

Etihad Sustainability Report

2020-2021



FROM ABU DHABI *for* THE WORLD

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CEO Introduction

Tony Douglas
Group Chief Executive Officer
Etihad Aviation Group



This report sets out the actions undertaken by Etihad throughout 2020 and 2021 on the long and difficult journey towards sustainable aviation. Knowledge sharing has been the key driver of the Etihad Greenliner Programme, bringing progress, innovation and transformation to the industry; our partners, our competitors; and the world. Identifying the million little things that will come together to see incremental, measurable and overall beneficial change is most effective when contributed by all minds thinking as one. This is the mission of Etihad Sustainability and the sole purpose of our call to arms.

Our agenda for 2022 includes adopting an even louder, bolder approach to sustainability. Under Etihad Sustainability, The Etihad Greenliner and Sustainable50 Programmes we will continue to widen the network with our partners and stakeholders to ensure that aviation remains the business of freedom, leaving behind nothing more than memories of travel and a connected world. We will continue to work so that we may reach a point where the marvel of air travel and wonder of flight can be celebrated, without detriment or negative impact for the environment. Indeed, our journey will be to ensure aviation and its influences benefit our planet and further human development.

We need to be bold in addressing the climate issues facing the planet. We need to be decisive. There is no other way forward. That is why we have been insistent that we continue to focus on the challenges and opportunities, many of which are available today, as a fundamental strategic priority for our business, spearheaded by the Etihad Sustainability Programme, and the many partners who have now joined in the crusade.

This is not an easy journey, but it is one we are determined to make. **We will succeed, because we must.**

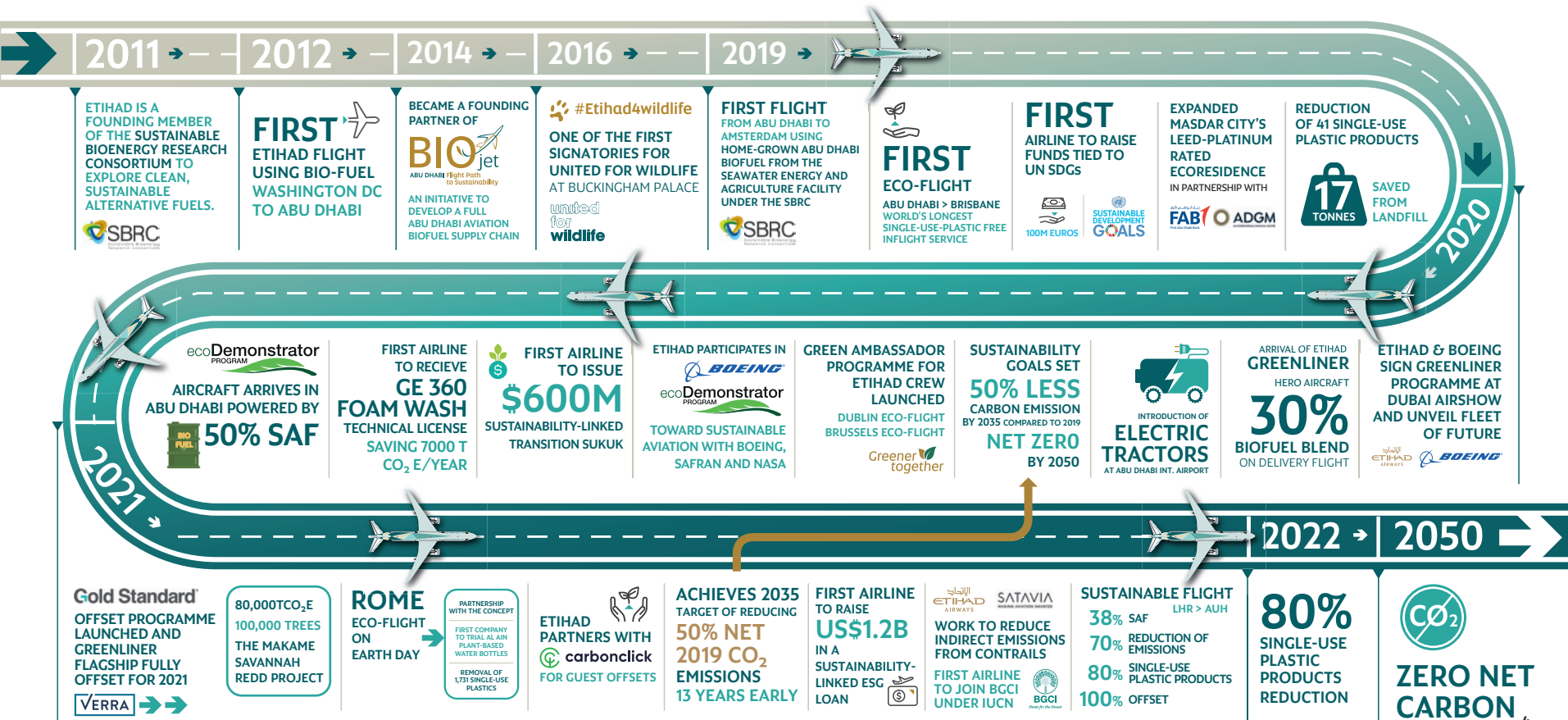
FROM ABU DHABI *for* THE WORLD



ETIHAD SUSTAINABILITY TOWARDS ZERO NET CARBON BY 2050

FROM ABU DHABI *for* THE WORLD

الإتحاد
ETIHAD



Governance

Start how you mean to go on

To reach our goals, Etihad Sustainability insists upon a strategy that is thorough, all-encompassing, and outcome driven. Reaching each target, addressing every concern and transforming the industry requires a commitment to action and innovation, based on continuous monitoring and improvement of our energy efficiency.

