

Areas of Alignment on Global Market-Based Measures (MBMs) to Address Aviation Emissions

Why this document and how was it developed?

This document was developed by a voluntary working group (the MBM Working Group). It is intended to explore and clarify key issues for unlocking progress within ICAO by examining three options for a market-based measure (MBM) “package” that can help account for diverse stakeholder interests and needs while, at the same time, addressing the issues of equity and the “special circumstances and respective capabilities of developing countries”¹ in the context of a global MBM under ICAO. Specifically, it explores key ideas and trade-offs, and identifies areas of alignment that could be introduced to the ICAO process as promising areas for consideration to build a global approach to CO₂ pricing and management in the aviation sector. The document’s content is informed by two high level aviation stakeholder workshops, convened by the World Wide Fund for Nature (WWF), in Washington DC and Berlin.

The MBM Working Group and the larger workshops included a wide range of stakeholders that are largely supportive of a global MBM and hopeful of progress within ICAO, including high level representation from the aviation industry, tourism industry, environmental non-governmental groups (NGOs), development advocates, and country governments from both developed and developing countries.

This working paper does not intend to form an alternative proposal of recommendations, but rather seeks to supplement ongoing thoughtful and informed engagement with additional diverse, expert, and cross-sector perspectives. It represents the views of stakeholders rather than those of WWF, who has taken a neutral role in facilitating this process.

How to use it?

The document is intended to inform policy makers who are preparing proposals within ICAO on market based measures to reduce greenhouse gas pollution from aviation. As it reflects the perspectives of different sectors with an interest in managing carbon from aviation, it also helps to inform and develop their views on the development of a global MBM.

¹ The ICAO equivalent of the United Framework Convention on Climate Change’s “common but differentiated responsibilities and respective capabilities” (CBDR&RC)

Why broader climate and aviation “packages” are needed

Three key challenges in reaching a global aviation agreement were identified at the first stakeholder workshop in Washington DC: 1) resolving the tension between ICAO’s non-discrimination principle and the UNFCCC’s principle of CBDR&RC (common but differentiated responsibilities and respective capabilities); 2) addressing revenue generation from a global MBM—who collects it and how it is spent, and; 3) the need to bring new voices into the aviation conversation to provide problem-solving momentum, such as development and tourism perspectives. It was emphasized that a “package deal” for a global MBM is possible if promising new ways of addressing key issues can be developed to break the deadlock and resolve the seeming clash of treaty principles. In other words, a package deal for controlling aviation emissions that balances climate stabilisation and sustainable development imperatives might include—in addition to the MBM itself—a global mid-century vision or goal, medium term milestones/targets, mechanisms for revenue distribution and governance, capacity building and technical support.

Key design considerations and trade-offs for an MBM

The MBM Package Working Group identified the following MBM design trade-offs as being most important in developing an MBM package of measures:

1. **Level of target ambition VS. allocation of the target:** The working group recognizes that exempting some countries/carriers/routes could be okay if it enables agreement on a cap among the vast majority of countries. (Note: As a political matter, it may be better to focus first on other design elements, then come last to the question of the level of the target later.)
2. **Level of specificity and detail in an ICAO MBM VS. flexibility left to governments and/or industry to implement the MBM:** It may be possible to create a single global MBM that would nonetheless leave some flexibility to implementing stakeholders (e.g. national governments, carriers, etc.). However, there are risks of complexity, weakness in emissions control, and competitiveness impacts on carriers if flexibility is too great.
3. **Implementation roles for national governments VS. carriers VS. ICAO VS. IATA:** Several permutations of institutional arrangements could be conceived to ensure sound management of an MBM. For example, once an MBM is chosen by ICAO Parties, it could be managed by either carriers or national governments and could include ICAO oversight. The trade-offs are numerous and complex since industry implementation might be faster to implement, while government implementation might enable more oversight and associated costs.
4. **Level of offset quality VS. transaction costs of an offset system (if an offset MBM):** An offset system would need to have some quality checks and standards. Many current offset systems lack environmental integrity. There is a trade-off between airlines worrying about the quality of offsets and finding 3rd party verifiers and spending that time on achieving carbon reductions within their businesses.
5. **Less revenue generation VS. more revenue available to take into account special circumstances and respective capabilities of developing countries:** Recipients for revenue disbursement could include the aviation sector, developing countries or specifically the aviation

sectors *in* developing countries; the option for revenue is attractive for some developing country stakeholders, as well as environmental advocates and development advocates.

