is difficult, the substitution elasticity is low. The fuel tax then turns out to be a relatively efficient instrument for raising revenue, and the optimal fuel tax is then high (when only this tax and no ticket tax is used).

non-carbon climate forcing component in the single fuel tax, this tax can be reduced by these components, in the two cases.

Table 2: Optimal tax rates for global aviation, ticket taxes (% of ticket value) and fuel taxes (euros per liter). Global cost of carbon = $80/t CO2

	Both fuel and ticket tax available		Only one tax available		
MCPF	Ticket tax (%)	Fuel tax, euro/liter	Ticket tax (%)	Fuel tax, euro/liter (Subst el = 1)	Fuel tax, euro/liter (Subst el = 0.5)
1	0	0.29	0.14	**0.29**	**0.29**
1.1	0.09	0.26	0.20	**0.35**	**0.42**
1.25	0.20	0.23	0.27	**0.45**	**0.55**

4. Revenue raised by optimal aviation fuel taxes, in Europe and globally

How much revenue will be raised from aviation taxes, when applied to the entire Europe, and when applied globally? Tables 3-4 show what these revenues can be for Europe, given that carbon taxes of $40 (Table 3), and $80 per ton CO_2 (Table 4), would be imposed in Europe today. We see that an optimal ticket tax provides (often far) more revenue than an optimal fuel tax. The main reason is that the ticket tax is more broad-based than the fuel tax, as it applies to the entire value of air tickets, which is a much larger value than the cost of fuels used for the related trips (usually, about 25-30% of airlines' total expenses). Also, the higher the MCPF, the higher are the optimal tax rates and thus tax revenues, regardless of whether only one tax is used, or both. Finally, using two taxes provides more revenue than using only one tax.

We here however still focus on optimal single fuel taxes, in italics in the two tables, which also yield substantial tax revenues. When the carbon tax is $40 per ton CO_2, the total annual revenue from an optimal single fuel tax is between 15 and 34 billion Euros. (table 3) When the carbon tax is $80, this revenue is between 26 and 49 billion Euros. (table 4)

The activity level in the aviation sector (the amount of flying) will be reduced by these taxes, which also reduces the base for tax revenues and revenues themselves. By how much depends on demand and supply elasticities for aviation services, not discussed here. We can however schematically consider our revenue assessments as applying to future years, when the activity in the absence of new taxes would, most likely, be significantly increased in the absence of taxes; and probably at least retained at current levels given these taxes.

Table 3: Annual revenue from optimal aviation taxes, Europe except Russia/CIS
Global cost of carbon = $40/t CO_2
Assuming Europe covers 27% of global activity, 25% of fuel consumption. Billion euros

	Both fuel and ticket tax available			Only one tax available		
Marginal cost of public funds	Ticket tax	Fuel tax	Total tax revenue	Ticket tax	Fuel tax (substitution elasticity = 1)	Fuel tax (substitution elasticity = 0.5)
1	0	14.5	14.5	17.6	**14.5**	**14.5**
1.1	19.2	13.5	32.7	30	**18**	**24.3**
1.25	42.7	11.8	54.5	46	**25.3**	**34.5**

Table 4: Annual revenue from optimal aviation taxes, Europe except Russia/CIS
Global cost of carbon = $80/t CO_2
Assuming Europe covers 27% of global activity, 25% of fuel consumption. Billion euros

	Both fuel and ticket tax available			Only one tax available		
Marginal cost of public funds	Ticket tax	Fuel tax	Total tax revenue	Ticket tax	Fuel tax (substitution elasticity = 1)	Fuel tax (substitution elasticity = 0.5)
1	0	26	26	29.8	**26**	**26**
1.1	19.2	23.5	42.7	41.7	**31.5**	**37.8**
1.25	42.7	20.8	63.5	56.7	**40**	**49.5**

Tables 5-6 show equivalent calculations for global tax revenues given that uniform fuel and ticket taxes are imposed at the global level. The figures in Tables 3-4 are now multiplied by a factor of about 4 (as Europe represents about one fourth of global jet fuel consumption, and slightly more than one fourth of total global airline activity). Outside of Europe, two regions dominate: North America represents about 30% of total aviation activity (and fuel consumption); while East Asia and the Pacific region represents about 25%, which is growing. These calculations are "hypothetical" and can only be viewed as numerical examples; they are in particular based on an assumption that the MCPF is the same in all countries globally; and that such taxes can be implemented everywhere; which is of course not realistic for the near future.

We see however that globally optimal aviation taxes could, potentially, raise substantial revenues: up to 140 billion euros with only the fuel tax, given a carbon price of $40/t CO_2; and 200 billion euros given a carbon price of $80/t CO_2.

Taxing aviation can also be seen as a "fair" type of taxation, in terms of both the global and national income distributions. Only a small share of the global population, the wealthiest share, about 10%, fly by air. In developing countries, the overwhelming majority never fly. Also in wealthier countries, flying activity is highly skewed toward the wealthiest population

segments. In the U.K., for example, 50% of flights are taken by only 10% of the population; and 20% of flights by 1% (see Smith et. al. 2019).

Table 5: Global annual revenue from optimal aviation taxes
Global cost of carbon = $40/t CO2. Billion Euros

	Both fuel and ticket tax available			Only one tax available		
Marginal cost of public funds	Ticket tax	Fuel tax	Total tax revenue	Ticket tax	Fuel tax (substitution elasticity = 1)	Fuel tax (substitution elasticity = 0.5)
1	0	58	58	65	**58**	**58**
1.1	71	54	125	110	**72**	**97**
1.25	158	47	205	170	**101**	**138**

Table 6: Global annual revenue from optimal aviation taxes
Global cost of carbon = $80/t CO2. Billion Euros

	Both fuel and ticket tax available			Only one tax available		
Marginal cost of public funds	Ticket tax	Fuel tax	Total tax revenue	Ticket tax	Fuel tax (substitution elasticity = 1)	Fuel tax (substitution elasticity = 0.5)
1	0	104	104	110	**104**	**104**
1.1	71	94	165	158	**126**	**151**
1.25	158	83	241	210	**160**	**198**

5. Ticket taxes and VAT on aviation in Europe today

Few countries in Europe have substantial ticket (departure) taxes today. Major European countries with relatively high ticket taxes are:

The UK has by far the highest departure taxes (also globally): between 14.40 and 173 euros, depending on distance and travel class, with average level 48.80 euros. (This level is not far from an "optimal ticket tax", of between 9 and 20% of ticket value, when the MCPF is between 1.1 and 1.25, and given that the ticket tax is charged jointly with an optimal fuel tax).

Three other main European countries have significant departure taxes on air tickets, namely Germany (between 7.50 and 42 Euros; average 13.70 euros), Sweden (between 6.25 and 42 euros; average 13.10 Euros) and France (between 5.60 and 53 euros; average 9.50 euros).

For all European countries, ticket taxes are charged only to air trip departures. (As an example, when arriving in the U.K. by air from another country, there is no U.K.-imposed tax. There may however be a ticket tax on that flight, imposed by the departure country.)

Several European countries have VAT on domestic flights. Germany, Netherlands, Greece and Hungary have full rates; various others have lower rates. The weighted average of the VAT within the EU is only 4%. Moreover, in these countries (except Germany) domestic flight activity is tiny (although for Germany, domestic flying is only a small fraction of the total).

No European country has VAT on international flights to and from destinations inside or outside of Europe, the by far most significant aviation activities for European countries in terms of traveled distance and airlines' fuel consumption.

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Chapter 7 - Tax aviation fuel in Scandinavia?

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Countries in Scandinavia began already in the 1990s to introduce carbon taxes. Sweden taxes carbon dioxide emitted from activities of all sorts that are not subject to the EU ETS with SEK 1.15 per kg (€ 0.11), while the Norwegian tax, NOK 1.35/kg, €0.14) is enforced not only on road transport and mobile machinery but also on emissions from domestic aviation. In addition, both countries apply ticket taxes to both domestic and international flights. The rate in Norway is NOK 75 for domestic flights and NOK 200 on international flights, while the Swedish charge is SEK 61 for all intra-European flights (including domestic) and SEK 255 for intercontinental flights shorter than 6,000 km. On routes longer than 6,000 km, the ticket tax is SEK 408.

A CO2-tax on international flights was considered in a report by a Norwegian government committee at the end of 2019, which came out in favor of establishing an industry CO2-fund (ref below). The Swedish government has also expressed an interest in introducing a tax on CO2. In Denmark, the industry wants a CO2-fund to be established, based on a rather modest CO2-charge. Finland has been less active, but recently a "citizens´ initiative" gained enough signatures to force the government to consider to act.

Even in a case where biofuels and electro fuels are not taxed at all, it would take a very high tax on kerosene to provide enough incentive for airlines to shift to alternative fuels. That may argue in favor of supplementing the tax with a biofuel mandate that requires them to reach increasingly higher blends. However, it may be difficult in an early phase to include a separate target for electro-fuels, which can be expected to be even more expensive, as they are currently not commercially available, and it will take some time before they can be market-introduced in qualities that are acceptable as aviation fuels aviation fuel. A CO2-mandate would not provide an incentive to make aircraft more fuel-efficient or to aim at a partial electrification.

Adding a CO2-differentiation of take-off and landing charges to a policy that already consists of a fuel tax and a biofuel mandate makes little sense. These charges are too small to allow for any meaningful differentiation when it comes to CO2, but they may be differentiated for, for instance, aircraft noise.

One way of making a high tax on CO2 more acceptable to the industry may be to rule that at least part of the revenue should be recycled into an aviation industry fund with the aim of financing grants to projects that introduce more efficient air craft, including electrification, and the use of alternative fuels, including in particular electro-fuels. Without this kind of support, it will be very difficult even for the largest and most profitable airlines to take any major step in isolation as the cost would most likely be high. This is

particularly relevant for electrification and the first trials with electro-fuels as a biofuel mandate would not provide an incentive to start developing them.

Relevant in the context of creating a fund is that the Commission has accepted the Norwegian NOx-fund as not violating the EU´s state aid rules. The NOx-fund provides ships and land-based sources that emit NOx a chance to avoid a tax by agreeing to pay a slightly smaller fee to the fond. The fund has been very successful in assisting shipping companies to reduce NOx by various technics, including electrification. Ideally, all participating states should contribute to a common industrial aviation fund from which all airlines operating on routes covered by the fuel tax should be allowed to apply for partial funding of projects to which they are parties.

As the EDT allows for taxation of aviation fuel on routes between Member States that have entered into bilateral agreements, it should be politically feasible to introduce a relatively broad tax on aviation kerosene if a number of environmentally-minded Member States form a *Coalition for Aviation Climate Action* and provides an opportunity for other Member States to opt-in. As indicated above, the Nordic countries should politically be in a good position to go ahead, perhaps in cooperation with other environmentally ambitious Member States such as the Netherlands, France and Germany.

Ref. Samferdseldepartementet (2019), *Fra statussymbol til allemanseie – norsk luftfart i forendring*. NOU 2019:22. A government committee report published 3 December 2019.

ANNEX I - Taxing Aviation Fuel in Europe

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A. Introduction

According to the European Green Deal[7], one of the aims of the European Commission is to accelerate *"the shift to sustainable and smart mobility" because "transport accounts for a quarter of the EU´s greenhouse gas emissions, and still growing. To achieve climate neutrality, a 90 % reduction in transport emissions is needed by 2050. Road, rail, aviation, and maritime transport will all have to contribute to the reduction."*[8]

With regard to the prices of transport and to existing tax exemptions, the Commission continues: "The price of transport must reflect the impact it has on the environment and on health. Fossil-fuel subsidies should end and, in the context of the revision of the Energy Taxation Directive, the Commission will look closely at the current tax exemptions including for aviation and maritime fuels and at how best to close any loopholes. Similarly, the Commission will propose to extend European emissions trading to the maritime sector, and to reduce the EU Emissions Trading System allowances allocated for free to airlines. This will be coordinated with action at global level, notably at the International Civil Aviation Organization and International Maritime Organization."[9]

This communication of the EU Commission is only one of the many voices increasingly focusing on the enormous and still growing negative contribution of aviation to the production of greenhouse gases and on the fact that, nevertheless, EU law continues to exempt *"energy products supplied for use as fuel for the purpose of air navigation other than in private pleasure flying"* from energy taxation[10]. For environmental reasons as well as for the equal fiscal treatment of the different transport modes, it is deemed necessary to end the preferential fiscal treatment of fuel used for aviation purposes, have the aviation

[7] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions "The European Green Deal", Brussels, 11.12.2019, COM (2019) 640 final.

[8] „The European Green Deal", COM (2019) 640 final, 10.

[9] „The European Green Deal", COM (2019) 640 final, 10 f.

[10] Art. 14 § 1 lit. (b) Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity (Energy Taxation Directive), OJ 2003 L283 p. 51. For possible limitations of those exemptions by the Member States compare Art. 14 § 2 Energy Taxation Directive.

sector contribute to the external costs it causes and, in this way, reduce its growing greenhouse gas footprint.

For those reasons, we examine here whether and how EU law can and should be revised to introduce EU-wide taxation on aviation fuel and additionally, what are the options already available for Member States to tax aviation fuel.

B. Current Legal Situation

This section firstly outlines the current legal situation. Three different legal sources have to be discussed: The European Law; the Chicago Convention on International Civil Aviation (Chicago Convention) including the Convention text and its resolutions; and existing Air Service Agreements.

At the moment there is no kerosene fuel taxation on fuel uplifted for flights departing from one European Union Member State with destination in another Member State (Intra-Community flights). Note that today, flights within the European Common Aviation Area (Intra-ECAA) are considered as Intra-Community flights[11]. There is also no taxation on fuel uplifted for flights departing from the European Union with destination in a state beyond the European Union (Extra-Community flights or international flights). Only the Netherlands and Norway[12] have implemented a kerosene fuel taxation for domestic flights within their territory.

However, there is a legal option to implement a fuel tax which complies with both European and international obligations. The European Law, especially the currently valid Energy Taxation Directive, already contains an option to implement a kerosene fuel tax at least for Intra-Community flights on the basis of a bilateral agreement between at least two Member States of the European Union or the ECAA. Moreover, there is currently no international law completely prohibiting the implementation of kerosene fuel taxation, although there are some restrictions and tax exemptions which have to be considered.

