

WHY FORESTS AND FLIGHT GO TOGETHER

Climate Advisers, in collaboration with Forest Trends | March 2018



**CLIMATE
ADVISERS**

Executive Summary

The International Civil Aviation Organization (ICAO) Carbon Offsetting Reduction Scheme for International Aviation (CORSIA) allows airlines to contribute towards the aviation industry's goal of carbon neutral growth from 2020 onwards by financing greenhouse gas (GHG) emission reductions outside of the aviation sector.

To fully comply with CORSIA, most airlines covered by CORSIA will need to purchase emission reductions. This is because air travel is expected to continue growing globally, and the corresponding increase in greenhouse gas emissions will likely outpace emission reductions achieved through efficiency and other means. Many airlines already offer GHG offsets to interested customers, including through forest conservation which is tangible and popular with airline customers. More specifically, leading airlines such as Air Canada, Delta Air Lines, Kenya Airways, Qantas and United Airlines enable their passengers to voluntarily offset emissions from their flights with forest conservation and restoration activities.¹

One of the most cost-effective ways for airlines to reduce their emissions is by conserving and restoring forests in developing countries. The international community, acting through the United Nations Framework Convention on Climate Change (UNFCCC), has created a policy framework to promote emission reductions from the forest sector, commonly called "Reducing Emissions from Deforestation and Degradation" (REDD+).² REDD+ is also an important ingredient in the 2015 Paris Agreement on climate change. While the policy framework for REDD+ already exists, the economic incentives for action have been limited, and thus haven't yet significantly affected deforestation and forest restoration trends in most tropical forest countries.

For airlines under CORSIA, the REDD+ framework represents an opportunity for high quality and relatively low cost offsets with real and marketable co-benefits of interest to passengers. Moreover, REDD+ is readily scalable. If correctly designed, CORSIA could provide airlines with high quality forest

¹ Conservation et al. (2017) *Linking Flight and Forests: the essential role of forests in supporting global aviation's response to Climate Change*. Retrieved from: https://www.conservation.org/publications/Documents/CI_Linking-Flight-and-Forests-Briefing-Paper-Apr-2016.pdf

² Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

emission reductions at an industry scale. Using REDD+ in the right way to meet CORSIA obligations, however, would require airlines to update the way in which they access forest carbon credits.

Airlines can benefit significantly from supporting REDD+ programs

- Emission reductions from deforestation programs would satisfy a substantial portion of airline demand for offsets through CORSIA, especially during that program's Pilot and First Phases (2021-2026).
- If REDD+ programs are properly designed, they offer significant non-carbon benefits that could provide addition public relations and financial benefits for airlines. These include preserving biodiversity and sensitive ecosystems in a way that boosts increased demand for ecotourism by vacationers.
- Because it is supported by the United Nations, including the UNFCCC Warsaw Framework for REDD+ and the Paris Agreement, REDD+ enjoys regulatory certainty as an endorsed approach to reducing GHG emissions.

Airlines should use CORSIA to stimulate the creation of REDD+ offsets that will benefit airlines later

- The rulebook and policy framework for REDD+ already exists, and active programs in countries are already generating reductions. Additional programs are expected to deliver results in the next three to five years.
- Through airlines' purchases of REDD+ credits, CORSIA will generate significant finance that will drive developing countries' performance in reducing emissions from deforestation and help them shift to a green development path.

Several transaction structures could be available to purchase REDD+ credits

- These include credits airlines could purchase through direct Government-to-Government Agreements, the World Bank Forest Carbon Partnership Facility, local carbon offset exchanges in forest countries, or a possible new, global REDD+ Clearinghouse.
- Airlines should consider the optimal transaction structure now so that forest offsets are readily available in time for airlines to meet regulatory obligations growing out of CORSIA.

Early investment can drive REDD+ action on the ground. Airlines could mobilize action by announcing that they would support REDD+ programs that are eligible for CORSIA compliance. These aspects demonstrate the opportunity for airlines in supporting REDD+.

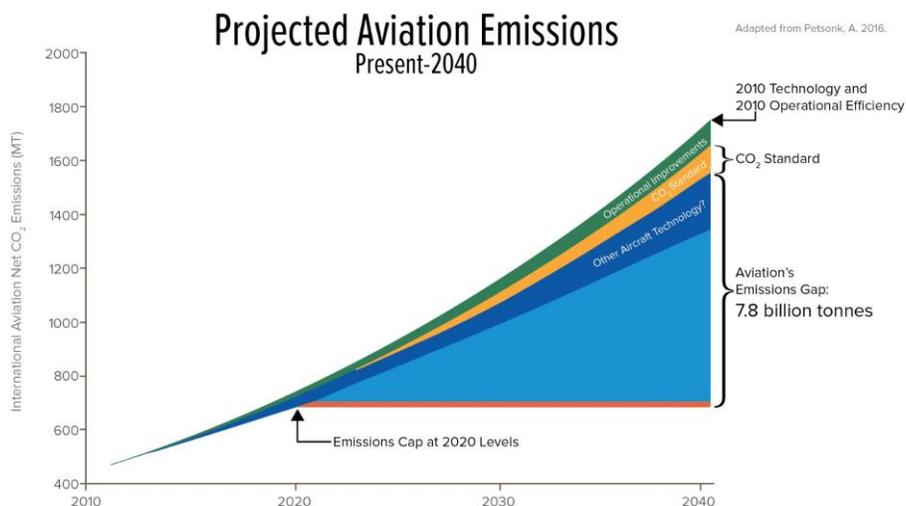
Based on these findings, this report offers the following recommendations to airlines:

1. Airlines should signal their interest in REDD+ now, to mobilize forest countries to create a large supply of credits in time for compliance with CORSIA
2. Voice support for REDD+ inclusion in CORSIA, consistent with the Paris Agreement's rules and guidance.
3. Actively support the creation of additional mechanisms that simplify airlines' access to high quality REDD+ credits, such as a REDD+ Clearinghouse.

Introduction

International aviation emissions are significant - if this sector were its own country, it would be among the top-ten emitters of carbon dioxide globally³ - and emissions are projected to continue growing as demand for air travel increases in future decades. In response, ICAO member countries agreed to a goal of carbon neutral growth from 2020 onwards. However, although there are current technologies that can improve operational and aircraft efficiency, increases in efficiency will not outpace the growth of the sector. The International Civil Aviation Organization (ICAO) agreed a CO₂ standard in February 2016 for new aircraft models. Alternative fuels also have the potential to reduce emissions from within the sector but are not yet commercially viable at sufficient scale. It is therefore likely that the international aviation industry will fall short of meeting its post-2020 emission reduction commitments, with a projected gap of 7.8 billion tons of carbon dioxide by 2040.

Chart 1: Projected Aviation Emissions and Emissions Gap



Source: Conservation International et al. (2016)⁴

ICAO established the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), to assist the international aviation sector in achieving carbon neutral growth from 2020 by purchasing

³ Conservation et al. (2017) *Linking Flight and Forests: the essential role of forests in supporting global aviation's response to Climate Change*. Accessed: : https://www.conservation.org/publications/Documents/CI_Linking-Flight-and-Forests-Briefing-Paper-Apr-2016.pdf

⁴ Ibid.

emission reductions which occur outside the sector. The Environmental Defense Fund estimates a cumulative demand for offsets between 2021 and 2035 of approximately 2.5 billion tons.⁵

ICAO member countries, who are also parties to the UNFCCC, have acknowledged the importance of protecting the world's forests, which store more carbon than is contained in the world's atmosphere. Tropical forests alone absorb almost a fifth of all carbon dioxide released each year from the burning of fossil fuels, and are needed to play a significant role in slowing the rate of climate change⁶. Unlike mitigation efforts in most other sectors, reductions in deforestation and forest degradation have a dual mitigation benefit – avoiding GHG emissions and maintaining a rate of natural removal of CO₂ from the atmosphere. In addition, the framework for Reducing Emissions from Deforestation and Forest Degradation (REDD+)⁷ can provide important co-benefits, including biodiversity benefits, empowering and rewarding indigenous peoples and local communities for their forest conservation efforts, and ensuring that vital ecosystem functions remain intact.

As a result, REDD+ is recognized in the 2015 UNFCCC Paris Agreement as an important mitigation tool for developing countries, to be supported with adequate and predictable financial resources. Meeting the long-term goals of the Paris Agreement requires halting and reversing deforestation trends and many countries have included such actions in their national climate plans.

This paper seeks to highlight the significant potential of REDD+ as an appealing compliance option for airlines, and describe possible pathways for how airlines can acquire high-quality REDD+ offsets that meet the forthcoming standards of both ICAO's emerging [Recommended Criteria for Offset Programs](#) and relevant UNFCCC decisions including the [Warsaw Framework for REDD+](#) and the Paris Agreement.⁸ This could include transacting directly with national and state governments, multilateral institutions, private sector investors, exchanges and clearinghouses.

⁵ Environmental Defense Fund, *ICAO's Market Based Measure*. Accessed: <https://www.edf.org/climate/icaos-market-based-measure>

⁶ S.L. Lewis et al., *Increasing carbon storage in intact African tropical forests*. *Nature*, Vol 457. 19 February 2009

⁷ Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

⁸ This paper does not endorse any specific jurisdictional REDD+ methodology. At the time of writing discussions on accepted programs under CORSIA are ongoing. The authors believe that REDD+ programs should be accepted under CORSIA using accepted methodological frameworks.

Background: CORSIA and REDD+

By establishing CORSIA, the International Civil Aviation Organization connects the sector's emission reduction targets to other parts of the global economy – allowing airlines to purchase offsets when they cannot feasibly reduce their own emissions. We believe that forest conservation and restoration should contribute to that effort, through REDD+. To aid in achieving a common understanding of how and why to take advantage of this opportunity, this section provides a brief background on both CORSIA and REDD+.