6. **A simple system for country differentiation VS. a more complex but precise formula for differentiation:** A formula for allocating emissions across countries and/or carriers could be key to addressing CBDR. The formula could be based on each country's aviation sector's share of global emissions in a chosen baseline year, with adjustment factors for a country's level of development, the scale and rate of growth of its aviation industry, and the sensitivity of its economy to increases in the cost of air travel. In contrast, it may be better to have the same requirement for all, with exemptions (e.g. land-locked developing countries [LLDCs], least developed countries [LDCs] and small island developing states [SIDS] having special exemptions, on the basis of routes to and from these countries), rather than differentiate across countries through a formula.
7. **Synchronization with current and anticipated MBMs around the world VS. creating an MBM that works better for aviation stakeholders:** For example, if the MBM is cap and trade, having access to the EU-ETS and other carbon markets in the future would be attractive to reduce the overall cost of the system. If it is offset-based it could potentially synchronize with the UN's Carbon Neutral Initiative.

Stakeholder areas of alignment on MBM packages

Stakeholders were asked to evaluate three different proposals for global MBMs, in part based on the three ICAO options currently being considered, namely offsetting (with or without revenue generation) and cap and trade. However, WWF also introduced a more speculative third levy package option, not dissimilar to a proposal recently presented to the High-Level Group on Climate Change. This third option, not currently being considered by ICAO, was included in order to inject wider, creative thinking into the process to generate new ideas.

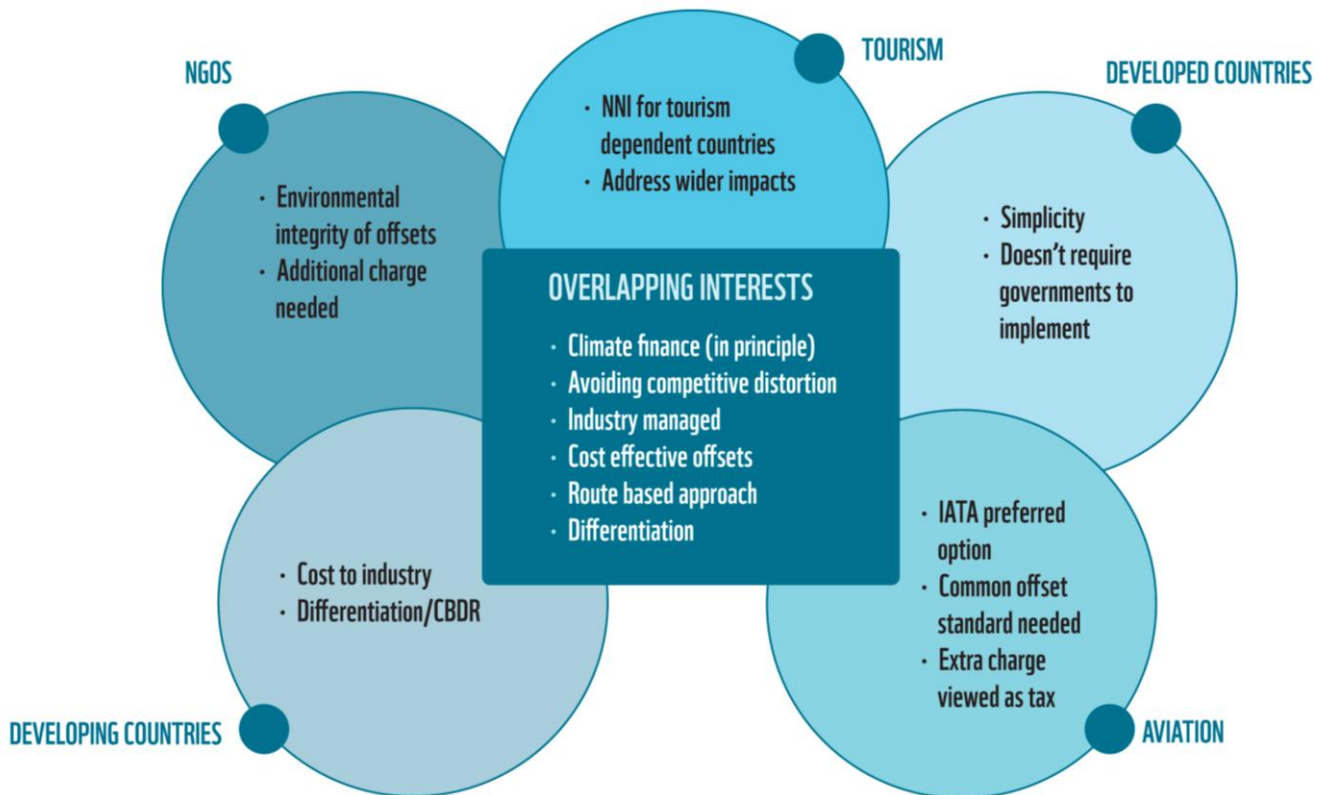
The pros and cons for each of these options was separately assessed by each of the different sectors represented within the stakeholder group, in order to identify possible trade-offs and areas of alignment. As shown in the graphics below (see pages 4-5), there was a considerable amount of alignment across the different sectors for each option. Significantly, many of the same areas of alignment emerged across all options.

