SUPPORTING FINANCIAL INSTITUTIONS IN THE NET-ZERO TRANSITION

Aviation Climate-Aligned Finance Progress Update

Center for Climate Aligned Finance

RMI

ENERGY. TRANSFORMED.

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Transportation Capital Markets

May 2023

BNP PARIBAS

The bank for a changing world

Aviation Climate-Aligned Finance: modeled after the Poseidon Principles for Shipping

Working Group of six banks develops detailed technical standards for measurement that comply with NZBA requirements

Experts, industry members, and other financial institutions are consulted during development

Financial Institutions use a common methodology, 1.5°C roadmap, and data sourcing resources to evaluate their portfolios

Financial Institutions disclose the climate alignment of their sectoral portfolio (client-level data remains confidential)

Aviation CAF Goals

Goals

- Provide banks with the ability to **annually** assess the emissions intensity of their portfolios and compare them to a reference 1.5°C trajectory
- Standardize measurement and disclosure between participating financial institutions
- Provide financial intuitions resources to improve measurement quality and reduce industry burden

What is excluded from the Aviation CAF?

- The CAF does not determine bank targets. Banks can set their own targets at their own discretion, with the reference 1.5°C trajectory providing for comparable disclosures. (Industry members are not required to use CAF methodology in their own sustainability reports).
- The CAF does not set a requirement for client to disclose to bank data (albeit such disclosure is welcomed) and CAF would not disclose any direct client data but instead banks will report a single, aggregated portfolio-level average figure.
- Each financial institutions retains full autonomy over strategy and decision making, with the CAF providing a common measurement framework

Primary Areas of Work

Research → Proposal Drafting → Initial Proposal → Industry, Expert Input → Full Proposal → Review Group Consultation

Methodology

- Specify the financial, industry, and emissions scope of the proposal, standardize emissions measurement including sustainable aviation fuels, and provide guidance for calculating a portfolio alignment score
- Incorporate Expert, Industry, and Review Group input to ensure proposed methodology is robust, comprehensive, and implementable

Roadmap

- Evaluate existing 1.5C roadmaps to select one that is is credible, ambitious, and workable
- Implement Expert, Industry, and Review Group input to ensure any selected roadmap is supported by NGOs and industry
- Calculate annual emissions-intensity benchmarks using the roadmap for determining portfolio alignment
- Differentiate roadmap as needed and make scope adjustments to align to CAF methodology

Data

- Develop data sourcing guidelines for financial institution signatories with the methodology and roadmap in mind
- Leverage both client-reported data and third-party data to fulfill methodology
- Execute an RFI to understand the capabilities/available data of existing third-party data providers

Note: The Data Workstream follows a slightly different development process than what is on the arrows on this slide

Methodology Details

Scope, metrics, and measurement

Status Tracker

Research | Proposal Drafting | Initial Proposal | Industry & Expert Input | Full Proposal | Review Group Consultation

= Completed = In progress = Upcoming

Agreement Scope: consistent with current SBTi guidance

Financial Scope

- Secured financing linked to specific aircraft
- General-purpose financing to an airline or lessor
- Facilitated capital markets (in initial version)

Activity Scope

- Commercial Aviation
- Belly Cargo
- Dedicated Cargo
- Military Aviation
- Corporate/ Business Jets
- General Civilian Aviation

Emissions Scope

- Upstream Fuel Refining Emissions
- Direct Fuel-Burn Emissions
- Airport Building Emissions
- Aircraft Manufacturing Emissions
- Ground Handling Emissions

= in scope = out of scope

Use of an Intensity Metric

$$\frac{Emissions}{Activity} = Emissions\ Intensity$$

1 Emissions intensity metrics are endorsed in NZBA guidance for sector-level target-setting and guidance and have been successfully implemented in shipping and steel frameworks

2 Emissions intensity metrics allow direct comparison between financial portfolios of different sizes

3 Emissions intensity metrics allow for more direct comparison to 1.5°C-aligned roadmaps

4 Emissions intensity metrics mitigates the chances for double counting

Double Counting
Intensity metrics evaluate portfolios based directly on exposure and the "climate quality" of assets and companies financed, avoiding the need to divide absolute emissions across all sources of financing.

Note: The use of emissions intensity as the primary metric is not intended to preclude financial institutions or their clients from using absolute emissions in other internal or external metrics.
Note: Static metrics such as ICAO Metric Value (EU Taxonomy) do not meet annual disclosure requirements

Intensity Metric: gCO2e/RTK

Based on existing frameworks, independent research, and extensive expert and industry consultations, the Aviation CAF will use a gCO2e/RTK metric, **in line with current SBTi**

Why Were RTKs Selected?

Revenue Tonne Kilometers (RTKs) measure the activity of an aircraft based on the total quantity of passengers and cargo carried, and the total distance they are traveled.

Industry and Expert Support

- The vast majority of experts and industry members involved in the CAF consultation support the use of RTKs over alternate traffic metrics

Existing Aviation Standards

- Existing standards, including SBTi voluntary target setting standards for airlines, use CO2/RTK metrics

Accurate Climate Performance

- RTKs capture the effects of increased load factors on carbon intensity, a key historical decarbonization strategy

Roadmap Compatibility

- gCO2e/RTK metrics allow direct comparison to aviation decarbonization roadmaps, which use demand-based forecasts

Following the Methodology

1) Calculate emissions intensity

At the aircraft-model average

At the full-fleet level

$$Intensity = \frac{Emissions}{Traffic} = \frac{Fuel * 3.84}{RTKs\ (Pax, Belly, Cargo)}$$

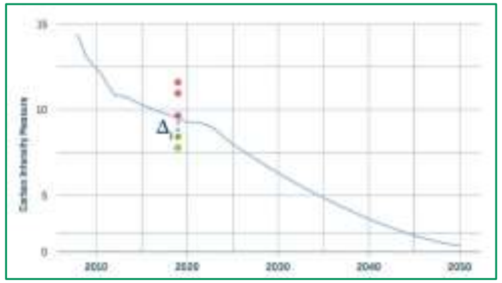
2) Adjust for SAF on a lifecycle basis

$$Reduction = \left(1 - \frac{SAF\ Lifecycle\ Emissions}{89\frac{gCO2e}{MJ}}\right) * 3.84 * Tonnes\ SAF$$