CORSIA: A Market Measure for Aviation

The international aviation sector was omitted from the Kyoto Protocol and Paris Agreement developed under the UNFCCC. Instead, addressing international aviation emissions has been the task of ICAO. In June 2013, the airline industry reached a historic milestone by agreeing a pathway to reach carbon neutral growth from 2020 onwards.⁹ A key tenet of that strategy was a single, global market-based measure (MBM) integrated alongside an overall package for the sector.

At the ICAO Assembly in September 2016, countries established the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) as part of a package of measures to limit CO₂ emissions from international civil aviation to 2020 levels.^{10 11} CORSIA will commence in 2021 and is in effect until 2035. The pilot phase (2021-2023) and first phase (2024-2026) are voluntary – 72 states representing over 87 percent of international aviation activity intend to participate in these phases. In the second phase, all states must participate except those specifically excluded.¹²

⁹ International Air Transport Association, June 3, 2013, *Historic Agreement on Carbon Neutral Growth*, Available:

<http://www.iata.org/pressroom/pr/Pages/2013-06-03-05.aspx>

¹⁰ https://www.icao.int/environmental-protection/Pages/A39_CORSIA_FAQ2.aspx

¹¹ ICAO, *What is CORSIA and how does it work?* Retrieved from: https://www.icao.int/environmental-protection/Pages/A39_CORSIA_FAQ2.aspx

¹² CORSIA's Second phase (from 2027 through 2035) would apply to all States that have an individual share of international aviation activities in RTKs in year 2018 above 0.5 per cent of total RTKs or whose cumulative share in the list of States from the highest to the lowest amount of RTKs reaches 90 per cent of total RTKs, except Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) unless they volunteer to participate in this phase. Source: https://www.icao.int/environmental-protection/Pages/A39_CORSIA_FAQ2.aspx

REDD+: A Global Mechanism to Reduce Deforestation

In December 2015, the 197 signatories to the UNFCCC adopted the Paris Agreement, the first global climate agreement that explicitly recognized tropical forest conservation as key to achieving its goals. After nearly a decade of analysis and negotiation, parties to the UNFCCC had reached agreement on the Warsaw Framework for REDD+ (COP19, 2013), which set out the technical and policy elements that constitute a framework for policies and incentives for REDD+.

As specified in the Warsaw Framework, those countries intending to receive payment for results (i.e. net emission reductions) from REDD+ activities must have in place four components: a national REDD+ strategy, national Forest Reference Emission Level or Forest Reference Level (FREL/FRL), robust and transparent national forest monitoring system, and a system for providing information on how safeguards are addressed and respected.¹³ The Warsaw Framework also specifies that the results achieved through the implementation of REDD+ activities, relative to the FREL/FRL, be measured in metric tons of carbon dioxide equivalent per year (tCO₂e/yr) and reported to the UNFCCC.¹⁴

The Warsaw Framework for REDD+ is included in the only sector-specific Article in the Paris Agreement – Article 5. This sends a clear signal internationally that addressing emissions from land-use and forestry is imperative to successfully combatting climate change.

For developing countries, and those governments and organizations assisting them, REDD+ has emerged as the most promising approach to reversing the trend in deforestation and forest degradation, by providing a policy framework for increasing the value of standing forests. Through providing incentives and support to reduce emission from deforestation and forest degradation, and to promote the conservation and enhancement of forest carbon stocks and the sustainable management of forests, REDD+ aims to combat the destruction of forest cover and loss of forest carbon.¹⁵

¹³ UN-REDD Programme. (2013). REDD+ Readiness: An Introduction. Presentation. Retrieved from: <http://www.fao.org/fileadmin/templates/rap/files/meetings/2013/131103-redd.pdf>

¹⁴ <http://redd.unfccc.int/>

¹⁵ Graham, P. (2016). Conserving Forests to Combat Climate Change: What is REDD+, how was it created and where is it going? World Wildlife Fund. Retrieved from: https://c402277.ssl.cf1.rackcdn.com/publications/916/files/original/WWF_REDD_Report-FINAL.pdf?1469038926

Box: Understanding the Scale of REDD+ Implementation

ICAO has yet to decide the types of emission reductions which will be eligible for compliance with CORSIA, or the programs that can deliver such units. Decisions on Emissions Unit Criteria (EUC) and eligibility criteria for offsetting programs are expected no later than the end of 2018. There is a possibility that issues specific to the land-use sector could present challenges for eligibility, but it is the authors' understanding that EUC shall not prejudice particular sectors. We expect CORSIA's rules to be consistent with UNFCCC rules and guidelines, which includes the Warsaw Framework for REDD+ and any relevant provisions of the Paris Agreement, including those addressing international co-operative approaches (Article 6). **It is our view that this means that, to be eligible under CORSIA, the scope of REDD+ activities must be national or, as an interim measure, sub-national.**

The Case for REDD+

ICAO's CORSIA is an opportunity to uncover and invest in emission reductions opportunities outside of the aviation sector, to contribute towards aviation's goals. Given the current level of emissions from deforestation and forest degradation (10-15% of global GHG emissions), achieving REDD+ ambitions at scale will require a substantial increase in investment in activities that can achieve and sustain effective forest conservation. For airlines under CORSIA, this need of forest countries represents an opportunity for high quality and relatively low cost offsets with real and marketable co-benefits. This section lays out some of the key benefits to airlines for choosing REDD+.