This commitment ranges beyond Etihad's own flight operations, to the emissions or impact created indirectly by support operations and that which we influence; extending out into the ecosystem of employees, guests, partners and back through the supply chain of manufacturers, suppliers, control authorities and subcontractors. Our goals are interlocking and cross-supporting. To demonstrate meaningful and consistent emissions reductions in our flight operations, we require our stakeholders to work with us.

Etihad is signatory to multiple internationally recognised compliance schemes and has backed world's first frameworks to promote diligent sustainable development. One such example is the UN Sustainable Development Goals.

Mandate and vision

Sustainability is an integrated element of the corporate mandate at Etihad Airways, with environmental sustainability and a focus on innovation ingrained in cross-organisational key performance indicators. These promote the success of our business activity, in addition to ensuring our vision becomes a core part of how we operate.

Sustainability Steering Committee

Chaired by the Etihad GCEO and attended by Executive Team representatives in Operations, Finance, Guest Experience, Brand & Marketing, the Sustainability strategy of the airline is monitored by the Sustainability Steering Committee. The primary goal of the Sustainability Steering Committee is the responsibility and management of sustainability priorities, enforcing corporate direction for all areas of the business and ensuring alignment to required business priorities by top executives in each area.

Sustainability Department

Etihad Airways Sustainability strategy is fulfilled by a dedicated Sustainability Team within the airline's Government, International & Communications Division. The Sustainability Team is responsible for the execution of, consultancy in and approval of sustainability related business activity and transformation. The members of the team-work through partnerships with subject matter experts across the airline. This approach ensures legitimate, realistic and practical solutions can be found for the range of business activities carried out by Etihad Airways.

Key Environmental Performance Indicators



Decarbonisation (Air & ground)

- Net Reduction in carbon emissions across all operations
- Reduce 2019 net emissions by 50% by 2035
- Net zero emissions by 2050
- 20% reduction in emissions intensity in the passenger fleet by 2025



Environmental performance

- Comprehensive data reporting and total compliance
- First-backer for industry compliance schemes
- Fleet and operational performance



Single-use plastics & waste

- 80% single-use plastic reduction company wide by 2022
- Comprehensive waste management processes and compliance to regulations



Wildlife conservation

- Biodiversity and Wildlife protection
- Signatory and compliance with relevant frameworks
- Contribution and attendance of task forces



Modern slavery & human welfare

- Zero-tolerance approach to human trafficking and modern slavery
- Continuous awareness and training

UN SDG



Etihad Sustainability Projects

Decarbonisation

Air

Etihad Greenliner Programme
Sustainable50
GE Engine Foam Wash
Sustainable Aviation Fuel Flights
Greenliner Carbon Offset Programme
Conrail management
Biofuel trials
Synfuel trials

Ground

Etihad Eco Residence
Electric Tractors
Noise pollution
Waste Recycling
Solar Energy Pilot
Biofuel crew transport
Electric Vehicle Chargers

Single-use plastics & waste

Single-use plastic policy products revision
Plastic free long-haul flight
Recycling facilities
Electronic Log-Books introduction

Conservation

Anti-Wildlife Trafficking Taskforce
Etihad Mangrove Forest
Sponsorship of BCGI Global Biodiversity Standard
REDD Makame Carbon Tanzania

Modern slavery

Modern Slavery Act
Training and awareness modules

Etihad Aviation Group

2018-2021 Carbon footprint

Scope 1	Unit	Conversion Factor	Tonnes CO ₂ per year			
			2018	2019	2020	2021
Aircraft Fuel Burn	kg	3.15 tCO ₂ /tfuel	9,714,898	9,014,084	4,207,328	4,215,343
Ground vehicle	Litre	2.7 kgCO ₂ /litre	6,264	8,426	8,620	2,570
Scope 2						
Etihad Airways Complex electricity	kWh	0.424 kgCO ₂ /kWh	4,968	4,691	4,290	4,222
Etihad Airways Plaza electricity	kWh	0.424 kgCO ₂ /kWh	5,424	5,340	4,684	3,307
Etihad Airways Centre electricity	kWh	0.424 kgCO ₂ /kWh	1,662	1,170	1,045	2,571
Etihad Crew Briefing Centre electricity	kWh	0.424 kgCO ₂ /kWh	2,740	1,185	1,113	1,169
Etihad Airways Complex district cooling water	kWh/hr	0.615 kgCO ₂ /KWh	2,206	2,161	1,282	1,866
Etihad Airways Plaza district cooling water	kWh/hr	0.615 kgCO ₂ /KWh	6,742	6,308	6,194	6,417
Etihad Airways Centre district cooling	kWh/hr	0.615 kgCO ₂ /KWh	1,812	1,204	1,029	1,069
Etihad Airways Complex potable water	m ³	8.85 kg CO ₂ /m ³	610	467	410	383
Etihad Airways Plaza potable water	m ³	8.85 kg CO ₂ /m ³	32	28	45	196
Etihad Airways Centre potable water	m ³	8.85 kg CO ₂ /m ³	153	131	75	62
Etihad Crew Briefing Centre potable water	m ³	8.85 kg CO ₂ /m ³	52	52	36	50
Scope 3						
Waste to Landfill - Etihad Complex	kg	487 kg CO ₂ e/tonne	81,407	62,952	43,923	71,367
Total tonnes of CO₂			9,828,970	9,108,199	4,280,074	4,310,592