I. European Law

The Energy Taxation Directive (2003) establishes minimum levels of taxation for certain energy products such as kerosene[13]. However, due to Art. 14 paragraph 1 lit. b, Member States shall exempt from taxation *"energy products supplied for use as fuel for the purpose of air navigation other than in private pleasure-flying"*.

As stated in recital 23 in the preamble of the Energy Taxation Directive, this exemption may have two aims: The first is to ensure compliance with *"existing international obligations"*

[11] Also, ECAA flights are considered to be intra-Community flights, since the agreeing states of the ECAA have to comply with the specific aviation regulations and obligations of the European Union for example as set out by the Energy Taxation Directive.

[12] Norway is a Member State of the ECAA. Also, Switzerland implemented a kerosene fuel taxation for domestic flights.

[13] Since 01 January 2010 the minimum taxation level of kerosene (CN codes 2710 19 21 and 2710 19 25) is 330 Euro per 1000 litre, see Annex I, Table A Energy Taxation Directive.

especially with those as stated by the Chicago Convention (1944) and by Air Service Agreements[14] and the second aim is "*the maintaining of the competitive position of Community companies*".

As an exception, Art. 14 paragraph 2 of the Energy Taxation Directive grants Member States firstly the right "*to limit the scope of the exemptions provided for in [Art. 14] paragraph 1(b) […] to international and intra-Community transport*". Therefore, a Member State is allowed but not obliged to impose a tax for domestic flights without having to fulfill any further requirements laid down in European or International Law.

Secondly, as stated in the second sentence of Art. 14 paragraph 2 of the Energy Taxation Directive, where a Member State has entered into a bilateral agreement with another Member State, Member States are entitled to waive the exemption on taxing kerosene fuel for intra-Community flights between their territories.[15]

However, due to the intention of Art. 14 para 2 of the Energy Taxation Directive and its statutory structure, the Energy Taxation Directive only permits agreements on the implementation of a kerosene fuel tax for intra-Community flights. Thus, due to EU law there is currently no possibility to implement kerosene fuel taxation on fuel uplifted for international (extra Community) flights.

Besides the Energy Taxation Directive, the Excise Duty Directive[16] also applies due its Art. 1 paragraph 1 lit. a. In accordance with Art. 7 paragraph 1 of the Excise Duty Directive, an "*Excise duty shall become chargeable at the time, and in the Member State, of release for consumption*". Therefore, the taxation of kerosene fuel has to be levied on the release for consumption and not on the consumption itself. Furthermore, it has to be noted that Member States may levy other indirect taxes on excise goods under the requirements of Art. 1 paragraph 2 of the Excise Duty Directive.

II. Chicago Convention

The Chicago Convention sets out the international legal framework for civil aviation, and it is the constitutive act for the International Civil Aviation Organization (ICAO), a specialized UN agency.

The Chicago Convention contains the convention text, the Annexes including their Amendments as well as other acts/resolutions of the ICAO. None of these legal sources completely prohibits kerosene fuel taxation based on the refueling process neither for domestic flights nor for Intra-Community flights nor for Extra-Community flights. Especially the Convention text itself does not ban the taxation of kerosene fuel taken on board an aircraft. While one resolution, in particular "*ICAO's policy on Taxation of International Air*

[14] This is underlined by ECJ's *Systeme Helmholz GmbH v Hauptzollamt Nürnberg* case, ECLI:EU:C:2011:797 para. 24, 25.

[15] The purpose of Art. 14 para. 2 of the Energy Taxation Directive addresses only flights between the agreeing states.

[16] Council Directive 2008/118/EC of 16 December 2008 concerning the general arrangements for excise duty and repealing Directive 92/12/EEC.

Transport"[17], adopted by ICAO's Council, seems to prohibit the taxation of kerosene fuel, in fact it does not.

1. Chicago Convention's Scope of Application

We need to discuss the scope of application of the Chicago Convention.

The personal scope of application of the Chicago Convention covers in general the Convention States. Since all Member States of the European Union entered the Chicago Convention they are legally bound by it. In contrast, the European Union is not a party to the Convention and only has observer status within the ICAO.[18] Furthermore, the European Union is not bound by the Chicago Convention based on the instrument of a legal successor of its Member States, because the European Union does not have the exclusive competences within the entire field of the Chicago Convention as held by the ECJ in its judgement[19] and therefore is not a legal successor of its Member States within the ICAO.

The material scope of the Convention covers extra-Community flights as well as intra-Community flights, because the European Union is not a party to the Convention and therefore, an intra-Community flight is a cross-border flight between two sovereign Convention Parties.[20] In contrast, domestic flights are not covered by duty-related provisions of the Chicago Convention.[21] The Convention contains some rules which might have an impact on kerosene fuel taxation.

a) No Unequal Treatment (Art. 11 of the Convention)

Art. 11 of the Chicago Convention generally prohibits an unlawful discrimination due to an operator's nationality. To apply Art. 11 of the Chicago Convention, it has to be seen that *"operation and navigation"* under Art. 11 of the Chicago Convention also includes the refuelling process. However, not every unequal treatment is unlawful if there is a

[17] Current version: Third Edition – 2000, Doc 8632.

[18] See https://ec.europa.eu/transport/modes/air/international_aviation/european_community_icao_en (January 8, 2020).

[19] See Judgment of the ECJ in the *Air Transport Association of America and Others v Secretary of State for Energy and Climate Change* case, ECLI:EU:C:2011:864 para. 57 to 72. The European Union is not considered as legal successor of the Member States within the Convention, because the European Union does not have the *"exclusive competence in the entire field of international civil aviation as covered by [the Chicago] Convention"*, ibid. para. 64. For the requirements of a legal binding effect of international agreements entered into by all Member States see further ECJ's *Intertanko* case, ECLI:EU:C:2008:312 para. 48 to 52.

[20] See also Art. 96 lit. b of the Chicago Convention: *""International air service" means an air service which passes through the air space over the territory of more than one State"*.

[21] This issue is extensively analysed by *Eckhard Pache*, Möglichkeiten der Einführung einer Kerosinsteuer auf innerdeutschen Flügen – Rechtsgutachten im Auftrag des Umweltbundesamtes, 2005 p. 14 et. seq., https://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/2853.pdf (January 17, 2020); The possibility of introducing a kerosene tax on domestic flights in Germany, https://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/2905.pdf (January 17, 2020), and *Bielitz*, Rechtsfragen einer Kerosinbesteuerung, 2005, p. 58 to 64; by its wording Art. 24 of the Convention is already not applicable to domestic flights.

justification, but in principal the implementation of fuel taxation shall generally be non-discriminatory.

b) Right of Transit (Art. 15 of the Chicago Convention)

Due to Art. 15 of the Chicago Convention *"No fees, dues or other charges shall be imposed by any contracting State in respect solely of the right of transit over or entry into or exit from its territory of any aircraft of a contracting State or persons or property thereon"*.

Since the taxation of kerosene fuel is an excise duty and therefore, based on the consumption of goods,[22] a taxation of kerosene fuel is not imposed in respect solely of the right of transit. Art. 15 of the Chicago Convention prohibits neither taxation on the basis of the refueling process nor a tax based on the consumption of kerosene fuel.

c) Customs Duty (Art. 24 of the Chicago Convention)

Art. 24 of the Chicago Convention states expressly that *"Fuel […] on board an aircraft of a contracting State, on arrival in the territory of another contracting State and retained on board on leaving the territory of that State shall be exempt from customs duty, inspection fees or similar national or local duties and charges"*.

By its wording, Art. 24 of the Chicago Convention only prohibits the taxation of fuel already on board an aircraft. Even if a tax might not be regarded as "*customs duty, inspection fees or similar national or local duties and charges"* due to agreed and subsequent practice, as laid down in Art. 31 paragraph 3 lit. a, b VCLT, any taxation of kerosene fuel already onboard an aircraft falls under the scope of Art. 24 of the Chicago Convention.

So, Art. 24 of the Chicago Convention only addresses fuel already onboard an aircraft and therefore the taxation of kerosene fuel based on the uplifting process is in accordance with Art. 24 of the Chicago Convention.

2. ICAO's Policy on Taxation of International Air Transport

Besides Art. 24 of the Chicago Convention, ICAO's Council extended the scope of this ban taxing aviation fuel by adopting *"ICAO's Policy on Taxation of International Air Transport"*[23]. This policy refers to Art. 24 of the Chicago Convention[24] and bans not legally, but de facto, the taxation of any kerosene fuel taken onboard an aircraft by at least insisting on a refund for any taxes paid.

The resolution states that *"1. a) When an aircraft […] is engaged in international air transport to, from or through a customs territory of another contracting state its fuel […] shall be exempt from customs or other duties on a reciprocal basis, or alternatively, in the cases of fuel […] taken on board in sub-paragraphs ii) or iii) such duty shall be refunded, when:*

[22] See Art. 7 para. 1 in conjunction with Art. 1 para. 1 lit. b Council Directive 2008/118/EC of 16 December 2008 concerning the general arrangements for excise duty and repealing Directive 92/12/EEC (Excise Duty Directive).

[23] Current version: Third Edition – 2000, Doc 8632-C/968.

[24] As stated in the Introduction and the third recital in Section I of the policy.

ii) the fuel etc. is taken on board for consumption during the flight when the aircraft departs from an international airport of that other state either for another customs territory or for the territory of any other state. […]; or

iii) the fuel etc. is taken on board the aircraft at an international airport […] and the aircraft makes successive stops […] in that customs territory."

However, it has to be recognized that ICAO Council resolutions do not share the legal status of the convention text, because resolutions are made by the bodies of the International Organisation itself and are not made directly by the Convention States, which only negotiate and conclude on the convention text itself. Thus, it will be shown that the Convention States have generally the right to deviate from ICAO's resolutions and therefore, such resolutions are in principal so called "soft law".

As stated by Assembly Resolution A1-31,[25] ICAO Council resolutions especially in the field of air navigation can consist of International Standards and Recommended Practices. As stated by this resolution, an International Standard is legally binding while a Recommended Practice is not.[26] The Council's right to adopt rules in the field of Chapter IV of the Chicago Convention, especially in the field of "air navigation", derives primarily from Art. 54 lit. l in conjunction with Art. 37 of the Chicago Convention.

The legal basis for adopting *"ICAO's Policy on Taxation of International Air Transport"* is in particular Art. 54 lit. l in conjunction with Art. 37 lit. j of the Chicago Convention. Since, Art. 24 of the Convention is titled *"Customs duty"*, since, Art. 24 of the Convention is located in Chapter IV which is titled *"Measures to Facilitate Air Navigation"*, and since, ICAO's Policy systematically addresses the same legal situation as Art. 24 of the Convention, Art. 24 of the Convention and ICAO's policy are rules in the field of "Customs and immigration procedures" in terms of Art. 37 lit. j of the Chicago Convention. Besides this argument, Art. 37 of the Convention is at least the relevant legal basis due to an agreeing and subsequent practice of the Convention States according to Art. 31 paragraph 3 lit. a, b VCLT.

By the wording of ICAO's Policy on Taxation of International Air Transport, which uses the term *"shall"*, the ban on kerosene fuel taxation for uplifted fuel is an International Standard and therefore, in general (de facto) legally binding, because the term *"shall"* is generally used for legally binding obligations of the Convention States, i.e. for International Standards. However, with respect to Arts. 22, 23, 28, 37, 38 of the Chicago Convention which state that Convention States only have to implement International Standards as far as they find it practicable to do so and with regard to the flexibility of adoption of International Standards, Convention States have no strict obligation to comply to International Standards.[27]

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[25] Doc. 4411 (A1-P/45), adopted in 1947.

[26] Annex 9 extends the application of this differentiation for resolutions in the field of the facilitation of international air transport, see Chapter 1, Section B, 1.1 of the Annex 9 of the Chicago Convention.

[27] See *Thomas Buergenthal*, Law-Making in the International Civil Aviation Organization, 1969, p. 76 et. seq.; this interpretation is also in line with the history of the Convention: With regard to a comment of Dr. Edward Warner who participated on the draft of the Convention see ibid., p. 78 fn. 64; *Eckhard Pache*, Möglichkeiten der Einführung einer Kerosinsteuer auf innerdeutschen Flügen – Rechtsgutachten im Auftrag des Umweltbundesamtes, 2005 p. 26 et. seq.,

Especially Art. 38 of the Chicago Convention shows that an International Standard is not strictly legally binding: Art. 38 of the Chicago Convention requires only that *"Any State which finds it impracticable to comply in all respects with any such international standard or procedure, or to bring its own regulations or practices into full accord with any international standard or procedure after amendment of the latter, or which deems it necessary to adopt regulations or practices differing in any particular respect from those established by an international standard shall give immediate notification to the International Civil Aviation Organization"*.

Thus, Art. 38 of the Convention constitutes a unilateral right to opt out at any time, which is restricted only by a procedural requirement, namely the notification, and not by any further substantive legal requirements.[28] As Art. 38 of the Convention does not rule on a definite period of time to notify the opt out, Convention States do not forfeit their right upon an expiry of a specific period of time. On the contrary, by agreeing on an opting out mechanism without any specific and more defined requirement regarding a time limit to exercise such a right, the Convention states demonstrated their intention to establish an opt out mechanism with a wide scope of application.

Therefore, International Standards have generally to be considered as *"soft law"* and every Convention State may opt out from resolutions. Whereas if a Convention State did not opt out, Art. 38 of the Chicago Convention does presume that this contracting state generally shall comply with International Standards. In these cases, International Standards have at least a de facto binding effect.

A stronger legal binding effect may derive from Art. 12[29], Art. 33[30] and Art. 34[31] of the Chicago Convention within the scope set out by these clauses. Additionally, one might argue that Art. 90 lit. a of the Chicago Convention causes a stronger legally binding effect for Annexes to the Convention[32] and their amendments. However, neither ICAO's policy on taxation is adopted as an Annex nor Art. 12, 33 and 34 of the Chicago Convention are applicable.

In conclusion, on the one hand, ICAO's policy on taxation bans the taxation of uplifted fuel by establishing the obligation of the Convention States at least to refund paid taxes. But on the other hand, the policy has to be considered as soft law in the sense that every

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https://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/2853.pdf (January 17, 2020); The possibility of introducing a kerosene tax on domestic flights in Germany, https://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/2905.pdf (January 17, 2020) p. 26 et. seq.