It is important to note the current stage of the ICAO process to elaborate CORSIA's rules: Technical discussions are ongoing to consider which programs and sectors should be eligible to supply airlines with emission reductions to help them meet stay below their 2020 level emissions caps. This paper does not prejudge the outcomes of those discussions, but we strongly believe that programs consistent with the Warsaw Framework for REDD+ meet the emission unit criteria used to assess which programs

are eligible under CORSIA.¹⁶ This paper also does not prejudge which methodology or program would apply for approval under CORSIA.

This paper emphasizes three key benefits to airlines of considering emission reductions from REDD+ in their portfolio for CORSIA compliance:

- REDD+ activities can generate significant supply of emission reductions
- REDD+ activities can generate significant environmental, economic and social co-benefits
- REDD+ is cemented within the UNFCCC and Paris Agreement, offering higher regulatory certainty than other mechanisms.

Benefit 1: Significant Potential Supply

The exact size of airline demand for offsets under CORSIA is not known. It will depend on multiple factors, including demand for air travel (passenger and freight) and aircraft fleet efficiency. Nevertheless, based on existing analysis we estimate total demand between 2021 and 2026 of 325 million metric tons of carbon dioxide-equivalent (tCO₂e), and 2,050 million tCO₂e in the Second Phase between 2027 to 2035 (see Table 1). These calculations are based on the current percentage of international aviation emissions from countries who will participate in the relevant phases, 65 percent in the Pilot and First Phases and 79 percent in the Second Phase.

Table 1: Projected Demand for Emission Reductions from CORSIA, Million tCO₂e

Phase	Timeline	Emissions Above 2020 Levels	Projected Demand
Pilot Phase and First Phase	2021 to 2026	500	≥ 325
Second Phase	2027 to 2035	2,600	≥ 2,050

Source: [ICAO's Market-Based Measure](#), Environmental Defense Fund

¹⁶ See, for example, Peter Graham and Anthony Mansell, *How Existing REDD Guidance Meets ICAO's Emission Unit Criteria*. Retrieved from: <https://www.climateadvisers.com/publications/how-existing-redd-guidance-meets-icaos-emission-unit-criteria/>

Despite the uncertainties over the size of a CORSIA market, it is worth considering the potential supply of REDD+ credits relative to estimate demand. To illustrate this, a set of analyses by Climate Advisers examine potential emission reductions through REDD+ across four forest countries. Table 2 presents the potential national supply in the pilot and first phases of CORSIA (2021 to 2026).

Table 2: Potential Emission Reductions from REDD+ in Select Forest Countries (Excluding Forest Restoration), Million tCO₂e

	Colombia	Ethiopia	Indonesia	Peru
2021	39.5	7.9	199.6	53.8
2022	46.1	9.2	232.8	62.8
2023	52.7	10.5	266.1	71.8
2024	59.3	11.8	299.3	80.8
2025	65.9	13.1	332.6	89.7
2026	65.9	13.1	332.6	89.7
Total	329.4	65.6	1,663.0	448.6

Source: Climate Advisers' calculations, based on Grillo Avila et al (2016)¹⁷

For these supply estimates to be realized, governments (and REDD+ implementation partners) must implement the national and subnational programs, policies and other measures necessary to generate real, verified emission reductions on the ground. Over \$10 billion in public funding has already been invested in preparing the technical and policy groundwork for REDD+ at national and subnational levels, benefiting over 50 countries. While progress in implementing REDD+ programs and achieving results varies from country to country, there are now several examples of programs in place to deliver and pay for verified emission reductions generated at national or subnational scale, including Brazil's

¹⁷ Grillo Avila et al (2016), *REDD+ in ICAO: Ready for Takeoff*. Retrieved from: https://www.jstor.org/stable/44135218?seq=1#page_scan_tab_contents

Amazon Fund, the World Bank's Carbon Fund and BioCarbon Fund, Germany's REDD Early Movers Program and bilateral deals through Norway's International Forest and Climate Initiative (NICFI).

In addition to political commitments and ongoing donor support for REDD+ efforts, there are several other significant factors that support the likelihood of realizing REDD+ supply potential, including: progress in securing land tenure and rights for indigenous peoples; corporate commitments to deforestation-free commodity supply chains (in particular the most forest-impacting commodities such as soy, palm, cattle, and timber and pulp); investors factoring-in deforestation risk in the valuation of companies; and, the growing engagement of sub-national governments in supporting REDD+ efforts.