To validate and legitimise our efforts, we have monitoring obligations pursuant to the European Union's Emissions Trading Scheme (EU-ETS) and the International Civil Aviation Organization's CORSIA Program. Etihad closely monitors and accounts for the two major factors contributing to the industry's emissions footprint and over which it has control: fuel burn and flight activity. The factors that will support the achievement of the target, under normal business operating conditions, are to increase the energy efficiency of Etihad's fleet and operations and to adopt and increase the use of sustainable aviation fuels. We report on our performance in accordance with the obligations set out in the CORSIA framework. Those reports are confidential, and we respect that process. To ensure the integrity of the programme we commit to transparency and reporting.





The Etihad Greenliner Programme



The Etihad Greenliner Programme



The Etihad Greenliner Programme came to life in 2019 when Etihad Airways revealed the flagship Etihad Greenliner aircraft; a bespoke liveried Boeing 787-10 and the world's first 'Greenliner', dedicated to sustainability.

This aircraft, and our entire 787 fleet, was committed to the global strategic partnership under the signing of an MoU with Boeing and General Electric and fueled by the philosophy of not what it is, but what it can become.

Over the last two years, Etihad has taken all possible steps in identifying constraints and opportunities, acknowledging the limitations, encouraging suppliers and partners to move toward more sustainable products, activating the market to think beyond the common boundaries, and using the Etihad Greenliner Programme as a challenge statement to the aviation world.

The Programme set about involving other partners to explore ways to take on today's challenges together, driven by the foundation pillars of knowledge sharing, innovation and technology. The partnerships forged through the programme have built a network of expertise and innovation to accelerate progress and work furiously toward sustainable aviation for the entire industry.

This is the power of the Etihad Greenliner Programme; the call to arms to the industry for the world. An open invitation to all to ask vital questions: where to improve, why can't we improve, what is stopping us – to work together to repair an industry that is not inherently interwoven with sustainability.

In 2020 and throughout 2021, the call to arms of the Etihad Greenliner Programme was responded to loudly.

FROM ABU DHABI *for* THE WORLD

ecoFlights

Putting ourselves to the test

The Greenliner test-bed fleet

With the commitment of the Etihad Greenliner B787 fleet dedicated to flying test-beds to assess initiatives to improve aircraft efficiency and reduce emissions, Etihad has operated a comprehensive programme of ecoFlights. The first such flight was in 2019, pre-empting the partnership announcement, as EY 484 operating from Abu Dhabi to Brisbane, Australia, was the world's longest single-use-plastic (SUP) free flight.

A key objective of Etihad ecoFlights has been targeting new initiatives or validating previous ones. Test-bed operations are an opportunity to gather and accumulate on-going research across different business areas to fulfil an overall objective of achieving maximum reduced environmental impact operations. The results are processed and validated against historical data and published to advocate for the necessary transformation of the aviation ecosystem and support industry reform.

On the 23rd October 2021, following 2 years of successful ecoFlights, Etihad, Boeing & dozens of other partners who had joined the "call to arms" came together to operate the "Etihad Sustainable Flight" on EY20 from London-Heathrow to Abu Dhabi. With all the efforts of the past 2 years combined on this one flight, the flight achieved a 72% reduction in absolute emissions when compared to a similar flight in 2019; a fundamental demonstration of the "art of the possible".



ABU DHABI TO BRUSSELS

January 13, 2020: Abu Dhabi Sustainability Week ecoFlight

- Collaboration with EuroControl and its members took place on the ecoFlight to Brussels, demonstrating the benefits to be made by close coordination between airlines and air navigation service providers. Electric tractors were utilised on ground in Abu Dhabi, and an expedited taxi time was made available to the aircraft to reduce additional fuel burn and minimise holding time with engines running.
- Reliance on airport ground power, rather than fuel-powered auxiliary units supported the flight, and Brussels Airport was selected following the demonstrative efforts made to be 'climate neutral' in its own carbon emissions.
- Further effort was made inside the cabin, with a reduction of 2,639 single use plastic items from service.

CHARLESTON TO ABU DHABI

January 23, 2020: Etihad Greenliner arrival flight

- Etihad received the signature Etihad Greenliner on a blend of 30% Sustainable Aviation Fuel, launching the sustainability programme together with Boeing and General Electric. Operated with several efficiency focused initiatives, such as continuous descent, and the use of Boeing Jeppesen FliteDeck Advisor.
- The flight was also the first test of the Nautical Air Mileage Evaluation to assess fuel flow on the B787.