3) Calculate exposure-weighted portfolio average

$$Portfolio\ Intensity = \sum_{i=1}^{n} \alpha_i I_i$$

4) Compare to a reference 1.5°C benchmark to calculate alignment score



Roadmaps

Selection of a 1.5°C Benchmark

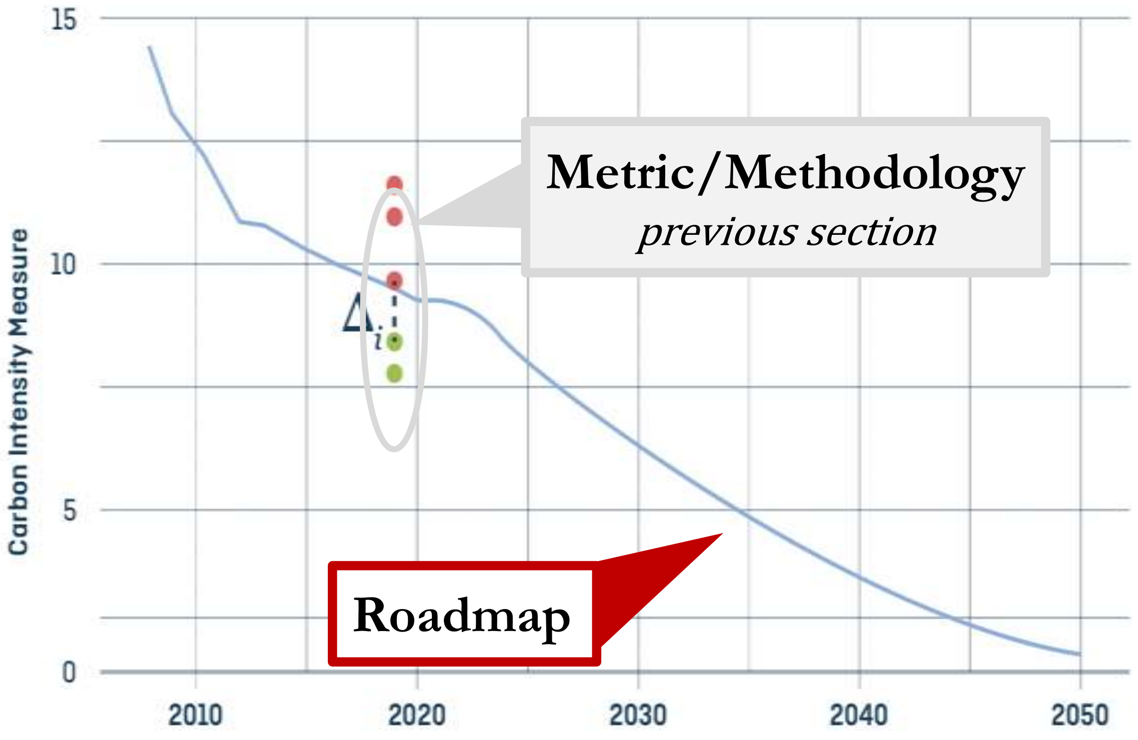
Status Tracker

Research → Proposal Drafting → Initial Proposal → Industry & Expert Input → Full Proposal → Review Group Consultation

= Completed = In progress = Upcoming

The Role of the Roadmap

- In Poseidon-style agreements, banks disclose the divergence between their portfolio's emissions intensity and targets derived from a sector specific **roadmap**
- A roadmap is critical to provide 1.5°C-aligned benchmarks for calculating climate alignment, and to contextualize the climate performance of a bank's portfolio



Calculating alignment with a roadmap is beneficial as it:

1. Gives stakeholders important context for disclosed values
2. Directly evaluates whether bank portfolios are "on track" for 1.5°C
3. Provides an objective measure of progress for each portfolio, in place of relative rankings

Note: *Under the CAF, banks remain free to define their own institutional targets. The CAF roadmap is intended to provide consistent cross-institution reporting.*

MPP PRU Roadmap Parameters

The Aviation CAF will use the MPP PRU roadmap based on its credible assumptions and external validation

Temperature Target: 1.5°C

Cumulative Emissions: 19.6 GT TTW

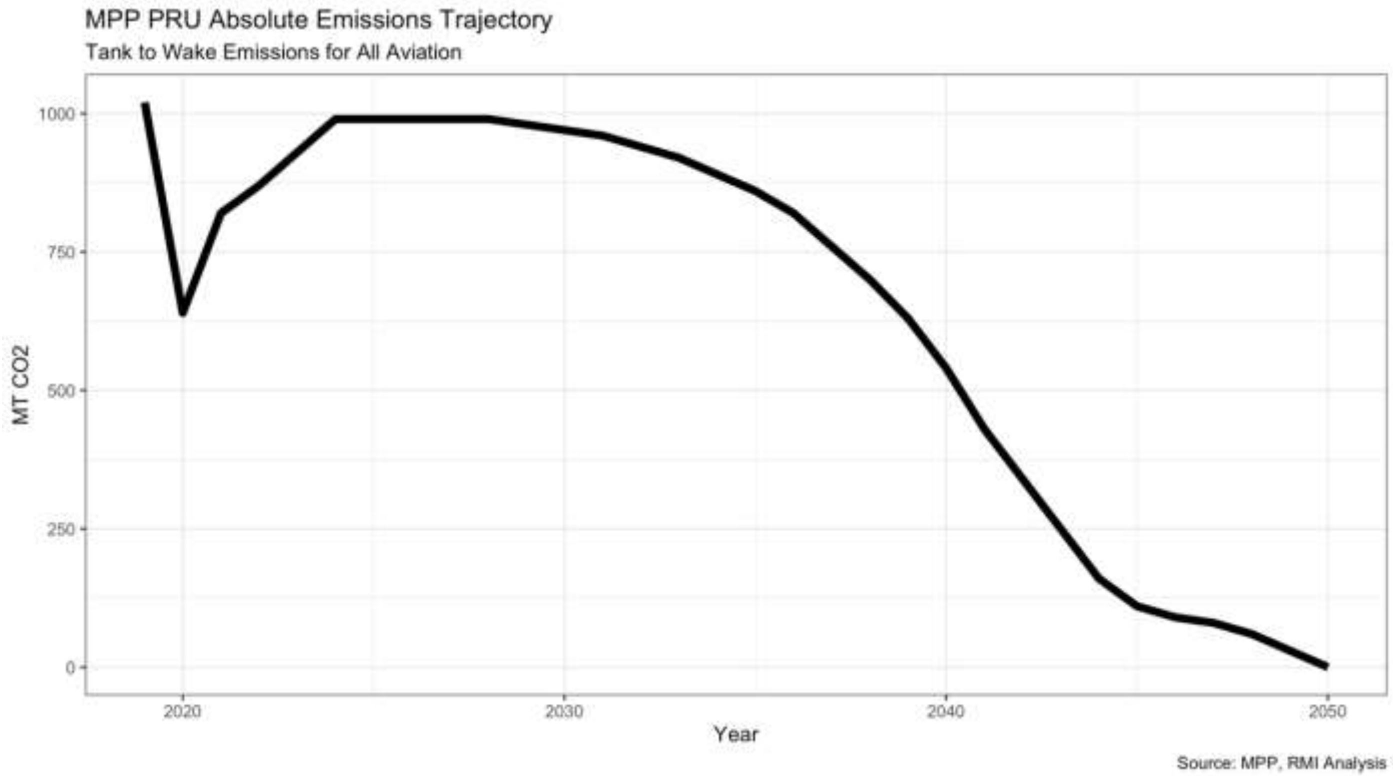
Activity Scope: Commercial, military and civil (commercial-only figures provided)

