

<b>Title:</b> Implementation of Regulation (EU) No 421/2014 which amends the Aviation EU Emissions Trading System (ETS). <b>IA No:</b> DECC0173  <b>Lead department or agency:</b> Department of Energy and Climate Change <b>Other departments or agencies:</b> Department for Transport	<b>Impact Assessment (IA)</b>		
	<b>Date:</b> 20/11/2014		
	<b>Stage:</b> Final		
	<b>Source of intervention:</b> EU		
	<b>Type of measure:</b> Secondary legislation		
<b>Contact for enquiries:</b> Alexei Mulko (DECC) and Alexandra Jenkins (DfT)			

<b>Summary: Intervention and Options</b>	<b>RPC Opinion:</b> Not Applicable
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Cost of Preferred (or more likely) Option			
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Measure qualifies as Two-Out?
-£734m	£227m	-£47m	No   NA

**What is the problem under consideration? Why is government intervention necessary?**

The UK believes that global action is the most effective way to reduce greenhouse gas emissions from aviation. The broad problem under consideration is how action at European level can achieve emissions reductions cost effectively now while facilitating agreement on a global measure to reduce aviation emissions at the International Civil Aviation Organisation (ICAO) in 2016. In light of this, there has been agreement at European level to amend the scope of the Aviation ETS, with Regulation 421/2014 coming into force on 30 April 2014. Government intervention is necessary to amend the Greenhouse Gas Regulations 2012 to reflect the change in scope of the Aviation ETS, and to ensure UK regulators have the appropriate powers to implement the provisions of Regulation 421/2014.

**What are the policy objectives and the intended effects?**

The UK's overarching policy objective is to address the growing level of aviation emissions. Since the UK believes that global action is the most effective way to achieve this, the primary objective of this intervention is to create the conditions to facilitate an agreement on a global measure for aviation emissions at the ICAO Assembly in 2016. The specific objective of this intervention is to ensure UK law is consistent with EU law and to provide clarity and legal certainty for regulators, aircraft operators, and other relevant stakeholders.

**What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)**

In this IA, the Do Nothing scenario is that neither EU Regulation 421/2014 nor the changes to existing UK Regulations are introduced.

The Policy Option that has been considered is that EU Regulation 421/2014 came into force on 30 April 2014 and the UK amends its domestic regulations so they are consistent with the EU Regulation. The key changes brought about by this are: intra-European Economic Area (EEA) scope for the Aviation ETS until 31 December 2016; a deferral of compliance for 2013 emissions until March and April 2015; an exemption for non-commercial operators emitting less than 1,000 tonnes CO<sub>2</sub>/year until 2020; simplified procedures for operators emitting less than 25,000 tonnes CO<sub>2</sub>/year; number of free allowances issued and allowances auctioned reduced in proportion to the reduction in scope. If the UK takes no action, the UK would be in breach of its obligations for UK law to be consistent with EU law and there would be considerable uncertainty for UK administered aircraft operators, verifiers and other key stakeholders.

<b>Will the policy be reviewed?</b> It will be reviewed. <b>If applicable, set review date:</b> from 10/2016					
Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.		<b>Micro</b> Yes	<b>&lt; 20</b> Yes	<b>Small</b> Yes	<b>Medium</b> Yes
What is the CO <sub>2</sub> equivalent change in greenhouse gas emissions? (Million tonnes CO <sub>2</sub> equivalent)		<b>Traded:</b> 0*		<b>Non-traded:</b> 0*	

*I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs.*

Signed by the responsible Minister:

Amber Rudd

Date: 20.11.2014

# Summary: Analysis & Evidence

# Policy Option

**Description:** The EU Regulation 421/2014 came into force on 30 April 2014 and the UK amends its domestic regulations so they are consistent with the EU Regulation

## FULL ECONOMIC ASSESSMENT

Price Base Year 2014	PV Base Year 2014	Time Period Years 4	Net Benefit (Present Value (PV)) (£m)		
			Low: -999 *	High: -412 *	Best Estimate: -734

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	n/a	202	792
High	n/a	342	1337
Best Estimate	n/a	245	961

### Description and scale of key monetised costs by 'main affected groups'

Key monetised costs resulting from the Policy Option as compared with the Do Nothing scenario include (i) reduction in Government's EU Aviation Allowance auction revenues owing to a reduction in the number of aviation allowances auctioned (best estimate of total costs to Government £109 million in PV terms); and (ii) reduction in environmental benefits of Aviation ETS owing to emissions from extra-EEA flights no longer being covered by Aviation ETS (best estimate of total environmental costs £852 million in PV terms)

### Other key non-monetised costs by 'main affected groups'

There may be some additional costs for regulators and verifiers resulting from the reduction in scope of Aviation ETS but at the same time there may also be some offsetting benefits. These are uncertain and have not been quantified.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	n/a	12	49
High	n/a	173	669
Best Estimate	n/a	58	227

### Description and scale of key monetised benefits by 'main affected groups'

The key monetised benefit resulting from the Policy Option as compared with the Do Nothing scenario is the reduction in compliance costs for aircraft operators owing to a reduction in the volume of allowances they would need to purchase to comply with the reduced scope of Aviation ETS (best estimate of total benefit £227 million in PV terms).

### Other key non-monetised benefits by 'main affected groups'

There may be some administrative cost savings for aircraft operators resulting from the exemption for non-commercial operators and simplified procedures which have not been quantified. In addition, the Policy Option will more broadly create conditions that would facilitate longer term agreement on a global measure to address aviation emissions at ICAO, which would result in emissions reductions with significant environmental benefits, but has not been quantified in this Impact Assessment.

Key assumptions/sensitivities/risks Discount rate (%) 3.5%

1) The estimates of the monetised costs and benefits are sensitive to the assumptions made and the other aspects of the methodology used in this IA, and should be interpreted as indicative estimates of the order of magnitude of these costs and benefits. 2) The main assumptions and sensitivities relate to the way in which estimated caps and emissions for 'UK flights' have been derived and the assumption that the reduction in scope of Aviation ETS in line with the Policy Option does not lead to a change in the carbon price.

## BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OITO?	Measure qualifies as
Costs: 0	Benefits: 47	Net: 47	No	NA

\* Note that high and low NPVs do not directly correspond with high and low estimates of total costs and total benefits; see paragraph 90 for further explanation

## Evidence Base (for summary sheets)

This final stage Impact Assessment has been prepared after taking into consideration the responses to the consultation which commenced on Monday 11 August 2014 for a six week period and concluded on Monday 22 September 2014. However, the consultation responses did not provide any substantial new evidence. Therefore, the only change to the analysis in the final stage Impact Assessment compared to the consultation stage Impact Assessment<sup>1</sup> is that it has been updated to reflect the latest Green Book supplementary guidance on the valuation of energy use and greenhouse gas emissions for appraisal and the latest data tables supporting the guidance<sup>2</sup> as both the guidance and the data tables supporting the guidance were updated after the completion of the consultation.

### 1. Introduction

#### *Aviation Emissions*

1. Globally, the aviation sector is responsible for about one to two per cent of emissions of greenhouse gases (GHGs), the gases responsible for climate change<sup>3</sup>. In the UK, domestic and international aviation<sup>4</sup> emissions account for about six per cent of total GHG emissions or about 21 per cent of the transport sector's GHG emissions.<sup>5</sup> Aviation is, however, likely to make up an increasing proportion of global and UK total GHG emissions as other sectors decarbonise more quickly over time.
2. The Government's objective is to ensure that the aviation sector continues to make a significant and cost effective contribution towards reducing global emissions. The emphasis is on action at a global level as the best means of securing UK objectives.

#### *EU Emissions Trading System*

3. The EU Emissions Trading System (EU ETS) was established under the European Directive 2003/87/EC to promote cost-effective reductions in GHG emissions. It supports the EU's commitment to a global carbon market as a key instrument for tackling climate change, and will be central in enabling the EU to achieve its stated goal of reducing emissions by 20% in 2020 and 40% by 2030 compared to 1990 levels. The EU ETS is a cap-and-trade system under which there is a limit on total emissions and operators need to surrender carbon allowances in line with their annual emissions. Some allowances are allocated to operators for free, some auctioned, and others available for allocation to new entrants.

#### *Inclusion of Aviation in the EU ETS*

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<sup>1</sup> The consultation stage Impact Assessment can be found here:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/341943/Annex\\_A\\_Consultation\\_Stage\\_Impact\\_Assessment.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/341943/Annex_A_Consultation_Stage_Impact_Assessment.pdf)

<sup>2</sup> *Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal*, Department of Energy & Climate Change, 2014, <https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>

<sup>3</sup> *Reducing Transport Greenhouse Gas Emissions: Trends & Data*, International Transport Forum, 2010, <http://www.internationaltransportforum.org/Pub/pdf/10GHGTrends.pdf>

*Greenhouse Gas Emissions from Aviation and Marine Transportation: Mitigation Potential and Policies*, Prepared for the Pew Center on Global Climate Change by David McCollum, Gregory Gould and David Greene, 2009, <http://www.c2es.org/docUploads/aviation-and-marine-report-2009.pdf>

<sup>4</sup> There is currently no internationally agreed way of allocating international emissions to individual countries. The percentage shares are based on the percentage of bunker fuel sales to the aviation sector from the UK.

<sup>5</sup> DECC, 2014, *2012 inventory data tables*. Available here:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/277022/20140204\\_2012\\_UK\\_Greenhouse\\_Gas\\_Emissions\\_Final\\_Figures\\_data\\_tables.xls](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/277022/20140204_2012_UK_Greenhouse_Gas_Emissions_Final_Figures_data_tables.xls)

4. In September 2005, the European Commission concluded<sup>6</sup> that, in view of the likely future growth in international air traffic, a new market-based instrument at EU level, such as an emissions trading system, was preferable to other measures to reduce aviation emissions. The Directive to include aviation in the EU ETS (2008/101/EC)<sup>7</sup> entered into force on 2 February 2009, and aviation was fully included in the EU ETS from 1 January 2012.
5. Directive 2008/101/CE requires all aircraft operators that operate flights into or out of aerodromes situated in the European Economic Area (EEA) to monitor their carbon dioxide (CO<sub>2</sub>) emissions for those flights each calendar year from 1 January 2010. Aircraft operators are required to then submit an independently verified report of their CO<sub>2</sub> emissions for those flights to their regulator by 31 March of the following year. Subsequently, from 30 April 2013 aircraft operators must surrender the corresponding number of EU emissions allowances (and project credits) to their designated regulating body each year to account for their annual verified emissions in the previous year (i.e. allowances to cover 2012 emissions must be surrendered by 30 April 2013).

### ***Stop the Clock***

6. The Aviation ETS was met with international opposition due to perceived infringements on sovereignty. In parallel, there was progress at the UN's International Civil Aviation Organisation (ICAO) Council<sup>8</sup> in November 2012 towards a global measure to address aviation emissions. Following the November ICAO Council meeting, the European Commission announced that, for qualifying operators, it would "Stop the Clock" on the enforcement of some Aviation ETS obligations. This proposal aimed to foster goodwill at ICAO and allow negotiations on the global measure to progress, free from the distraction of opposition to Aviation ETS.
7. The "Stop the Clock" Decision (377/2013/EU) temporarily suspended, for 2012 emissions only, the enforcement of the obligations under the Aviation ETS on qualifying aircraft operators for their flights operating between aerodromes located in the European Economic Area (EEA) and third countries. The effect of this was that aircraft operators would only face enforcement action for a failure to comply for flights between EEA aerodromes<sup>9</sup>.
8. At the time of the "Stop the Clock" Decision, the European Commission expressly offered to further amend Directive 2003/87/EC if there was "sufficient progress" on a global measure at the ICAO Assembly held between 24 September to 4 October 2013. Since the "Stop the Clock" decision was a temporary derogation, without a further amendment to the Directive, the "clock" would restart and all Aviation ETS obligations would automatically be re-introduced for 2013 emissions, with compliance required from the end of March 2014.