[28] *Aston*, Sekundärgesetzgebung internationaler Organisationen zwischen mitgliedstaatlicher Souveränität und Gemeinschaftsdisziplin, Berlin 2005, p. 134, 135, *Bielitz*, Rechtsfragen einer Kerosinbesteuerung, 2005, p. 91.

[29] Referring to rules of the air, Art. 37 lit. c of the Chicago Convention. Art. 12 of the Chicago Convention take precedence over the opt out option laid down in Art. 38 of the Chicago Convention, see *Rojahn* in: von Münch/Kunig, Grundgesetz Kommentar, 6th edition 2012, Art. 24 GG para. 55.

[30] Addressing the recognition of certificates and licenses.

[31] Addressing the duty to maintain a journey logbook.

[32] In accordance with Art. 54 lit. l and Art. 90 lit. a of the Chicago Convention International Standards and Recommended Practises may be designated as Annexes to the Chicago Convention.

Convention State is obliged to comply with ICAO's council's resolutions, only as long as the concerned Convention State did not opt out unilaterally under Art. 38 of the Chicago Convention.

III. Air Service Agreements / Air Transport Agreements

Any implementation of kerosene fuel taxation by Member States of the European. Union principally has also to comply with other international obligations set out by international agreements agreed on by the European Union or the Member States themselves. Both the European Union and Member States entered into Air Service Agreements, also called Air Transport Agreements, with third non-European countries. Air Service Agreements thereby establish the conditions covering air services between the agreeing states. It has to be clarified that international agreements agreed by EU Member States are first of all only binding for these states and not for the European Union. However, since Air Service Agreements concluded by the European Union are European law, these agreements are binding up on the institutions of the European Union and its Member States.

Some of these Air Service Agreements include exemptions or prohibitions of kerosene fuel taxation for operators of the agreeing states. Considering the foregoing, any implementation of a kerosene fuel tax under Art. 14 paragraph 2 of the Energy Taxation Directive has to comply with exemption clauses included in Air Service Agreements agreed by the European Union or by the Member States imposing a kerosene fuel taxation.

Furthermore, there are some old, existing ASAs between Member States of the European Union / ECAA states (intra-Community Air Service Agreements) which may also include taxation prohibition clauses. However, especially due to the primacy of European Law Art. 14 paragraph 2 of the Energy Taxation Directive and tax agreements based on Art. 14 of the Energy Taxation Directive take precedence over eventual bans of taxation within every intra-Community Air Service Agreement. Therefore, tax exemption and tax prohibition clauses laid down in intra-Community Air Service Agreements are not applicable and have no effect on taxation agreements under Art. 14 paragraph 2 of the Energy Taxation Directive, because in such cases the Air Service Agreements include a clause which is not in accordance with European Law. Member States are obliged to renegotiate or amend those agreements in accordance with the "*regulation on the negotiation and implementation of Air Service Agreements between Member States and third countries*".[33]

The most discussed Air Service Agreement concluded by the European Union is the EU-US Open Skies Agreement.

Art. 11 paragraph 2 lit. c of the EU-US Open Skies Agreement states that *"There shall also be exempt, on the basis of reciprocity, from the taxes, levies, duties, fees and charges referred to in paragraph 1 of this Article, […]:*

[…]

fuel […] introduced into or supplied in the territory of a Party for use in an aircraft of an airline of the other Party engaged in international air transportation, even when these

[33] Regulation (EC) No 842/2004 of the European Parliament and of the Council of 29 April 2004 on the negotiation and implementation of Air Service Agreements Between Member States and third countries, OJ L 157, 30.4.2004, p. 7 – 17.

supplies are to be used on a part of the journey performed over the territory of the Par-ty in which they are taken on board;".

As set out by this article, any taxation of kerosene implemented by the European Union itself is not in accordance with the EU-US Open Skies Agreement. In addition, Art. 11 paragraph 6 lit. c of the EU-US Open Skies Agreement states *"In the event that two or more Member States envisage applying to the fuel supplied to aircraft of US airlines in the territories of such Member States for flights between such Member States any waiver of the exemption contained in Article 14(b) of Council Directive 2003/96/EC of 27 October 2003, the Joint Committee shall consider that issue, in accordance with paragraph 4(e) of Article 18"* taxation of uplifted fuel may be implemented by a bilateral/ multilateral agreement between Member States for flights between their territories, only if a consensus decision of the Joint Committee was reached, cf. Art. 18 paragraph 4 lit. 3 of the EU-US Open Skies Agreement. Hence, for every agreement concluded with regard to Art. 14 paragraph 2 of the Energy Taxation Directive, it has to be awaited whether or not such an agreement which contains any tax burden for operators benefiting from the provision in EU-US Open Skies Agreement will be regarded to be in accordance with the EU-US Open Skies Agreement or not.[34]

IV. Interim Conclusion

In conclusion, neither the agreement text of the Chicago Convention nor other acts of the ICAO strictly prohibit the implementation of a kerosene fuel tax for uplifted fuel. Member States are allowed to implement a tax for domestic flights and to agree on a bilateral or multilateral agreement to implement a kerosene fuel tax for intra-Community flights between their territories with regard to Art. 14 paragraph 2 of the Energy Taxation Directive. In the latter case the agreeing states have to notify the ICAO according to Art. 38 of the Chicago Convention that they will no longer comply with ICAO's Policy on Taxation of International Air Transport. Additionally, the implementation of a kerosene fuel tax has to take into consideration Air Service Agreements which may include tax exemption clauses as it will be shown below. However, the current version of the Energy Taxation Directive and therefore the European Law prohibits the taxation of kerosene fuel uplifted for international (extra Community) flights.

C. Revision of the Energy Taxation Directive

Within the Green Deal, the European Commission confirms its willingness to revise the Energy Taxation Directive by the year 2021. The taxation of kerosene fuel used for aviation within the European Common Aviation Area is in the legislative power of the European Union. Therefore, many different approaches might be possible, as, for example, a total legal reorganization. However, it will be shown that even a marginal legislative effort would be sufficient to introduce a kerosene taxation within the ECAA based on the refueling

[34] Hereby, it is to consider that the contracting states mainly intended to fulfill their international obligations with regard to the Chicago Convention, as held by the ECJ, ECLI:EU:C:2011:864 para. 57 to 72. Hence, the joint Committee has to consider the fact, that a taxation based on the refueling process does not lead to a violation of Art. 24 of the Chicago Convention and as all convention states have a unilateral right to opt out from *"ICAO's policy on Taxation"* a taxation of kerosene fuel based on the refueling process would be in accordance with the provisions deriving from the Convention.

process of kerosene for the purpose of aviation. Further, it will be demonstrated that such a revision of the Energy Taxation Directive would be lawful, since it would not violate any European Law, especially as the European Union is not bound by Member States´ international obligations unconditionally.

I. Revision by Deletion of Art. 14 of the Energy Taxation Directive

A straightforward approach would be the deletion of Art. 14 paragraph 1 lit. b of the Energy Taxation Directive. This provision exempts energy products supplied for the use as fuel for the purpose of air navigation other than in private pleasure-flying from the scope of the Energy Taxation Directive so long as Member States did not enter in a bilateral/multilateral agreement to waive this tax exemption as provided for in Art. 14 paragraph 2 of the Energy Taxation Directive.[35]

If intra-Community and domestic flights would be excluded from the scope of the exemption provided under Art. 14 of the Energy Taxation Directive, kerosene fuel for the purpose of air navigation within the European Union would be covered by the scope of the Energy Taxation Directive without any additional legislative process, as the initial taxation duty under Art. 1, 2 paragraph 1 lit. b of the Energy Taxation Directive would be automatically applicable.

This regular initial taxation duty does not leave Member States any room for manoeuvre in implementation, which might have allowed any distinction based on operator's nationality or on its purpose of flying. Hence, Member States´ duty to implement a kerosene taxation based on the refueling process would have a ubiquitous effect on all flight operations within the European Union.

According to that, in the case of such a revision by solely excluding domestic and intra-Community flights from the exemption, Member States would be obliged to introduce a tax which may not be less than the minimum level of taxation prescribed by this Directive, cf. Art. 4 of the Energy Taxation Directive. For kerosene the laid down minimum taxation level is generally 330€ per 1000 liters, as found in Annex I Table A to the Energy Taxation Directive.

Further on, it will be demonstrated that such a deletion of the existing exemption would be lawful.

II. Lawfulness of a Kerosene Tax under the Unlimited Scope of the Energy Taxation Directive

The Energy Taxation Directive is a Union secondary law act under Art. 288 of the TFEU and is therefore located in the European Union's multilevel system. Therefore, it is important to realize that the only standard by which Union legal instruments are measured is the Union Law itself.[36] That means that Member States' national Law cannot impose any further demands on the lawfulness of a European act, insofar as such requirements are not set out by the European Law itself.

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[35] See page 54 et seq.

[36] *Ruffert* in Calliess/Ruffert, EUV/AEUV, 5th Edition 2016, Art. 288, para. 8.

Hence, it will first be demonstrated that the European Law itself does not rule out the introduction of a kerosene fuel tax by revising the Energy Taxation Directive, as described above. Secondly it will be shown that European Law does not oblige the European Union to respect Member States´ pre-existing international obligations unconditionally.

1. European Law and the Chicago Convention

To analyze whether a revision by solely excluding domestic and intra-Community flights from the exemption of Art.14 of the European Tax Directive is lawful, we must investigate if this Directive so revised is still in accordance with European Law.

As already indicated[37] there are different relevant international agreements ruling on international aviation which might have an impact on the implementation of a tax. Nevertheless, the only standard by which the European Union's legal instruments are measured is the Union's law itself. Hence, it has to be investigated how those international treaties, especially Air-Service Agreements concluded by the European Union, are incorporated into the European Law.

Under Art. 216 paragraph 2 TFEU, agreements concluded by the European Union are binding upon institutions of the Union and on its Member States. Therefore, all secondary laws (such as the Energy Taxation Directive) have to comply with them.[38]

But the European Union is no Party to the Chicago Convention,[39] and therefore not bound by its rules. Neither can the Chicago Convention be legally qualified as international customary law, hence, it is not incorporated into the European Law pursuant to Art. 3 paragraph 5 TEU.[40]

In conclusion, the Chicago Convention cannot be seen as a standard by which the Union's legal instruments are measured, hence it does not affect the lawfulness of a European act. In concrete terms, Union Secondary Laws such as the Energy Tax Directive, do not have to be in accordance with the Chicago Convention to be lawful itself. This has been stated by the ECJ.[41] Therefore, it is already insignificant that even the Chicago Convention does not prohibit the taxation of uplifted fuel as demonstrated above,[42] so the Union is not directly bound by the Convention anyway.

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[37] See pages 53, 54.

[38] *Dörr* in Das Recht der Europäischen Union, 68th Edition 2019, Art. 47 EUV, para. 82.

[39] See page 55.

[40] The European Union is bound by international customary law, because of it is a subject to international law, see *Damm*, Die Europäische Union im universellen Völkergewohnheitsrecht, Tübingen 2015, p. 21.

[41] See footnote 34.

[42] The Chicago Convention itself does not ban Taxation on uplifted kerosene, see page 51.

2. Union's Duty of Loyalty in case of Conflicting Obligations for the Member States with regard to the Chicago Convention and Member States´ Air Service Agreements

However, it is to be seen whether European Law requires the European Union to respect Member States´ international obligations. This question is governed by the principle of loyalty between the European Union and its Member States as stated by Art. 4 of the TEU. This general principle gives way to lex specialis rules as Art. 351 of the TFEU which specifies the principle of loyalty with respect to Member States´ international agreements.

It states: "*The rights and obligations arising from agreements concluded before 1 January 1958 or, for acceding States, before the date of their accession, between one or more Member States on the one hand, and one or more third countries on the other, shall not be affected by the provisions of the Treaties.*"

So European Law in principle does not affect Member States´ existing agreements which meet the requirements set out by Art. 351 of the TFEU. This means in concrete terms, that if Union Primary or Secondary Law would oblige Member States to violate their existing international agreements, those Member States´ agreements get priority over the European Law.[43] Hence, in such cases European Law is subordinate to Member States´ pre-existing international obligations.

However according to Art. 351 paragraph 2 of the TFEU this "primacy" of Member States´ international obligations is not unconditional, since paragraph 2 states that *"To the extent that such agreements are not compatible with the Treaties, the Member State or States concerned shall take all appropriate steps to eliminate the incompatibilities established. Member States shall, where necessary, assist each other to this end and shall, where appropriate, adopt a common attitude"*.

Hence, if there is a conflict between Member States´ pre-existing international obligations deriving from such existing agreements and European Law, and if, in this case, the international law provides any legal possibility to act in accordance with both International and European Law, then the Member States´ obligations, and moreover, the corresponding rights of third parties, are not to be considered as worthy of protection under Art. 351 paragraph 1 of the TFEU, as Member States have the possibility to act in accordance with both their international duties and European Law.

In concrete terms, even if there are pre-existing international obligations which would supersede European Law as shown above, Member States are not free to violate European Law if there is a legal possibility to act in accordance with European and international law. Only in the case that there is no possibility to act in accordance with both the Member State's pre-existing international obligation and the European Law, those pre-existing international obligations get precedence over European Law.

[43] *Schmalenbach* in Callies/Ruffert, EUV/AEUV, 5th Edition 2016, Art. 351, para. 11; *Lorenzmeier* in Das Recht der Europäischen Union, 68th Edition 2019, Art. 351, para. 20.

Therefore, Member States are not free to decide whether they are willing to comply with European Law or not; if there is a possibility to act in accordance with European Law, the Member States have to take all appropriate steps to eliminate these incompatibilities.

An appropriate step according to Art. 351 paragraph 2 of the TFEU can even include, as ultima ratio, the obligation to withdraw from the conflicting pre-existing agreement,[44] if firstly such an action would give the European Law full effectiveness, secondly if a withdrawal is legally possible, and lastly if the Member State could have foreseen the potential conflict with European Law.[45]

It has to be mentioned that in any case the European Union's Legislative Power is not limited by Member States´ pre-existing international obligations,[46] because Art. 351 of the TFEU is not able to supersede the division of powers between the Union and its Member States.[47]

But in such cases, where the Member States benefit from the scope of protection set out by Art. 351 paragraph 1 TFEU, especially if the Member States could not foresee any upcoming conflict with European Law, the Union's power is solely limited in the respect that the Union is not entitled to impose enforcement measures for legislative acts,[48] until the Member State has had a real possibility to take other appropriate steps to eliminate that conflict.