This analysis suggests that a global MBM having broad acceptability across different sectors and countries would be possible to achieve, by building on the following strongest areas of alignment:

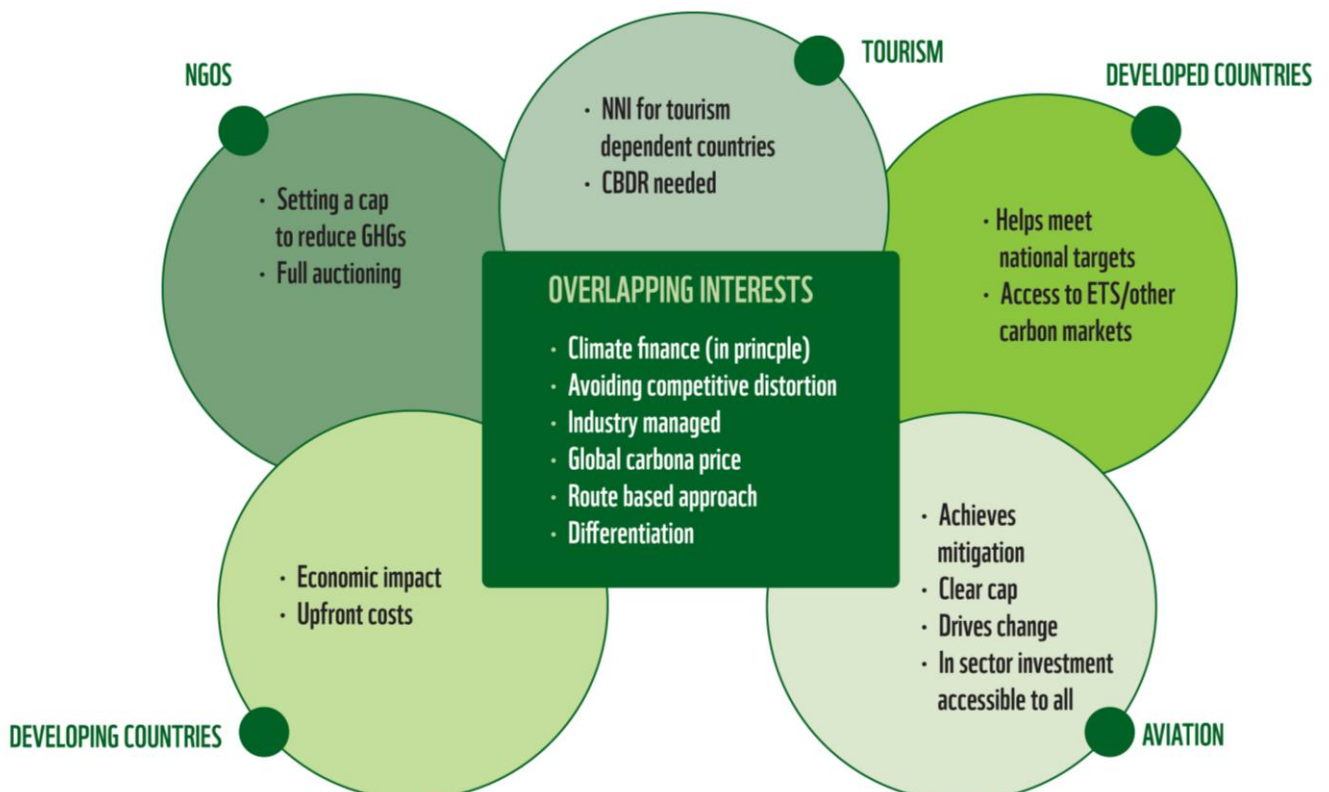
- Climate finance for in-sector investment (so long as this did not contribute to competitive distortion)
- An industry-managed system (perhaps in conjunction with ICAO or other global body to distribute any revenues generated)
- A route-based approach instead of a country-based system
- Differentiation principles applied for developing and tourism-dependent countries
- Use of a global carbon price