### ***ICAO Assembly***

9. On 4 October 2013, following very challenging negotiations, the ICAO Assembly agreed a Climate Change Resolution which reaffirmed ICAO's commitment to the goal of carbon-neutral growth from 2020 and to making operational and technological improvements to reduce emissions. The Resolution also agreed that a global Market Based Measure

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<sup>6</sup> Document number COM (2005) 459 (2005), *Reducing the Climate Change Impact of Aviation*, available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52005DC0459:EN:NOT>.

<sup>7</sup> Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008L0101:EN:NOT>.

<sup>8</sup> ICAO, an agency of the United Nations, was created in 1944 to promote the safe and orderly development of international civil aviation throughout the world. It sets standards and regulations necessary for aviation safety, security, efficiency and regularity, as well as for aviation environmental protection.

<sup>9</sup> For the purpose of the 'Stop the Clock' decision, this also included flights between EEA aerodromes and aerodromes in Croatia, Switzerland and dependencies or territories of EEA states.

(MBM) for aviation should be developed, for decision at the next meeting of the ICAO Assembly in 2016 and to be implemented from 2020. The EU welcomed this progress towards the global measure to tackle aviation emissions. In addition, the Resolution sought to limit the application of national and regional market based measures where “mutual consent” had not been obtained. 42 European states<sup>10</sup> placed a reservation on this part of the Resolution to signal their disagreement with this text.

### ***European Commission Proposal***

10. On 16 October 2013, following the developments at ICAO, the European Commission proposed to reduce the coverage of the Aviation ETS to include only the portion of a flight that takes place within EEA airspace from 2014-2020. The proposal included a further year of an intra-EEA scope similar to “Stop the Clock” for 2013<sup>11</sup>, and – in order to allow time to implement the new provisions – an extraordinary two-year compliance cycle for aviation emissions for 2013 and 2014, with data for both years being reported by 31 March 2015 and allowances (and project credits) surrendered by 30 April 2015.
11. The proposal also included a European Commission-led review in 2016 following the next ICAO Assembly, where progress towards the global measure would be assessed and new changes to the Aviation ETS could be proposed accordingly.
12. On more technical elements, the proposal offered an exemption from 2013 to 2020 for non-commercial operators emitting less than 1,000 tonnes of CO<sub>2</sub> per year, and simplified procedures for all operators emitting less than 25,000 tonnes of CO<sub>2</sub> per year<sup>12</sup>. Changes to monitoring, reporting and verification (MRV) procedures were also proposed to accommodate the airspace scope. In addition, the proposal included a *de minimis* provision similar to that in the ICAO Resolution, with exemptions for certain developing states with a share of less than 1% of international aviation.

### ***EU Negotiations and agreed Regulation***

13. After negotiations between the European Commission, the European Parliament and the Council (composed of the Member States), a compromise agreement emerged, the key features of which are as follows:

#### **Scope**

- Between 1 January 2013 and 31 December 2016, the Aviation ETS will cover emissions from flights between two EEA<sup>13</sup> aerodromes (i.e. intra-EEA flights).
- All aircraft operators which emit above the exemptions thresholds (see below – ‘Provisions for small emitters’) for the scheme, irrespective of their nationality, will be required to ensure that they surrender sufficient carbon allowances (and project credits) to cover their emissions on intra-EEA flights<sup>14</sup>.

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<sup>10</sup> This included all the Member States of the EU and 14 other Member States of the European Civil Aviation Conference (ECAC) including Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, the Republic of Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, and The former Yugoslav Republic of Macedonia.

<sup>11</sup> Differences included exemption of flights to Switzerland and overseas territories and crown dependencies.

<sup>12</sup> These thresholds will be assessed on the basis of the full scope of the aviation EU ETS, i.e. for all flights arriving at and departing from aerodromes in the EEA.

<sup>13</sup> EEA airports include aerodromes in the 28 EU Member States as well as Norway, Iceland and Liechtenstein

<sup>14</sup> As specified in the original ETS Directive, aircraft operators are entitled to use international credits in the form of Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs) for up to 1.5 % of the number of allowances they are required to surrender. These credits represent emissions reductions undertaken internationally.

- Emissions from flights between the EEA and the rest of the world (including Overseas Territories and Outermost Regions<sup>15</sup>) will not be included in the ETS between 2013 and 2016.

### **Review in 2016**

- A review will be undertaken by the European Commission in 2016 to consider whether the scope of the Aviation ETS should be amended from 2017 onwards based on progress towards a global market based measure (GMBM) at the ICAO Assembly in 2016.
- From 1 January 2017 emissions from all flights arriving at and departing from EEA airports will once again be included in Aviation ETS, and so the return to “full-scope” is the default in the absence of any changes resulting from the review.

### **Provisions for small emitters**

- Non-commercial operators emitting less than 1,000 tonnes CO<sub>2</sub> per annum based on total emissions (full-scope ETS) will temporarily be exempted from the ETS until 2020.
- The *de minimis* exemption for commercial operators<sup>16</sup> remains unchanged from the original Directive (and continues to be based on the full scope of the ETS).
- Aircraft operators (whether commercial or non-commercial) emitting less than 25,000 tonnes of CO<sub>2</sub> per year benefit from simplified procedures.

### **Deferral of Compliance Obligations**

- In order to allow time to implement these new provisions, there is an extraordinary two-year compliance cycle for 2013 aviation emissions.
- Emissions data for both 2013 and 2014 is therefore to be reported by 31 March 2015 and allowances (and project credits) for both years should be surrendered by 30 April 2015.

### **Allocation of allowances, auctioning, special reserve**

- Under the Aviation ETS Regulation, the percentage of allowances to be freely allocated remains at 82% of the total quantity of aviation allowances to be issued, as prescribed by the original Directive. The number of free allowances to be received by each eligible aircraft operator<sup>17</sup> will be recalculated so that the free allocation for the years 2013, 2014, 2015 and 2016 will be reduced in proportion to the reduction in scope<sup>18</sup>. The temporary reduction will be deducted from the free allowances calculated by EU Member States in 2011. Aviation allowances that are not issued will be cancelled instead of auctioned.
- The number of allowances to be auctioned during the 2013-2016 period remains at 15% of the total quantity of aviation allowances to be issued, but the new

<sup>15</sup> Please note flights between two aerodromes in the same Outermost Region will be included.

<sup>16</sup> This exemption is for aircraft operators with either fewer than 243 flights per period for three consecutive four-month periods or total annual emissions lower than 10,000 tonnes CO<sub>2</sub> per year.

<sup>17</sup> For those operators exempted from Aviation EU ETS, please refer to Annex I of Directive 2003/87/EC. The new Aviation ETS Regulation 421/2014 contains a new exemption for non-commercial operators with less than 1,000t CO<sub>2</sub> of annual emissions based on the full-scope Aviation ETS. Excluded operators will have their aircraft operator holding account set to excluded, which will prevent them receiving EUAs for the years in which they fall within the exemptions criteria.

<sup>18</sup> The total number of allowances allocated to aircraft operators administered by the UK has been preliminarily calculated by the European Commission. These estimates are currently being reviewed by the Environment Agency (along with other competent authorities across the EEA) and the UK, in line with other Member States, will publish the number of free allowances allocated by 1 September 2014. For more information, please see European Commission Document: Frequently Asked Questions on 2013-16 Regulation amending the EU Emissions Trading System for Aviation, p 6, Accessible here: [http://ec.europa.eu/clima/policies/transport/aviation/docs/faq\\_aviation\\_2013-2016\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/docs/faq_aviation_2013-2016_en.pdf)

Aviation ETS Regulation stipulates that the UK, along with other EU Member States, will auction a number of aviation allowances that is reduced in proportion to the reduction in the total number of EU Aviation Allowances (EUAAAs) to be issued.

- The number of allowances issued to aircraft operators that are allocated from the special reserve should be reduced in proportion to the reduced scope.

14. In summary, the main changes in the compromise agreement compared to the Commission's original proposal are the:

- geographic scope, which covers intra-EEA flights, rather than the portion of a flight that takes place within EEA airspace (following an intra-EU scope similar to "Stop the Clock" in 2013);
- time period during which the changes to the geographic scope apply is 2013 until 2016, rather than the Commission's original proposal of 2013 until 2020; and
- the exclusion of the *de minimis* exemption, which would have exempted certain developing states with a share of less than 1% of international aviation.

15. Regulation 421/2014 reflecting the agreement was adopted on 14 April 2014 by the Council and came into force on 30 April 2014.

## 2. Problem under Consideration and Rationale for Intervention

### *Emissions*

16. Although aviation accounts for a small proportion of global greenhouse gas emissions today, it is a fast growing global industry. For example, global passenger traffic is forecast to increase over 500% from 2010 by 2050<sup>19</sup>. As a result, international aviation's share of total CO<sub>2</sub> emissions is estimated to reach at least 4% of total emissions by 2050 without further mitigation efforts<sup>20</sup>.

17. Measures to tackle aviation emissions are being pursued by governments, ICAO and the EU, as well as by the aviation industry and include technological measures (e.g. improved air traffic management, investment in more efficient aircraft), operational measures (e.g. encouraging continuous descent approaches, more efficient taxiing at airports), and the development of sustainable biofuels.

18. However, even the most optimistic scenarios about the effectiveness of technological and operational measures show that these will not be sufficient to limit the increase in aviation emissions. For example, a study in 2013 by Manchester Metropolitan University<sup>21</sup> identified that no measures (on their own or combined) would achieve ICAO's aspirational goal of stabilising international aviation's net CO<sub>2</sub> emissions by 2020<sup>22</sup> and concluded that a global MBM was needed to fill the "emissions gap", as this would provide further incentives for the aviation industry to reduce its emissions.

19. MBMs, such as emissions trading, have the advantage that they can guarantee specific environmental outcomes (the total amount of CO<sub>2</sub> emissions can be capped) and the

<sup>19</sup> ICAO 2013 Environmental Report, p.20, Table 1 (<http://cfapp.icao.int/Environmental-Report-2013/files/assets/basic-html/page32.html>)

<sup>20</sup> Lee et al. (2013), Shipping and aviation emissions in the context of a 2°C emission pathway, Working Paper, Manchester Metropolitan University (<http://www.cate.mmu.ac.uk/projects/shipping-and-aviation-emissions-in-the-context-of-a-2c-emission-pathway/>)

<sup>21</sup> Lee et al. (2013), 'Bridging the aviation CO<sub>2</sub> emissions gap: why emissions trading is needed' (<http://www.cate.mmu.ac.uk/projects/bridging-the-aviation-co2-emissions-gap-why-emissions-trading-is-needed/>)

<sup>22</sup> ICAO 2013 Environmental Report (2013), p.150

market-based approach allows emission reductions to take place where the cost of the reduction is lowest, thus lowering the overall costs of combating climate change.

20. In addition to the arguments presented above, the international character of the aviation industry and the global nature of climate change makes a strong case for reducing or mitigating aviation emissions at the global level. The UK Government continues to believe, that in addition to operational and technological improvements, an internationally agreed global MBM would be the most effective measure for tackling aviation emissions.

#### ***Delivering a Global Measure***

21. Global action to reduce aviation CO<sub>2</sub> emissions has long been discussed at ICAO. Some previous achievements include agreement on a global aspirational goal of carbon neutral growth from 2020 at the General Assembly in 2010, agreement to develop a global CO<sub>2</sub> standard for aircraft, sharing of best practice on operational and technological improvements and alternative fuels and the development of State Action Plans to reduce CO<sub>2</sub> emissions.
22. As mentioned earlier, on 4 October 2013, the ICAO Assembly adopted a Climate Change Resolution, which agreed to develop a global MBM for implementation from 2020, for decision in 2016.
23. The technical and analytical work to develop a global MBM is already underway, with regular global measure task force (GMTF) meetings taking place. A “strawman” for the global MBM is also being discussed by ICAO’s newly formed Environmental Advisory Group (EAG). This work will directly feed in to the preparation and discussions at the 2016 ICAO Assembly, at which there will be a decision about the global MBM, for implementation in 2020.