ABU DHABI TO DUBLIN

March 17, 2020: First ecoFlight on Etihad Greenliner

- An operational efficiency focused ecoFlight to Dublin resulted in a 35-minute reduction in flight time, reduced fuel burn by 800kg and 3 tonnes of CO₂ emissions.



ABU DHABI TO ROME

17 April, 2021: Earth Day 2021 ecoFlight

- Proof of concept initiatives on flight and engine optimisations insisted upon the value of incremental reductions. The use of new Probabilistic Flight Planning capabilities to optimise routing and fuel efficiency were used. Taking weather forecasting into account, new flight planning technology assisted to identify a flight path using less fuel. This technology has the potential to reduce Etihad's fleet-wide annual CO₂ emissions by approximately 2 million kgs.
- Removal and replacement of on board items saved 1,731 single use plastic items, and an overall weight reduction of 108kg; approximately 60kg of CO₂ emissions.
- While international stations restrict airline capability of sufficient waste management, concerted efforts resulted in diverting 8.1kg of recyclable material from landfill.



The art of the possible

EY 20 LONDON TO ABU DHABI

October 23, 2021

The Etihad Sustainable Flight

Etihad celebrated the power of such demonstrations by operating "The Sustainable Flight"; an all-encompassing ecoFlight which saw a 72% reduction in absolute emissions compared to an equivalent flight in 2019, attributable to a range of initiatives studied under the programme.

- 80% of single use plastics were eliminated, and amenities provided from a range of non-single use plastic and light weight alternatives.
- Aircraft baggage was transported in Abu Dhabi Airport using electric tractors, while biofuel was used to power transit coach services.
- Data gathered by the aircraft sensors was submitted into the growing database and analysed by GE Digital.
- 38% SAF was utilised on the flight, though inhibited by airport infrastructure was loaded into the fuel hydrant system and served to multiple airlines.
- Operational efficiencies such as expedited flight routing, continuous descent and arrival patterns, single-engine taxi and potable water optimisation reduced fuel burn.
- In an industry first, the flight was the first commercial flight to trial contrail prevention, using SATAVIA software. Based on analysis of the original flight plan, the activity prevented a net c.64 tonnes of CO₂e (with a marginal fuel burn increase of 100kgs).

While our ecoFlight programme throughout 2020-21 was successful in demonstrating opportunities for emissions reductions, the fact remains that many of these initiatives cannot be readily deployed today in regular commercial airline operations due to inherent industry limitations. Governments must support the industry in realising the possibilities.

Boeing ecoDemonstrator

Flying research station

2020 saw Etihad continuing efforts under the strategic partnership with Boeing on the ecoDemonstrator Program, for the first time on a B787-10. Working with Boeing, NASA and Safran Landing Systems, the flying research station EcoDemonstrator had four components; to improve airspace efficiency, reduce fuel use to cut CO₂ emissions, advance ways for pilots to reduce noise and inform future quiet aircraft designs.



Noise

The 2020 Program conducted the most comprehensive NASA aircraft system noise flight tests ever. More than 1,000 microphones were positioned on the ground and 214 acoustic sensors attached to the outside of the 787 ecoDemonstrator, recording sound levels that included over 50 unique test configurations and flight maneuvers.

Up to 30% of noise from aircrafts approaching an airport is caused by air flowing around the landing gear. Testing was performed using landing gear designed to be quieter by Safran Landing Systems. Modifications included perforated fairings covering part of the nose landing gear and airfoil-shaped fairings wrapped around struts on the main gear.

1,200

microphones

214

external acoustic
sensors

50

unique test
configurations

The testing generated 1.6 terabytes of noise data, and valuable to better understand and validate community noise prediction processes and the noise reduction potential of a landing gear modified for quieter operations.



Sustainable Aviation Fuel

Each test-flight on the ecoDemonstrator aircraft used a blend of between 30-50% Sustainable Aviation Fuel, and Etihad leveraged this opportunity by operating an ecoFlight for the ecoDemonstrator's arrival and inauguration into our fleet. In addition to flight path optimisation and operational efficiencies, the delivery flight of the ecoDemonstrator arrived with the world's highest volume at the time of 50% SAF, totaling:

50,000

USG of 50/50
biofuel blend

60tCO₂

reduced overall
emissions



The aircraft arrived in Abu Dhabi in late 2020, unveiling our new sustainability mission statement

Etihad Airways:

FROM ABU DHABI *for* THE WORLD



ecoDemonstrator
PROGRAM



GE Engine Foam Wash

Engineering proficiency

In February 2021, shortly after Etihad's participation in the ecoDemonstrator Program, the airline was the first to receive a technical license for GE Aviation's 360 Foam Wash for use on GE90 and GENx engines.



The jet engine cleaning system optimises performance of the GE90 and GENx-1B engines on Boeing 777 and 787 fleets, with potential annual impacts at full scale use of more than 7,000 metric tonnes of CO₂. Application of the process resulted in 1,000 tonnes of fuel conserved, or more than 3,000 tonnes of CO₂.

The groundbreaking process restores engine performance; by reducing build-up of deposits in the engine, lowering engine exhaust temperatures, and improving engine compressor efficiency. These improvements led to reduced fuel consumption and increased engine time on wing, in addition to significant water use reductions.