For a more detailed analysis of each option, please see Annex A.

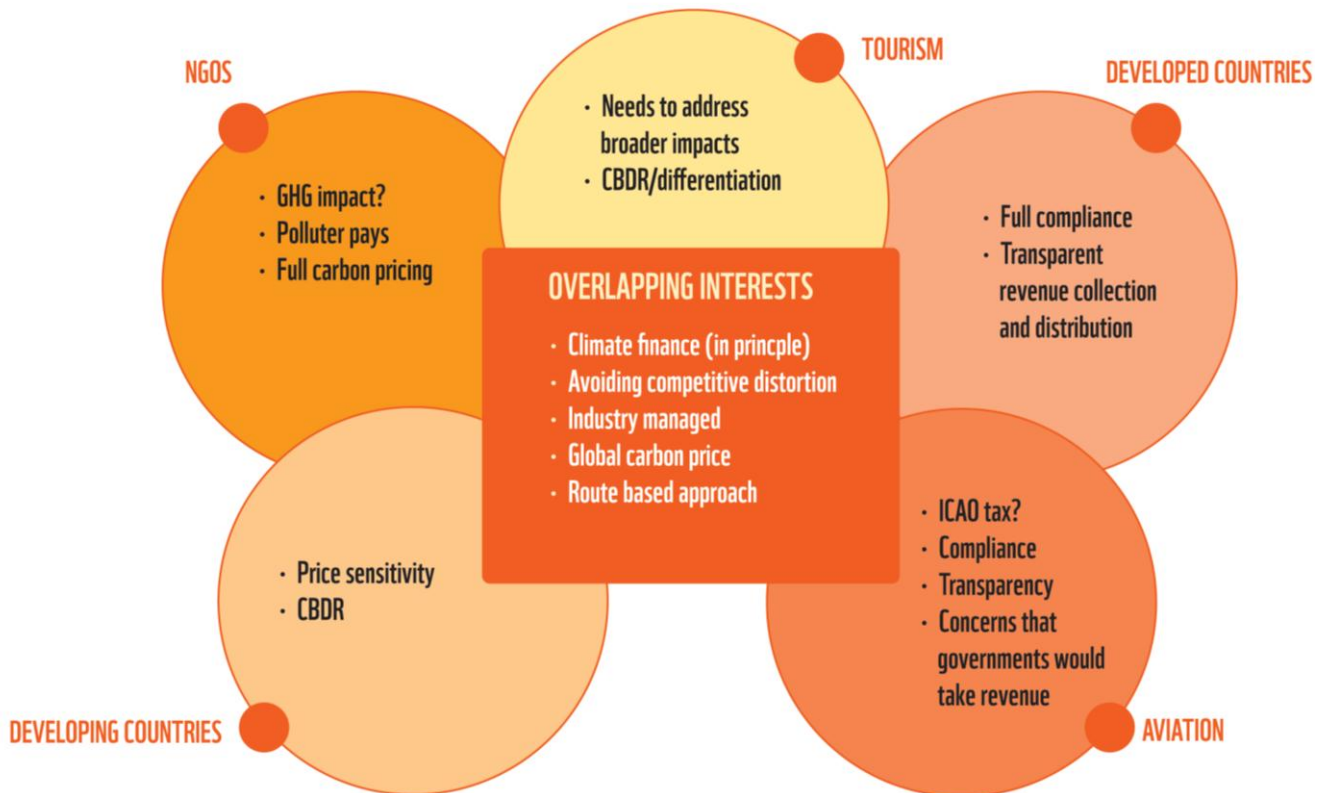
PACKAGE 1: OFFSETTING (with or without revenue generation) MAIN ISSUES AND INTERESTS