#### ***Measures which precede a potential Global Measure***

24. The broader problem under consideration is how action at European level can achieve emissions reductions cost effectively now while facilitating a global agreement at ICAO in 2016. This requires a careful balance to be struck to maintain the effectiveness and environmental integrity of the Aviation ETS while ensuring its broad acceptability to non-EU states.

### **3. Policy Objective**

25. The UK’s overarching policy objective for this intervention i.e. the Policy Option, is to address the growing level of aviation emissions in line with overall targets to reduce emissions to tackle climate change. Since the UK believes that global action would be the most effective way to achieve this, the primary objective is to create the conditions to facilitate an agreement on a global measure for aviation emissions at the ICAO Assembly in 2016.
26. The UK also has a number of secondary objectives, which include: preserving the competitiveness of the aviation sector; maintaining a level playing field in the aviation market; minimising administrative complexity of the Aviation ETS; and limiting additional administrative costs for aircraft operators and competent authorities.
27. The specific objective of Government intervention is to ensure UK law is consistent with EU law, to provide clarity and legal certainty for regulators, aircraft operators, and other relevant stakeholders. In particular, Government intervention is necessary to amend the Greenhouse Gas Regulations 2012<sup>23</sup> to reflect the change in scope of the Aviation ETS,

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<sup>23</sup> <http://www.legislation.gov.uk/ukxi/2012/3038/contents/made>



and to ensure UK regulators have the appropriate powers to implement the provisions of the European Regulation

#### 4. Description of options

28. For the purposes of this IA, the **Do Nothing** scenario is that neither the EU Regulation nor the changes to existing UK Regulations are introduced.
29. However, it should be noted that the EU Regulation came into force on 30 April 2014. If the UK does not take action, this would place the UK in breach of its duty under EU law to ensure UK law is consistent with EU law, and specifically that the UK Greenhouse Gas Regulations 2012 are brought into line with the EU Regulation, as the UK would otherwise be in breach of its obligations for UK law to be consistent with EU law. Therefore, the UK is obliged to take action to amend the existing UK Regulations.
30. The **Policy Option** is therefore that the EU Regulation came into force on 30 April 2014 and the UK amends its domestic regulations so that they are consistent with the EU Regulation.
31. The principal features of the EU Regulation are described above at paragraph 13. Compared to the “Do Nothing” scenario, the key changes under the Policy Option are that the Aviation ETS would have an intra-EEA scope until 31 December 2016 (i.e. only covering emissions from flights between two EEA aerodromes; flights between UK airports and non-EEA countries will not be covered). There would also be a deferral of compliance for 2013 emissions until March and April 2015; an exemption for non-commercial operators emitting less than 1,000 tonnes CO<sub>2</sub> per year (on a full-scope basis); simplified procedures for operators emitting less than 25,000 tonnes of CO<sub>2</sub> per year (on a full-scope basis); and the number of free allowances issued and allowances auctioned would be reduced in proportion to the reduction in scope. The Policy Option does not involve gold plating of EU Regulations.
32. No further options have been identified since as discussed above the UK must take action to amend its domestic regulations so that they are consistent with the EU Regulation. Hence, only one policy option has been assessed in this Impact Assessment (IA).

#### 5. Impacts of the Policy Option

33. This IA assesses the impacts the Policy Option (i.e. the EU Regulation enters into force and the UK amends its domestic regulations so they are consistent with the EU Regulation) compared to the Do Nothing scenario (i.e. neither the EU Regulation nor the changes to existing UK Regulations are introduced).
34. Since the key impact of the Policy Option is the amended geographic scope which only applies to flights between 1 January 2013 and 31 December 2016, a four year appraisal period has been used in this IA for the purposes of the analysis of the monetised costs and benefits on the grounds of proportionality.
35. The discussion of the impacts of the Policy Option that have been identified to date is structured as follows:
- 5.1. Impacts on aircraft operators
  - 5.2. Impacts on auctioning revenues
  - 5.3. Impacts on the environment
  - 5.4. Impacts on air fares

- 5.5. Impacts on UK regulators
- 5.6. Impacts on verifiers

36. Table 1 below provides an overview of the key stakeholder groups that are likely to be directly affected by the Policy Option and the impacts on whom have been considered in this IA. These are discussed in further detail in subsequent sections.

**Table 1: Key stakeholder groups affected**

Stakeholders	Likely or potential impacts
Aircraft operators	Reduction in the costs to aircraft operators of purchasing allowances for compliance (monetised benefit), Reduction in the administrative costs for aircraft operators (non-monetised)
UK regulators	Impacts on UK regulators (non-monetised)
Verifiers	Impacts on verifiers (non-monetised)
Consumers	Impacts on air fares (non-monetised)
All	Impacts on the environment (monetised cost and non-monetised benefit)

37. Consultees were invited to submit any additional evidence or other relevant information on the impacts of the Policy Option that are identified in this IA; and provide the details of any impacts that are not identified in this IA and any additional evidence or relevant information that is available on these impacts. A number of areas where we would particularly welcome additional evidence or other relevant information were also flagged up. No substantial new evidence was provided by consultees.

### **5.1. Impacts on aircraft operators**

38. Our assessment of the impacts on aircraft operators comprises an assessment of the reduction in the costs of purchasing allowances and an assessment of the reduction in the administrative costs for aircraft operators. It should be noted that the quantitative analysis of the reduction in the costs to aircraft operators of purchasing allowances for compliance relates solely to flights undertaken between 1 January 2013 and 31 December 2016 (see Paragraph 39 for more details). Furthermore, on the grounds of proportionality, it should be noted that this analysis does not take account of the impact on aircraft operators of the deferral of compliance obligations; the reduction in the number of allowances issued from the special reserve; or the impact of the new exemption for non-commercial operators on flights after 31 December 2016. For example, in a study commissioned by the Commission and based on 2012 Eurocontrol data, PWC have estimated that the new exemption for non-commercial operators would only exempt around 0.2% of the total CO<sub>2</sub> emissions covered by the “full-scope” of the Aviation ETS<sup>24</sup>.

#### **5.1.1 Reduction in the costs to aircraft operators of purchasing allowances for compliance (monetised benefit)**

39. For the purposes of the analysis in this IA, the reduction in the costs to aircraft operators of purchasing allowances to comply with the Aviation ETS has been assessed for flights departing from UK airports, and flights arriving at UK airports from non-EEA countries; these flights are referred to as “UK flights” below. This approach has been taken because the best available evidence on the share of the Aviation ETS “indicative cap” that is accounted for by UK aviation is the UK’s share of EU Aviation Allowances (EUAA) auction volumes which is based on this definition of “UK flights” (see Paragraph 44 for more details), and in order to be consistent with the Department for Transport’s Aviation Appraisal guidance<sup>25</sup> which treats the impacts on all aircraft operators undertaking flights

<sup>24</sup> Table 25, page 41, *ETS Aviation small emitters*, 2014, PWC (prepared for the European Commission):

[http://ec.europa.eu/clima/policies/transport/aviation/docs/report\\_ets\\_aviation\\_small\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/docs/report_ets_aviation_small_en.pdf)

<sup>25</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/275398/webtag-tag-unit-a5-2-aviation-appraisal.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275398/webtag-tag-unit-a5-2-aviation-appraisal.pdf)

to and from the UK equally, regardless of their nationality<sup>26</sup>. It should be noted that the costs to aircraft operators of purchasing allowances reflects the costs of purchasing both EU Allowances (EUAs) and EUAAs from the market and/or government auctions.

40. Under the Do Nothing scenario, all of these flights would be covered by the Aviation ETS. In contrast, under the Policy Option, only those flights between UK airports to EEA countries will be covered by the Aviation ETS. The key difference between the Do Nothing scenario and the Policy Option is therefore that flights between UK airports and non-EAA countries will no longer be covered by the Aviation ETS.
41. In order to comply with the Aviation ETS, aircraft operators need to surrender a number of units equal to their verified emissions. In line with provisions under the EU ETS Directive, they can use international credits up to a specified limit of 1.5% of their verified emissions, and for the remaining 98.5% of verified emissions need to use either EU EUAAs or EUAs for compliance.<sup>27</sup> For the purposes of the analysis in this IA, it has been assumed that international credits are cheaper than EUAAs and EUAs, which is in line with recent market prices<sup>28</sup>. This implies that aircraft operators use up their entire 1.5% entitlement. Further, it has also been assumed that the prices of EUAAs and EUAs are equal<sup>29</sup>, although in reality, EUAAs are likely to be slightly cheaper than EUAs.
42. Any policy change that affects either the quantity of units that need to be surrendered or the price of these units will affect aircraft operators' compliance costs. The Policy Option, by reducing the scope of Aviation ETS as compared to the Do Nothing scenario, reduces the number of units that aircraft operators will need to surrender for compliance purposes in relation to "UK flights" and consequently the number of units that aircraft operators will need to purchase to comply with the Aviation ETS in relation to "UK flights". The quantity of allowances that need to be purchased by aircraft operators for compliance purposes in relation to "UK flights" under the Do Nothing scenario and the Policy Option has been calculated as described below.
43. As explained previously, aircraft operators need to surrender allowances for 98.5% of their verified emissions. A significant portion of these emissions can be covered by free allocation; 82% of the total quantity of aviation allowances to be issued are given to aircraft operators in the form of free allowances. Therefore, for both the Do Nothing scenario and the Policy Option, the quantity of allowances that need to be purchased by aircraft operators for compliance purposes in relation to "UK flights" is calculated as the volume of emissions that need to be covered by allowances (98.5% of the estimated "gross" CO<sub>2</sub> emissions<sup>30</sup> from "UK flights" covered by Aviation ETS) less the volume of allowances allocated for free (82% of the "indicative" Aviation ETS cap) under the relevant scenario.

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<sup>26</sup> Flights arriving at UK airports from EEA countries are covered by the Aviation ETS under both the Policy Option and the Do Nothing scenario. Given the assumptions that have been made in this IA, the difference between the Policy Option and the Do Nothing scenario will be almost the same regardless of whether the scope of this analysis is a) flights departing from UK airports and flights arriving at UK airports from non-EEA countries or b) all flights departing from UK airports and flights arriving at UK airports. This is because the only impact on flights arriving at UK airports from EEA countries would be due to the new exemption for non-commercial aircraft operators which affects a very small proportion of emissions. Furthermore, given the available evidence, additional assumptions would need to be made to estimate the "indicative cap" for flights arriving at UK airports from EEA countries, which would increase the uncertainty around the analysis. Therefore, it has not been considered necessary to include flights arriving at UK airports from EEA countries within the scope of this analysis.

<sup>27</sup> Throughout this IA the term "allowances" has been used to refer to EU Aviation Allowances (EUAAs) and EU Allowances (EUAs) and the term "units" has been used to refer to allowances and international credits (which include Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs)). EUAAs can only be used for compliance purposes by aircraft operators whereas EUAs can be used by aircraft operators as well as stationary operators.

<sup>28</sup> See footnote 36.

<sup>29</sup> The prices of EUAAs will be at most as high as those of EUAs given that aircraft operators are able to use EUAs for compliance, and the prices of both will be equal so long as there is sufficient demand for EUAAs. In reality, uncertainty and low demand may make EUAAs cheaper than EUAs.

<sup>30</sup> The level of 'gross' emissions from a particular sector is the actual quantity of emissions emitted by the sector.