Emissions Scope: TTW and WTW figures both provided

Traffic Growth Rate: 2.5% CAGR from 2019 (3% from 2024 after Covid rebound)

2030 TTW Emissions: 970 MT

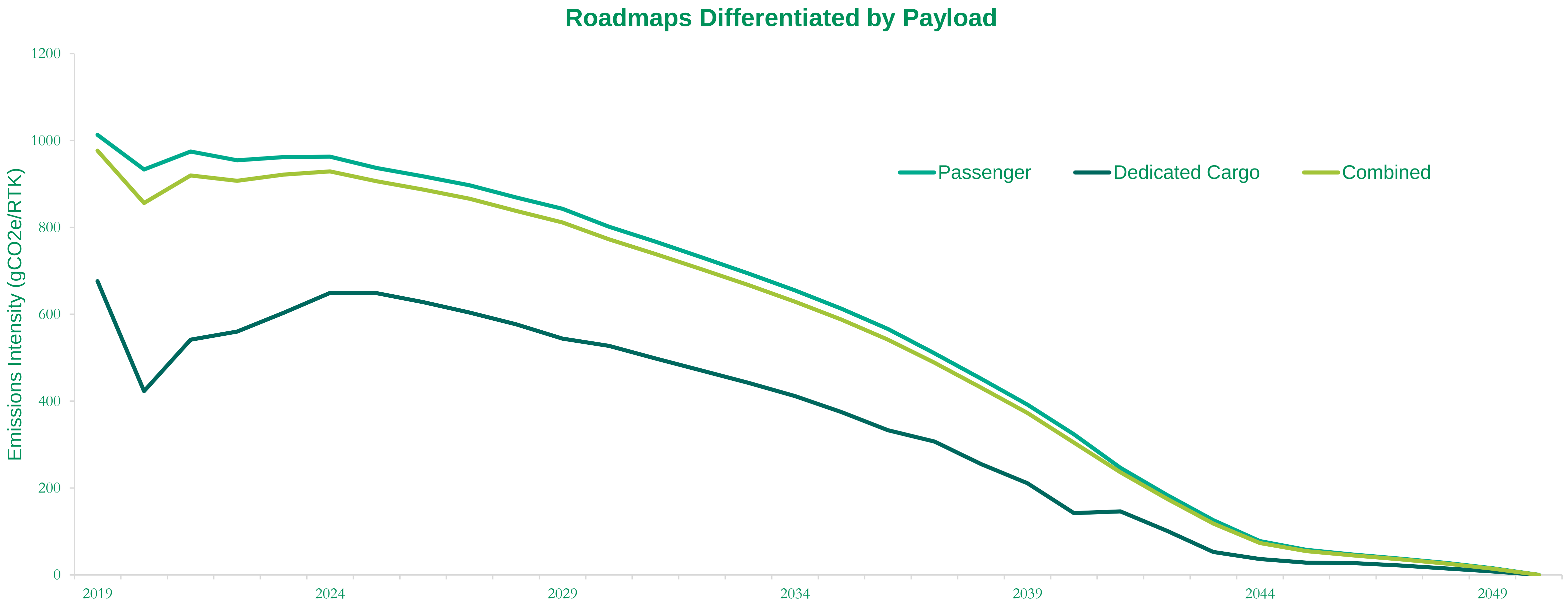
2030 SAF Blending Rate: 13%



Notes: *Model assumptions are provided for transparency and informational purposes only. Portfolios are not benchmarked directly against technical targets such as SAF blending rate.*

MPP PRU Emissions Intensity Pathway (Differentiated)

Passenger- and cargo-aircraft specific benchmarks are derived from underlying MPP modeling to account for differences in emission intensity between the two industry segments



Use and Maintenance of Roadmaps

The use of a roadmap provides a link between emissions intensity and absolute intensity, and must be maintained over time to ensure alignment

Using the roadmap

- By comparing their portfolio intensity to a 1.5°C roadmap, banks are able to contextualize raw intensity into a climate alignment score
- MPP PRU provides both an absolute emissions trajectory, which is aligned with a 1.5°C scenario, and a traffic forecast, which is used to calculate intensity
- The modeled traffic forecast provides the bridge between intensity and absolute emissions scenarios, preventing intensity from becoming disconnected from real-world scenarios
- While banks set their own targets, having a common reference benchmark provides a consistent 1.5°C context to disclosures

Maintenance and credibility

- Traffic forecasts and emissions trajectories need to be up-to-date to maintain 1.5°C credibility
- Traffic grown beyond roadmap forecasts could mean target intensity becomes decoupled from absolute trajectory
- NZBA recommends targets be revisited every 5 years
- MPP is committed to updating the PRU pathway as necessary, and has done so previously in steel
- The CAF governance structure will be responsible for managing updates to the roadmap

Data

Technical resources for sourcing required data

Status Tracker

Research → Initial Proposal → 3rd-Party RFI → Client Guidance Drafting → Client Guidance Testing → Finalization

= Completed = In progress = Upcoming

Data Requirements Summary Table

	Fleet Emissions	Fleet Activity	Aircraft Emissions	Aircraft Activity
Airlines	Annual total fuel consumption for the full operational fleet	Annual total RTKs generated by the full operational fleet	Average (or total) fuel consumption for aircraft of that model, operated by that airline	Average (or total) RTKs generated by aircraft of that model, operated by that airline
Lessors	Sum of all aircraft-level fuel consumption for the full owned fleet	Sum of all aircraft-level RTKs generated by the full owned fleet	Average (or total) fuel consumption for aircraft of that model, operated by the lessee airline for that aircraft	Average (or total) RTKs generated by aircraft of that model, operated by the lessee airline for that aircraft

Note: *Traffic requirements include passenger, belly cargo, and dedicated cargo*

Client-Reported Data

What is client-reported data?