PACKAGE 2: CAP AND TRADE MAIN ISSUES AND INTERESTS



PACKAGE 3: LEVY MAIN ISSUES AND INTERESTS



Draft “Straw Person” MBM packages

This section presents the detailed “straw person” options used to illicit stakeholder reactions. It is important to note that WWF was more interested in testing opinion and is not proposing that any of these options be adopted by ICAO. **The stakeholders also did not prefer any particular one of these options over the others. This was intended to be an exercise to identify those design elements and trade-offs most likely to have the greatest degree of cross-sector acceptance any proposal for a global MBM; it was not intended to recommend a particular option to ICAO.**

The three options presented were purposely designed to have different ambition levels, start dates, and designs, in order to spark greater understanding of the trade-offs (e.g. a more stringent cap may be acceptable with a later start date).

DESIGN QUESTION	POTENTIAL ELEMENTS	PACKAGE 1: OFF-SETTING	PACKAGE 2: CAP AND TRADE	PACKAGE 3: LEVY
Target and timetable for CO2 reduction	<p><i>CO2 sector reduction target: set at what level?</i></p> <p><i>(recognizing state action plans, industry efficiency measures, using MBM for gap filling)</i></p>	<p>–2005 emissions levels by 2020</p> <p>–Long-term target: 50% net reduction from 2005 levels by 2050 (IATA target)</p>	<p>–No net increase in emissions after 2020</p> <p>(more ambitious targets could also be considered, e.g. 5% below 2005 levels by 2020 or 10% below 2005 levels by 2050)</p>	<p>–No binding target, but rather a price signal intended to reflect the social cost of carbon (the costs of climate change impacts per tonne of carbon)— \$25/tonne CO2e</p>
MBM type and features	<p><i>Type of MBM preferred</i></p> <p><i>Start date</i></p> <p><i>Eligibility</i></p> <p><i>Participants</i></p> <p><i>Compliance requirements</i></p> <p><i>Implementing institution(s)</i></p>	<p>–Offset with quality assurance</p> <p>–Managed by carriers with national gov't and ICAO oversight</p> <p>–Starting 2017</p>	<p>–Cap and trade (harmonization of existing systems and those under development)</p> <p>–Mix of free initial allowances and initial auction (proportions to be determined, could change in subsequent trading periods)</p> <p>–Market managed by exchange entity selected/created by participating gov't's, with ICAO oversight</p> <p>–Starting 2020</p>	<p>–Levy: A global assessment based on the volume of fuel burned (collected by national governments).</p> <p>–Starting in 2017</p>

Revenue generation and use	<p><i>Amount generated</i></p> <p><i>No net incidence (NNI)²</i></p> <p><i>Revenue uses to address CBDR&RC (e.g. NNI payments or rebates)</i></p> <p><i>Collection, allocation and distribution of revenues</i></p> <p><i>Options for spending the revenue (in-sector mitigation, climate finance, ensuring NNI)</i></p> <p><i>Governance</i></p>	<p>–Additional revenue could be raised by incremental charge on offsets, channelled to Green Climate Fund (GCF) and No Net Incidence (NNI) compensation fund</p>	<p>–Additional revenue raised through periodic permit auctions and exchange transaction fees, and channelled to GCF, aviation industry fund, and NNI compensation fund</p> <p>–Permit trading could be managed so that developing country governments decided how to allocate domestically, with more requirements on developed country governments to allocate to e.g. GCF</p>	<p>–Revenue from the assessment is directed towards an ‘Aviation Green Climate Fund’ under ICAO that is set aside for technical assistance programs for developing States that have submitted National Action Plans on CO₂ reduction.</p>
Competitiveness impacts	<p><i>How to share obligations, eg grandfathering, % emissions, benchmarking</i></p>	<p>–Route-based application of offset requirement</p>	<p>–Route-based application of trading system</p>	<p>–None; all fuel is assessed equally for all operators.</p>
Incentivising participation by developing countries	<p><i>CBDRRC</i></p> <p><i>De minimis exclusions (for small carriers with minimal traffic)</i></p> <p><i>Compensation for developing countries (NNI)</i></p> <p><i>Phasing in</i></p>	<p>–De minimis exemptions for countries with very low # of int’l flights</p> <p>–NNI compensation from offset revenue for countries with high value, highly travel cost-sensitive tourism sectors</p> <p>–Phase in for routes starting/ending in lower and middle income countries (later for lower income than middle income countries)</p>	<p>–NNI compensation from trading revenue based on one or several of the following criteria:</p> <ul style="list-style-type: none"> • high value tourism sectors • highly travel cost-sensitive tourism sectors • Developing countries • Least Developed Countries • Land Locked Developing Countries • “Low” HDI levels 	<p>–The ICAO principle of equal treatment applies at an operator level, so all operators have an equal assessment/levy. However, there is NNI because when allocations are made from the ‘Aviation Green Climate Fund,’ there are differentiated disbursements, that only go to developing countries’ aviation sector.</p>