44. The estimates of the “gross” CO<sub>2</sub> emissions from “UK flights” that are covered by the Aviation ETS under both the Do Nothing scenario and the Policy Option are based on the DfT’s latest January 2013 forecasts of the total CO<sub>2</sub> emissions from flights departing from UK airports<sup>31</sup>. For the purposes of this analysis, the approach to produce these estimates is as follows:

- It is assumed that the “gross” CO<sub>2</sub> emissions from individual “UK flights” and consequently the level of abatement in relation to these flights are same under both the Do Nothing scenario and the Policy Option.
- The DfT’s latest January 2013 forecasts have been updated to reflect the most recent actual data on air transport movements from the Civil Aviation Agency (CAA) as of May 2014.
- The breakdown of the total CO<sub>2</sub> emissions from international flights departing from UK airports between a) flights to EEA countries and b) flights to non-EEA countries has been estimated by the DfT<sup>32</sup>.
- It is assumed that the CO<sub>2</sub> emissions from international flights arriving at UK airports from non-EEA countries are equal to the CO<sub>2</sub> emissions from international flights departing from UK airports to non-EEA countries.
- The estimates of the “gross” carbon dioxide (CO<sub>2</sub>) emissions from “UK flights” have been reduced to take account of the impacts of exemptions for commercial aircraft operators with emissions below 10,000 tonnes CO<sub>2</sub> (under the Do Nothing scenario and the Policy Option) and non-commercial aircraft operators with emissions below 1,000 tonnes CO<sub>2</sub> (under the Policy Option only) using estimates of the proportion of the total CO<sub>2</sub> emissions from all flights covered by the “full-scope” of the Aviation ETS in 2012 that would fall under these exemptions<sup>33</sup>.

45. The “indicative cap” for “UK flights” that are covered by the Aviation ETS under the Do Nothing scenario and the Policy Option has been estimated using the latest available European Commission estimates of the UK’s EUAAs auction volumes under each scenario. As 15% of the Aviation ETS “indicative cap” is auctioned each year, the indicative Aviation ETS “cap” for “UK flights” that are covered by the Aviation ETS is assumed to be equal to the latest estimate of the UK’s EUAA auction volumes divided by 15% for each scenario. However, it should be noted that the European Commission’s estimates are based on preliminary calculations and may be adjusted in future. Furthermore, the estimates used in this IA do not take account of the accession of Croatia<sup>34</sup>.

46. By reducing the level of “effort” required to meet the Aviation ETS “indicative cap” (i.e. the difference between business as usual emissions and the number of issued EUAAs) as compared to the Do Nothing scenario, the Policy Option would also, in theory, have some impact on the price of allowances.<sup>35</sup> However, for the purposes of the analysis in this IA any such change in the price of allowances has not been taken into account on

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<sup>31</sup> DfT. 2013, UK Aviation Forecasts.

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/223839/aviation-forecasts.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223839/aviation-forecasts.pdf)

<sup>32</sup> The estimates are based on the estimates for domestic and international model areas which underpin the central forecasts published in January 2013. Where appropriate, scaling factors that use the most up to date data on air transport movements have been used to convert to the precise geography of flights to EEA countries so that they are mapped to the modelled areas.

<sup>33</sup> Table 1, page 4 and Table 25, page 41, *ETS Aviation small emitters*, 2014, PWC (prepared for the European Commission):

[http://ec.europa.eu/clima/policies/transport/aviation/docs/report\\_ets\\_aviation\\_small\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/docs/report_ets_aviation_small_en.pdf)

<sup>34</sup> This has not been taken into account as, although the European Commission has produced estimates which show that the accession of Croatia has a very minor impact on the UK’s EUAAs auction volumes under the Policy Option, a corresponding estimate is not available for the Do Nothing scenario.

<sup>35</sup> In theory, there could also be a very small impact on the price of international credits resulting from a change in the quantity demanded by aviation operators but this effect will be negligible.

proportionality grounds. The change in the total ETS cap as a result of moving from the Do Nothing scenario to the Policy Option represents less than 8% of the total EU ETS cap (including both stationary and aviation sectors) in 2013. This change in the cap is likely to be accompanied by a similar change in emissions, thereby implying a small change in the level of “effort” required to meet the cap. Further, assuming that the Policy Option does not cause a significant change in abatement costs as compared to the Do Nothing scenario, this implies that any resulting impacts on the price of allowances will not be significant. For this reason the same set of allowances prices has been used under both the Do Nothing scenario and the Policy Option. The simplifying assumption of no change in allowance prices implies that for the purpose of the analysis presented in this Impact Assessment there would be no impact on stationary EU ETS operators or on government revenues from auctions of EUAs.

47. Allowance prices are assumed to be the same as DECC’s latest published short-term traded carbon values for policy appraisal<sup>36</sup>. These prices are presented in Table 2 below. Prices under the central scenario in DECC’s published short-term traded carbon values represent our best estimate of carbon prices for the purposes of the analysis in this IA, whilst DECC’s published prices in low and high scenarios have been used purely for sensitivity purposes. In particular, the assumptions used in the low scenario represent an extremely pessimistic scenario with continued chronic oversupply in the carbon market as a result of which the carbon price from 2014 to 2020 is zero. This does not reflect a view from Government that the market price is likely to reach zero in reality.

**Table 2: Allowance prices, in real 2014 £/tCO<sub>2</sub>**<sup>37</sup>

	2013	2014	2015	2016
Low scenario	3.92	0.00	0.00	0.00
Central scenario	3.92	4.48	4.56	4.66
High scenario	3.92	12.38	15.78	19.66

48. The costs of purchasing units for compliance are simply the quantity of units that need to be purchased multiplied by the price of these units. Since international credits can only be used for complying with a very small proportion of emissions and the price of international credits is currently very low<sup>38</sup>, for the purposes of the analysis in this IA, the costs of purchasing international credits have not been taken into consideration. The estimated compliance costs presented here thus only relate to the costs of purchasing allowances.
49. The estimated compliance costs under the Do Nothing Scenario and Policy Option are presented in Table 3 below. The central carbon price scenario reflects our best estimate, while values under low and high carbon price scenarios are presented as sensitivities.

<sup>36</sup> Tables 1-20: supporting the toolkit and the guidance:

<https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>

<sup>37</sup> See Data tables 1-20: supporting the toolkit and the guidance in the Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal (<https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>). Note that these values represent actual historical prices in 2013 and projections for 2014, 2015 and 2016. For this reason, the 2013 values do not vary across low, central and high scenarios.

<sup>38</sup> Based on Thomson Reuters historical data, the average price of CERs over the period 2 January to 30 May 2014 was €0.25/tCO<sub>2</sub>, much lower than the average price of EUAs of €5.65/tCO<sub>2</sub> over the same period. The price of international credits has been very low owing to oversupply of credits and lack of demand for them.

**Table 3: Estimated costs to aircraft operators of purchasing allowances for compliance, in real 2014 £m<sup>39</sup>**

	2013	2014	2015	2016	Total
<b>Low scenario</b>					
Costs to aircraft operators under Do Nothing	65	0	0	0	65
Costs to aircraft operators under Policy Option	17	0	0	0	17
<i>Change in the costs to aircraft operators of purchasing allowances for compliance (Policy option - Do Nothing)</i>	-48	0	0	0	-48
	<b>Total PV (2014 £m)</b>				<b>-49</b>
<b>Central scenario</b>					
Costs to aircraft operators under Do Nothing	65	77	80	87	309
Costs to aircraft operators under Policy Option	17	20	20	21	78
<i>Change in the costs to aircraft operators of purchasing allowances for compliance (Policy option - Do Nothing)</i>	-48	-58	-60	-66	-231
	<b>Total PV (2014 £m)</b>				<b>-227</b>
<b>High scenario</b>					
Costs to aircraft operators under Do Nothing	65	214	279	366	923
Costs to aircraft operators under Policy Option	17	54	70	90	230
<i>Change in the costs to aircraft operators of purchasing allowances for compliance (Policy option - Do Nothing)</i>	-48	-160	-209	-277	-693
	<b>Total PV (2014 £m)</b>				<b>-669</b>

Note: Totals may not add up due to rounding

50. Under the central carbon price scenario, the Policy Option involves an estimated reduction in aircraft operators' compliance costs over 2013-2016 of the order of **£227 million** in real 2014 terms (Present Value) as compared to the Do Nothing Scenario. Note that the above are estimates of total costs for all aircraft operators. In reality, the magnitude of impacts on individual operators will vary depending on the operator in question, and other things being equal, this will be in proportion to the amount of extra-EEA (out of scope) flights that an operator has. This has not been considered further in this IA on grounds of proportionality.
51. Further to our assessment of direct impacts on aircraft operators' compliance costs that is presented above, it should be noted that the overall impact on an aircraft operator would also depend on whether it chooses to pass on any of the benefits to its customers under the Policy Option and the extent that it would pass on the costs associated with the aviation ETS to its customers under the Do Nothing scenario and the Policy Option. In response to the inclusion of aviation in the EU ETS in 2012, some airlines introduced a surcharge on tickets to cover their costs – this was in the order of USD \$3 for trans-

<sup>39</sup> For the purposes of this IA, it is assumed that the costs to an aircraft operator of purchasing allowances for compliance in relation to a flight are incurred in the same year as the flight is undertaken.

Atlantic flights<sup>40</sup> and €0.25 for short-haul intra-EEA flights<sup>41</sup>. It will be a matter for those airlines that have already passed on these costs to determine whether they now return any financial benefits to consumers.

52. If it were assumed that aircraft operators would pass on 100% of the benefits to passengers, DfT's Aviation Appraisal guidance<sup>42</sup> recommends that all of these benefits should be counted as benefits to the UK except for the benefits to "international to international interliners" (i.e. passengers who simply change planes at a UK airport). Given the assumptions that have been made in this IA, the share of the estimated benefits in Table 3 that is accounted for by these passengers is equal to the share of CO<sub>2</sub> emissions that is accounted for by these passengers. DfT has estimated that 'international to international interliners' will account for about 23% of the CO<sub>2</sub> emissions from international flights departing from UK airports that are out of scope of the ETS between 2013 and 2016<sup>43</sup>. Therefore, if it was assumed that aircraft operators would pass on 100% of the benefits to passengers, only about 77% of the estimated benefits in Table 3 would be counted as benefits to the UK.

#### *5.1.2. Reduction in the administrative costs for aircraft operators (non-monetised)*

53. The overall administrative cost savings for aircraft operators are an order of magnitude smaller than the overall benefits for aircraft operators from the reduction in the costs of purchasing allowances. As a result, the reduction in the administrative costs for aircraft operators has not been monetised in this IA and has instead been discussed qualitatively.

54. The focus of our assessment of the reduction in the administrative costs for aircraft operators is on the impacts of the new exemption for non-commercial aircraft operators and the new simplified procedures under the Policy Option, given that these two provisions are expected to have the most significant impact. However, it should also be noted that there may be some other impacts. For example, aircraft operators may incur some limited administrative costs as a result of the transition to the revised scope. The deferral of compliance for 2013 emissions, which will mean that compliance deadlines for 2013 and 2014 emissions would both be in spring 2015, may also have an impact on aircraft operators. In particular, some aircraft operators may have already submitted emissions reports for 2013 emissions by 31 March 2014, and therefore may incur some minor additional administrative costs in amending these reports.

#### New exemption for non-commercial aircraft operators

55. As a result of the new exemption for non-commercial aircraft operators emitting less than 1,000 tonnes CO<sub>2</sub> which applies until 2020 under the Policy Option, the number of non-commercial aircraft operators that need to comply with the requirements of the Aviation ETS will reduce quite considerably in this period. For example, on the basis of their estimated emissions in 2013<sup>44</sup>, the Environment Agency (EA) estimates that 361 UK

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<sup>40</sup> US Congressional Research Service (2012), Aviation and the European Union's Emission Trading Scheme report prepared for Members and Committees of Congress, page 19, <http://www.fas.org/spp/crs/row/R42392.pdf>, Consulted 31/7/2013, as quoted in the European Commission Impact Assessment, 2013: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52013SC0430>

<sup>41</sup> Ryanair estimated ticket prices (Ryanair press release (2012) Ryanair to Introduce ETS Levy to Cover New EU Eco-looney Tax), as quoted

in the European Commission Impact Assessment, 2013: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52013SC0430>

<sup>42</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/275398/webtag-tag-unit-a5-2-aviation-appraisal.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275398/webtag-tag-unit-a5-2-aviation-appraisal.pdf)

<sup>43</sup> A caveat is that this does not account for the difference in the type of aircraft used by 'international to international interliners' as compared to the aircraft used by other passengers on international flights, most notably passengers on charter flights.