- Data requested on a voluntary basis directly from clients, either airlines or lessors

What are some benefits of how client-reported data will be sourced?

- Provided confidentially to banks for use in portfolio measurement
- Underlying client data is not disclosed; only an aggerate Portfolio Alignment Score is made public
- Offers a channel for direct client engagement
- Data sourcing is executed on a “look-through” basis to avoid double-counting. Data sourcing is structured such that lessors can use the same reporting template that banks use if they choose.

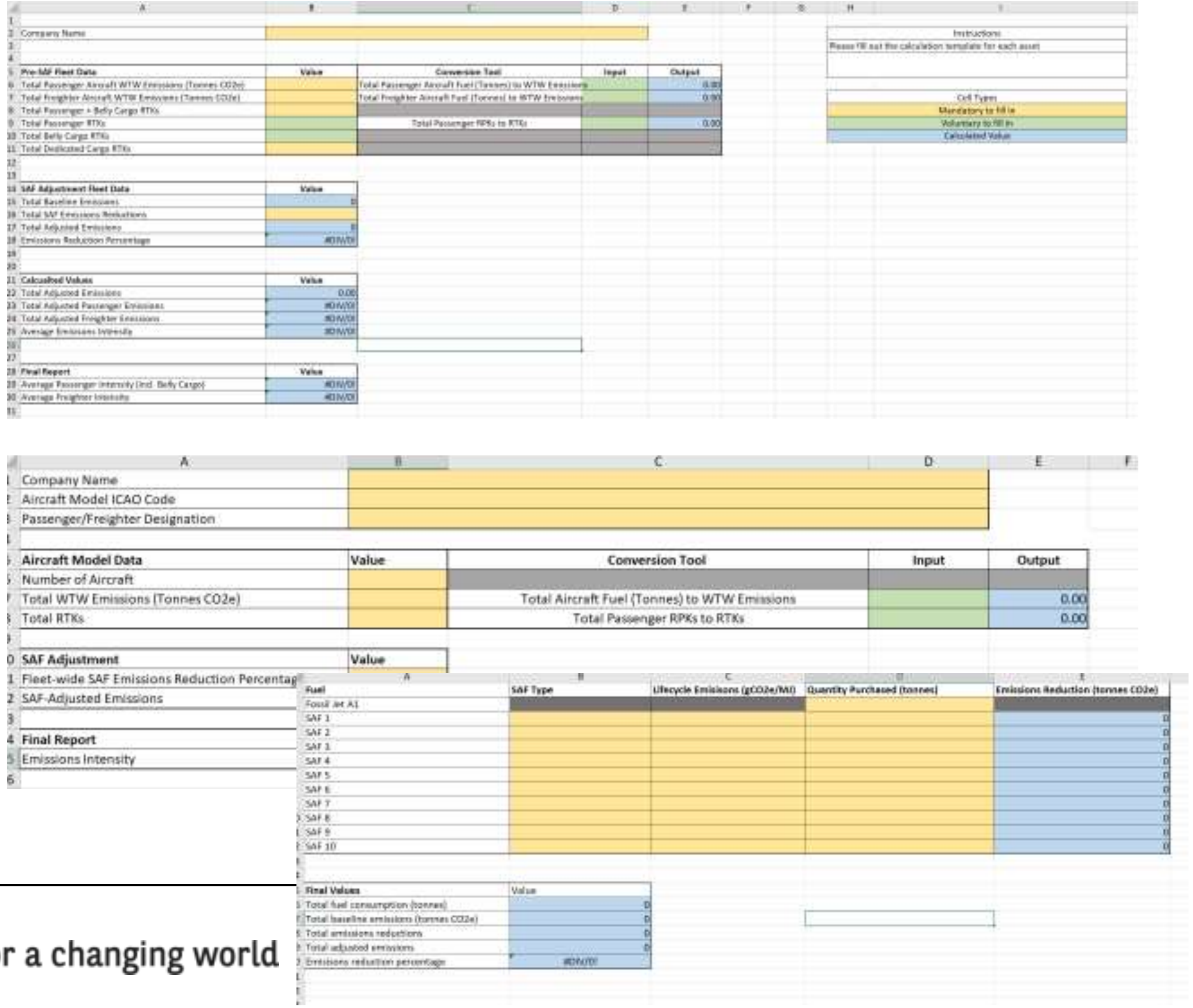
What is included in the Aviation CAF data guidance?

- Includes a standardized reporting template developed with industry to reduce multiple-reporting burden for clients and ensure comprehensive data (see examples screenshots on right of the next page)
- Includes reporting technical guidance to help complete reporting template
- Provides banks with a standard covenant clause for their voluntary use

Sourcing Client-Reported Data: under active development for testing with industry

Technical Reporting Resources:

1. **Standardized reporting template**
   - Excel template that contains all airline data requests and calculations (see adjacent images)
2. **Technical reporting guidance**
   - Accompanying document that explains how to use template, provides all necessary definitions and methodology details
3. **Voluntary covenant clause**
   - Stock language available for banks to voluntarily use in loan documentation



Industry Input and Road Tests:

All reporting resources will be informed by

1. Informational calls with industry members
2. A “road test” process where industry will use the resources in a trial run and provide feedback on availability of requested data and feasibility in reporting requested data

3rd-Party Provided Data

The Working Group is conducting research to understand how gaps in client-reported data can be mitigated using 3rd-party data providers

3rd-Party Provided Data

- Data procured from a commercial service provider
- Can provide full portfolio coverage, globally available data
- May be easier and quicker to access than client-reported data
- Must be calibrated to match the methodology, off-the-shelf offerings not always suitable

Data RFI

- The Working Group developed technical specifications necessary in order to fulfill the aviation CAF methodology
- These specifications were shared with data providers, like AWG, through an open RFI
- The Working Group is currently analyzing RFI responses, along with AWG's response, to understand what data is available in the marketplace

AWG Calculator

Decisions around use of third-party data remain ongoing within the Working Group. However, some initial notes on the AWG calculator submission can be shared:

Notes on Response

- AWG calculates emissions at the needed granularity (down to the MSN), based on physical fuel consumption modeling and real operational data
- AWG, by design, does not provide data on traffic or fleet composition
- AWG calculator as currently designed requires substantial input data from a user
- AWG calculator as currently designed requires substantial user effort to compile airline-aircraft-model averages
- As a result, calculations involving lessors are especially challenging

Potential Refinements

- Pending WG decision on data provider approach, potential refinements to the AWG calculator could significantly improve its usability for CAF application

1. Performing calculations at the airline-aircraft-model average level (rather than requiring construction from individual MSN)
2. Including input data for airline-aircraft-model calculations, rather than requiring users to supply hours and cycles
3. Performing lessor calculations on a look-through basis, using the relevant airline-aircraft-model average values

Next Steps

What’s next for the Aviation CAF?