The Warsaw Framework for REDD+ allows national governments to authorize, through a national focal point for REDD+, stakeholders to receive payments for emission reductions resulting from REDD+. This was to ensure the environmental integrity of the international climate regime as well as alignment with related national commitments and policy. While project-scale activities (i.e. smaller than a state or provincial jurisdiction) may be key to the success of national REDD+ strategies, the UNFCCC decisions require that monitoring and accounting for REDD+ activities be done at the national level (or subnational level, on an interim basis).

With respect to national climate policy and interest in carbon markets, governments may elect to withhold a portion of emission reductions from trading or transfer to fulfil their NDC. Given the requirement to avoid double counting, this effectively limits the volume of emission reductions from any sector recognized under CORSIA that will be available to airlines. Nonetheless, airlines could meet a substantial portion of their demand through REDD+ even if only a portion of emission reductions are made available by countries.

Benefit 2: Significant Potential Co-Benefits

CORSIA's objective is to allow airlines to purchase eligible offsets from activities outside of the international aviation sector, based on a quantification of the greenhouse gas emissions that they reduce or removals that they increase. Depending on the activity or project, there may be co-benefits in addition to climate change mitigation. In the voluntary carbon market, nearly half of buyers have supported projects in part because of their non-carbon benefits.¹⁸ CORSIA creates a regulatory market,

¹⁸ Ecosystems Marketplace (2017), State of the Voluntary Carbon Market 2017. Retrieved from: http://www.forest-trends.org/documents/files/doc_5591.pdf#

but airlines may choose to consider purchasing offsets based on their additional, non-carbon benefits that relate to the company's corporate social responsibility policy and/or marketing interests.

As acknowledged in UNFCCC decisions, REDD+ can and should generate significant co-benefits. These may include water quality improvements, biodiversity conservation, adaptation, ecosystem services, improved livelihoods for indigenous peoples and forest-dependent communities, and broader economic benefits¹⁹. Conserving biodiversity in many cases is a by-product of forest protection, and REDD+ strategies can be designed to maximize biodiversity benefits. There is significant overlap between countries undertaking REDD+ activities and their recognition of biodiversity values within their forests.²⁰ Healthy forests are more resilient to climate change impacts, contributing to ecosystem stability and thereby continuing to provide ecosystem goods and services over time.

While social and environmental safeguard systems must be in place, co-benefits from REDD+ are maximized through well-designed REDD+ strategies developed by governments in consultation with stakeholders. For example, benefits to communities will be greater if the government establishes benefit-sharing mechanisms with local and indigenous communities.²¹ Indeed, REDD+ programs such as the World Bank's Forest Carbon Partnership Facility (FCPF) require that countries demonstrate the co-benefits that their REDD+ activities achieve. If potential offset purchasers such as airlines prioritize co-benefits, this could provide a signal to national governments to increase the non-carbon benefits in their REDD+ programs.

Preserving the world's precious rainforests also makes business sense. Ecotourism is increasingly attractive for tourists. Air travel to popular ecotourism hotspots such as Costa Rica will continue to grow as demand for environmentally responsible travel increases. By investing in REDD+, airlines can demonstrate their public commitment to ecotourism by preserving the unique ecosystems in forested areas at risk from deforestation and forest degradation.

Benefit 3: Policy Clarity

REDD+ is recognized by the international community as an important component of combatting climate change. The clarity in direction of science-based policy at the international level and the growing

¹⁹ http://www.climatefocus.com/sites/default/files/maximizing_the_cobenefits_of__reddplus_actions.pdf

²⁰ Ibid.

²¹ Ibid.

consensus on best practices in results-based payment systems should give airlines confidence to invest in REDD+ programs.

The UNFCCC Warsaw Framework for REDD+ serves as a rulebook for recognizing efforts undertaken by developing countries to reduce emissions from deforestation and forest degradation, etc. As noted earlier, countries are making progress in implementing national REDD+ strategies and national or subnational programs. Furthermore, Article 5 of the Paris Agreement cements its role in meeting both NDCs and the long-term goals of the Paris Agreement.

Article 6 of the Paris Agreement, which allows for “co-operative approaches” between governments as a means to achieve more ambitious GHG targets, is a potential avenue for government co-operation on REDD+. This may include a transfer of GHG emission reductions between countries, known as an Internationally Transferred Mitigation Outcome (ITMO). If parties involved in the transfers follow all relevant UNFCCC rules and guidance for measurement, reporting and accounting, including avoiding double counting, ITMOs may proceed in any sector (including forestry). This topic is further discussed in papers published by [Climate Advisers](#) (Graham, 2017) and the [Meridian Institute](#) (Streck, Howard and Rajão, 2017).