<sup>44</sup> These estimates are from the Eurocontrol Support Facility.



administered aircraft operators<sup>45</sup> which currently have an annual emissions monitoring plan will no longer be required to comply with the Aviation ETS in relation to their flights in 2013 as a result of this exemption. The EA does not expect the number of aircraft operators affected by this exemption to change substantially in future years, although it should be noted that there is no relevant quantitative evidence currently available.

56. In a study commissioned by the European Commission, PWC have estimated that the price of verification for an aircraft operator is €1,250<sup>46</sup> per year on average for small emitters. In addition, the annual subsistence charge paid to EA would be £2,550 per aircraft operator<sup>47</sup>. Furthermore, drawing on the results of the PWC study, the EA has proposed assuming that the remaining administrative costs (i.e. excluding the costs of purchasing allowances) for affected aircraft operators would be around €1,000 per year; this amount is lower than the related estimates in the PWC study and is intended to be a conservative assumption. This indicates that the total savings per non-commercial aircraft operator emitting less than 1,000 tonnes CO<sub>2</sub> could be of the order of £4,375<sup>48</sup>, resulting from an aircraft operator no longer being required to comply with the Aviation ETS. However, this amount is subject to uncertainty and is likely to vary between aircraft operators.

#### Simplified procedures

57. The Policy Option introduces a new provision for aircraft operators (whether commercial or non-commercial) emitting less than 25,000 tonnes of CO<sub>2</sub> per year. This removes the requirement for verification of emissions data when an operator determines its emissions using the small emitters tool, populated by Eurocontrol with data from its ETS support facility.

58. As noted above, PWC have estimated that the price of verification for an aircraft operator per year is on average €1,250<sup>49</sup> for small emitters. Data from the ETS Support Facility (which populates the Small Emitters tool) currently costs €400 per year. This indicates that the savings per operator could be in the region of €850 per year for an aircraft operator that would not buy this data under the 'Do Nothing' scenario, or €1,250 per year for an aircraft operator that would buy it under the 'Do Nothing' scenario. However, again, this amount is subject to uncertainty and is likely to vary between aircraft operators.

59. The number of aircraft operators that can benefit from this new provision will depend on how many aircraft operators are exempted from the Aviation ETS in a given year. For example, excluding the operators that it expects will be exempted from the Aviation ETS, the EA has estimated (on the basis of 2013 emissions<sup>50</sup>) that a further 95 UK regulated aircraft operators will have the opportunity to take advantage of these simplified procedures in relation to their flights in 2013. However, there is uncertainty about how many operators this would affect in future years and the extent to which eligible aircraft operators will take advantage of this.

60. Alongside this provision, the new Regulation also allows for Member States to implement their own simplified procedures for non-commercial operators, "as long as such procedures provide no less accuracy than the small emitters tool provides". At present,

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<sup>45</sup> 'UK administered aircraft operators' is defined as those aircraft operators who carry out an aviation activity listed in Annex 1 to the Aviation EU ETS Directive and are allocated to the UK: <https://www.gov.uk/eu-ets-operators-and-activities-affected>.

<sup>46</sup> Table 12, Page 25, *ETS Aviation small emitters*, 2014, PWC (prepared for the European Commission): [http://ec.europa.eu/clima/policies/transport/aviation/docs/report\\_ets\\_aviation\\_small\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/docs/report_ets_aviation_small_en.pdf)

<sup>47</sup> <https://www.gov.uk/eu-ets-charges#eu-ets-aviation-charges>

<sup>48</sup> £1=€1.233 in line with DECC's Appraisal Guidance – see Tables 1-20: supporting the toolkit and the guidance: <https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>

<sup>49</sup> Table 12, Page 25, *ETS Aviation small emitters*, 2014, PWC prepared for the European Commission: [http://ec.europa.eu/clima/policies/transport/aviation/docs/report\\_ets\\_aviation\\_small\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/docs/report_ets_aviation_small_en.pdf)

<sup>50</sup> These estimates are from the Eurocontrol Support Facility.

the UK does not intend to introduce further simplified procedures, but it will keep this under review, and in the event that further simplifications are implemented, these would likely benefit non-commercial operators.

## **5.2. Impacts on auctioning revenues (monetised cost)**

61. The proportion of allowances to be auctioned during the 2013-2016 remains at 15% of the aviation “indicative cap”, but the new Aviation ETS Regulation stipulates that the UK, along with other EU Member States, will auction a number of aviation allowances that is reduced in proportion to the reduction in the total number of EUAAs to be issued.
62. Consequently, a lower quantity of aviation allowances will be auctioned which proportionately reflects the reduced total number of aviation allowances in circulation. This will result in lower auction revenues for the UK Government. Where aircraft operators purchase EUAAs from auctions, it should be noted that auctioning revenues represent a transfer from aircraft operators to Governments. Therefore, a reduction in auctioning revenues for the UK Government results in a corresponding benefit to aircraft operators in the form of reduction costs of purchasing allowances for compliance. The benefits to aircraft operators performing “UK flights” are reflected in Section 6.1.1.
63. EUAA auction revenues under the Do Nothing Scenario and Policy Option are estimated by multiplying the UK’s estimated EUAA auction volumes (see Paragraph 45 for more details) with DECC’s published traded carbon values (see Table 2). Table 4 below presents our estimates of the change in EUAA auction revenues between the Do Nothing scenario and the Policy Option. The central scenario reflects our best estimate, while values under low and high scenarios are presented as sensitivities.

**Table 4: Estimated EUAA auction revenues for the UK Government, in real 2014 £m<sup>51</sup>**

	2013	2014	2015	2016	Total
<b>Low scenario</b>					
EUAA auction revenues under Do Nothing	28	0	0	0	0
EUAA auction revenues under Policy Option	3	0	0	0	0
<i>Change in EUAA auction revenues for UK Government (Policy option - Do Nothing)</i>	-25	0	0	0	0
	<b>Total PV (2014 £m)</b>				<b>-25</b>
<b>Central scenario</b>					
EUAA auction revenues under Do Nothing	28	32	33	33	126
EUAA auction revenues under Policy Option	3	4	4	4	15
<i>Change in EUAA auction revenues for UK Government (Policy option - Do Nothing)</i>	-25	-28	-29	-29	-111
	<b>Total PV (2014 £m)</b>				<b>-109</b>
<b>High scenario</b>					
EUAA auction revenues under Do Nothing	28	88	113	140	370
EUAA auction revenues under Policy Option	3	11	14	17	44
<i>Change in EUAA auction revenues for UK Government (Policy option - Do Nothing)</i>	-25	-78	-99	-124	-325
	<b>Total PV (2014 £m)</b>				<b>-314</b>

Note: Totals may not add up due to rounding

64. The Policy Option involves an estimated reduction in EUAA auction revenues for UK government over 2013-2016 of the order **£109 million** in real 2014 terms (present value) as compared to the Do Nothing Scenario.

65. Estimated EUAA auction revenues under low and high scenarios have been provided for sensitivity analysis only and do not represent the Government's views on the likely impact on EUAA auction revenues in reality. As discussed previously, the assumptions used in the low scenario represent an extremely pessimistic scenario with continued chronic oversupply in the carbon market as a result of which the carbon price between 2014 and 2020 is zero. This does not reflect a view from Government that the market price is likely to reach zero in reality.

66. Note further that the estimated revenues presented above are not official UK revenue forecasts and are based on a different methodology to that used by the UK's Office for Budget Responsibility (OBR) and HM Revenue & Customs (HMRC) when calculating the revenue effects of costing changes in EU ETS policy. The key methodological differences include the use of a different forecast of EUA prices (this Impact Assessment uses DECC's short-term traded carbon values, as explained at paragraph 47, instead of the figures used by the OBR in official forecasts) and use of estimates of the change in EUAA auction volumes as a result of the policy change.

67. Any official analysis of the impact of this policy on the Exchequer will employ OBR methodology, and will be subject to scrutiny by the OBR. The OBR EU ETS forecast at

<sup>51</sup> For the purposes of this IA, it is assumed that auctions take place in the year that the allowances are issued for.

the Autumn Statement 2014 will include estimated EUAA auction revenues to take account of this policy. It is possible that revenue impacts calculated using OBR methodology could be significantly different to those presented above.

### 5.3. Impacts on the environment (monetised cost and non-monetised benefits)

68. The level of “gross” emissions from a particular sector is the actual quantity of emissions emitted by the sector. The “net” emissions for the sector take account of the emissions allowances or international project credits that it has traded with other sectors. For example, suppose that a sector was given a cap of 80 million tonnes of CO<sub>2</sub> (MtCO<sub>2</sub>) and allocated allowances to this level. If the sector actually emits 100 MtCO<sub>2</sub>, it will need to purchase an additional 20 MtCO<sub>2</sub> of allowances (and/or project credits) from other sectors in order for the overall cap to be met. This sector would be said to have “gross” emissions of 100 MtCO<sub>2</sub> and “net” emissions of 80 MtCO<sub>2</sub>; 100 MtCO<sub>2</sub> “gross” emissions minus 20 MtCO<sub>2</sub> of purchased allowances (and/or credits).
69. For the purposes of the analysis in this IA, the impacts of the Policy Option on the “net” CO<sub>2</sub> emissions savings from the Aviation ETS in respect to flights that depart from UK airports and flights that arrive at UK airports from non-EEA countries (“UK flights”) between 1 January 2013 and 31 December 2016 have been monetised. This approach has been taken on the grounds of proportionality and to be consistent with the assessment of the reduction in the costs to aircraft operators of purchasing allowances that is presented in Section 6.1.1 above. However, it should be noted that this does not prejudice a view on the apportioning of emissions to the UK in the event of an international agreement to reduce aviation emissions. The impacts in relation to “UK flights” after 31 December 2016 have not been monetised as the key factor that will impact on the “net” CO<sub>2</sub> emissions from these flights is the new exemption for non-commercial aircraft operators and this is expected to have a very small impact on the “net” CO<sub>2</sub> emissions from these flights (see Paragraph 38).
70. Under the Policy Option, emissions from extra-EEA flights will be outside the scope of the EU ETS over the period 2013-2016. Since these emissions will no longer be capped, the resulting increase in the “net” CO<sub>2</sub> emissions from “UK flights” (i.e. the reduction in the “net” CO<sub>2</sub> emissions savings from the Aviation ETS) will constitute an environmental impact. This is presented in Table 5 below.

**Table 5: Estimated net CO<sub>2</sub> emissions savings for UK flights, in MtCO<sub>2</sub>**

	2013	2014	2015	2016	Total
Do Nothing	9	10	10	11	<b>39</b>
Policy Option	3	3	4	4	<b>14</b>
<i>Difference: Policy option - Do Nothing</i>	-5	-6	-6	-7	<b>-25</b>

Note: Totals may not add up due to rounding.

71. The Policy Option involves an estimated increase in aircraft operators’ “net” CO<sub>2</sub> emissions from “UK flights” between 2013 and 2016 of the order of 25 MtCO<sub>2</sub> as compared to the Do Nothing Scenario (i.e. a reduction in the environmental benefits of the Aviation ETS in respect to “UK flights” in this period). To evaluate the environmental impact of the Policy Option as compared to the Do Nothing scenario, the value of the increase in the “net” CO<sub>2</sub> emissions from “UK flights” is assumed to be equal to the Shadow Price of Carbon (SPC)<sup>52</sup> as per Government’s carbon valuation guidance<sup>53</sup>. The

<sup>52</sup> The shadow carbon price is the social cost of cost of carbon, i.e. the full global cost today of an incremental unit of carbon emitted now summing the full global cost of the damage it imposes over the whole of its time in the atmosphere, adjusted to reflect the UK policy and technological environment.