² When a government receives more money back from a fund than it pays into it.

Conclusions

The WWF-convened stakeholder process has found a strong level of support for a global MBM and a surprisingly high level of common ground and alignment across stakeholder groups as regards the design elements that would be most acceptable for the development of an MBM package. This analysis suggests that there should be no insurmountable barriers to achieving a global MBM with broad political acceptability across different sectors and countries. A global MBM should build on the following strongest areas of alignment, namely:

- Climate finance for in-sector investment (so long as this did not contribute to competitive distortion)
- An industry-managed system (perhaps in conjunction with ICAO or another global body to distribute any revenues generated)
- A route based approach instead of a country based system
- Differentiation principles applied for developing and tourism-dependent countries
- Use of a global carbon price.

Annex A: Package options reviewed by individual sectors represented by the stakeholder group

Stakeholder Perspectives				
		PACKAGE 1: OFF-SETTING	PACKAGE 2: CAP AND TRADE	PACKAGE 3: LEVY
Aviation Industry Views	<i>airline trade associations, manufacturers, and both developed and developing country airlines</i>	<p>Pro: –Favored by IATA. –Could be industry managed, eg by IATA, but they would need to expand their remit. –Easier to implement if a route-based system. –Could raise finance for in-sector investment but would need to avoid creating competitive distortion.</p> <p>Con: –Potential difficulties around enforcement (may need ICAO to do this). –May require 3rd party verifiers to guarantee quality—the transaction costs of certification and quality assurance could make it cheaper to focus on in-sector carbon reductions instead. –Uncertainty about sufficient supply of quality offsets. –Future costs (eg will these</p>	<p>Pro: –Preferred option among airlines with fuel efficient fleets. –Aligned with ICAO goal of carbon neutral growth (CNG) post 2020. Incentivises good environmental behaviour among airlines and drives change through the industry. –Sets a cap so clearly results in mitigation. –Could be run by industry and ICAO together. –Airlines already used to cap and trade systems (eg ETS). –Could raise finance for in-sector investment, which needs to be accessible to all. –Having a cap would demonstrate industry efforts to reduce emissions.</p> <p>Con: –Potentially high level of auctioning would increase cost to airlines. –Risk of competitive distortion due to CBDR, especially as some developing countries are significant aviation powers. –Hits fast-growing carriers hardest (often in developing countries).</p>	<p>Pro: –Clear and straightforward system based on volume of fuel burned. –No competitiveness impacts as equally applied to all operators. –Could be implemented by industry. –Favors more fuel-efficient airlines (eg low cost airlines and airlines with more modern fleets). –Could generate finance for in-sector investment. –Demonstrates corporate responsibility if revenue generated for Aviation Green Carbon Fund, potentially run by ICAO.</p> <p>Con: –Least favoured option. –Not viewed as environmentally effective. –Governments wouldn't necessarily comply, or they would take the revenue for the public purse, not for climate action. –Could be viewed as a tax that's in contravention of ICAO rules which apply to fuel (but the real barrier is existence of bilateral agreements preventing taxation); requires the right to collect a tax internationally (which no one has). –Would increase cost of air travel. –Risk that it wouldn't be universally applied. –Detrimental to older fleets with less fuel-efficient airlines. –Unclear how much a levy would contribute to achievement of ICAO mitigation goals.</p>