The partnership with GE Aviation followed through on the sentiments of the Etihad Greenliner Programme, seeing the collaboration produce valuable data during the trial process for product development. The solution further provides a case study to the broader industry on the benefit of developing solutions to improve supply chain lifespan.



Brussels ecoFlight

Abu Dhabi Sustainability Week 2020

2,639 single use plastic

reduced

8,836 kg

weight reduced

7,000 metric tonnes

annual CO2 savings with GE 360

Engine Foam Wash

Dublin ecoFlight

First Etihad Greenliner ecoFlight

40 minutes

flight time reduced

800kg

fuel saved

3 tonnes

CO2 emissions reduced

DUBLIN

BRUSSELS

LONDON

ROME

Rome ecoFlight

Earth Day 2021

1,925 kg

CO2 reduced

1,731 single use plastic

reduction

309.5 tonnes CO2

avoided annually from electric tractors

TARGETS



NET	ZERO EMISSIONS	2050
50%	2019 EMISSIONS	2035
25%	CO2 INTENSITY	2025
80%	SINGLE USE	
	PLASTICS	2022
100%	GREENLINER	2021
	OFFSET	
ABU DHABI FOR THE WORLD		

ecoDemonstrator

Test & Delivery Flight

c.50,000

gallons of 50/50 Sustainable Aviation Fuel

30-50%

SAF used on all test flights

60 tonnes CO2

reduced on delivery flight

CHARLESTON

London Sustainable Flight

Two years of Etihad Greenliner Programme

72% 67%

CO2 emissions reduced through operational efficiencies

carbon intensity reduction per guest

1,725

Single use plastics removed

350 mangroves

adopted

3,700kg

CO2 captured by

mangroves

342m

aircraft scrap material

upcycled

174 tonnes

CO2 avoided by GENx powered

B787

64,000kg

secondary CO2 emissions avoided

via SATAVIA contrail management

39,000 kg

CO2 emissions reduced through

Sustainable Aviation Fuel

800 kg

fuel saved due to optimized

flight path

1,000 kg

fuel saved due to

operational efficiencies

Etihad Greenliner

Test bed fleet

39 B787

Etihad Greenliners

15-25%

more fuel efficient

80,000 tonnes

CO2 offset for 2021

30%

Sustainable Aviation Fuel on delivery

flight

Brisbane ecoFlight

World's longest and regions first single use plastic free in-flight service

22 April

Earth Day 2019

95 single use plastic

items removed

50 kg

plastics prevented from landfill

BRISBANE

ECOFLIGHTS



AMSTERDAM	SAF	2019
BRISBANE	SUP	2019
DUBLIN	CO2	2020
BRUSSELS	SAF	2020
ECOD - USA	SAF	2020
ROME	CO2-SUP	2021
LONDON	CO2	2021

ACHIEVEMENTS

FROM ABU DHABI *for* THE WORLD

The Etihad Greenliner Programme

Answering the call to arms

There is a saying that in times of crisis, families can either pull themselves together, or pull themselves apart. It's a choice. And now, more than ever before, the aviation family needs to pull together.

Etihad views emission reductions as a whole-of-industry responsibility and has actively explored collaboration across the entire aviation ecosystem, including partnerships with government agencies, to address structural opportunities such as airspace management reform, which, even with small measures, could deliver seismic reductions in aviation's carbon footprint.

Supporting our contention that reducing aviation's carbon emissions is an industry issue, and not specifically an airline issue, Etihad has extended an invitation to aviation suppliers, urging them to consider their own sustainability initiatives, and how they might dovetail with airline efforts to become more sustainable, whether by developing affordable, lightweight replacements for single-use plastic items in the cabin or reducing component or equipment weights to lower fuel burn and emissions.

Etihad also offered approved partners in the Etihad Greenliner Programme the opportunity to test their own sustainability initiatives aboard scheduled flights of the airline's Boeing 787 aircraft on any of the 40-plus international routes which they fly.

Two years after the Greenliner Programme was launched, and the call to the world went out, we are proud of all those partners who responded so proactively and loudly!



Two years ago, two years on

Dubai Airshow 2021

Two years ago... at the 2019 Dubai Airshow Boeing, General Electric & Etihad launched the Greenliner Programme to a confused yet enthralled audience. Many could be forgiven for their confusion about such a launch; instead of announcing a major fleet purchase as is typical of airshows, these two remarkable companies announced a unique partnership centered around the world's most sustainable commercial aircraft – the Boeing 787. There was no agenda; no commercial objective; just the aspiration of working together towards a sustainable future. Those were lofty days; we would make it up as we went along. We had nothing to lose and everything to gain.

And we gained everything

Two years on... back in Dubai at the 2021 Airshow. This time we weren't talking aspiration. The concept wasn't wistful; wasn't lofty. Those two years had made the idea of industry collaboration without commercial objective a reality.

الإتحاد
ETIHAD Choose Well.