<sup>53</sup> The Social Cost Of Carbon And The Shadow Price Of Carbon: What They Are, And How To Use Them In Economic Appraisal In The UK, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/243825/background.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/243825/background.pdf)

SPC for a 550 parts per million (ppm) CO<sub>2</sub> equivalent stabilisation trajectory from this guidance has been used to produce estimates under the central SPC scenario, with sensitivity ranges of -10% and +20% around the central value for Low and High SPC scenarios respectively as recommended in the guidance. The SPC ranges used in this IA are presented below in Table 6.

**Table 6: Shadow Price of Carbon, in real 2014 £**

	2013	2014	2015	2016
Low SPC scenario	30.25	30.78	31.41	32.04
Central SPC scenario	33.61	34.19	34.90	35.60
High SPC scenario	40.33	41.03	41.88	42.72

Note that the Low SPC and High SPC scenarios in this section are distinct from the Low and High scenarios in previous sections, which relate to the traded price of carbon rather than the SPC.

72. Table 7 below presents the estimated environmental benefits of the Aviation ETS under the Do Nothing scenario and the Policy Option in respect to “UK flights”. For each scenario, this has been calculated as the estimated “net” CO<sub>2</sub> emissions savings from the Aviation ETS (i.e. the difference between the estimated “gross” CO<sub>2</sub> emissions from “UK flights” and the “indicative cap” for “UK flights”) multiplied by SPC. The estimated “gross” CO<sub>2</sub> emissions from “UK flights” are explained in Paragraph 44 and the “indicative cap” for “UK flights” is explained in Paragraph 45.

**Table 7: Environmental benefits of Aviation ETS in real 2014 £m<sup>54</sup>**

	2013	2014	2015	2016	Total
<b>Low scenario</b>					
Environmental benefits under Do Nothing	264	293	313	350	1,221
Environmental benefits under Policy Option	102	106	111	118	437
<i>Change in environmental benefits of Aviation ETS (Policy option - Do Nothing)</i>	-162	-187	-201	-233	-784
	<b>Total PV (2014 £m)</b>				<b>-767</b>
<b>Central scenario</b>					
Environmental benefits under Do Nothing	294	326	347	389	1,356
Environmental benefits under Policy Option	113	118	123	131	486
<i>Change in environmental benefits of Aviation ETS (Policy option - Do Nothing)</i>	-180	-208	-224	-259	-871
	<b>Total PV (2014 £m)</b>				<b>-852</b>
<b>High scenario</b>					
Environmental benefits under Do Nothing	352	391	417	467	1,628
Environmental benefits under Policy Option	136	142	148	157	583
<i>Change in environmental benefits of Aviation ETS (Policy option - Do Nothing)</i>	-216	-249	-269	-311	-1,045
	<b>Total PV (2014 £m)</b>				<b>-1,023</b>

<sup>54</sup> For the purposes of this IA, it is assumed that the environmental benefits in relation to a flight are incurred in the same year as the flight is undertaken.

Note: Totals may not add up due to rounding. The increase in the 'net' emissions from these flights represents a cost to society and thus carries a negative sign

73. Our central estimate of the value of the increase in aircraft operators' "net" CO<sub>2</sub> emissions from "UK flights" between 2013 and 2016 is of the order of **£852 million** in real 2014 terms (present value). This increase in emissions represents a cost to society.
74. It should also be noted that whilst Aviation ETS remains key to enabling long term sustainable aviation growth, any scope of the Aviation ETS in terms of emissions is dwarfed by the coverage of a global measure. The agreement reached on the geographic coverage of the Aviation ETS up to 2016 (i.e. the Policy Option) aims to ensure that it continues to operate in an effective manner whilst ensuring broad acceptability with non-EU countries. This seeks to create the conditions to facilitate an agreement on the global market-based measure at the ICAO Assembly in 2016, with implementation in 2020.
75. We do not attempt to quantify the benefits of agreement on a global measure on the environment, but we can be certain that they will be significant, since the emissions coverage of any global scheme will far exceed any European system.

#### **5.4. Impacts on air fares (non-monetised)**

76. This IA does not attempt to quantify the impact on air fares as it is expected that the Policy Option will have a very small impact on air fares as compared to the Do Nothing scenario. For example, under the assumption that aircraft operators pass on 100% of the financial costs of purchasing allowances and the opportunity costs of using free allowances to passengers, the Department for Transport's Aviation Forecasts 2013<sup>55</sup> estimate the carbon costs per passenger per flight at around 1% of air fares on average across all flights departing from UK airports between 2012 and 2020 under the Do Nothing Scenario.

#### **5.5. Impacts on UK regulators (non-monetised)**

77. There are four regulators (or "competent authorities") in the UK with responsibility for administering and enforcing the Aviation ETS: the Environment Agency (EA) for England, the Scottish Environment Protection Agency (SEPA), Natural Resources Body for Wales (NRW), and the Chief Inspector (for Northern Ireland).
78. As a result of the new exemption for non-commercial operators emitting less than 1,000 tonnes CO<sub>2</sub> (which applies until 2020) and the other changes under the Policy Option, the number of operators administered by the competent authorities, particularly the Environment Agency, will reduce quite considerably in this period. For example, on the basis of their estimated 2013 emissions, the EA has estimated that UK regulators<sup>56</sup> will regulate around 361 fewer aircraft operators - which currently have an annual emissions monitoring plan - in relation to flights in 2013 due to the new exemption for non-commercial operators emitting less than 1,000 tonnes CO<sub>2</sub> under the Policy Option. This is estimated to leave the Environment Agency regulating 151 operators, SEPA regulating two operators, and NRW regulating no operators in relation to their flights in 2013. The Chief Inspector will continue to have no operators. As a consequence, the number of charges that the EA receives from operators will reduce, which will in turn reduce the EA's income.

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<sup>55</sup> DfT. 2013, UK Aviation Forecasts. See Annex C.4 in the data annex:  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/223839/aviation-forecasts.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223839/aviation-forecasts.pdf)

<sup>56</sup> UK administered aircraft operators are divided between the four UK regulators (EA, SEPA, NRW and the Chief Inspector) according to where the operator has its registered office (Regulation 27, 2012 GHG Regulations), or if the operator does not have a registered office in the UK and the data is available, the regulator of the area to which the greatest proportion of the aviation emissions of the operator is attributable (Regulation 28, 2012 GHG Regulations).

79. Although the EA's income will decline, the 'net' impact on the EA will depend on the extent that the EA's costs decline. Compared to the Do Nothing scenario, the EA expects that its ongoing costs will decline by less than its revenues under the Policy Option. The EA and SEPA will also incur (and have already incurred) some transition costs in updating its reporting software to reflect the new obligations, and will be impacted from an administrative perspective by the deferral of compliance obligations for 2013 which will result in a 'double reporting year' in 2015. The Policy Option will therefore result in a "net" cost to the EA compared to the Do Nothing scenario. There may also be a "net" cost to SEPA.
80. The combination of the above changes mean that the EA, and possibly also the UK's other competent authorities, may have to revise their charging regimes so that they are able to continue to cover their costs of administration and enforcement of the Aviation ETS. This is currently under review and is not part of the Policy Option that is assessed in this IA.
81. Given that the overall impacts on the UK regulators will be very small in comparison to those impacts that have been monetised in this IA, the impacts on UK regulators have not been monetised on the grounds of proportionality.

#### **5.6. Impacts on verifiers (non-monetised)**

82. As part of the requirements of the Aviation ETS, emissions reports submitted by aircraft operators must be independently verified (unless a specific exemption applies). These verification services are provided by verification companies, which are in turn regulated by the UK Accreditation Service (UKAS).
83. UK verifiers and UKAS will be impacted by the Policy Option as a result of the a) the reduction in scope, b) the introduction of an exemption for non-commercial operators emitting less than 1,000 tonnes of CO<sub>2</sub> per year, and c) the removal of the requirement to verify emissions for aircraft operators emitting less than 25,000 tonnes of CO<sub>2</sub> per year. The deferral of compliance for 2013 emissions is also likely to have some impact on verification companies, as reports for 2013 and 2014 emissions would be required in one year (2015).
84. The reduction in scope of the Aviation ETS to include only intra-EEA flights will reduce both the total number of flights in scope and also the number of aircraft operators in scope (as some operators previously caught within the full-scope will have no intra-EEA flights). This will consequently reduce the level of emissions data requiring verification and also the number of potential clients (aircraft operators) for verifiers for the period 2013-2016.
85. In addition to the impacts of the reduced scope, verification companies will be impacted by the new provisions for small emitters. In particular, both the exemption for non-commercial operators emitting less than 1,000 tonnes CO<sub>2</sub> until 2020 and the removal of the verification requirement for operators (both commercial and non-commercial) emitting less than 25,000 tonnes CO<sub>2</sub> will reduce the number of potential clients for verification companies.
86. Verification companies are therefore likely to experience a reduction in their revenues from verifying emissions reports submitted by aircraft operators. Consequently, it is reasonable to assume that the verification industry will be impacted negatively by the Policy Option. However, the net impact on verification companies is uncertain and will depend upon a range of factors, including the extent to which resources that would have been used to verify emissions reports submitted by aircraft operators under the Do Nothing scenario are redeployed under the Policy Option and the extent of any transition costs that arise. No evidence is available on the most likely alternative use of these

resources and the likely transition costs. Therefore, it is not possible to provide accurate points of estimate the costs to verifiers.

87. The impacts on individual verifiers will also depend on a range of factors, including the extent to which a verifier's clients are small emitters and the extent to which a verifier's clients have extra-EEA flights, and could vary between verifiers.
88. Given that the overall impacts on verifiers are considered to be small in comparison to those impacts that have been monetised in this IA, they have not been monetised on the grounds of proportionality.

#### *Overall net impact*

89. The overall net impact of the Policy Option as compared to the Do Nothing scenario is estimated as the monetised benefits (in this case, a reduction in compliance costs for aircraft operators) less the monetised costs (in this case, increase in environmental costs and reduction in EUAA auction revenues).
90. Table 8 below provides overall net impacts under three scenarios:
  - The Low Net Present Value (NPV) scenario uses the estimated reduction in compliance costs and revenues under the Low carbon price scenario and the estimated increase in environmental costs under the High SPC scenario so as to produce a low NPV (based on a high estimate of costs & low estimate of benefits).
  - Conversely, the High NPV scenario uses the estimated reduction in compliance costs and revenues under the High carbon price scenario and the estimated increase in environmental costs under the Low SPC scenario so as to produce a high NPV (based on a high estimate of benefits and low estimate of costs).
  - The Central NPV scenario uses the estimated reduction in compliance costs and revenues under the Central carbon price scenario and the estimated increase in environmental costs under the Central SPC scenario.



**Table 8: Overall net impacts, in real 2014 £m**

	2013	2014	2015	2016	Total
<b><u>Low NPV</u></b>					
<b>Costs</b>					
Reduction in environment benefits of Aviation ETS (Table 7)	216	249	269	311	1,045
Reduction in EUAA auction revenues for UK Government (Table 4)	-25	0	0	0	-25
<b>Benefits</b>					
Reduction in the costs to aircraft operators of purchasing allowances for compliance (Table 3)	48	0	0	0	48
<b>Net impact: Benefits - Costs</b>	-193	-249	-269	-311	-1,022
<b>Total NPV (2014 £m)</b>					<b>-999</b>
<b><u>Central NPV</u></b>					
<b>Costs</b>					
Reduction in environment benefits of Aviation ETS (Table 7)	180	208	224	259	871
Reduction in EUAA auction revenues for UK Government (Table 4)	25	28	29	29	111
<b>Benefits</b>					
Reduction in the costs to aircraft operators of purchasing allowances for compliance (Table 3)	48	58	60	66	231
<b>Net impact: Benefits - Costs</b>	-157	-178	-192	-222	-750
<b>Total NPV (2014 £m)</b>					<b>-734</b>
<b><u>High NPV</u></b>					
<b>Costs</b>					
Reduction in environment benefits of Aviation ETS (Table 7)	162	187	201	233	784
Reduction in EUAA auction revenues for UK Government (Table 4)	25	78	99	124	325
<b>Benefits</b>					
Reduction in the costs to aircraft operators of purchasing allowances for compliance (Table 3)	48	160	209	277	693
<b>Net impact: Benefits - Costs</b>	-139	-105	-92	-80	-416
<b>Total NPV (2014 £m)</b>					<b>-412</b>

Note: Totals may not add up due to rounding.