If a Member State´s international agreement is not covered by the provision set out by Art. 351 paragraph 1 of the TFEU, the primacy of European Law is completely applicable and supersedes any national obligation. One might discuss whether an analogous application of Art. 351 TFEU for other international treaties made by the Member States is needed if the European Union received its competence on a specific field later than the Member State entered into such an international agreement. Since Member States are always obliged to take all appropriate steps to avoid any conflict, this issue does not have any relevant impact on the ASAs concluded by the Member States.

Hence, one has firstly to distinguish between Member States´ obligations which are protected under Art. 351 of the TFEU and those obligations which do not fall under this scope. Consequently, if there is a conflict with a Member State´s international agreement which is protected under Art. 351 paragraph 1 of the TFEU, one has to investigate if there are appropriate steps the Member States can take to avoid such a conflict. And if the Member State's agreement is not protected by Art. 351 paragraph 1 TFEU, the primacy of European Law supersedes these agreements.

a) European Union's Obligation to act in accordance with the Principle of Loyalty with respect to Member States Opting Out from ICAO's Resolutions

Since all Member States of the European Union are Parties to the Chicago Convention, we now examine how this Convention affects European Law under the requirements set out above. Since, at least some Member States have entered into the Chicago Convention before

[44] *Lorenzmeier* in Das Recht der Europäischen Union, 68th Edition 2019, Art. 351, para. 41.

[45] *Lorenzmeier* in Das Recht der Europäischen Union, 68th Edition 2019, Art. 351, para. 41.

[46] *Schmalenbach* in Calliess/Ruffert, Art. 351 AEUV, EUV/AEUV, 5th Edition 2016, para. 22.

[47] *Lorenzmeier* in Das Recht der Europäischen Union, 68th Edition 2019, Art. 351, para. 22.

[48] *Schmalenbach* in Calliess/Ruffert, Art. 351 AEUV, EUV/AEUV, 5th Edition 2016, para. 22.

the 1st of January 1958, or before their accession to the European Union, the European Treaties, in principle, do not affect existing international agreements. Therefore, these Member States´ obligations deriving from the Chicago Convention are protected under the scope of Art. 351 of the TFEU.

In any case, it has also to be remembered that a revised Energy Taxation Directive, as being suggested here, does not lead to a conflict with the Chicago Convention itself because the Convention does not rule out the taxation of kerosene fuel taken on board an aircraft.

However, it cannot be denied that a conflict may arise from "*ICAO's Policy on Taxation of International Air Transport*", insofar as a Member State did not opt out from the Policy[49] and a revised Energy Taxation Directive, as it is suggested here, obliges Member States to introduce a tax for kerosene fuel.

But as mentioned above, even if existing obligations, in this case the Chicago Convention, are protected under Art. 351 of the TFEU, those Member States with protected obligations are obliged to take appropriate steps to avoid a conflict between their international duties and European Law - Art 351 paragraph 2 of the TFEU. It is not just a question of Member States having the alternative available to opt out from ICAO's policy.[50] Member States have the unilateral option to opt out from the *"ICAO's Policy on Taxation of International Air Transport"* at any time. Therefore, the European Law is not in a way superseded by Member States´ international obligations deriving from the Chicago Convention. On the contrary, if the European Union imposes a tax, Member States would be obliged to opt-out from the resolution.

In conclusion, the European Union is not bound by the Chicago Convention, and therefore, the Chicago Convention does not somehow affect European legislation. In concrete terms, a revised Energy Taxation Directive which is not in accordance with the concerned ICAO resolution is still lawful, as the Member States have the possibility to opt out. Whether or not a Member State actually opts out, does not affect the lawfulness of Union secondary law.

b) European Union's Obligation to act in accordance with the Principle of Loyalty and Member States´ Air Service Agreements

Apart from the Chicago Convention, as already mentioned, there are Air Service Agreements between Member States and third countries that fall under the scope of Art. 351 paragraph 1 TFEU. For those agreements it is the same legal situation as for the Chicago Convention.

But for those Air Service Agreements which do not meet the requirements, if they are concluded after the 1st of January 1958, or after the Member State´s accession to the European Union, then those agreements are in principle excluded from the protective scope set out by Art. 351 TFEU.[51] Hence, an international obligation concluded by a Member State

[49] As it is legally possible under Art. 38 of the Chicago Convention.

[50] At least is has to be mentioned that it is not the Union's right to claim that Member States have to act in accordance with their international treaties; this is still Member State responsibility deriving from their sovereignty. Only the possibility for Member States to act in accordance with their obligations meet the requirements under Art. 351 of the TFEU, hence, the Union is able to rule on the concerned issue.

[51] *Lorenzmeier* in Das Recht der Europäischen Union, 68th Edition 2019, Art. 351 AEUV, para. 23.

which does not meet the requirements of Art. 351 paragraph 1 of the TFEU is void in relation to European Law, even if Member States themselves remain obligated by the concerned agreement.[52]

Clauses based in Air Service Agreements concluded by the Member States which contain any legal provision which is not in accordance with European Law are unlawful under European Law. For such Air Service Agreements which are concluded between a Member State and a third country, the Member State cannot refuse its obligation deriving from European Law by referring to that agreement. Therefore, the European Union is in principal not legally obliged to show any consideration towards Member States´ international obligations if they do not fall under the scope of Art. 351 paragraph 1 of the TFEU.

In such cases, the European Law holds precedence with regard to the principle of primacy of application of European Law. This means in concrete terms, that Member States are not entitled to escape from any European legally binding obligation due to an individual international agreement concluded with another Member State or a third party.

It is clear that this rigid legal consequence may lead to legal uncertainty as there are many Air Service Agreements concluded by the Member States which might contradict European Law and one has to consider that it might be difficult to determine the division of competences within the area of aviation. Although the majority of provisions of the aviation sector fall within the exclusive competences of the European Union, there remain several areas of legislation within the Member States´ sphere of competence. Therefore, Member States are at risk to find themselves with conflicting obligations.

To avoid such legal uncertainty and to ensure the continuity of bilateral Air Service Agreements, the European Union implemented a *"regulation on the negotiation and implementation of Air Service Agreements Between Member States and third countries"*.[53] Under the provisions set out by this regulation, Member States´ Air Service Agreements can be amended or replaced so as to be in accordance with European Law. So, the regulation sets out a specific procedure for bilateral negotiations between Member States and third countries: Firstly, the relevant standard clauses, developed jointly between Member States and the Commission have to be included in such negotiations. Secondly, the Member States are obliged to notify the Commission of their intention in writing. Finally, it is up to the Commission to give notice to the concerned Member States if such an amendment would lead to an incompatibility with European Law.

As long as Member States follow the requirements set out by the regulation, Member States can rely on the EU conformity of the renegotiated or replaced agreements.

Hence, it should be noted that European Law in particular supersedes national law, if a Member State´s international treaty obligation does not meet the requirements set out by Art. 351 TFEU. Therefore, to ensure EU conformity, Member States should amend their Air Service Agreements in accordance with the Regulation to avoid any conflicting duty.

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[52] Ibid.

[53] Regulation (EC) No 842/2004 of the European Parliament and of the Council of 29 April 2004 on the negotiation and implementation of Air Service Agreements Between Member States and third countries, OJ L 157, 30.4.2004, p. 7 – 17.

c) *Interim Conclusion*

In conclusion, whether or not Member States are bound themselves by international agreements, the Union's legislative power is not somehow reduced.

It is the Member States´ duty to ensure their ability to act in accordance with European Law. Only in cases falling under Art. 351 TFEU where the Union has to respect existing historical agreements, solely the enforcement measures for legislative acts may be restricted until the affected Member States have had the possibility to take all appropriate steps to eliminate incompatibilities.

European Law does not require the Union to give respect to Member States´ obligations under the Chicago Convention or under Air Service Agreements if they do not meet the requirements of Art. 351 paragraph 1 of the TFEU. Therefore, the *"regulation on the negotiation and implementation of Air Service Agreements Between Member States and third countries"* [54] has been adopted to achieve legal certainty and to ensure the continuity of bilateral Air Service Agreements. Member States should follow this procedure to avoid an international liability as the primacy of European Union's Law may supersede any contradicting national agreement.

3. European Law and Air Service Agreements concluded by the European Union

Notwithstanding the further explanation regarding the Chicago Convention, there are international obligations which are legally binding on the European Union itself. International agreements which are concluded by the Union with regard to its treaty-making power laid down in Art. 216 paragraph 1 TFEU are binding upon its institutions.

Such agreements become a component of the Union Law and are ranked in the legislative hierarchy between primary and secondary law.[55] Hence, as a part of European Law, those agreements set a standard by which the Union's legal instruments are measured.

Therefore, any Air Service Agreement concluded by the Union and a third state is part of European Law. Hence the Union's secondary law, in particular the revised Energy Taxation Directive, has to be in accordance with international obligations based on Air Service Agreements concluded by the European Union itself.

It is important to note here the fact that such Air Service Agreements can refer to specific rules of the Chicago Convention. However, this does not elevate the Convention or parts of it to European Law, as would be the case under the regime of Art. 216 of the TFEU. Rather, those references to the Convention make them part of the Air Service Agreement concluded by the contracting parties, but they do not lead to any international obligation arising from the Convention itself. Hence, such a reference is only significant within the regulatory context of the concerned Air Service Agreement.

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[54] Regulation (EC) No 842/2004 of the European Parliament and of the Council of 29 April 2004 on the negotiation and implementation of Air Service Agreements Between Member States and third countries, OJ L 157, 30.4.2004, p. 7 – 17.

[55] With further references: *Schmalenbach* in Callies/Ruffert, EUV/AEUV, 5th Edition, Art. 216, para. 50.

To summarise, any violation of Air Service Agreements concluded by the European Union, renders the secondary legislation unlawful.

At this point, it has to be mentioned that the US-EU Open Skies Agreement does conflict with a revised Energy Taxation Directive, as is being discussed here. Under the EU-US Open Skies Agreement, the European Union is not entitled to tax operators benefiting from this international agreement, but Member States may introduce a tax based on the bilateral agreement provisions of Art. 14 paragraph 2 of the Energy Taxation Directive, subject to a consensus decision of the Joint Committee being reached, cf. Art. 11 paragraph 2 lit. c of the EU-US Open Skies Agreement.

a) The Revised Energy Taxation Directive and the EU-US Open Skies Agreement

The already mentioned conflict between the EU-US Open Skies Agreement will exemplify the current issue. As shown above, the EU-US Open Skies Agreement prohibits the European Union from implementing a tax on kerosene fuel without making a distinction between a tax based on the consumption or on the refueling process, cf. Art. 11 paragraph 2 lit. c of the EU-US Open Skies Agreement. An exemption to this general prohibition clause, upon a decision made by the Joint Committee, is only provided for Member States which intend to implement a tax based on Art. 14 paragraph 2 of the Energy Taxation Directive, namely through the bilateral agreement alternative. Hence, the European Union itself is not allowed to implement any tax which might lead to a taxation obligation on operators which fall under the scope of the EU-US Open Skies Agreement.

A directive which might lead to such a tax obligation would be unlawful, since the EU-US Open Skies Agreement falls under the scope of Art. 216 TFEU and therefore is to be considered as European Law.

Hence, a revised directive has to be in accordance with the provisions set out by the EU-US Open Skies Agreement which prohibits the European Union to tax kerosene fuel. So a revision of the Directive should limit itself to domestic and intra Community flights and include a so-called de minimis clause as an appropriate way to redress any existing conflict with Air Service Agreements which might contain tax exemption clauses.[56]

b) Redress of Conflicts with Air Service Agreements which contain a Valid Tax Exemption for Uplifted Fuel

As the revised Energy Taxation Directive has to be in accordance with Air Service Agreements concluded by the European Union, it has to be considered how such conflicts could be redressed.

First of all, in cases where a conflict with existing European Air Service Agreements can be identified, the European Union should renegotiate the concerned Air Service Agreements

[56] With regard to the idea of de-minimis-clauses to guarantee the fulfilment of existing international obligations to exempt foreign operators from kerosene taxation on the one hand and to ensure equal treatment and fair competition conditions for domestic operators see for general information regarding de minimis clauses *Pablo Mendes de Leon*, "Preliminary legal analysis of taxation of aviation fuels in Europe" in: CE Delft, Taxing aviation fuels in the EU, November 2018, page 14 et seq., https://www.transportenvironment.org/sites/te/files/publications/2019_02_CE_Delft_Taxing_Aviation_Fuels_EU.pdf (January 17 2019); see for specific options of implementation *Aoife O'Leary*, "Legal Analysis of Domestic and Intra-EU Aviation Fuel Taxation" in: ibid., pages 27-29.

and remove the mutual fuel tax exemption provisions contained in them. In any case, Air Service Agreements which might ban a kerosene tax on uplifted fuel would not be violated by a revised Energy Taxation Directive, as being discussed here, so long as the Directive contains specific exemption clauses for operators benefiting from those agreements. In this context, besides de minimis clauses, alternative exemptions for specified sectors need to be discussed.

(1) The implementation of De Minimis Clauses for intra-Community Passenger Flights

At the moment it seems that only a few foreign operators offer a small number of intra-Community passenger flights. Hence, it might be possible to implement a de minimis clause to exempt those foreign operators de facto from the tax liability.

De minimis clauses are already well known with regard to the European Union Emissions Trading System (EU-ETS) which states that flights are exempted "*which, but for this point, would fall within this activity, performed by a commercial air transport operator operating either:*

-fewer than 243 flights per period for three consecutive four-month periods, or

-flights with total annual emissions lower than 10.000 tones per year."

The EU-ETS de minimis clause might be regarded as a blueprint for fuel tax de minimis clauses, as foreign operators which benefit from an Air Service Agreement performing less than the laid down number of flights, or generating total annual CO2 emissions of less than 10.000 tones per year would *de facto* not be taxed, even if they fall under the initial scope of such a Taxation Directive.

But a fixed number of exempted flights without any mechanism for modification could immediately give rise to an adverse effect in the concerned Air Service Agreement, as soon as the foreign operator were to exceed the number of offered flights specified in the de minimis provision.