- The Working Group aims to launch the final Aviation CAF framework in **fall 2023**.
- The Working Group is currently reaching out to industry for feedback on the final framework proposals, and to seek industry endorsement

What’s next for AWG’s involvement?

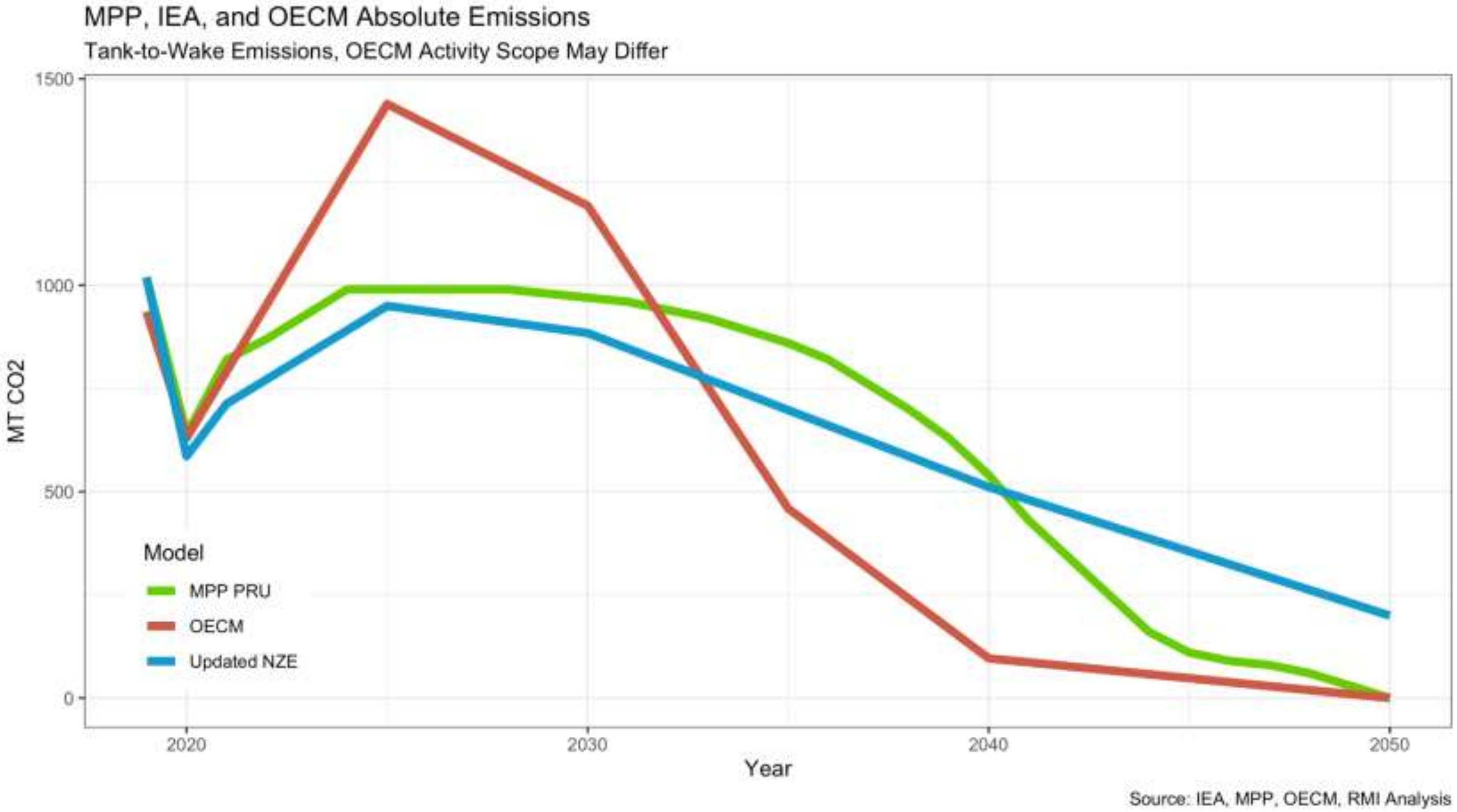
- Expert & Industry members who would like to learn more about the proposals or a potential endorsement should reach out to the Working Group
- Interested industry members may provide feedback on the development of client-reporting resources, and should reach out to the Working Group or RMI
- RMI and the Working Group will be in touch regarding the results of the RFI analysis and following steps.

Appendix

Example SAF accounting calculations, roadmap 1.5°C alignment, acronyms

Comparing Roadmaps

In terms of absolute emissions, MPP PRU, IEA NZE, and OECM indicate a similar level of total ambition with differences stemming primarily from the shape of the decarbonization curve driven by assumptions on technology readiness



Why has the Working Group Selected MPP PRU?

MPP received majority support from those industry and expert respondents who expressed a preference for a 1.5°C roadmap

MPP

Pros:

- Open, granular, and technically detailed model
- Preferred over IEA NZE by a majority of expert and industry respondents who expressed a preference
- Provides well-to-wake emissions forecasts and commercial-only scoping compatible with CAF methodology without modification
- Provides detailed cargo and passenger traffic forecasts which account for Covid-19 recovery
- Accounts for short-term technical constraints on availability of SAF and novel aircraft technology in 2030 target

Cons:

- Does not model full economy (not IAM)
- Not adopted as widely as IEA

Updated IEA NZE

Pros:

- Economy-wide 1.5°C roadmap with strong name recognition

Cons:

- Less-preferred by experts and industry members
- Lacks model transparency and data granularity:
  - Provides only 5- or 10-year figures
  - Includes military and general aviation emissions
  - Excludes upstream emissions
  - Provides only passenger traffic CAGR, does not account for cargo or Covid-19 recovery
- Forecasts lower 2030 emissions than MPP with similar traffic and lower SAF uptake, indicates aggressive efficiency, demand reduction, or other assumptions to compensate

Colors coordinate with those on "Comparing Roadmaps" slide

Accounting for Sustainable Aviation Fuels: Airline Level

The Working Group recommends using an airline-level measure equivalent to current SBTi guidance