91. The overall estimated net impact of the Policy Option as compared to the Do Nothing scenario (prior to discounting) ranges from - £1,022 million to - £416 million in real 2014 terms, while our best estimate is of the order of - £750 million in real 2014 terms.
92. The estimated total net present value ranges from - £999 million to - £412 million in 2014 terms, while our best estimate is of the order of - **£734 million** in real 2014 terms.

## 6. Rationale and evidence that justify the level of analysis used in IA

93. In this IA, the quantitative assessment of the costs and benefits covers the key direct impacts of the Policy Option compared to the Do Nothing scenario. The level of analysis used in the IA is considered to be proportionate given that the EU Regulation is already in force across all EU Member States and the UK is obliged to take action to amend its domestic regulations so that they are consistent with the EU Regulation.

## 7. Risks and Assumptions

94. The analysis presented in this IA relies on a number of assumptions that have already been discussed in previous sections. The estimates of the monetised costs and benefits that are presented are sensitive to the assumptions that have been made, the sources of the evidence that have been used, and the other aspects of the methodology that has been adopted in this IA. Therefore, these estimates should be interpreted as indicative estimates of the order of magnitude of these costs and benefits. To illustrate some of this uncertainty, ranges for the monetised costs and benefits are presented in this IA. These ranges have been generated by varying allowances prices (See Table 1) and the Shadow Price of Carbon (see Table 4). It has not been considered proportionate to undertake further sensitivity analysis.

95. The key assumptions are summarised below for sake of completeness:

- The value of the increase in the “net” CO<sub>2</sub> emissions from “UK flights” under the Policy Option is assumed to be equal to the Shadow Price of Carbon (SPC) as per Government’s carbon valuation guidance.
- It is assumed that the prices of EUAAs and EUAs are the same under the Policy Option and the Do Nothing scenario. In addition, the prices of EUAAs and EUAs are assumed to be equal, and are assumed to be the same as DECC’s latest published short-term traded carbon values for policy appraisal.
- The indicative Aviation ETS “cap” for “UK flights” that are covered by the Aviation ETS is assumed to be equal to the UK’s estimated EUAA auction volumes divided by 15%.
- It is assumed that the “gross” CO<sub>2</sub> emissions from individual “UK flights” and consequently the level of abatement in relation to these flights are same under both the Do Nothing scenario and the Policy Option.
- It is assumed that the CO<sub>2</sub> emissions from international flights arriving at UK airports from non-EEA countries are equal to the CO<sub>2</sub> emissions from international flights departing from UK airports to non-EEA countries.

96. The other key aspects of the methodology are summarised below. It should be noted that adopting a different approach from that described below (e.g. only assessing the impacts in relation to flights departing from UK airports) would significantly impact on the order of magnitude of the estimated monetised costs and benefits.

- The reduction in the costs to aircraft operators of purchasing allowances to comply with the Aviation ETS has been assessed for flights departing from UK airports and flights arriving at UK airports from non-EEA countries.
- The impacts on the “net” CO<sub>2</sub> emissions from flights that depart from UK airports and flights that arrive at UK airports from non-EEA countries have also been assessed for consistency.

## 8. Direct costs and benefits to business calculations (following OITO methodology)

97. The EU ETS, on account of being classified as an environmental tax for the purposes of Better Regulation, is out of scope of the One In Two Out (OITO) methodology. For sake of completeness, however, a brief description of direct costs and benefits to businesses resulting from the Policy Option as compared with the Do Nothing scenario has been presented below.
98. Of all the monetised costs and benefits considered under Section 6, the reduction in the costs to aircraft operators of purchasing allowances for compliance (Table 3) is the only impact that directly relates to businesses. As described previously, the Policy Option involves a reduction in the costs to aircraft operators of purchasing allowances for compliance over 2013-2016 of **£227 million** in PV terms (2014 Price Base Year, 2014 Present Value Base Year) under the central scenario as compared to the Do Nothing Scenario.
99. In line with OITO methodology<sup>57</sup>, this is estimated to result in an Equivalent Annual Net Cost to Businesses (**EANCB**) of the order of - **£47m per year** (2009 Price Base Year, 2010 Present Value Base Year) (i.e. an Equivalent Annual Net Benefit to Businesses of £47m per year). Note that these estimates only relate to the reduction in the costs of purchasing allowances to comply with the EU ETS; as discussed in Section 6, there may also be some administrative cost savings resulting from simplified procedures and exemptions for non-commercial aircraft operators and some costs to both aircraft operators and verification companies, which have not been quantified on grounds of proportionality.

## 9. Wider impacts

### ***Small and Micro Business Assessment***

100. Although according to the Better Regulation Framework Manual, the Small and Micro Business Assessment does not apply to EU measures which do not gold-plate, we have considered potential impacts of the Policy Option on small and micro businesses for the sake of completeness.
101. It is estimated that there were 145 micro businesses (1-9 employees) and 65 small businesses (10-49 employees) in the passenger air transport sector in the UK; and 60 micro businesses and 25 small businesses in the freight air transport and space transport sector in the UK at the start of 2013<sup>58</sup>.
102. Under the Do Nothing scenario, there was a *de minimis* exemption for commercial operators – with either fewer than 243 flights per period for three consecutive four-month periods or flights with total annual emissions lower than 10,000 tonnes CO<sub>2</sub> per year. However, there was no similar exemption for non-commercial operators.
103. Under the Policy Option, non-commercial operators emitting less than 1,000 tonnes CO<sub>2</sub> per annum based on total emissions (full-scope ETS) will temporarily be exempted from the ETS until 2020. Furthermore, aircraft operators (whether commercial or non-commercial) emitting less than 25,000 tonnes of CO<sub>2</sub> per year will benefit from simplified procedures (see paragraphs 57-60 for more details).
104. The benefits of these provisions in terms of the reduction in the administrative costs for aircraft operators compared to the Do Nothing scenario are discussed qualitatively in

<sup>57</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/31616/11-671-one-in-one-out-methodology.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/31616/11-671-one-in-one-out-methodology.pdf)

<sup>58</sup> The Department for Business, Innovation & Skills (2013) [Business population estimates 2013](https://www.gov.uk/government/publications/business-population-estimates-2013)  
<https://www.gov.uk/government/publications/business-population-estimates-2013>

paragraphs 55-60. Furthermore, the new exemption for non-commercial operators is also taken into account in the analysis of the reduction in the costs of purchasing allowances (see paragraph 44). Given the number of small and micro businesses that operate in air transport sectors (see Paragraph 101), it is expected that a proportion of the benefits of the Policy Option will accrue to small and micro businesses.

105. Furthermore, although no statistics on the number of micro businesses and small businesses that operate in the emissions verification market are available, it is recognised that this measure has the potential to impact adversely on micro businesses and small businesses that operate in this market.
106. The UK must take action to amend its domestic regulations so that they are consistent with the EU Regulation. The UK therefore has very limited scope to further reduce the burdens on small and micro businesses.
107. The one factor that has been identified where there could potentially be scope to further reduce the burdens on small and micro businesses is that the new Regulation allows for Member States to implement their own simplified procedures for non-commercial aircraft operators, “as long as such procedures provide no less accuracy than the small emitters tool provides”. The Environment Agency does not envisage a simplified scheme that could provide the same degree of data integrity as Eurocontrol data but at a lower cost, both to the operator and the Competent Authority. Therefore, as noted in paragraph 60, the UK does not currently intend to introduce further simplified procedures, but it will keep this under review. In the event that further simplifications are implemented, these could offer further benefits for small and micro businesses.

#### ***Equality Impact Tests***

108. An Equality Impact Assessment has not been completed for this IA given the limited scope of what is being amended within the Greenhouse Gas Regulations.

#### ***Human Rights Test***

109. In respect of the European Convention for the Protection of Human Rights and Fundamental Freedoms, no issues arise.

#### ***Competition Assessment***

110. The Competition Assessment is attached at Annex 1.

### **10. Summary and preferred option with description of implementation plan**

111. Taking all the impacts into account, the **Policy Option** is the preferred option. If the UK was to take the **Do Nothing** approach, the UK Greenhouse Gas Regulations would be inconsistent with the Aviation EU ETS Regulation. This would create considerable uncertainty for UK administered aircraft operators, verifiers and other key stakeholders, as the UK Regulations would not be in line with the EU-level Regulation that entered into force across all 28 Member States simultaneously on 30 April 2014. It would also mean that the UK would be in breach of its duty to implement EU law obligations.
112. The Policy Option ensures that Aviation ETS continues to operate in an effective manner whilst ensuring broad acceptability with non-EU countries, thus creating the conditions to facilitate an agreement on a global measure for aviation emissions at ICAO in 2016. The emissions coverage, and likely emissions reductions, of any global measure would far outweigh that of the Aviation EU ETS. The new Regulation also contains a number of exemptions and simplified provisions which reduce the administrative burden on low emitting operators and the competent authorities.

113. Looking ahead, the European Commission will undertake a full review in 2016 to consider whether the scope of the Aviation ETS should be amended from 2017 onwards based on progress towards agreement on a global market based measure at the ICAO Assembly in 2016. The review should also consider the environmental effectiveness of the EU ETS and in this context, determine how best to align the Aviation ETS with the wider ETS. The UK is fully supportive of an open and comprehensive review.
114. The regulation stipulates that from 1 January 2017 all flights arriving and departing EEA airports will once again be included in Aviation ETS, and so the return to “full-scope” is the default in absence of any changes coming out of the review. The key milestones for the implementation of the Regulations are as follows:
- The UK undertook a formal public consultation on the amended UK Greenhouse Gas Regulations 2012. The consultation commenced on Monday 11 August 2014 for a six week period and concluded on Monday 22 September 2014. A consultation stage IA was included in the consultation package, along with the proposed legislative amendments.
  - The UK published a full consultation response on [date].
  - To provide clarity to aircraft operators and other relevant stakeholders in advance of the 2015 compliance deadlines, we expect the amended UK Regulations to come into force by the end of 2014.

## Annex 1: Competition Assessment

### A1.1. Introduction

Section A1.2 discusses the impacts of the Aviation ETS on competition under the Do Nothing scenario. The approach to assessing the impacts of the Policy Option on competition as compared to the Do Nothing scenario is explained in Section A1.3 and a detailed overview of the potential impacts of the Policy Option on competition is presented in Section A1.4.

Section A1.5 provides our assessment of the scale of potential impacts of the Policy Option on competition. A key factor is that, given likely allowance prices in the period to 2020, the available evidence indicates that ETS costs are only likely to account for a very small percentage of air fares in the period to 2020. It is therefore considered unlikely that the changes to the Aviation ETS under the Policy Option would have a significant impact on competition in the aviation sector.

### A1.2. Competition under the Do Nothing scenario

Under the Do Nothing scenario (see Paragraph 28), the Aviation ETS has a range of impacts on competition. For example:

- other things being equal, the Aviation ETS increases the competitiveness of more fuel-efficient aircraft operators compared to less fuel-efficient aircraft operators because the costs of compliance with the Aviation ETS (in terms of the purchase of allowances) are related to the volume of emissions;
- other things being equal, the allocation of free allowances to incumbent aircraft operators increases the competitiveness of incumbent aircraft operators compared to new entrants because incumbent aircraft operators will receive free allocations from 2012 but new entrants will not be able to receive any free allocation until 2017, and hence new entrants will have to cover a larger proportion of the cost of their emissions in this period; and
- other things being equal, the Aviation ETS reduces the competitiveness of direct flights between EEA airports and non-EEA airports (e.g. a direct flight from London to Beijing) and trips via a connection at an EEA hub (e.g. a trip from Edinburgh or New York to Beijing via a connection in London) compared to competing direct flights between two non-EEA airports (e.g. a direct flight from New York to Beijing)<sup>59</sup> and competing trips via a connection at a non-EEA hub (e.g. a trip from London or New York to Beijing via a connection in Dubai)<sup>60</sup>. This is because the former would incur higher costs of compliance with the Aviation ETS than the latter. For example, competing flights that do not arrive into or depart from an EEA airport would incur no costs of compliance with the Aviation ETS.