		<p>increase as soon as system is put in place?)</p> <p>–Competitive distortion if developing countries with major carriers get revenues for in-sector investment.</p> <p>–An extra offsetting charge would be viewed as a tax—why is this needed if airlines are already buying offsets to pay for mitigation action? (Would feel like they’re paying twice.)</p> <p>Package 1 could be acceptable if:</p> <ul style="list-style-type: none"> • There was an industry-wide agreement to use higher quality offsets, agreeing a standard (otherwise it will be a race to the bottom in terms of low quality at lowest cost); these could be purchased primarily from developing countries (although allowing for some offset purchases in developed countries too) • Revenues used primarily for in-sector investment, so long as it’s accessible to all and/or without creating competitive distortion. 	<p>Package 2 could be acceptable if:</p> <ul style="list-style-type: none"> • There is a phase in for developing countries • Everyone uses the same carbon price. 	<p>Package 3 could be acceptable if:</p> <ul style="list-style-type: none"> • Revenues are hypothecated for in-sector investment, without creating competitive distortion, and could also contribute to climate finance • Price is set relatively low to encourage more acceptance (although there would be a trade-off with the amount of revenue available for in-sector investment) • Governments agree to a solution to avoid bilateral agreements which prevent taxation, or agree a means for collecting tax internationally.
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<p>Tourism Industry Views</p>	<p><i>International and regional trade associations; academic experts in tourism, and representatives of the tourism sector in multilateral fora</i></p>	<p>Pro: –Offsetting is in line with UN’s Carbon Neutral Initiative (documenting how much carbon is being emitted connected to the ICAO carbon calculator). –Offset purchases could be used to support mitigation actions across a range of sectors in developing country destinations, including tourism. –Willing to consider an extra offsetting charge to generate revenue if it is used for a broad range of mitigation and adaptation measures in developing countries. –Compatible with NNI on developing countries.</p> <p>Con: –Only considers climate change impacts but ignores social and environmental costs; ignores impacts on tourism flows due to price elasticity of demand.</p> <p>Package 1 could be acceptable if:</p> <ul style="list-style-type: none"> • A broad range of mitigation impacts as well as its unintended 	<p>Pro: –Recognises impact on developing countries generally and tourism-dependent countries particularly.</p> <p>Con: –Could have an economic impact on developing countries unless NNI on developing countries is observed and unintended consequences are managed.</p> <p>Package 2 could be acceptable if:</p> <ul style="list-style-type: none"> • No Net Incidence (NNI) is observed for developing country destinations • An enhanced interpretation of CBDRRC removes current political obstacles in a way acceptable to all developing countries • The means of implementation and creative ways to deal with unintended consequences for long haul and other developing country destinations forms part of the package. 	<p>Pro: –Willing to consider if the revenue generated is used to encourage mitigation but also adaptation measures.</p> <p>Con: –Could increase cost of air travel and reduce relative growth in tourism flows to long haul destinations.</p> <p>Package 3 could be acceptable if:</p> <ul style="list-style-type: none"> • A route-based approach is used rather than solely according to country • Revenue used to address social and environmental impacts as well as climate change mitigation, ultimately with a view to NNI for developing country destinations.
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		<p>consequences for long haul and other developing country destinations are considered, including tourism as well as aviation</p> <ul style="list-style-type: none"> • Developing countries perceive the resolution of the conflict between ICAO and UNFCCC principles as fair and equitable. 		
Environmental Advocates	<i>NGOs such as WWF, T&E, AEF, EDF and ICSA</i>	<p>Pro: –Could raise climate finance for developing countries.</p> <p>Con: –Offsetting has little mitigation impact –Potentially low environmental integrity and little additionality.</p> <p>Package 1 could be acceptable if:</p> <ul style="list-style-type: none"> • Offset purchases were high quality, developing country offsets would have priority, and they could keep the revenue • Offset credits supplementary to in-sector actions • Must cover entire duration (i.e. fuel burn) of flights. 	<p>Pro: –Has a firm cap so achieves mitigation. –Provides greatest certainty that ICAO goal of CNG post 2020 will be met. –Builds on pre-existing systems (eg ETS).</p> <p>Con: –Revenues may go into national treasures and not used for in-sector reduction or climate finance in developing countries.</p> <p>Package 2 could be acceptable if:</p> <ul style="list-style-type: none"> • Full auctioning and declining cap • Hypothecation of revenue, mostly used for climate finance • Must cover entire duration (i.e. fuel burn) of flights Revenue allocated to GCF to address CBDR. 	<p>Pro: –Acknowledges ‘polluter pays’ principle –Treats all flyers equally (and accepts their ability to pay) –Raises climate finance for developing countries</p> <p>Con: –Uncertainty about GHG impact –Would require careful revenue collection and disbursement</p> <p>Package 3 could be acceptable if:</p> <ul style="list-style-type: none"> • Price set to include social and environmental costs (full carbon pricing) • Revenue mostly used for climate finance • Must cover entire duration (i.e. fuel burn) of flights.