1

Emissions reductions caused by each type of SAF purchased by an airline is calculated as follows:

$$Absolute\ Emissions\ Reduction = \left(1 - \frac{SAF\ Lifecycle\ Emissions}{89\,\frac{\mathrm{gCO2e}}{\mathrm{MJ}}}\right) * 3.84 * \ Quantity\ SAF$$

2

Total emissions avoided using SAF calculated as the sum of reductions from each type of SAF purchased by the airline

$$Total\ Emissions\ Reduction = \ 3.84 * \sum Quantity \ \ SAF \left(1 - \frac{SAF\ Lifecycle\ Emissions}{89\,\frac{\mathrm{gCO2e}}{\mathrm{MJ}}}\right)$$

3

The emissions intensity of the airline is calculated using the adjusted emissions as follows:

$$Airline\ Intensity = \frac{Baseline\ Emissions^{*} - Total\ Emissions\ Reductions}{\mathrm{Activity}}$$

**Baseline emissions are the total quantity of fuel (including SAF) consumed, multiplied by the 3.84 WTW coefficient*

Accounting for Sustainable Aviation Fuels: Aircraft Level

For aircraft-level accounting, emissions reductions from SAF at the airline level can be averaged across all aircraft operated by the airline. This avoids attempting to track physical SAF consumption at the aircraft level

1

Calculate the total percentage emissions reductions due to SAF purchases at the airline level

$$\boxed{Percentage\ Reduction = \frac{Total\ Emission\ Reduction}{Baseline\ Emissions}}$$

2

For any individual aircraft, apply that percentage to calculate its emissions intensity as:

$$\boxed{Aircraft\ Intenstiy = \frac{Total\ Fuel * 3.84 * Percentage\ Reduction}{Activity}}$$

SAF Accounting Example: Airline Level

	Jet A1	ATJ - Agricultural Residue (integrated)	HEFA – Used Cooking Oil
Quantity Consumed	100,000 Tonnes	10,000 Tonnes	20,000 Tonnes
Lifecycle Emissions Factor	89 gCO2e/MJ	24.6 gCO2e/MJ	13.9 gCO2e/MJ

= formula

= example

Step 1 – Calculating absolute emissions reduction per SAF type

$$Absolute\ Emissions\ Reduction = \left(1 - \frac{SAF\ Lifecycle\ Emissions}{89}\right) * 3.84 * \ Quantity\ SAF$$

ATJ

$$Absolute\ Emissions\ Reduction = \left(1 - \frac{24.6}{89}\right) * 3.84 * \ 10{,}000 = \ 27{,}786$$

HEFA

$$Absolute\ Emissions\ Reduction = \left(1 - \frac{13.9}{89}\right) * 3.84 * \ 20{,}000 = 64{,}805$$

Step 2 – Calculating total emissions reduction (combining ATJ and HEFA in this example)

$$Total\ Emissions\ Reduction = \ 3.84 * \sum Quantity_{SAF}\left(1 - \frac{Emissions_{SAF}}{89}\right)$$

$$Total\ Emissions\ Reduction = 27{,}786 + 64{,}805 = 92{,}591$$

Step 3 – Calculating emissions intensity of the overall airline

$$Airline\ Intensity = \frac{Baseline\ Emissions - Total\ Emissions\ Reductions}{\text{Traffic}}$$

$$\frac{(499{,}200 - 92{,}591)\ Tonnes * 1{,}000 * 1{,}000}{500{,}000{,}000\ RTKs} = \ 813\ gCO\,2/RTK$$

SAF Accounting Example: Aircraft Level

	Jet A1	ATJ - Agricultural Residue (integrated)	HEFA – Used Cooking Oil
Quantity Consumed	100,000 Tonnes	10,000 Tonnes	20,000 Tonnes
Lifecycle Emissions Factor	89 $gCO2e/MJ$	24.6 $gCO2e/MJ$	13.9 $gCO2e/MJ$

= formula

= example

Step 1 – Calculating percentage reduction

$$Percentage\ Reduction = \frac{Total\ Emission\ Reduction}{Baseline\ Emissions}$$

$$Percentage\ Reduction = \frac{92{,}591}{499{,}200} = 18.54\%$$

Step 2 – Applying percentage reduction to individual aircrafts

$$Aircraft\ Intenstiy = \frac{Total\ Fuel * 3.84 * Percentage\ Reduction}{Traffic}$$

$$Aircraft\ Intensity = \frac{100tonnes * 3.84 * 1000 * 1000 * (1 - .1854)}{450{,}000} = 693.3gCO2\,e/RTK$$

MPP PRU – 1.5°C Alignment

MPP PRU is not an IAM, but its alignment can be evaluated by comparing cumulative emissions to 1.5°C IAMs, or by using IAM-derived global budgeting assumptions

IEA NZE	OECM
Recognized as 1.5°C-aligned by NZBA	Recognized as 1.5°C-aligned by NZBA
Global Carbon Budget: 500GT	**Global Carbon Budget:** 400GT
Aviation Carbon Budget: 19.4GT	**Aviation Carbon Budget:** 20GT
Aviation Share of Global Carbon Budget: 3.88%	**Aviation Share of Global Carbon Budget:** 5.00%

MPP PRU

Aviation Carbon Budget: 19.4GT (2020-2050)

Estimation of MPP PRU Global Carbon Budget:

Using IEA NZE's Aviation Share
19.4GT/3.88% = 500GT

Using OECM's Aviation Share
19.4GT/5.00% = 388GT

Using IAM- based assumptions, MPP PRU's global carbon budget is between 388-500GT.

IPCC defines a range of scenarios within the "1.5°C low-overshoot" category that have cumulative emissions totals from 460-550GT.

MPP PRU's estimated global carbon budget of 388-500GT falls within or well-below the 460-550GT range.