The future of other offsetting mechanisms remains unclear. The Paris Agreement established a new market mechanism under Article 6.4. Negotiations are ongoing to elaborate the rules, modalities and procedures under which the mechanism will operate. Decisions on these issues are expected at COP24 in December 2018. At this time, there is significant uncertainty about when projects under the new mechanism may be issuing eligible credits. Even if the UNFCCC decides to incorporate in some way the Clean Development Mechanism (CDM), which served the Kyoto Protocol, its scope of forest projects is limited to afforestation and reforestation projects and additional work on rules and procedures may be needed to ensure alignment with the accounting framework of the Paris Agreement.

Affirmation of the important role of REDD+ also exists outside of UNFCCC negotiations and agreements. The World Bank’s Forest Carbon Partnership Facility Carbon Fund (FCPF-CF), the Green Climate Fund, the Verified Carbon Standard’s (VCS) Jurisdictional and Nested REDD+ (JNR), and bilateral programs such as Germany’s REDD Early Movers Program and Norway’s International Forest and Climate Initiative offer financial and technical assistance for developing country governments to meet the UNFCCC requirements. These institutions are committed to implementing REDD+ at the national level, and/or, as an interim measure, at the subnational level. They have pioneered various voluntary and pre-compliance results-based payment incentives for REDD+ at various scales, resulting in the implementation of dozens of national and subnational REDD+ programs.

The importance of strong social and environmental safeguards was recognized early in the development of REDD+ policies and initiatives, by the UNFCCC and by multilateral programmes. Where UNFCCC rules and guidance were not sufficiently detailed or prescriptive to address implementation requirements of an incentive programme (such as the FCPF Carbon Fund), technical solutions have been developed to address donors' or investors' interests. While the additional technical solutions may vary according to the type of incentive arrangement (e.g. with or without transfer of rights), they address issues related to forest reference emissions levels (i.e. baselines), risk of non-permanence of emission reduction, and pricing mechanisms. Best practices have emerged in how to address these issues that were previously seen as barriers to the credibility of REDD+ credits.

The UNFCCC decisions and agreements on REDD+, and the methodologies now used by governments (and their implementation partners) to apply those rules and guidance in practice, have been developed through nearly a decade of negotiations under the UN and with consideration of decades of experience in forest conservation and climate science. Airlines should therefore have confidence in the validity of REDD+ programs that follow the UNFCCC's Warsaw Framework for REDD+ and all related provisions of the Paris Agreement, and are recognized within national REDD+ strategies or action plans. CORSIA is open to emission reductions of high quality generated from any and all economic sectors. Investment in REDD+ can be an important component of an airline's compliance portfolio as it can contribute to both environmental integrity and regulatory compliance throughout CORSIA's lifespan. This decade of experience and technical discussions help provide evidence for how REDD+ clearly meets the emission unit criteria for CORSIA eligibility.

Transacting in Emissions Reductions from REDD+ Programs:

Options for Airlines

The projected supply of emissions reductions from REDD+ activities represents an opportunity for airlines to meet their CORSIA obligations. However, there is relatively little practical experience in structuring commercial transactions between airlines to purchase emission units for regulatory compliance.²² This section lays out potential options for airlines to arrange the purchase and transfer

²² The exceptions are airlines who participate in the European Union Emissions Trading System (EU ETS) covering flights within Europe, and airlines in Shanghai whose flights were covered under the city's pilot ETS.

of emission reductions approved by national governments, building on a previous paper by Conservation International (CI) and Environmental Defense Fund (EDF).

Direct purchase from governments: An airline could enter into bilateral agreements with interested governments to procure and transfer eligible REDD+ emission reductions²³ that have been measured, reported and accounted by the seller in accordance with UNFCCC rules and guidance, and registered and tracked in the seller's national GHG registry. The airline could transact directly with a developing country under a results-based payment arrangement (should this arrangement be approved by CORSIA), or they could purchase tons from a government that acquired eligible REDD+ emission reductions through an Internationally Transferred Mitigation Outcome (ITMO) with a forest country. In either instance the transfer should avoid the emission reductions being claimed by both the airline and the seller country (i.e. avoid double counting).

Purchase from World Bank Forest Carbon Partnership Facility: The Forest Carbon Partnership Facility (FCPF), which comprises the Readiness Fund and Carbon Fund, was established in 2008. The Readiness Fund supports country partners in the development of the capacity, institutional arrangements, strategies and action plans for necessary to achieve their REDD+ objectives consistent with UNFCCC decisions. The Carbon Fund provides incentives for countries to implement their REDD+ strategies by entering results-based payment arrangements, or Emission Reduction Purchase Agreements (ERPAs), for a portion of the expected emissions reductions. The FCPF's funding comes primarily from national governments but the Carbon Fund also includes a non-government organization (The Nature Conservancy) and a private sector partner (BP Technology Ventures) among its contributors.

At the time of writing, nineteen emission reduction programs are in the Carbon Fund pipeline, including eight programs included in a portfolio from which ERPAs are being prepared.²⁴ The Carbon Fund requires partner countries to comply with a methodological framework based on the Warsaw Framework for REDD+, and the authors expect the Carbon Fund to meet the CORSIA Emission Unit Criteria.²⁵ Indeed, Carbon Fund participants have expressed support for

²³ The term "eligible" here is used to mean approved by ICAO as having met the Emission Unit Criteria (EUC).