Moreover, to base the de minimis rule on "*total annual emissions*" would give rise to a conflict with Art. 24 of the Convention which, as already noted, addresses the taxation of fuel already on board an aircraft.[57] However, again, as shown above, the European Union is not directly bound by the Chicago Convention as Member States´ obligations to act in accordance with the Chicago Convention do not affect the Union's legislative powers. On the contrary, as explained above, in such a case it is an obligation of Member States to take appropriate steps to avoid a conflict between European Law and their international obligations. In the present case, as the Chicago Convention does set out a right of withdrawal under Art. 95 of the Chicago Convention, even such a withdrawal as *ultima ratio* would be legally possible to be regarded as a step to take to avoid such a conflict. Moreover, with respect to the current political discussions, the Member States can foresee that the European Union may intend in the future to rule on kerosene taxation. Hence, Member States could even be obliged to withdraw from the Chicago Convention if there is no other possibility to avoid a conflict between European Law and the Chicago Convention. However, as in fact there are other possibilities to implement a de minimis clause, the European Union

[57] See page 56.

could aim to avoid on political grounds a conflict between European Law and the Chicago Convention. Therefore, a de minimis clause which is based on total annual emissions is not an appropriate approach to redress a conflict between a fuel tax at the European Union level.

Consequently, it might be a conceivable solution to rule on tax exemptions which are only applicable for those operators falling under the scope of such a European Air Service Agreement. But this might lead to an unequal treatment between different operators, which might be regarded as discriminative and therefore, conceivably problematic with regard to international obligations as set out by Art. 11 of the Chicago Convention or the European Union's Laws own general principle of non-discrimination.

Therefore, as long as only a few operators perform a small number of Intra-Community passenger flights,[58] the best approach would be to implement a de minimis rule which exempts a certain number of flights for all operators equally. This to ensure that the de minimis number covers all flights offered by foreign operators, which are fuel tax exempt. Hence, all operators are treated equally since every operator no matter from which origin, is free of taxation within the scope of the de minimis clause. But to avoid a conflict with Air Service Agreements, this de minimis clause should include a mechanism for dynamic modification. As long as only a few operators perform a small number of passenger flights it seems to be practically possible to observe market developments and modify the de minimis clause as necessary.[59]

In conclusion, the Energy Taxation Directive should contain a de minimis clause set at least at a number which does not impact foreign fuel tax exempt operators. Such a de minimis clause has to include a mechanism for dynamic modification.

(2) Implementation of an Exemption for Intra-Community Freight Flights

With regard to foreign freight operators falling under tax exemption clauses, those foreign freight operators perform many more flights within the European Union than foreign passenger flight operators. For this reason, things turn out differently as the EU-US Open Skies Agreement effectively prohibits the taxation of kerosene fuel for foreign freight operators as well.

Of course, technically one could raise the number of flights exempted by the de minimis clause to cover all freight flights operated by tax exempt foreign operators. However, such an exemption of freight operators would contradict the legislator's intention, because so many more flights would need to be excluded that the tax would no longer have a significant impact. Therefore, it seems more reasonable to exclude all freight operators from fuel taxation under the revised Energy Taxation Directive, as tax exempt foreign freight operators perform a high number of flights.

In conclusion, if there is an Air Service Agreement which prohibits the taxation of kerosene for foreign freight operators, then in general all freight operators should be excluded independently of their registration or nationality to avoid an unequal treatment between

[58] Belly hold freight is considered a part of passenger flights.

[59] The yearly modification of thresholds by the European Commission is a common instrument which is for example used in competition law.

different operators, which might have an adverse impact on existing European and International Law.

If all freight operators are exempted from a kerosene tax in this way, one could think of different approaches to have also the freight operators contribute to the external costs of their activities, for example by introducing a per flight tax for freight operations.[60]

III. Interim Conclusion

A revision of the Energy Taxation Directive with the objective to delete the exemption rule as stated in Art. 14 paragraph 1 lit. b of the Energy Taxation Directive for kerosene fuel taxation for flights within the European Union would be lawful.

In consideration of the fact that the EU-US Open Skies Agreement as well as other existing Air Service Agreements prohibit any taxation of kerosene fuel in general, operators benefiting from such an agreement would have to be exempted from taxation.

Such an exemption should be realized by the introduction of a de minimis clause into the Energy Taxation Directive which should exempt a certain number of passenger flights for each operator of passenger flights in Europe, whether the operator falls under the scope of application of an Air Service Agreement or not.

The number of flights exempt from the taxation for all operators should be the highest number of passenger flights operated in Europe by an operator falling under the scope of application of an Air Service Agreement with a tax exemption clause. As the number of passenger flights operated in Europe by such foreign operators is relatively low, the de minimis clause would also only have to exclude a relatively low number of passenger flights from kerosene taxation.

By introducing such a de minimis clause for passenger flights, all operators of passenger flights would be treated the same way and without any discrimination. The number of passenger flights excluded from taxation would have to be revised regularly taking into consideration the current number of passenger flights offered by foreign operators enjoying a tax exemption.

For operators of freight flights, a different treatment seems to be more appropriate because the number of freight flights in Europe operated by foreign freight operators falling under tax exemption clauses is much higher than the number of passenger flights. To include also the number of those freight flights into a general de minimis clause for aviation would make the whole system of kerosene taxation ineffective as too many flights would be tax exempt. For this reason, freighter flights should be generally exempt from kerosene taxation.

IV. Proceeding to Revise the Energy Taxation Directive

To revise the Energy Taxation Directive in general, a unanimous act of the Council after consulting the European Parliament and the Economic and Social Committee as set out by Art. 113 TFEU is necessary.

[60] The legal implications of such a per flight tax still have to be discussed.

There are conflicting interests between the Member States which require a balance to be struck between legal possibility and political compromise. There might be comprehensible concerns regarding an extensive tax on kerosene fuel. However, even an unequal treatment within the Energy Taxation Directive could be justifiable and therefore lawful if there is a sufficient reason for doing so.

Especially islands which can only be reached by aircraft might have a justified interest that this traffic is not taxed to the full amount. To find a political compromise there are different approaches conceivable: besides a total or partial exemption of concerned Member States, specific transitional periods could be laid down. Within such transitional periods it would further be possible to set out a taxation level below the principal minimum tax rate to simplify the transition process for concerned Member States.

Considering the foregoing, there are already existing tax exemption clauses and transitional period clauses laid down in the current version of the Energy Taxation Directive and laid down in the Excise Duty Directive which may be used as an example. Art. 18 of the Energy Taxation Directive already includes implementation periods for Member States which had difficulties in implementing the rules of the current Energy Taxation Directive. Based on Art. 19 of the current Energy Taxation Directive, the European Council is empowered to authorise any Member State to introduce further exemptions for specific policy considerations by a unanimous act on a proposal from the European Commission. Regional exemption clauses can already be found in Art. 5 of the Excise Duty Directive. These regional clauses are also applicable to the current Energy Taxation Directive due to the clear wording of this provision and might be applicable to a revised Energy Taxation Directive as well.

Additionally, it is legally possible to treat freight operators differently than passenger operators, because all freight operators would be treated in the same manner. In case of a whole tax exemption for freighter aircraft, no such freight operator will be taxed and therefore, such a rule would be non-discriminatory with regard to the operator's origin. With regard to the passenger sector, such unequal treatment is justified by environmental reasons considering the high amount of foreign all freight operators operating intra-Community freight flights which cannot be taxed due to tax exemption clauses laid down in Air Service Agreements. Hence, such an exemption would not lead to a violation of the European Law's principle of non-discrimination. Moreover, since environmental protection is of the highest importance, an unequal treatment of all freighter aircraft operators compared to passenger flight operators is justified, because of the inability to tax the fuel of all freighter flights.

Even if a revision of the Energy Taxation Directive needs a unanimous Council decision, there is room to agree on a political compromise.

Furthermore, the European Union stated in the past, as recital 23 to the Energy Taxation Directive shows, that there is political will to act in accordance with the Chicago Convention to avoid an international conflict for its Member States. Under this presumption the European Union should give respect especially to Art. 11, 15 and 24 of the Chicago Convention. In particular, the European Union should implement a tax based only on the refueling process and should not implement any duty in respect solely of the right of transit.

D. Member States´ Options on the basis of the Existing Energy Taxation Directive for Implementing a Kerosene Fuel Tax

As long as there is no revised Energy Taxation Directive adopted, or to bridge the time until the Energy Taxation Directive is revised, Member States can already introduce kerosene fuel taxation for uplifted fuel on the basis of the currently valid Energy Taxation Directive by agreeing on a bilateral or multilateral agreement. Under Art. 14 paragraph 2 of the Energy Taxation Directive, Member States are free to waive the tax exemption for kerosene fuel as it is laid down in Art. 14 paragraph 1 of the Energy Taxation Directive.

Such an agreement has to meet the requirements set out in Art. 14 paragraph 1 of the Energy Taxation Directive and has to be lawful with regard to European Law and Member States´ international obligations. With regard to the European Law, Member States´ agreements have to be in accordance with Air Service Agreements concluded by the European Union.[61] Moreover, even if the European Union is not bound by international agreements concluded by the Member States, the Member States themselves are bound by their own international obligations. Especially Air Service Agreements and the Chicago Convention which have been concluded by themselves are binding on the agreeing Member States.

Furthermore, to pave the way for the implementation of taxation agreements, the European Commission may support the Member States.

I. No Substantive Requirement by Art. 14 paragraph 2 of the Energy Taxation Directive and Universal Validity

As described above, Art. 14 paragraph 2 of the Energy Taxation Directive states that *"where a Member State has entered into a bilateral agreement with another Member State, it may also waive the exemptions provided for in paragraph 1(b)"*.

Beside the required agreement between the agreeing Member States, Art. 14 paragraph 2 of the Energy Taxation Directive does not state any further substantive requirements to introduce a kerosene fuel tax. Such an agreement on the legal basis of Art. 14 paragraph 2 Energy Taxation Directive permits Member States to implement a kerosene tax on fuel uplifted for flights between the territories of the agreeing states, regardless of the flight operator's origin and nationality.

As Art. 14 paragraph 2 of the Energy Taxation Directive does not set out any further substantive requirements, the agreeing states are not obliged to agree on individual tax arrangements. Therefore, without any further negotiation effort, the Energy Taxation Directive would be automatically applicable and hence, the initial taxation duty under Art. 1, 2 paragraph 1 lit. b of the Energy Taxation Directive would apply in its full scope.

As Art. 7 paragraph 1 of the Excise Duty Directive, European Directive 118/2008/EC, states that an *"Excise duty shall become chargeable at the time, and in the member state, of*

[61] These Air Service Agreements are legally binding due to Art. 216 para. 1 TFEU.

release for consumption",[62] the agreeing Member States have only to transpose the mentioned taxation obligation into their own national legal framework.[63]

1. Possibilities of Tax Arrangements

Even if there is no further substantive requirement set out by Art. 14 paragraph 2 of the EDT, the agreeing states remain free to conclude different tax arrangements. In accordance with Art. 1 paragraph 2 of the Excise Duty Directive, *"Member States may levy other indirect taxes on excise goods for specific purposes, provided that those taxes comply with the Community tax rules applicable for excise duty or value added tax as far as determination of the tax base, calculation of the tax, chargeability and monitoring of the tax are concerned, but not including the provisions on exemptions."*

Since the exemption clause under Art. 1 paragraph 2 of the Excise Duty Directive (*"but not including the provisions on exemptions"*) with regard to Member States´ agreements under Art. 14 paragraph 2 of the Energy Taxation Directive is not applicable anymore, Member States are free to decide on other indirect taxes as well. Therefore, any indirect taxation based on the excise good itself is in accordance with Art. 1 paragraph 2 of the Excise Duty Directive.

One should consider whether a tax may be based on other parameters such as the actual consumption of fuel during the flight or on an average consumption in relation to flight plans (e.g. a flat tax). Hereby, the agreeing states should avoid the double taxation of kerosene fuel within EU airspace. This may be the case if an agreement with one Member State implements a tax based on real fuel consumption, while another State bases the tax on the refuelling process.[64]

But, more important, as already mentioned above, to base the tax on real fuel consumption would conflict with Art. 24 of the Chicago Convention, as fuel already on board an aircraft would be taxed. Therefore, such agreements should not tax fuel already onboard an aircraft to avoid any international liability.

Hence, to base the taxation on uplifted fuel is still the best approach to implement kerosene taxation within a bilateral or multilateral agreement.

2. Tax Rates

Furthermore, agreeing states remain free to agree on special tax rates. Therefore, the agreeing states can agree on similar or even different levels[65] of taxation for flights from

[62] As seen above, the direct applicability of Art. 7 para. 1 of the Excise Duty Directive is stated in Art. 1 para. 1 lit. a of the Excise Duty Directive.

[63] Member States have rule on national procedure, e. g. to determine the person liable to pay the exice duty in accordance with Art. 8 of the Excise Duty Directive.

[64] For example, there may be a double taxation when an aircraft refuels in state A for two subsequent flights, to state C via state B, state A taxes the whole refuelled fuel. In this case, when state B and C taxes the real consumption for the flight between their territories, the fuel consumed during the flight from state B to state C is double-taxed.

[65] Taking into account the fact that Member States have been able to introduce different tax rates before the Directive came into force and the fact that Art. 14 para. 2 Energy Taxation Directive is silent as to the question of whether Member States shall agree on an identical tax rate, it can be assumed that Art.

Member State A to B and for flights from Member State B to A as long as operators and their carriers are treated equally. Further, it is not possible to make a distinction based on different parameters such as the type of air carrier or the average consumption of fuel of a certain type of aircraft, because an excise duty is already indirectly based on the fuel consumption and taxes the kerosene taken on board an aircraft during the refueling process. Thus, the efficiency of an airplane is already considered in an excise duty scheme to the maximum extent, because the less efficient an air carrier is in consuming fuel, the more taxes the operator of this air carrier has to pay.

Lastly, the agreeing states are not obliged to set a minimum level as laid down in the third sentence of Art. 14 paragraph 2 of the Energy Taxation Directive, therefore, they are entitled to agree on any tax rate, even below 330 Euro per 1000 litres, therefore, also on a tax level of zero.

Moreover, as agreeing states remain free to agree bilaterally on a taxation level, and since the agreeing states have to adopt their own national law to impose a tax, the taxation agreement can even be silent as to tax rates. In this case, every Member State is entitled to decide unilaterally on a tax rate.