Acronyms

ATAG – Air Transport Action Group

CAGR – Compound Annual Growth Rate

CAF – Climate-Aligned Finance

ICAO CORSIA – International Civil Aviation Organization Carbon Offsetting and Reduction Scheme for International Aviation

GFANZ – Glasgow Financial Alliance for Net Zero

GHG – Greenhouse Gas

IAM – Integrated Assessment Model

ICCT – International Council on Clean Transportation

IATA Net Zero Pledge – International Air Transport Association Net Zero Pledge

IEA NZE – International Energy Agency Net Zero Emissions

IEA SDS – International Energy Agency Sustainable Development Scenario

MPP PRU – Mission Possible Partnership Prudent

MV – Metric Value

NZBA – Net-Zero Banking Alliance

OECM – One Earth Climate Model

RPK – Revenue Passenger Kilometer

RTK – Revenue Tonne Kilometer

SAF – Sustainable Aviation Fuel

SBTi – Science Based Targets Initiative

WEO – World Energy Outlook

WTW – Well-to-Wake

Calculating Alignment Scores

Participating financial institutions measure a single figure capturing the difference between their measured portfolio intensity and the benchmark 1.5°C-aligned portfolio intensity for that year

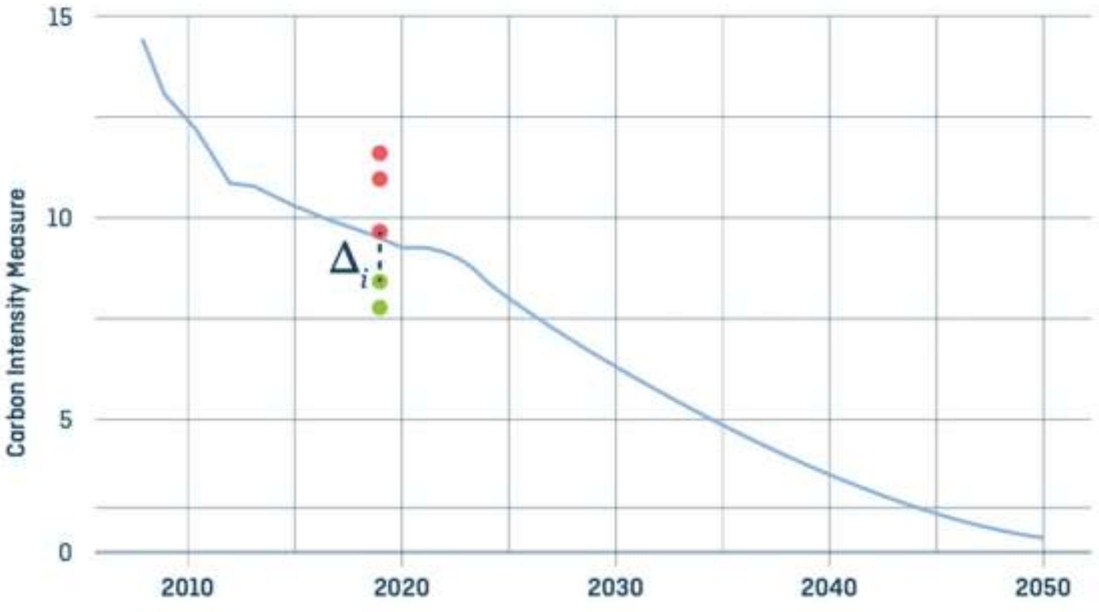
$$Alignment = \frac{Portfolio\ Intensity - Benchmark\ Intensity}{Benchmark\ Intensity}$$

The overall portfolio intensity is the average of each item of financing's emissions intensity, weighted by the amount outstanding on the financing

$$\Delta_p = \sum_{i=1}^{N} w_i \Delta_i$$

That final portfolio alignment score is what is disclosed in the annual report. Individual client data is kept confidential.

Portfolio Alignment Scores Compared to Benchmark



Source: Poseidon Principles

Selection of an Intensity Metric over Existing ICAO Metrics

The Working Group evaluated two current ICAO emissions measurement approaches, the CORSIA offsetting requirements and the CO2 Metric Value, concluding neither was fit-for-purpose

CORSIA Offsetting Requirements

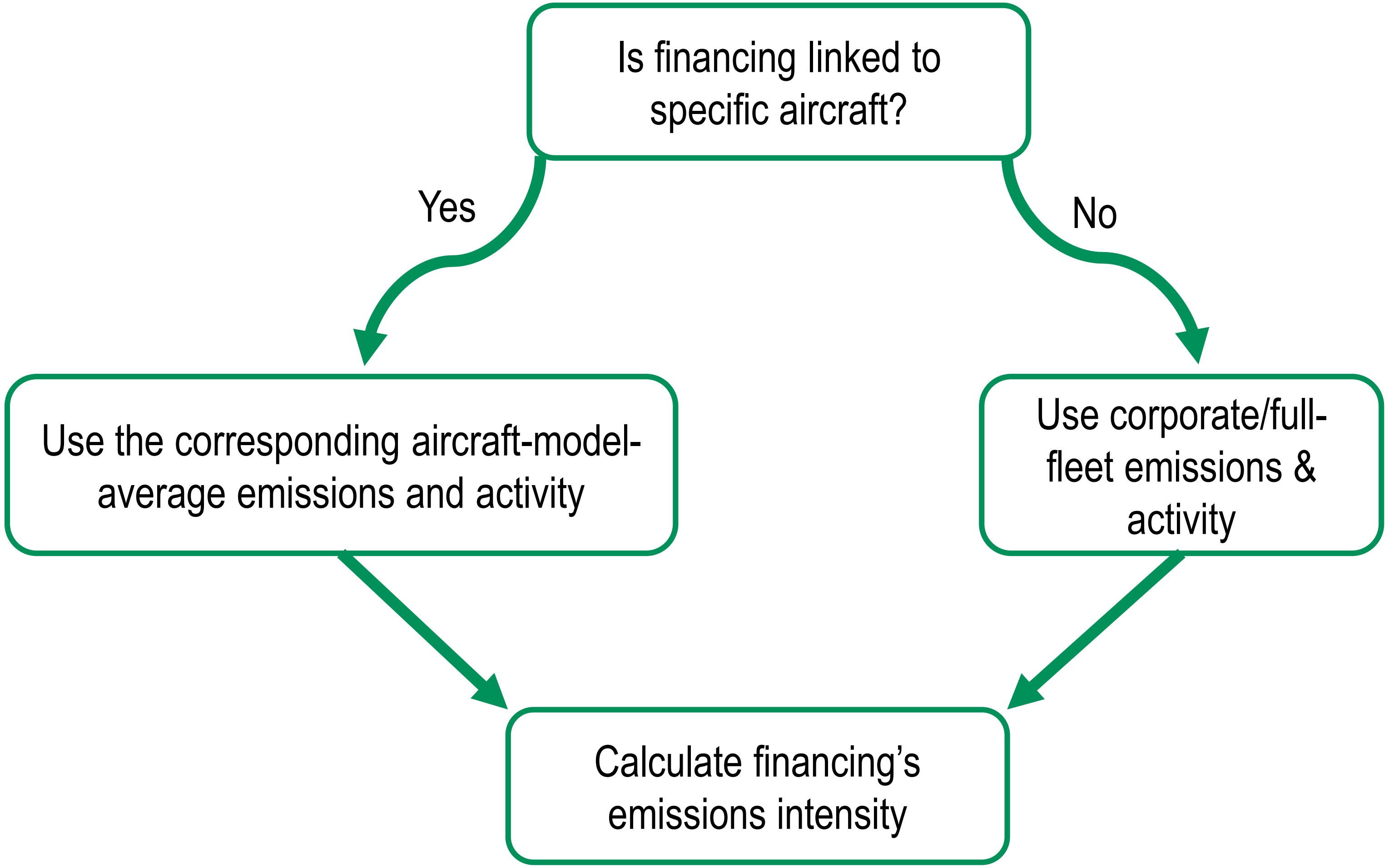
- Eligible airlines are required to calculate offset purchase requirements under ICAO CORSIA
- These offset requirements provide an existing measure of airline emissions
- However, **only international flights are covered, and only a subset of routes**
- Offsets are also **based on absolute emissions, negating the benefits of an emissions intensity metric** (see previous slide)