²⁴ World Bank Forest Carbon Partnership Facility, FCPF Carbon Fund Dashboard June 30, 2017. Retrieved from: https://www.forestcarbonpartnership.org/sites/fcp/files/2017/Aug/FCPFCDashboard_063017.pdf

²⁵ Climate Advisers, 2018. [How Existing REDD+ Guidance Meets ICAO's Emission Unit Criteria.](#)

exploring FCPF participation in CORSIA. If this proceeds, the World Bank could serve as an intermediary between developing countries and airlines, by transferring emission reductions from programs in the Carbon Fund portfolio. This concept was [presented](#) at the ICAO Seminar on Carbon Markets in February 2018.

Purchase through local exchanges: Transactions for carbon units can be settled either Over the Counter (OTC)²⁶ or via an exchange. For example, the Intercontinental Exchange (ICE) offers a platform for trading allowances under the European Union Emissions Trading System (EU ETS). Local stock exchanges could offer a similar platform for exchanging emission reduction units generated from REDD+ programs with airlines for CORSIA compliance. The exchange would not apply to CORSIA itself, but instead act as an intermediary for airlines to purchase units from eligible REDD+ programs. For example, Mexico's existing carbon market platform, MexiCO₂, could increase its offerings by hosting an exchange for emission reductions achieved at the state or national level. Aeromexico has used MexiCO₂ to purchase voluntary offsets for its "Fly Green" program.²⁷

Purchase from a central "REDD+ Clearinghouse": The establishment of a centralized clearinghouse for eligible REDD+ emissions reductions could facilitate purchase and transfers between forest countries and buyers such as airlines. Such a clearinghouse does not currently exist but could be established based on a demand signal from prospective buyers of CORSIA-eligible REDD+ emission reductions. The clearinghouse would be empowered to negotiate and purchase emission reductions directly from governments or via multilateral institutions, taking on the associated risks. As is the case with local exchanges, it would not apply for approval as a program under CORSIA, but instead act as an international intermediary matching units from eligible programs with interested airlines. It would manage the quality assurance for ensuring emission reductions are of sufficient quality and strive for standardization across forest countries. To mobilize supply, the clearinghouse could negotiate Advanced Market Commitments or other innovative financial instruments from donor nations to spur emission reductions from forest countries (consistent with their obligations under the UNFCCC). The

²⁶ An OTC transaction is conducted directly between the buyer and seller, whereas an exchange transaction occurs via an intermediary.

²⁷ PR Newswire, October 2 2015. *Aeromexico Signs Agreement with Mexico Carbon Platform, MEXICO2, to Invest in Carbon Projects*. Retrieved from: <https://www.prnewswire.com/news-releases/aeromexico-signs-agreement-with-mexico-carbon-platform-mexico2-to-invest-in-carbon-projects-300153420.html>

clearinghouse would be operated as an independent institution from which an airline in any geography could purchase REDD+ emission reductions supplied by participating forest countries.

Purchase from tailored REDD+ finance vehicles: Specific vehicles may be established to provide an intermediary market-making function for REDD+, supporting a market infrastructure for transactions with airlines. For example, EDF and Climate and Forest Capital intend to establish a REDD+ Acceleration Fund (RAF) to redistribute transaction risks associated with REDD+ transactions in a way that makes them more attractive to buyers.²⁸ As the RAF or similar funds begin to procure emission reductions from CORSIA-eligible REDD+ programs (from or through national governments and program developers), airlines could purchase emission reductions through these finance vehicles.

Many different transaction structures could become available to airlines who wish to acquire CORSIA-eligible emission reductions from REDD+. As with all types or sources of emission reductions an airline may purchase, there are considerations that affect their decision on which approach best suits their needs and interests.

Airlines need to be comfortable with the counterparty to their transaction. For example, they may be hesitant to enter into purchase agreements directly with a government agency, preferring to structure the transaction using an intermediary. The latter approach could allow for the transfer of certain responsibilities and risks (political risk, quality assurance for emission reductions, currency risk) to an intermediary that is better placed to manage these risks and aggregate units across multiple REDD+ countries. Intermediaries could offer a net saving to airlines by reducing a significant portion of the internal resources dedicated to verification of emission reductions, conducting detailed due diligence, and ensuring social and environmental safeguards. If the intermediary is working with multiple airlines, it may be better place to achieve cost efficiencies in replicating these services. Nevertheless, airlines must have sufficient trust in an intermediary, such as a clearinghouse or exchange, to conduct due diligence on emission reductions and fulfil transactions in a timely manner.