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<sup>59</sup> For example, the competitiveness of a trip from New York to Beijing which is made via an EEA hub (London) would be reduced compared to a direct flight between New York and Beijing.

<sup>60</sup> For example, the competitiveness of a direct flight from London to Beijing would be reduced compared to a trip from London to Beijing which is made via a non-EEA hub (Dubai); and the competitiveness of a trip from Edinburgh to Beijing which is made via an EEA hub (London) would be reduced compared to a trip from Edinburgh to Beijing which is made via a non-EEA hub (Dubai).

Annex 2 of the UK's IA for 'The Aviation Greenhouse Gas Emissions Trading Scheme Regulations 2010'<sup>61</sup> contains more details on the impacts of the Aviation ETS on competition under the Do Nothing scenario.

### **A1.3. Approach to the competition assessment for the Policy Option**

Compared to the Do Nothing scenario, the impacts of the Policy Option (see Paragraph 30) on competition have been taken into account by addressing the following questions in line with the Green Book supplementary guidance on completing competition assessments in impact assessments<sup>62</sup>.

- Would the Policy Option directly limit the number or range of suppliers?
- Would the Policy Option indirectly limit the number or range of suppliers?
- Would the Policy Option limit the ability of suppliers to compete?
- Would the Policy Option reduce suppliers' incentives to compete vigorously?

It is not considered that the Policy Option would directly limit the number or range of suppliers as none of the relevant factors apply. For example, the Policy Option would not involve the award of exclusive rights to supply. Furthermore, it is not considered that the Policy Option would reduce suppliers' incentives to compete vigorously as none of the relevant factors apply. For example, the Policy Option would not require or encourage the exchange between suppliers, or publication, of information on prices, costs, sales or outputs.

With regards to the question of whether the Policy Option would indirectly limit the number or range of suppliers, or limit the ability of suppliers to compete, it is recognised that the Aviation ETS theoretically has the potential to significantly raise the costs of new suppliers relative to existing suppliers, of some existing suppliers relative to others, or of entering or exiting an affected market; and the potential to substantially influence the price(s) a supplier may charge. This would depend crucially on the significance of ETS costs relative to the other costs incurred by aircraft operators.

Therefore, the following approach has been taken in this IA. Firstly, a summary of the potential impacts of the Policy Option on competition that have been identified is presented in Section A1.4. Secondly, our assessment of the likely scale of potential impacts of the Policy Option on competition is provided in Section A1.5. It should be noted that the scale of the potential impacts is crucial in determining whether the Policy Option would have a significant impact on competition in the aviation sector.

### **A1.4. Overview of the potential impacts of the Policy Option on competition**

A summary of the identified potential impacts of the Policy Option on competition is presented below. Depending on the significance of ETS costs, it should be noted that the scale of these impacts could theoretically range from having a negligible impact on competition to a very significant impact on competition. As noted above, our assessment of the likely scale of these impacts is provided in Section A1.5.

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<sup>61</sup> DECC / DfT (2010) [Impact Assessment of Second Stage Transposition of EU Legislation to include Aviation in the European Union Emissions Trading System \(EU ETS\)](http://webarchive.nationalarchives.gov.uk/20110508074721/http://decc.gov.uk/assets/decc/Consultations/euetsaviationsecondstage/909-ia-second-stage-transposition-euets.pdf)

<sup>62</sup> HM Treasury (2013) [Green Book supplementary guidance: competition](https://www.gov.uk/government/publications/green-book-supplementary-guidance-competition)

### A1.4.1. Reduction in scope of ETS

Under the Policy Option, the Aviation ETS will have an intra-EEA scope until 31 December 2016. We have identified a number of potential impacts on competition from reducing the scope of the Aviation ETS.

- As flights between EEA airports and non-EEA airports ('extra-EEA flights') will now be out of scope of the Aviation ETS until 31<sup>st</sup> December 2016 and airlines operating these flights will no longer incur ETS costs in relation to these flights in this period, competition in the market for extra-EEA flights will be impacted relative to the Do Nothing scenario.
- Firstly, by exempting extra-EEA flights from the Aviation ETS, the Policy Option would eliminate many of the impacts of the Aviation ETS on competition in the market for extra-EEA flights that would exist under the Do Nothing scenario for the duration of the exemption. For example:
  - there will be a reduced competitive advantage for more fuel-efficient aircraft operators compared to less fuel-efficient aircraft operators as well as for incumbent operators compared to new entrants;
  - there will be an increase in the relative competitiveness of direct flights between EEA airports and non-EEA airports (e.g. a direct flight from London to Beijing) compared to competing trips via a connection at a non-EEA hub (e.g. a trip from London to Beijing via a connection in Dubai) or any competing direct flights between two non-EEA airports<sup>63</sup>; and
  - there will be an increase in the relative competitiveness of trips between non-EEA airports via a connection in an EEA hub (e.g. a trip from New York to Beijing via a connection in London) compared to competing direct flights between two non-EEA airports (e.g. a direct flight from New York to Beijing) and competing trips via a connection at a non-EEA hub (e.g. a trip from New York to Beijing via a connection in Dubai).
- Secondly, we have identified that, under an intra-EEA scope, there would be an increase in the relative competitiveness of direct flights between EEA airports and non-EEA airports (e.g. a direct flight from Edinburgh to Beijing) and trips between two EEA airports via a connection at an non-EEA hub (e.g. a trip from London to Athens via a connection in Zurich) compared to competing trips via a connection at an EEA hub (e.g. a trip from Edinburgh to Beijing via a connection in London or a trip from London to Athens via a connection in Frankfurt respectively). This is because the former will be out of scope of the Aviation ETS and will not incur ETS costs, but the latter will still be partially in scope of the Aviation ETS and still incur some ETS costs (e.g. the Edinburgh to London leg of a trip from Edinburgh to Beijing via a connection in London would still be in scope of the Aviation ETS).
- In addition, we have identified that, under an intra-EEA scope, the Aviation ETS would continue increase the relative competitiveness of flights between an EEA airport and a non-EEA airport via a connection at an non-EEA hub (e.g. a trip from Edinburgh to Beijing via a connection in Dubai) compared to competing trips via a connection at an EEA hub (e.g. a trip from Edinburgh to Beijing via a connection in London), although this could be less than under the Do Nothing scenario. Again, this is because the former will be out of scope of the Aviation ETS and will not

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<sup>63</sup> This does not appear to be relevant for the UK but might be a factor for other EEA countries.



incur ETS costs, but the latter will still be partially in scope of the Aviation ETS and still incur some ETS costs as above.

- Further to the previous paragraph, the European Commission's 2013 Impact Assessment<sup>64</sup> discusses the risks that, under an intra-EEA scope, there would be distortions of competition as feeder flights from EEA airports to EEA hubs (e.g. the Edinburgh to London leg of a trip from Edinburgh to Beijing via a connection in London) would be included in the Aviation ETS but feeder flights from EEA airports to non-EEA hubs (e.g. the Edinburgh to Dubai leg of a trip from Edinburgh to Beijing via a connection in Dubai) would be exempt. The European Commission concluded that there are no significant risks of serious distortions to competition under current carbon prices.
- The European Commission's 2013 Impact Assessment<sup>64</sup> also discusses the risks that, under an intra-EEA scope, there would be distortions to competition between tourist destinations, particularly within the Mediterranean area (e.g. between flights to North Africa or Turkey which are exempt from the Aviation ETS and flights to EEA destinations in the Mediterranean area which are included in the Aviation EU ETS). Again, the European Commission concluded that there are no significant risks under current carbon prices.
- Furthermore, with regards to the market for intra-EEA flights, airlines operating solely in the EEA have raised concerns that, under an intra-EEA scope, foreign or UK airlines that operate both extra-EEA and intra-EEA flights may be able to cross-subsidise tickets on intra-EEA flights, causing them a competitive disadvantage on intra-EEA flights. It is noted that the European Commission's 2006 Impact Assessment<sup>65</sup> concluded that, regardless of the scope of the Aviation ETS, additional cross-subsidisation is unlikely to occur.

#### **A1.4.2. Exemptions and simplified procedures for small operators**

Under the Policy Option, there will be an exemption for non-commercial aircraft operators emitting less than 1000 tonnes CO<sub>2</sub> per year in the period until 2020 and aircraft operators emitting less than 25,000 tonnes of CO<sub>2</sub> per year will benefit from simplified procedures. This could potentially impact on competition by reducing the costs for aircraft operators that benefit from these provisions compared to those aircraft operators that do not. The PWC report for the European Commission<sup>66</sup> includes some analysis of the impacts of potential exemptions for non-commercial aircraft operators and simplifications for small emitters on competition. This report suggests that introducing an exemption threshold for non-commercial aircraft operators could potentially result in market distortions. For example, the report identifies that it could raise the costs of participating in a fractional ownership scheme compared to owning a private aircraft, but concludes that the impact on the market would be minimal as other factors are more important. This report also suggests that the simplified procedures would not impact on competition.

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<sup>64</sup> European Commission (2013) Impact Assessment  
[http://ec.europa.eu/clima/policies/transport/aviation/docs/swd\\_2013\\_430\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/docs/swd_2013_430_en.pdf)

<sup>65</sup> European Commission (2006) Impact Assessment of the inclusion of aviation activities in the scheme for greenhouse gas emission allowance trading within the Community  
[http://ec.europa.eu/clima/policies/transport/aviation/docs/sec\\_2006\\_1684\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/docs/sec_2006_1684_en.pdf)

<sup>66</sup> PWC (2014) ETS Aviation small emitters: Cost assessment of applying EU ETS on aviation small emitters and analysis of improvement potential by simplifications, alternative thresholds and alternative means of regulation  
[http://ec.europa.eu/clima/policies/transport/aviation/docs/report\\_ets\\_aviation\\_small\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/docs/report_ets_aviation_small_en.pdf)

### **A1.4.3. Changes to volume of allowances in the special reserve**

Under the Policy Option, the number of allowances issued to aircraft operators that are allocated from the special reserve in the period to 2020 should be reduced in proportion to the reduced scope. Given that allowances allocated from the special reserve will only be issued from 2017 and the Aviation ETS will return to the full scope from 2017 in the absence of any changes coming out of the review, this could impact on the competitiveness of aircraft operators that are allocated allowances from the special reserve compared to other aircraft operators that are not.

### **A1.5. Scale of potential impacts of the Policy Option on competition**

It is considered that the significance of ETS costs relative to the other costs incurred by aircraft operators is a key determinant of whether the Policy Option would result in a significant impact on competition in the aviation sector. The key changes to the Aviation ETS under the Policy Option are only temporary and expire at the end of 2016 in respect of the derogation for extra-EEA flights, and at the end of 2020 in respect of the derogation for non-commercial operators. Given likely allowance prices in the period to 2020, the available evidence indicates that ETS costs are only likely to account for a very small percentage of air fares in the period to 2020. For example, Department for Transport forecasts published in January 2013<sup>67</sup> estimated that allowance costs would only account for around 1% of average UK air fares in the period to 2020 under the Do Nothing scenario (and this assumes full pass through of the value of free allowances to passengers).

**It is therefore considered unlikely that the changes to the Aviation ETS under the Policy Option would have a significant impact on competition in the aviation sector.**

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<sup>67</sup> Department for Transport (2013) [UK aviation forecasts 2013](https://www.gov.uk/government/publications/uk-aviation-forecasts-2013)  
<https://www.gov.uk/government/publications/uk-aviation-forecasts-2013>