Etihad expands strategic sustainability programme uniting industry leaders in the most comprehensive, cross-organisational aviation sustainability initiative ever undertaken

AIRBUS



15 November 2021, 04:00 PM

Abu Dhabi, UAE – Etihad Airways has signed multiple partnership and collaboration agreements with the aviation industry's top manufacturers, suppliers and stakeholders at the 2021 Dubai Airshow, bringing aviation's leading organisations together under its strategic sustainability programme to drive decarbonisation creating the industry's most comprehensive multi-organisational partnership to reduce Co2 emissions globally.



Once again there was no fleet order, instead a collaboration of two had become the most popular show in town; a partnership of the many. Joining the Boeing 787 Greenliner was her long-awaited partner, the Airbus A350-1000 dubbed the "Sustainable50". It would be hard for many airlines to present sustainable fleet credentials like this.

With Boeing & General Electric renewing their commitment to the Greenliner Programme, and Airbus & Rolls Royce launching the Etihad Sustainable50 Programme, we are confident that we will look back on the Dubai Airshow of 2021 as a milestone occasion in the drive for sustainable aviation.





Operations

Efficient aircraft

The greatest single opportunity for carbon-emission reduction involves the development of aircraft and engines that reduce emissions. The major commercial aircraft and engine manufacturers have made considerable progress in this area; solutions available today. As early as 2010 Etihad identified these aircraft as the most sustainable aircraft on the market and confirmed fleet orders for both.

The Boeing 787 Dreamliner was the first commercial airliner to be constructed primarily of lightweight composite materials to reduce its weight and increase its flying range, while consuming significantly less fuel than earlier-model aircraft of similar size thanks to the step-change powerplant technology of the GENx engine developed by General Electric. Based on a standardised measure of cost per available seat kilometre, the Boeing 787/GENx combination is at least 15 per cent more fuel-efficient than any aircraft type previously operated by the airline. The 787 is now the backbone of the Etihad Airways fleet. By 2023, this aircraft will represent over 50% of the airline's fleet.

In 2022, Etihad will introduce another new/next generation fleet of Airbus A350-1000, with sustainability credentials similar to the Boeing 787. Concurrently, the airline will continue its transformation drive towards a sustainable fleet with the phase out of older models such as the Airbus A330 and the old generation Boeing 777.

The introduction of the Rolls Royce XWB-97 powered Airbus A350-1000 aircraft in March 2022 further demonstrates the airline's commitment to invest in modern, fuel-efficient aircraft. The addition of Rolls Royce and Airbus to the airline's call to arms – under the unique banner "Sustainable50" – allows vital cross-industry information sharing, replicating many of the Greenliner test-bed initiatives and exploring technology advancements associated with this new aircraft/engine combination.

Carbon emissions & intensity forecast

Etihad Airways is not only using absolute emissions but also carbon intensity as core KPI to measure the progress of its 2050 Net Zero roadmap. It is important to deliver this ambitious target, based on a clearly defined timeline, where intermediate targets and trigger events are identified, and progress publicly disclosed.

To achieve this Etihad Airways has linked the carbon intensity KPI targets to its loan agreements and meets the Sustainability-Linked Bond Principles 2020. This assures that the KPI is relevant and material from an environmental standpoint, is measurable, externally verifiable and can be benchmarked. Carbon Intensity is not only a measure customers are using to select the airline they fly with, but it has also grown into key decision factor for the air cargo shippers.

The approach of using revenue tonnes as a baseline combines the travelling public component of air travel with the air cargo shipping component, ensuring that commercial business and sustainability decisions are irrevocably linked.

The achieved KPI results will be externally verified on an annual basis as part of the loan requirements and the relevant sections of verification assurance reports will be made publicly available as part of our Sustainability Report. The Etihad Airways Board has deliberately chosen this approach to demonstrate the seriousness around sustainability and build its credibility with regulators, commercial partners and customers likewise.

Due to the schedule downsizing associated with the pandemic, changes to the fleet mix and several emissions-reductions initiatives, Etihad achieved net 57% reduction in emissions in 2021, reaching our 2035 target 14 years ahead of schedule. Going forward, our commercial growth, will challenge us once again to remain below that target, but with our new fleet mix, and a diligent programme of initiatives & offsets we are confident to maintain that new baseline.

		2019	2021	2022	2023	2024	2025	2026
Intensity	CO ₂ /RTK (g) Baseline	651						
	CO ₂ /RTK (g) Forecast 5YP		591	542	462	446	442	436
Emissions	CO ₂ (t) Baseline	9.01M						
	CO ₂ (t) Forecast 5YP		4.22M	5.13M	5.03M	5.21M	5.33M	5.47M
CO ₂ /RTK Reduction 2019 %			-9%	-17%	-29%	-31%	-32%	-33%
CO ₂ (t) Reduction 2019 %			-57%	-43%	-44%	-42%	-41%	-39%
Mitigation Requirement (t) Etihad 2035 Commitment			0 (t)	625k (t)	522k (t)	704k (t)	826k (t)	961k (t)



It's not one thing; It's a million little things

Optimised operations

Beyond fleet choice, opportunities continue to be explored around not just what aircraft are flown, but importantly, how they are flown. A key and emerging driver of sustainable flight operations is the data produced by modern aircraft that provide insight into flying efficiencies that realise potential emission reductions.