Finally, the agreeing states may also agree on a tax range which binds the agreeing states through the adoption of their own national law.

II. Lawfulness of a Bilateral or Multilateral Agreement with regard to European and International Law

When the Member States agree on a bilateral agreement, they have to ensure that this agreement is in accordance with European Law and as far as Member States are bound by international law, they have to act in accordance with those provisions, too.

Since, all Member States are bound by the Chicago Convention, a bilateral/ multilateral agreement has to be in accordance with its provisions.[66] Therefore, a taxation agreement based on Art. 14 paragraph 2 of the Energy Taxation Directive has to comply with the Chicago Convention and the "*ICAO's Policy on Taxation of International Air Transport* ". Therefore, the agreeing states have to notify ICAO's Council to opt out from this resolution. As shown above, the Convention Text of the Chicago Convention itself does not ban the taxation of uplifted fuel, only Art. 24 of the Convention prohibits solely the taxation of fuel onboard an aircraft.

With regard to *"ICAO's Policy on Taxation of International Air Transport"* which bans the taxation of uplifted fuel, the Convention States also have the unilateral right to opt out from this policy at any time in accordance with Art. 38 of the Chicago Convention, hence, a bilateral/multilateral taxation agreement based on the refueling process can be lawful

14 para. 2 Energy Taxation Directive does not affect the freedom of Member States to agree on divergent tax rates.

[66] The fact that the European Union is not directly bound by the Chicago Convention does not affect Member States´ international obligations. Hence, to avoid an international liability, Member States have to ensure that their acting is in accordance with their international obligations.

under the regime of the Chicago Convention. The agreeing states would have to notify ICAO's Council.

If Member States concerned had previously concluded Air Service Agreements which ruled on fuel taxation, then Member States would be obliged to renegotiate or amend those agreements. Those amendments should meet the requirements set out by the *"regulation on the negotiation and implementation of Air Service Agreements between Member States and third countries"* to ensure the legal compatibility with European Law and to achieve legal certainty.[67]

Due to the primacy of European Law, Member States are obliged to act in accordance with European Law as well. Therefore, Member States are also bound by Air Service Agreements concluded by the European Union and third States, cf. Art. 216 paragraph 2 TFEU. Art. 18 paragraph 4 lit. 3 of the EU-US Open Skies Agreement provides a tax exemption for bilateral or multilateral agreements concluded between the Member States under the scope of Art. 14 paragraph 2 of the Energy Taxation Directive, unless a consensus decision of the Joint Committee could be reached. A tax for US-carriers in accordance with such a decision made by the Joint Committee would be lawful with regard to international law without any further demands.

But even if such a decision in the Joint Committee to waive the tax exemption is not reached, or to bridge the time until such a decision, a non-discriminatory de minimis clause in the taxation agreement between the Member States including a modification system and special exemption clauses for all freight operators are an appropriate possibility to avoid any conflict with the EU-US Open Skies Agreement or other structurally similar Air Service Agreements. The requirements for such de minimis clauses or all freighter flight exemptions are equal to those already set out above.

III. Cooperation with and Support by EU Institutions, esp. by the European Commission

To assist the Member States in implementing a Kerosene Fuel Tax, the European Commission may offer guidelines, including general explanations and interpretative communication of European Law, as "soft law" for the implementation of such bilateral/multilateral agreements. As the possibility of a taxation agreement between the Member States under Art. 14 paragraph 2 of the Energy Taxation Directive is foreseen in European Union law, the European Commission has the competence to give guidelines on the meaning, interpretation and application of this European law for the concerned Member States. Such actions by the European Commission are not legally binding and Member States remain free to differ from any potential guidelines. Such an act of the Commission does not have a legislative impact, as the Member States parliaments decide finally and independently from European Commission guidelines on the content of such a taxation agreement.

[67] For the specific requirements laid down in the regulation see page 67 et seq.

However, if Member States intend to enter into a taxation agreement, they can ask the European Commission for support. In this case it seems useful that the European Commission offers guidelines which are not legally binding.

Moreover, the European Commission could publish statistics of market monitoring to facilitate the right number of thresholds for de minimis clauses or special spheres of exemption e.g. for all freight flight operators.

In contrast, the European Commission cannot draft the taxation agreements for the Member States, because under the current version of the Energy Taxation Directive, the taxation agreement itself is a Member State competence. However, besides the mentioned guidelines, Member States remain free to ask the Commission for their opinion on the compliance of such a drafted agreement and also on the compatibility of certain possible aspects of a planned agreement with the European Law.

IV. Interim Conclusion

Already today and without any change to the current Energy Tax Directive or to other European or international laws, the Member States have the option to enter into an agreement with one or more other Member States to apply a fuel tax to all intra-Community flights between their territories.

Such an agreement could simply contain the consent of the agreeing states to introduce a kerosene fuel tax for flights between their territories. However, it could additionally set out the taxation conditions such as the taxation procedure itself, tax rates as well as de minimis clauses and all freight exemption clauses with respect to existing Air Service Agreements.

The taxation should be based on the airport refueling process, as only kerosene fuel taken on board an aircraft can be taxed according to Art. 24 of the Chicago Convention. The Member States are free to decide on the tax rates, as there is no minimum level of taxation, and they are also free to lay down different levels of taxation for the refueling in their respective territories.

E. Conclusion

In conclusion, taxation for kerosene based on the refueling process for domestic and intra-Community flights is already today legally possible. However, under the current valid Energy Taxation Directive, this requires at least two Member States to agree on a bilateral agreement to tax intra-Community flights between their territories. Such agreements can be first steps for Member States wanting to act as fast as possible to reduce greenhouse gas emissions until the European Union decides at European Level to impose a kerosene fuel tax, because such first steps at the national level might already equalize transport market distortions due to taxation exemptions and pave the way for a common European solution.

In this case, there is no conflict with the Chicago Convention, as long as the agreeing states implement a tax on uplifted fuel only and as long as the agreeing states opt out from ICAO's Policy on Taxation of international Air Transport which only requires a notification according to Art. 38 of the Chicago Convention. To be in line with existing

ASAs which may include taxation exemption clauses, the implementation of de minimis rules is necessary.

To meet the goals as stated in the European Commission's Green Deal, the revision of the Energy Taxation Directive and the implementation of a kerosene fuel tax on a European level, in particular in the revised Energy Taxation Directive, would be a step forward to reduce distortions in the Community transport market which currently favors aviation transport compared to other modes by taxation exemptions laid down in the current Energy Taxation Directive.

In contrast to its Member States, the European Union is not legally bound by the Chicago Convention and by ASAs only concluded by Member States; in any case, the European Union might consider complying with them for political reasons.

In the case at hand, the European Union is in line with the Chicago Convention as long as the taxation is based on the refueling process, which is already the taxation method specified in Art. 7 paragraph 1 in conjunction with Art. 1 paragraph 1 lit. a of the Excise Duty Directive. Member States are then required to opt out from ICAO's Policy on Taxation of International Air Transport according to Art. 38 of the Chicago Convention.

Therefore, a deletion of the existing kerosene fuel taxation exemption clause as regards domestic and intra Community flights is a possible step as long as de minimis rules are implemented, because a revision of the Energy Taxation Directive as related to domestic and intra Community flights has to comply with Air Service Agreements concluded by the European Union.

As regards flights between the EU and third countries, since there exists a relevant number of Air Service Agreements concluded by the European Union containing tax exemption clauses for flights operated by carriers falling under the scope of those Agreements i. e. between the EU and these 3rd countries, kerosene uplifted for those flights may not be taxed. For this reason, international flights should generally be exempted from taxation.

In the first instance because too many international flights falling under such an agreement have to be exempted from fuel taxation so a de minimis clause is not reasonable. And secondly because any revision of the Energy Taxation Directive which contained a blanket removal of the fuel tax exemption for flights between the European Union and 3rd countries without a de minimis clause or other tax exemption schemes would conflict with provisions in those Union Agreements with 3rd countries which contained a fuel tax exemption clause. For these reasons, a revision of the Directive should only remove the tax exemption for domestic and intra-Community flights. A general exemption for international flights should remain, as long as Air Services Agreements which are in accordance with European Law have not been renegotiated in such a way as to remove the tax exemption clauses therein or as long as there is no other appropriate exemption scheme for those operators available.

Annex II - Aviation in EU energy tax policies

Bill Hemmings

Exempting aviation from fuel taxation began nearly a century ago when US state governments progressively taxed vehicle fuel to fund roadbuilding. The nascent aviation industry, then mainly carrying mail, not passengers, objected strongly and by 1931, of the 46 US states reporting data, 33 had a standing tax exemption or refund arrangement for airlines, 11 states did not, and 2 states were unclear. See Daniel Meijers Taxflight for a detailed history. These exemptions extended to foreign international airports when, for example, Pan Am opened mail operations to Latin America. The Pan American Convention on Commercial Aviation signed by 21 Latin American states in Havana in 1928 provided in Article 25 that "So long as a contracting State shall not have established appropriate regulations, the commander of an aircraft shall have rights and duties analogous to those of the captain of a merchant steamer, according to the respective laws of each State".

In 1939 a conference was convened in London on a "Convention concerning Exemption from Taxation for Liquid Fuels and Lubricants used in Air Traffic". 38 of the 47 states attending signed the Final Act but the text was never ratified because of the war. Article 2(1)(a) of the London agreement on the question of exempting the taxation of fuel on arrival was effectively incorporated in Article 24(a) of the 1944 Chicago Convention Article 2(1)(b).

The Chicago Convention (1944) set the basis for regulating the development of the aviation industry in the aftermath of WWII. US aviation emerged in a strong position after the war and sought liberal access to overseas markets, including the avoidance of en route fuel taxation. The US concluded agreements with Ireland, Norway, Sweden and Denmark as well as a multilateral Transport Agreement with several European and Latin American countries. But the UK controlled transatlantic access, and its industry, severely weakened by the war in Europe, sought protection through very restrictive and specific commercial conditions governing capacity, routes and authorized carriers etc. The UK/US "Bermuda Agreement" signed in 1946 came to serve as a template for the thousands of bilateral air services agreements which subsequently still rule industry access. Eventhough Bermuda did not ban fuel taxation as Taxflight explains, merely agreeing "to treat the visiting airline *not less favourable* as their respective national airlines. Neither had the Chicago Convention banned the taxation of fuel taken on board an aircraft, only the fuel left in tanks upon arrival – see also Pache at The Hague. But the American liberal interpretation prevailed and subsequent bilateral treaties ensured no fuel was taxed along the way on a mutually reciprocal basis.

Excise Duties

The Treaty of Rome first required that decisions on taxation needed to be taken by the Council acting unanimously. Excise duties however remained for a long time regulated mainly by the European Court of Justice (ECJ). With Member States being compelled to abandon excise duty arrangements which favoured their domestic producers to the detriment of those producers in other Member States. The 1986 Single European Act (SEA) establishing the single market, allowed most Council decisions to be taken by qualified majority with taxation remaining an important exception. The Commission General Directorate for Taxation presented several excise duty proposals in the late 1980s and the Council adopted a common framework on excise duties in time for the 1992 internal market deadline. The EU six (later twelve) insisted on sovereignty grounds, that their aviation fuel

taxation exemptions (for *supplies of jet fuel (CN code 2710 00 51)* be incorporated on a mandatory basis in Europe's first Directive – 92/81/EEC of 19 October 1992 - on harmonizing the structures of excise duties on mineral oils. See Jacob Klok. The reasoning behind this exemption was subsequently explained in a 1996 Commission document COM (96) 549.

2.3 Aviation kerosene (AVTUR – Jet A1) is currently not subject to taxation. This is largely because of international commitments under which all contracting parties to the International Civil Aviation Organisation (ICAO) have entered into reciprocal arrangements to supply aircraft fuel exempt of all taxes….
2.4 Although Article 24 of the Chicago convention only deals with "goods" already on board the aircraft, the ICAO Council resolution of 14 December 1993 (Doc 8632- C/968) confirms that fuel embarked on aircraft destined for another State, shall also be exempt. Furthermore, it is made clear that "or similar national or local duties and charges" includes for example excise duties and sales and consumption taxes. These resolutions are adhered to by all EU Member States and are implemented through several bilateral agreements. All Member States of the European Union are members of ICAO, while the European Community has had observer status since 1989.

Second thoughts

The years afterwards saw attempts to strengthen and widen various energy tax provisions, expand the scope of mandatory minimum levels and introduce environmental measures including an EU CO2 tax. The aviation exemption was also the subject of many studies. Pressure for change grew and soon the backtracking began. Various conferences and reports turned up the heat. The Transport and Environment Council's wideranging Conclusions of 16 December 1994 look remarkably similar to many elements of today's Green Deal particularly as regards transport, and stated that excluding commercial air traffic from indirect taxation cannot be justified on environmental grounds. In February 1996, OECD Environment Ministers urged ICAO to explore air fuel taxation and efficiency standards and the OECD and IEA subsequently made the case for Annex I fuel charges in the runup to the Kyoto Protocol. "The fight against global warming may require that advanced countries agree to a charge on aviation fuel that would result in higher airfares and reduced demand for air travel and freight".

Article 8(7) of Directive 92/81/EEC had required the Commission to review the aviation fuel tax exemption by the end of 1997, taking account of aviation's external costs and environmental implications and submit a proposal. COM (96) 549 of 14 November 1996 contained the review which warned of a likely doubling of aviation CO2 emissions by 2005 over 1993 levels. It recommended that the 1992 Directive be amended to require Council to tax aviation kerosene as soon as the international legal situation allowed all carriers flying within Europe to be subject to a fuel tax. Such a provision, it was argued, would strengthen Europe's hand at ICAO. Allowing domestic fuel taxation was also recommended. And indeed the Commission's 12 March 1997 proposal on Energy Products Taxation, COM (97) 30, permitted domestic fuel taxation and limited in then Article 13 the existing aviation fuel tax for international and intra-Community transport **" *only so long as such products are obliged to be exempt under international obligations*".** It did not mention ICAO but also included a new provision; "where a Member State has entered into a bilateral agreement with another Member State, it may also waive the exemptions provided·for in paragraphs I (c) and (d) of this Article. In such cases, Member States may apply a level of taxation below the minimum level set out in this Directive".

Why not tax all jet fuel?