Experience with previous carbon markets can guide consideration of these issues. The Clean Development Mechanism (CDM) established under the Kyoto Protocol traded Certified Emission

²⁸ Climate and Forest Capital, <http://www.climateandforest.com/new-page/>

Reductions (CERs) that occurred in developing countries for use towards developed country targets. To trade CERs, the private sector developed a standardized contract, the Emission Reduction Purchase Agreement (ERPA).²⁹ In some instances, these conditions will already be defined by ICAO's EUCs. Nevertheless, an ERPA's structure provides some insights into the issues parties to a REDD+ emission reduction transaction between an airline and a seller should cover. These include:

- Obligations of the Seller – terms for when and how to deliver units to the buyer; proof of verification, validation, etc. of emission reductions.
- Obligations of the Buyer – authorization to purchase units; payment terms and procedures.
- Representations, Warranties and Undertakings – attestations by both buyer and seller that they can perform the obligations of the contract.
- Termination – the rights of buyer and seller to terminate a contract; conditions under which a contract can be terminated, including default, force majeure, regulatory changes, evidence of illegality, and failure of the seller to deliver emission reductions.
- Governing Law – specifying in which country/jurisdiction the agreement is governed.
- Commercial Terms – schedule of delivery for emission reductions; pricing and currency information, including due dates for payment.

In any sector, Airlines must consider the structure through which they transact offsets. If they procure REDD+ credits a contract applying some of the conditions above could be established. At this stage airlines should consider the suite of issues incorporated into existing structures such as an ERPA to decide the composition of a contract for REDD+.

In addition to the risks associated with a counterparty, airlines would prefer to purchase emission reductions simply. Lower transaction costs are one metric, though as discussed above it may be worthwhile to pay the price premium for an intermediary to reduce counterparty risks. Transacting offsets in any sector may require a change in company policy, depending on the transaction structure – for example, when Rio Tinto first participated in carbon markets, it required a modification of corporate policy that prohibited market speculation to allow them to trade derivative contracts.³⁰ Some

²⁹ For this paper, we use Emission Reduction Purchase Agreement Version 3.0 2006, developed by the International Emissions Trading Association. Retrieved from: <http://www.ieta.org/resources/Resources/Trading%20Documents/cdmerpav.3.0final.doc>

³⁰ World Bank Partnership for Market Readiness, *Preparing for Carbon Pricing: Case Studies from Company Experience: Royal Dutch Shell, Rio Tinto, and Pacific Gas and Electric Company*, January 2015. Retrieved from: https://www.thepmr.org/system/files/documents/PMR%20Technical%20Note%209_Case%20Studies.pdf

major companies established internal trading desks to conduct their emissions reductions purchases, while others relied on external brokers or financial institutions to conduct purchases on their behalf. Regardless of approach, airlines require dedicated staff resources and internal processes to agree trading strategies and execute them effectively.

In summary, each airline must consider how best to structure itself to trade emission reductions, as well as the transaction structure and counterparty that best meets their needs. CORSIA's voluntary phase begins in 2021. Time is therefore limited before airlines are expected to surrender emission reductions at the end of this phase in 2023. When the scope of emission reductions eligible for CORSIA becomes clear, it would be prudent for airlines to commence purchasing of units ahead of compliance. This could involve the purchase of pre-2020 emission reductions, should those units be eligible, or making a forward commitment to purchase emission reductions which occur from 2021 onwards. In the meantime, airlines should identify the optimal arrangement for transacting REDD+ emission reductions. Establishing and piloting new institutions, funds or exchanges could be a lengthy process – to reduce the risk of missing these available opportunities, work should commence as soon as possible to make REDD+ transactions optimal for airline purchase.

Conclusion

Airlines will need to acquire billions of metric tons of emission reductions to meet their pledges and compliance obligations under CORSIA. Emissions reductions generated from national or subnational REDD+ programs could supply a significant portion of their portfolio. Relative to other sources, emission reductions from REDD+ programs are expected to be of relatively low cost and are associated with generating significant social and environmental co-benefits.

The policy framework for results-based incentives for REDD+ is a product of over a decade of international negotiation and is recognized in the 2015 Paris Agreement as an important part of the solution to the climate challenge. The building blocks for REDD+ are in place, the key technical and policy issues have been answered, and up-front finance in excess of \$10 billion has been delivered to REDD+ countries to help them get ready to implement REDD+ activities and meet the conditions for results-based payments. As national and subnational programs begin to deliver verified net emission reductions from REDD+ activities (preventing deforestation, reducing forest degradation, restoring forests, etc.), both governments as prospective sellers and airlines as prospective buyers need to begin developing the market infrastructure for the transacting in REDD+ emission reductions.

Airlines will benefit from the availability of REDD+ under CORSIA. However, there are actions airlines can take now to make this opportunity possible. Therefore, this report recommends that airlines take the following actions:

- 1.** Airlines should signal their interest in REDD+ now, to mobilize forest countries to create a large supply of credits in time for compliance with CORSIA
- 2.** Voice support for REDD+ inclusion in CORSIA, consistent with the Paris Agreement's rules and guidance.
- 3.** Actively support the creation of additional mechanisms that simplify airlines' access to high quality REDD+ credits, such as a REDD+ Clearinghouse.