ICAO Metric Value (MV)

- ICAO's CO2 Metric Value measure was developed as part of New Aircraft Performance Standards, and is included in proposed EU Taxonomy guidance
- MV measures theoretical efficiency, based on specific fuel-burn tests at time of manufacture
- **MV does not measure real annual emissions based on operational conditions**
- **MV is not adequate for financial institutions which must track the actual emissions of financed aircraft, airlines, and lessors**

A Comprehensive Approach to Alignment Scores

The nature of the financing will determine at what level emissions intensity is measured



Measuring Emissions & Traffic

In line with SBTi and common industry practice, the proposed CAF agreement measures emissions by combining fuel consumption with standardized emissions coefficients

Emissions

$$Emissions = Fuel * Coef_{emissions}$$

Emissions Coefficients ($Coef_{emissions}$):

- ICAO's **Well-to-Wake** fossil fuel coefficient is **3.84** gCO2e/gFuel (89 g/MJ)
- ICAO's coefficients use CO2e measures (that include methane, etc.) for upstream emissions, but include only CO2 for direct aircraft emissions due to negligible non-CO2 Kyoto GHG emissions at the point of combustion
- Non-GHG impacts, including radiative forcing and contrails, are not currently included

Traffic

$$Traffic = Passenger_{rtk} + Belly_{rtk} + Cargo_{rtk}$$

$$Passenger_{rtk} = Passenger_{rpk} * Conversion\ Factor$$

- A conversion factor (proposed IATA-standard 100kg) allows RPKs to be converted to RTKs
- Belly cargo and dedicated cargo are measured by weight and do not need a conversion factor
- Airline-level activity is defined as the sum of all operated aircraft traffic
- Lessor-level activity is defined as the sum of all owned aircraft traffic

Note: *The emissions methodology proposed here is equivalent to current SBTi guidance*

Full Methodology Pathway

Pending updates as a result of this consultation period, bank signatories to the Aviation CAF Framework would use these steps to calculate portfolio alignment score for public disclosure

1. **Determine if financing is linked to specific aircraft or is corporate level** (5.1)
2. **Calculate the relevant fossil-baseline annual emissions using the 3.84 ICAO WTW multiplier** (8.0)
3. **Adjust for SAF usage using the relevant airline-level emissions reduction percentage** (9.0)
4. **Determine the activity in RTKs, including passengers and cargo where relevant** (10.0)
5. **Divide the SAF-adjusted emissions by activity to determine emissions intensity** (7.0)
6. **Repeat steps 1-5 for each balance-sheet item in the reporting portfolio**
7. **Take the exposure-weighted average of each balance-sheet item to calculate the overall portfolio emissions intensity** (5.0)
8. **Take the difference between the portfolio emissions intensity and the sectoral benchmark to calculate the portfolio alignment score** (5.0)
9. **The portfolio alignment score is publicly disclosed (corporate data remains confidential)**

Relevant sections of the Methodology Memo are included in parentheses

Goals For Roadmap Selection

- Select a sector-specific, 1.5°C-aligned roadmap for banks to assess their portfolio against for annual disclosure
- Use that roadmap to implement benchmarks that are workable for lenders' full portfolios
- Ensure that the roadmap meets NZBA requirements
- Engage industry to ensure that the benchmarks are practical and feasible
- Engage stakeholders to ensure benchmarks are implementable, credible, and ambitious

Roadmap Evaluation Criteria

The criteria below were used to evaluate existing roadmaps to ensure their success within a CAF framework

Criterion	Description
Climate-alignment	
Industry Validation	Has the model been informed and/or endorsed by industry?
Legitimacy	Has the model gone through a process of validation from key stakeholders?
Standardization	Is the model being used by other voluntary or mandatory initiatives?
Granularity	Does the model include data at a sufficiently granular level, for the sector, including yearly data on
	Is the model based on sensible assumptions about changes in technology? Does the model incorporate various technology options and sensitivities?
	Are the model's full assumptions and results available to the Working Group and other stakeholders?

Evaluated Roadmaps

The Working Group evaluated eight roadmaps based on the evaluation criteria, shortlisting MPP PRU, IEA NZE, and OECM (all recognized as 1.5°C-aligned by GFANZ) for close review

Roadmap	Summary	Status
MPP PRU	1.5°C-aligned bottom-up technical roadmap	Recommended by Working Group for benchmarking
IEA NZE (updated WEO 2022)	1.5°C-aligned integrated assessment model	Leading alternative to MPP evaluated by Working Group
OECM (2022)	1.5°C-aligned integrated assessment model	Considered by Working Group, ruled out due to technical concerns regarding model assumptions (see section 15.3.3)
ICCT	Potentially 1.5°C-aligned bottom-up technical roadmap	Considered by Working Group, ruled out due to greater detail in comparable MPP roadmap
IEA SDS	1.8°C-aligned integrated assessment model	Eliminated due to lack of 1.5°C-alignment
ATAG	CORSIA-compatible technical scenario modeling	Eliminated due to lack of 1.5°C-alignment
IATA Net Zero Pledge	Net-Zero by 2050 pledge, without intermediate targets	Eliminated due to lack of interim targets
ICAO CORSIA	Offset-based regulatory scheme, with a long-term aspiration goal of net zero in 2050	Eliminated due to lack of 1.5°C-alignment

= Eliminated in primary evaluations = Shortlisted = Selected roadmap