In January 1999 an exhaustive study was completed entitled "Analysis of the taxation of aircraft fuel". It was Commissioned by the EC and prepared by a consortium led by Resource Analysis Delft together with MVA Ltd, NLR and IIASL in Leiden. COM (2000) 110 of 02 March 2000 published its conclusions including that; *"principally for economic reasons' just targeting fuel taxation of EU registered carriers within the EU " would not be practicable or desirable" and that the environmental effects of such unilateral action would be significantly less… whereas there would be significantly higher environmental benefits from the introduction of kerosene taxation targeting all operations from Community airports. In addition, the significant revenues accruing from such a measure would allow Member States to reduce other taxes and charges, notably those on labour as recommended in Article 1 of the Commission Proposal for the taxation of energy products*".

A year later, Com (2001) 370 of 12 September 2001, lamented that *"This tax exemption for fuel provides no incentive for airlines to use the most efficient aircraft and to contribute to reducing CO2 emissions (of which air transport accounts for 13%). It also creates situations where the competition between air transport and other modes is unfair. Taxation of kerosene has long been under consideration at European level, especially since the Commission communication on taxing aviation fuel. The Ecofin Council subsequently approved a recommendation that Member States should, in close cooperation with the Commission, work together more closely within the International Civil Aviation Organisation with a view to introducing an aviation fuel tax, and other instruments with similar effect. The European Union has requested - thus far without success - that this issue be discussed within the International Civil Aviation Organisation. It will renew its efforts in this direction at the next ICAO Assembly. Without calling into question the international rules, consideration might be given to abolishing the tax exemption for kerosene on intra-Community flights.31 This path is by no means free of problems since it will demand equal treatment vis-à-vis non-Community carriers operating intra-Community flights… As an additional or alternative solution the Commission proposes, as part of the programme to create the single sky, to introduce differential en route air navigation charges to take account of the environmental impact of aircraft".*

The effects of fuel taxation on the Cohesion States were specifically studied by Resource Analysis to investigate whether fuel taxation works against Cohesion Fund policy. It was found that there were no indications that the direct effects in terms of aviation activity are more significant compared to the effects for the other Member States. However, further analysis indicated that a given percentage change in passenger demand might cause relatively greater economic disadvantage to the Cohesion States due to their greater reliance on air transport.

The 2003 ETD.

The Commission in COM (2000) 110 of 2 March, recommended that:
1. The Council proceeds with the adoption of the Commission Proposal for a Council Directive restructuring the Community framework for the taxation of energy products permitting Member States to levy tax on aviation fuel used on National flights, or by bilateral agreement, intra-Community movements.
2. Member States, in close co-operation with the Commission, intensify their work within the ICAO framework for the introduction of taxation on aviation fuel and other instruments with similar effects.
3. The Council reviews the situation on the basis of a Report from the Commission on the outcome of ongoing discussions and negotiations within the ICAO framework,

targeting the 33rd ICAO Assembly

As Jacob Klok later noted; *"2002 was no arbitrary date. This was the date when the Community planned to conclude its negotiations for the accession of ten new countries in the EU, most from Central and Eastern Europe. The upcoming Eastern Enlargement seemed to provide the energy tax negotiations with a new essential driver. The perspective of having to compete on the Internal Market with ten new Member States, most of these with low or no energy taxes in place, seemed to create new determination in the Council to find a solution within the energy tax area. This among the traditional high tax proponents of the directive, but also among the most reluctant Member States Spain, Portugal, Greece and Ireland, who with enlargement would suddenly jump from being the low-tax members to being the middle-tax members of the club. As it was hard to imagine a future EU of 25 finding an unanimous agreement on the energy products tax directive, it seemed to be now or never".*

The Danish Presidency (July - December 2002) was under pressure to meet a December deadline for finalising negotiations on a revision to the Directive agreed by Ministers meeting the previous March in Barcelona. As Jacob Klok (page 24), put it

"it was relatively easy for the Danish Presidency to ascertain agreement on the Commission proposal to allow Member States to tax fuel used for air and sea navigation nationally or between Member States that conclude a bilateral agreement. The Presidency had furthermore counted on an easy ride when it came to the proposal that energy products supplied as fuel for commercial air crafts was going to be covered by the minimum tax rates, as soon as such products were no longer obliged to be exempted under international obligations.However, as it turned out, Spain and Ireland were far from willing to agree to this proposal"

So already by 27 November 2002 – see Ecofin political agreement - the critical words in then Article 13 of the Commission's 1997 proposal which exempted aviation fuel from taxation while adding the qualifier "*for as long as such products are obliged to be exempted under international obligations*" had disappeared in what was at that point then Article 14 1 (b) of the final draft.

The others in the room were clearly not impressed and the remaining 13 of the then 15 EU members plus the Commission declared in a separate Council statement re Article 14(b) added to the Council minutes on final agreement of the proposal in 2003 that;

"All delegations, with the exception of Ireland and Spain, and the Commission agree that as a matter of principle, and in the interest of a consistent tax system, commercial aircraft fuel should be taxed on the same basis as any other fuel. However, the question of competition with third countries needs to be taken into account and any distortion of competition with socio-economic implications has to be avoided. All delegations, with the exception of Ireland and Spain, and the Commission are of the view that an appropriate strategy would be to pursue the discussion on the matter with the ICAO and that when taxation of such products will be allowed at international level, the Council needs to decide, on the basis of a proposal from the commission, whether to abolish the exemption". See Jacob Klok.

So the Spanish and Irish veto converted a provisional exemption into a mandatory one that would require tax unanimity, from a much enlarged EU, to overturn. And so to the Green Deal's dilemma today. It had taken 6 years of negotiations before the European Council

finally agreed a new but considerably weakened energy tax directive under the Italian Presidency in the second half of 2003. What of the future now?

Interestingly, the Commission had already noted in a Communication COM 2001 260 of 25 May 2001that;

"Energy and environmental taxation.
Generally, taxation has proved to be an efficient economic instrument for tackling environmental problems. It is a crucial instrument in meeting the commitments of the Kyoto Protocol and has the potential for providing an effective stimulus for policies to dissociate energy use from economic growth, to improve energy consumption patterns and to develop renewable energy sources…"

"The shift towards environmental taxes has clearly been a very slow one…"

"it remains the Commission's view that a move to qualified majority voting at least for certain tax issues is indispensable. Since the legal basis will, for the present, remain unanimity it will, after enlargement, be much more difficult to have any new Community legislation agreed. So where legislation is not absolutely essential (notably in the direct tax field), other methods will have to be found to achieve progress in removing tax obstacles and distortions to the Internal Market, which taxpayers have a right to expect"

And;

"The use of non-legislative approaches or "soft legislation" may be an additional means of making progress in the tax field. For example, peer pressure, which is the basis of the Code of Conduct for business taxation, could be applied in other areas. Other instruments - notably Commission recommendations, which have been used in the past - but also guidelines and interpretative notices could also be considered. Such non-legislative approaches should, to the largest extent possible, involve the European Parliament through the existing mechanisms for the consultation of Parliament. The use of non-legislative or soft law approaches could be particularly effective in cases where they have a firm legal foundation, based on the Treaty and the case law of the Court of Justice. In such cases, instruments such as Communications, recommendations, guidelines and interpretative notices can provide guidance to Member States on the application of the Treaty principles and promote the rapid removal of obstacles to the Internal Market. The use of such instruments can also address, at least to a certain extent, the abovementioned problem of the asymmetry of a legal approach. This is because, first, these instruments can point to potential legal problems and indicate possible ways forward for dealing with them in order to avoid legal conflicts or even litigation. Second, these instruments can contribute to the development of new tax rules when the Court has found the old ones unlawful.

And;

"Enhanced co-operation
The possibilities introduced by the Amsterdam Treaty and developed by the Nice Treaty for closer co-operation between sub-groups of like-minded Member States could also be envisaged in certain cases. In particular, this could be used in tax policy areas where, even in the long term, decisions in the Council are taken by unanimity. These must be self-contained policy areas so that Member States cannot pick and choose between policies as best suits them. The decision at Nice will enable the Commission to propose to the Council that as small a group as eight Member States may co-operate more closely, after approval within the Council by qualified majority".

The Communication also called for better cooperation between the Commission and Member States when discussing tax policies at the OECD.

Fuel taxation and ICAO

As to ICAO, in 1996, a year before Kyoto, the ICAO Council adopted a Resolution that "strongly recommends that any environmental levies on air transport which States may introduce should be in the form of charges rather than taxes". This resolution was endorsed at ICAO's 33rd Assembly in September 2001, which "Recognized the continuing validity of Council's Resolution of 9 December 1996 regarding emission related levies". In ICAO's view, taxes were levies to raise general national and local government revenues to be applied for non-aviation purposes whereas charges were seen as levies to defray the costs of providing facilities and services for civil aviation. ICAO's 2001 decision was important and effectively killed the possibility of developing further work within ICAO on the use of kerosene taxation as an instrument to internalise the external costs of international aviation, including its impacts on climate change. This was the ICAO Assembly at which European member states had been called upon in COM (2000) 110 to reverse ICAO's policy on fuel taxation.

The 35th ICAO Assembly in October 2004 returned to the question of environmental charges and taxes. See Grounded. It reconfirmed the ICAO Council's 1996 decision to recommend charges rather than taxes but then resolved to amend Assembly Resolution A33-7 and urged "Contracting States to refrain from unilateral implementation of greenhouse gas emissions charges prior to the next regular session of the Assembly in 2007, where this matter will be considered and discussed again". The Assembly was effectively ruling out the use of the policy instrument that it once preferred to taxes, for the next three years. Just prior to the Assembly, the European Parliament passed a resolution criticizing the amendment as unacceptable and a retrograde step for ICAO which would undermine the organisation's credibility, The Parliament called on ICAO urgently to implement an open emissions trading scheme and to develop emissions related levies.

Indeed this thinking was reflected in COM(2005) 459 of 27 September which stated;

In this context, the judgments delivered on 5 November 2002 by the Court of Justice of the European Communities in the "Open Skies" cases are significant. They triggered a comprehensive reform of the EU's external aviation relations. As part of this process, more than 200 ASAs between EU Member States and non-EU countries have already been amended to open the possibility of taxing fuel supplied to EU and non-EU carriers on an equal basis. However, while this process must and will continue, it will inevitably take time to complete. In view of this specificity of the aviation sector, the wider application of energy taxes to aviation can not be relied upon as the key pillar of a strategy to combat the climate change impact of aviation in the short and medium term. It has therefore not been further assessed in the present context.

The 35th ICAO Assembly in September 2004 endorsed "voluntary trading systems that interested Contracting States and international organizations might propose" and stated that "ICAO would provide guidance for use by Contracting States, as appropriate, to incorporate emissions from international aviation into Contracting States' emissions trading schemes consistent with the UNFCCC process." (Resolution 35-5) This statement was the basis for the European Commission's proposal, put forward in December 2006, to include aviation in the EU Emissions Trading Scheme.

Between 2004 and 2007, an ICAO task force prepared written guidance for member states on aviation and emissions trading i.e. a non-binding document designed to help contracting States wishing to include aviation in their emissions trading schemes. At CAEP 7 in February 2007 there was broad agreement on the document except for one critical point; the ability of a contracting state to include any carrier, regardless of its nationality, in an emissions trading scheme. Some States, including the US, insisted that foreign carriers could only be included by mutual agreement – a provision, which, if agreed, would necessitate forging new bilateral agreements with all states involved in each and every scheme. The alternative, favoured by the EU, was to allow the state to mandate participation of foreign carriers in the absence of mutual agreement. This mutual agreement clause was to create enormous controversy and an enduring rift when ICAO's 36th Assembly considered the issue in September 2007. The Assembly voted to endorse the US supported approach of signing separate mutual agreements before including foreign carriers in emission trading schemes. But the EU together with Norway, Switzerland and Turkey entered a reservation which signalled they would ignore the provision – from Grounded.

Annex III – Tankering

Bill Hemmings

Fuel tankering is common in aviation. It occurs because fuel prices can and do differ, sometimes widely, from one airport to the next and between carriers at airports, depending on volumes etc. Airlines can save on fuel costs by tankering up at one airport to avoid taking on more fuel than is necessary at the next airport if fuel there is more expensive. The end result is that there can be an overall fuel cost saving to get to the third airport. Obviously tankering fuel creates additional fuel burn and CO2 because the extra fuel to be carried has a weight and this also has a cost. Tankering also reduces the overall revenue payload available. A recent report from Eurocontrol looked into tankering in Europe. Some believe the practice may be understated. One question to ask is whether either an intra EU wide fuel tax or fuel taxation on a bilateral basis would exacerbate the problem. Or possibly even create the opportunity to help solve or diminish it? Obviously the act of making fuel more expensive through taxation is a disincentive to tanker because you burn more fuel than is needed for the flight and its at a higher price than before the tax was introduced. The 1999 Resource Analysis paper suggested in fact that domestic fuel taxation could lead to tankering.

We believe that tankering could be reduced within an area subject to a fuel tax and possibly even largely eliminated by making the practice prohibitively expensive through dual fuel taxation rates within the taxed state(s). And without impacting operations, safety or the pilot's discretion as to how much fuel to be loaded. Pilots are in charge of everyone's safety, including their own.

Minimum Fuel

When aircraft land at an airport, the ground staff/pilot have available (often calculated by the airline head office ops and sent electronically), an amount called "minimum fuel" which is the minimum fuel volume which, by law, must be carried for the next flight for safety reasons.

The "minimum fuel volume" which must be carried for each flight is regulated in Europe by Commission Regulation 965 2012. Section CAT.OP.MPA.150 Fuel policy page 606 of EASA Easy Access Rules for Air Operations sets out the details.

Along with the calculated fuel requirement for the flight, contingency fuel, final reserve fuel, alternate fuel and, if necessary, extra fuel must also be carried. In this way, it is ensured that the aircraft can continue in a hold position for a certain time or can fly to the next-nearest airport, should a landing at the destination airport itself not be possible at the scheduled landing time. The maximum fuel volume is limited by the size of the fuel tank within the framework of the type certificate and by the maximum take-off weight (MTOW). In the case of aircraft which are operating at full capacity, it is possible that the tank capacity cannot be fully tapped, since the MTOW would then be exceeded. Furthermore, the length of the landing strip at the destination airport can also restrict the fuel load capacity as can the possible exceedance of the Maximum Landing Weight, which could be caused by either a short runway or by a short sector (less trip fuel).