<p>Development Advocates</p>	<p><i>NGOs such as Oxfam, the World Bank, IMF</i></p>	<p>Same views as “Environmental Advocates” above.</p>	<p>Pro: –Could be implemented multilaterally, similar to Adaptation Fund, perhaps by World Bank.</p> <p>Cons: –Incentivising developing countries will be difficult.</p> <p>Package 2 could be acceptable if:</p> <ul style="list-style-type: none"> • NNI guaranteed • CBDRRRC for developing countries. 	<p>Pro: –Raises climate finance for developing countries.</p> <p>Con: –Higher ticket prices may further limit benefits of flying to ‘privileged few’.</p> <p>Package 3 could be acceptable if:</p> <ul style="list-style-type: none"> • It did not make the cost of flying prohibitive for substantially more people in developing countries.
<p>Developing Country Governments</p>	<p><i>BRICS and LDCs</i></p>	<p>Pro: –Could generate climate finance directed to developing countries. –Offsetting in developing countries will be less expensive.</p> <p>Con: –Could incur economic costs, harming growth –Developed countries might keep the revenue. –Unintended consequences for aviation, tourism and trade growth</p> <p>Package 1 could be acceptable if:</p> <ul style="list-style-type: none"> • NNI is guaranteed; offsetting mainly in developing countries to 	<p>Pro: –Could generate climate finance directed to developing countries.</p> <p>Cons: –Upfront costs. –Cost to economy. –Don’t like departing flights approach. –Too similar to unilateral EU ETS (which is disliked).</p> <p>Package 2 could be acceptable if:</p> <ul style="list-style-type: none"> • NNI guaranteed; CBDRRRC paramount • Differentiation including de minimis and other exclusions • Focus on the entire basket of measures and considerably enhance work on non-market based measures. 	<p>Pro: –Could generate climate finance, eg to Aviation Green Carbon Fund, directed to developing countries.</p> <p>Cons: –Hard to incentivize participation as difficult to apply CBDR&RC. –Assumes ability to pay which may not be the case (highly price sensitive market).</p> <p>Package 3 could be acceptable if:</p> <ul style="list-style-type: none"> • CBDRRRC paramount • Levy set sufficiently low (but trade-off with revenue generated and environmental outcomes) • All levy revenues to be prioritized for use for in-sector investment or climate finance in developing countries • NNI guaranteed • Focus on the entire basket of measures and considerably enhance work on non-market based measures.

		<p>ensure net flow of resources from North to South</p> <ul style="list-style-type: none"> • CDDRRC for national carriers • Minimal upfront costs • Focus on the entire basket of measures and considerably enhance work on non-market based measures. 		
Developed Country Governments	<i>Annex 1 countries</i>	<p>Pro: –Simple to implement. –Could be implemented by airlines rather than governments.</p> <p>Con: –Potential competitive distortion.</p> <p>Package 1 could be acceptable if:</p> <ul style="list-style-type: none"> • No treaty was involved and airlines could implement. 	<p>Pros: –Could be industry implemented and multilaterally managed. –Could help meet national mitigation targets. –Could replace existing cap and trade systems (like ETS).</p> <p>Con: –Risk of competitive distortion if significant aviation powers are exempted through CBDR</p> <p>Package 2 could be acceptable if:</p> <ul style="list-style-type: none"> • Have access to ETS and other carbon markets to reduce overall costs • Have clear priorities for defining and differentiating between developing countries. 	<p>Pro: –Fair and equitable system. –No competitiveness impacts as applied to all operators.</p> <p>Con: –Risk of market distortion if not all countries collect revenue. –Won't like all the revenue going to developing countries. –Taxes can be politically difficult even if collected by industry.</p> <p>Package 3 could be acceptable if:</p> <ul style="list-style-type: none"> • Full compliance among carriers and countries • Transparent revenue collection and distribution.