Operations Efficiency Steering Group

Within Etihad, Operational Efficiency exists to continually monitor, report and verify the fuel consumption patterns of our operations. A key output of the group is to set targets and implement valuable initiatives to monitor flight performance and technical behaviors.

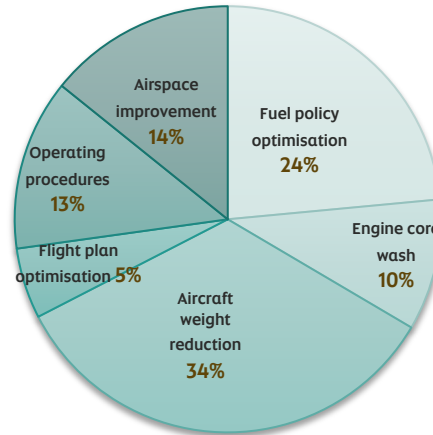
Data driven progress

Etihad is now using aircraft-generated statistical data to assess all parts of the operation of an aircraft, from "gate-to-gate". This extends the boundary of opportunity beyond the aircraft to include airport handling and elements that are driven by the guest experience, allowing the possibility of customising fuel volumes on a flight-by-flight basis to meet actual needs.

One such example is the trials Etihad performed with Boeing of the Jeppesen FliteDeck Advisor, a digital solution for real-time flight efficiency insights. First explored during Etihad's participation in the 2020 Boeing ecoDemonstrator Program, the application identified opportunities of fuel savings in Cruise and Continuous Descent and Arrival procedures allowing further evidence of emissions reductions initiatives. Tests on the B787 demonstrated potential savings:

1.4%	350kg	1,100 kg
Fuel savings	Average fuel saving/flight	Average CO ₂ saving/flight

Contribution of optimisation initiatives to emission reduction



Other operational optimisations sought to reduce the carriage of unnecessary taxi fuel and led to reduced aircraft weights, lowering fuel consumption and emissions.

Data also has yielded similar information about the use of potable water carried on aircraft for toilets and wash basins, presenting a pattern of usage across a range of flights, routes and even times of travel. Etihad is leveraging this rich data, and advances in aircraft sensor technologies, to determine optimum volumes of potable water to be loaded, again leading to sizable weight reductions and delivering lower fuel consumption and CO₂ emissions.

Airspace efficiency

In 2020 and 2021, on a range of ecoFlights, Etihad worked with several air navigation service providers (ANSPs), including the FAA, the GCAA, based at UAE's Sheikh Zayed Centre, the UK's renowned National Air Traffic Services (NATS), and a number of EuroControl's Member States' ANSPs.



Targeting optimal flight paths and digitally aligning pilots, Air Traffic Controllers and the airline's operations centre, Etihad's ecoFlights demonstrated the benefits of optimised routing (simplifying the process for course changes due to weather and traffic) and enhancing safety (by reducing workload and radio frequency congestion for pilots and controllers). Tools included a text messaging system, flight path application and NASA's Tailored Arrival Manager. The testing included 17 re-routing's during two transcontinental flights across the United States. Further benefits included reduced holding time before landing, saving time and fuel and therefore, lowering CO₂ emissions.

These efforts sought to confirm what is commonly known; that the most effective and urgently required initiative to reduce aviation's emissions is the reform of airspace and airspace management. Greater alignment of air navigation service providers, together with increased investment in traffic management infrastructure and continuous development of efficient traffic management practices, would deliver seismic improvement to the airline industry's efforts to achieve carbon-neutral growth.



DECISIONX: NETZERO

Contrail prevention

Aircraft contrails (or condensation trails) are clouds made up of aircraft-generated ice crystals; the line-shaped clouds formed by aircraft passing through high level, cold, humid, atmospheric conditions (ice-supersaturated regions, ISSRs). Contrails cause a net surface heating effect globally by trapping atmospheric heat, causing up to 60% of aviation's total climate impact (equivalent to 2% of all human impact).

Validation

SATAVIA contrail calculations are highly accurate, resting on best-in-class atmospheric and contrail radiative forcing modelling, building on decades of scientific research. SATAVIA's numerical weather prediction modelling has been validated using millions of data points generated by radiosonde and other observations. SATAVIA's ability to predict ISSRs and contrail formation is up to 95% accurate.

Philosophy

The exploration of SATAVIA's contrail prevention software widens the net to cover non-direct emissions. With smarter flight planning and tactical changes, Etihad will continue to work with SATAVIA to continue in depth trials and development of the DECISIONX:NETZERO contrail prevention platform, integrating atmospheric modelling with operational flight planning to prevent contrail formation by Etihad aircraft.