The pilot who signs a legal document certifying all this before takeoff, is personally and legally liable for the safety of the aircraft including that sufficient fuel is onboard when leaving the departure gate to reach the next destination safely in all circumstances – including bad weather, extended taxiing times, problems at alternate airports, holding patterns etc. So by longstanding practice, captains have absolute discretion to take on extra

fuel beyond ”minimum fuel“ to cover last minute eventualities including latest weather etc. This “captain’s discretion” is by tradition inviolable.

When an aircraft refuels, both the refueller and the pilot can see from the aircraft’s totaliser fuel meter how much fuel remained in the aircraft tanks upon arrival from the previous destination and thus how much needs to be uplifted to reach minimum fuel plus the captain’s discretion for the next flight. In some cases the captain will receive a request from the airline to uplift additional fuel – “tankering recommended uplift’ or similar wording. On completion of refuelling, the total fuel uplifted is signed off and the refueller issues an invoice manually, or increasingly electronically, to the airline, effectively on the spot.

Dual Tax rate

We would propose that in a future fuel taxed regime under a revised ETD, or when fuel is taxed bilaterally, that there are two fuel tax rates; one being a tax on the fuel uplifted to reach the legal “minimum fuel” level plus captain’s discretion. And a second much higher and potentially dissuasive tax rate to penalise any tankered fuel taken on board above this minimum required level plus captain’s discretion. Some general agreement might be needed as to what “captain’s discretion” might mean in this context – possibly an additional % above minimum fuel, but we believe industry in wide consultation could address this issue with regulators to help ensure that “captain’s discretion” would not be used to tanker fuel unnecessarily. What is important here is that there is no physical limit placed on what amount of fuel can actually be uplifted – so no impact on safety.

We believe the higher, dissuasive, anti-tankering tax rate would be legal under EU and member state law – and that current exemptions and differential tax rates etc already allowed under the ETD, would be good precedents. If an aviation fuel tax is introduced, then kerosene fuel suppliers and airport fuel farms become licensed tax collectors. Refuellers would be required to record officially on the invoice the amount of fuel loaded to meet the “minimum fuel” requirement plus captain’s discretion. Then apply the lower tax rate. And also show on the invoice all additional fuel uploaded and charge the higher tax rate. These entries would be governed by tax laws and subject to regulatory audit. How much fuel aircraft could actually be taken on board would remain limited only by existing safety regulations not by these fuel tax provisions. So there is no safety issue.

If a fuel tax was introduced across the board within the EU under a revised ETD, then it would be important for every member state to set a basic fuel tax rate, even zero, so that refuellers would be required to declare the amount of minimum fuel and captain’s discretion which had been loaded. Every state, even those with a zero fuel tax rate, would then need to set a second dissuasive tax rate to deter tankering. We believe this move would stop or severely limit all fuel tankering for flights between member states – even if all member states set the base fuel tax rate at zero.

It is often feared that flights would tanker fuel from outside Europe if the EU introduced a fuel tax. This would however rarely happen. Firstly because as already shown, only some 0.7% of foreign flights serving Europe operate a 5th freedom sector which, depending on flight length etc, might benefit from tankering. There is no incentive or reason to tanker fuel for the foreign carrier’s return flight to home base if this is a turnaround flight as this fuel is not taxed under an intra EU fuel tax scheme. For EU registered carriers, most longhaul aircraft are dedicated to operate longhaul flights on a roundtrip basis so again there is no additional incentive (tankering may already be undertaken) created by the fuel tax as all fuel uplifted for such turnaround flights is tax free.

For EU registered aircraft operating within the EU or to shorthaul destinations outside the EU, a fuel tax may indeed provide an incentive for tankering where a flight arriving from

outside the EU then operates a flight within the EU. A dual tax rate cannot address this issue which could benefit from further study by regulators.

We now consider the case where member states or regions agree to tax fuel for flights between them on a bilateral/multilateral basis. Most flights in Europe operate from airport A to airport B and then return to airport A. This is the case for both hub carriers whose business model is hub and spoke, and for most low cost carriers who increasingly operate such roundtrip services from minihubs across Europe. If airport A is outside a taxed area, and fuel at B is taxed for all destinations to airport C and beyond in a taxed area, then fuel taxation would not affect what happens today at airport B for an aircraft operating A to B and then back to A.

For example if fuel is taxed within the Nordic area, then a flight from Amsterdam (A) to Stockholm (B) then back to Amsterdam would refuel as normal in Stockholm and pay no fuel tax. If fuel was already being tankered on such flights – presumably because fuel was more expensive in Stockholm - then nothing would change.

If some carriers – it would usually be local carriers with a hub within the taxed area – operate flights A to B and then on to airport to C also within the taxed area, and if they typically tanker at airport B because, for example, C might be a remote airport where fuel is much more expensive, then operators may well continue to tanker at airport B. But potentially to a lesser extent depending on the dissuasive tax rate and fuel costs at C and because all taxed fuel is more expensive in the first place.

Flights from Amsterdam(A) to Stockholm or Oslo (B) then proceeding to more remote airports eg Trondheim or Umea (C) already invariably tanker from A to B because of high fuel prices at C. The extent to which they would tanker at Oslo or Stockholm for the onward flight to C if Nordic flights were subject to a fuel tax would depend on the new price of taxed fuel at both B and C. In addition, under a taxed regime, member states would have the flexibility to levy a reduced or zero fuel tax rate at remote airports (C) in order to reduce and potentially eliminate tankering.

If a single member state (say Germany) introduces a domestic fuel tax in isolation, then only those aircraft flying in (to say Frankfurt) from outside Germany and proceeding to a second domestic airport (say Hamburg) will have an incentive to tanker due to the fuel tax. Only a few carriers will operate such a flight pattern as most will fly into Frankfurt then return home without being subject to the tax. The extent of tankering that might arise for the flight into Frankfurt and beyond to Hamburg etc will partly depend on the flight length to Frankfurt itself and the fuel tax rate etc. One could argue that the best solution in this case is to expand the taxed area to include other member states.

If countries A and B agree to tax fuel – for example France and Sweden - then of course some traffic may reroute and travel from Paris to Stockholm via Amsterdam if there is no fuel taxation in the Netherlands. This is carbon leakage rather than tankering, and indeed the indirect routeing will generate more emissions per passenger than on a direct flight. This highlights the need for as many countries – whether via an ETD revision or bilaterally/multilaterally – to implement fuel taxation.

Annex IV - Countries taxing kerosene for domestic aviation

Timothée Galvaire and Tassos Papachristou from Fairosene

Country	Rate	Unit	$ per gallon	Tax in %*	Source
Argentina			60 EUR/tonne 50 ARS/GJ		OECD
Australia	0.03556	AUD per litre	0.02	6%	https://www.ato.gov.au/business/excise-and-excise-equivalent-goods/fuel-excise/excise-rates-for-fuel/ CE Delft
Armenia	27	AMD per kg	0.05	12%	http://www.parliament.am/legislation.php?sel=show&ID=1472&lang=eng . From CE Delft
Azerbaijan			1 AZN/tonne		excise tax levied for importing kerosene into Azerbaijan (earlier the amount was 80 AZN/tonne) Could not find more trustworthy source
Bolivia			aviation gasoline: 4.57 BOB/litre kerosene: 2.87 BOB/litre		PwC
Brazil	state level (Brazil = federal)				'In the off-road sector (Figure 3), fossil fuels are untaxed.' OECD The federal government doesn't tax fuel but states individually do so as they wish (only domestic flights) source
Canada	0.03	CAD/ litre	0.08	7%	https://www.canada.ca/en/revenue-agency/services/forms-publications/publications/currate/current-rates-excise-taxes.html From CE Delft
Chile					In the off-road sector, fossil fuels are untaxed. OECD other source

					but 19% VAT on the sale price of jet fuel (deductible for international flights)
Colombia					In the off-road sector, fossil fuels used are taxed. This includes fuels used for commercial navigation ("marine") and commercial aviation OECD. Source comment. Like in Brazil, but this time the government is controling the price of jet fuel. Can increase or decrease the international price of jet fuel. **VAT on fuel**
Costa Rica			Yes		*Aresep*. *Recope*
DRC			jet A1 taxed		*PwC*
Dominica,			1,14 XCD / gallon		1,14 XCD / gallon PwC
Ecuador			5%		**Americaeconomia.com**
Ethiopia					"But there is a lot more to do. Ethiopia, for example, remains a challenge. Fuel uplift is charged excise tax and stabilization funds in contravention of ICAO principles. And jet fuel is subject to charges that subsidize other fuel users. So Ethiopian Airlines and Bole International Airport are at a competitive disadvantage as they try to build a successful aviation hub serving the region.Ghana and Angola have set a good example. It's time for other governments (Ethiopia included) to follow" IATA, 2013
Guatemala			aviation gasoline: 4,7 GTQ / gallon kerosene (DPK): 0,5 GTQ / gallon. avjet turbo fuel: 0,5 GTQ / gallon		**PwC**
Hong Kong SAR	6.51	HKD per litre	0.70		https://www.customs.gov.hk/en/trade_facilitation/dutiable/types/ From CE Delft
India					Petroleum products — petrol, diesel, naphtha, aviation turbine fuel, natural gas etc. — are subject to VAT at higher rates, which range from 5% to 33% depending on the nature of product and the state where they are sold. EY. World Bank,

					All fuel subject to 8.24% excise duty and domestic flights face state fuel taxes of up to 30%.AsianAviation, 2012 A recent article states; the central government currently charges 11% excise duty on Aviation Turbine Fuel + state-level taxes can go as high as 30%
Indonesia					Levies VAT at 10% for aviation fuels
Japan	18	JPY/litre	0.14	34%	https://www.env.go.jp/en/policy/tax/20170130_greening.pdf From CE Delft
Jordan				26%	Taxes & fees imposed on a litre of kerosene represent 26% of its total price, Jordan Times
Kenya					Kenya charges a US$0.06 excise duty for kerosene-type, and US$0.22 duty for spirit-type jet fuel per liter—in addition to a US$0.004 petroleum development levy per liter. The new VAT Act in Kenya, which was approved in 2013, also limits the exemption of jet fuel from VAT to three years under a "transitional period" (Kenya Revenue Authority 2013).[...] Kenya still taxes jet fuel through an excise and a development levy *World Bank ,2014*
Laos	14%				*http://www.vdb-loi.com/wp-content/uploads/2017/04/Lao-Tax-Booklet-2016.pdf* . CE Delft
Mexico			12.91 pesos/ liter		https://www.ey.com/Publication/vwLUAssets/EY-2015-Global-oil-and-gas-tax-guide/$FILE/EY-2015-Global-oil-and-gas-tax-guide.pdf. OECD
Myanmar				5%	http://download.pwc.com/mm/gobig/pdf/tax-updates_may2017.pdf From CE delft From PwC, from 5 to 80%)
Nepal			2.13 RS/litre		On top of Kerosene, they also tax ATF, source here (2017)

Norway					Domestic aviation is subject to both a CO2-tax and the EU ETS. OECD "The petroleum sector and domestic aviation are also required to pay the Norwegian CO2 tax, and the current tax rate is about NOK 500 per tonne CO2." energifaktnorge

Paraguay					from 2008 until 2014, Paraguay was taxing jet fuel *in 2006 (IMF study)*
Peru					"Since Peru is presently in the process of reactivating its economy, it will continue to apply its tariff policy in all fields of economic activity until stabilization is achieved. As a result, Peru shall inform ICAO at the proper time when the conditions of its economy make it possible to apply ICAO's Policies on Taxation in the Field of International Air Transport contained in Doc 8632". ICAO documents/8632 fourth supplement 2016
Philippines	4	PHP per litre	0.07	17%	https://business.mb.com.ph/2018/01/02/aviation-fuel-lubricants-hit-by-high-excise-taxes/. CE Delft
Rwanda					*Yes - no rate given World Bank, 2014*
Saudi Arabia			0.02		http://gulfbusiness.com/saudi-apply-5-tax-fuel/ From CE Delft 5% (domestic flights only
South Africa					The Fuel Levy applies to gasoline, diesel and its biofuel equivalent, as well as to kerosene - aviation fuels OECD
Sri Lanka					taxes kerosene'-- source Decision to decrease aviation fuel taxes' Source
Switzerland					Fuels used for aircraft refuelling are subject to a mineral oil tax, with an amount of CHF 739.50 (aircraft petrol) or CHF 731.20 (aircraft fuel) per 1000 litres. https://www.ezv.admin.ch/ezv/fr/home/infos-pour-entreprises/impots-et-redevances/importation-en-suisse/impot-sur-les-huiles-minerales/carburant-pour-le-ravitaillement-d-aeronefs/generalites-concernant-le-perception-de-l-impot-sur-les-carburan.html Flights between Zurich and Geneva which provide a connection with a scheduled flight from or to a foreign country are exempted. https://www.admin.ch/opc/fr/classified-compilation/19960585/index.html#a33
Taiwan			0.06 US$/gallon		IMF study from 2006, more recent rates couldn't be found
Tanzania					No taxation on jet fuel according to PwC. But

					"Aviation fuel and lubricants do not attract any taxes. However, there are duties, levies, fees and charges that are payable as follows: ... " *ICAO*
Tchad			Jet A1: XAF50 per litre		*PwC*
Thailand		(USD0.15) per litre			https://www.ch-aviation.com/portal/news/85911-thai-govt-cuts-fuel-tax-on-domestic-flights Update to CE Delft
Uganda					According to Ugandan VAT law, the supply of refined petroleum fuels, including motor spirit, kerosene and gas oil, spirit-type jet fuel and kerosene-type jet fuel, is exempt from VAT but is subject to excise duty EY Other source (Uganda government)
United States	0.044	USD per gallon	0.01	9%	https://taxmap.irs.gov/taxmap/pubs/p510-008.htm#TXMP440314d6 From CE Delft
Venezuela					Venezuela had *'fuel levies'* in 2014 (BBC)
Vietnam	3,000	VND per litre	0.11	28%	http://vijagas.vn/en/environment-tax-increase-will-not-raise-gasoline-retail-price-in-vietnam-official.html. CE Delft

*Tax in % is based on an average jet fuel price of € 0.40 per litre (March 2018) (for percentages that come from the CE Delft study)