SATAVIA
MAKING AVIATION SMARTER

SATAVIA: World's first trial

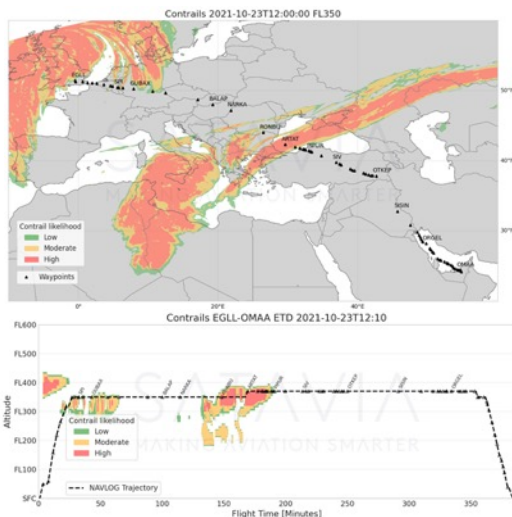
In a world's first trial on the Etihad Sustainable Flight on 23 October 2021, the SATAVIA software was deployed to better understand indirect emissions and improve the performance of the software. Based on analysis of the original flight plan, EY20 contrail prevention activity achieved:

64,000

Kg indirect-CO₂
emissions avoided

60%

Total estimated
climate impact of
aviation by contrails



Red areas = areas of contrail risk

Looking under every stone



eTech Logs

Following three months of trials on the B777 fleet, Etihad was the first airline in the region to implement the use of electronic technical logs; eTech Logs. With approval from the GCAA, the digital solution removes reliance on paper documentation, improves efficiency and with real-time data capture supporting multiple stakeholders, reduces delays and costs. The trials were a success and by the end of 2021 were rolled out across the Etihad 777 and 787 fleets.

Lufthansa Technik AG

At the Dubai Airshow in November 2021, Etihad and Lufthansa Technik AG signed a Memorandum of Understanding (MoU) regarding a comprehensive partnership on the exploration of digital solutions that are set to further optimise the airline's technical fleet and operations management. The partnership aims to utilise data collection and processing targeting fuel efficiency to reduce emissions from fuel burn.



Lufthansa Technik

Electric ground vehicles

Improving ground performance is a vital part of improving our overall scope 1 emissions. Etihad has deployed 33 out of 88 fleet of electric tractors with 37% of flights serviced by tractors. Benefits include c.309.5 tonne annual CO₂ saving. These tractors service baggage and freight loading at the airport and this initiative demonstrates the value in analysing the full ecosystem which supports flight operations.

Lightweight equipment

In July 2021, Etihad Cargo introduced Lightweight Unit Load Devices (ULDs). Etihad Cargo sought to further identify ways to reduce its carbon emissions by introducing lightweight ULDs. These lightweight containers have the potential to conserve around 830 tonnes of weight per month for wide-bodied flights at full scale use. On-going monitoring is key to measuring long-term benefits; allowing us to continually explore opportunities for incremental reduction.



Sustainable Aviation Fuels

Sustainable Aviation Fuels

Sustainable fuel is a major objective of the Emirate of Abu Dhabi, and a guiding principle of its Abu Dhabi 2030 social and economic plan. Abu Dhabi aims to reduce its historic reliance on oil and diversify its economy; including the development of Sustainable Aviation Fuels (SAFs).

To develop the airline's position on Sustainable Aviation Fuels, Etihad has contributed significantly through investments, R&D, trialing and testing, and further, into advocacy to expand positioning for SAFs.

As founding partners of BioJET Abu Dhabi, to develop a biofuel supply chain in the UAE, the SBRC (Sustainable Bioenergy Research Consortium), and alongside Masdar to support the Green Hydrogen economy, Etihad is positioned to effectively pursue further opportunity for SAF engagement; the efforts serve to de-risk the supply chain and make sustainable fuels commercially sustainable. In 2021, Etihad signed a Joint Development Agreement with Tadweer to develop waste to fuel from MSU which further support the nation's landfill diversion goals.

The airline is also committed to testing and, when possible, introducing sustainable aviation fuels from various sources into its energy mix.



2011-2012

- First commercial flight using SAF made from used cooking oil. Abu Dhabi to Washington.
- Etihad is founding partner of BioJET (to establish biofuel supply chain in UAE)

2014

- BioJET Abu Dhabi becomes SBRC (Sustainable Bioenergy Research Consortium) with Boeing, Total, Takreer, Masdar

2019

- Flagship project of SBRC SEAS (Saltwater Energy Agriculture System) produces first locally produced biofuel from Salicornia Plant

- SEAS biofuel used from Abu Dhabi to Amsterdam
- Etihad signs groundbreaking global strategic partnership with Boeing; Etihad Greenliner Programme

2020

- Etihad Greenliner Aircraft arrives with 30% biofuel blend
- Etihad, Boeing, NASA, Safran conduct 2020 Boeing ecoDemonstrator Program
- ecoDemonstrator Program operates all test flights on 30-50% biofuel
- Aircraft arrives in Abu Dhabi on maximum volume of biofuel; 55,000 USG of 50/50 SAF

2021

- Etihad joins SAFI-UAE (Sustainable Aviation Fuels Initiative). Targeting de-risking portfolio of investments for viable deployment of SAF
- Etihad operates Sustainable Flight with 34% SAF blend for a reduction of 39 tonnes CO₂ of absolute emissions

2021-2022

- Etihad and Tadweer sign joint JOP (Joint Development Agreement) on waste to fuel initiatives

2027-2030

- Masdar Hydrogen Project to achieve viability between 2025-2027 for full integration in 2030
- CORSIA mandatory for all airlines

2035

- Etihad target to achieve 50% net reduction of 2019 emissions

2050

- Net Zero Carbon Emissions by 2050 global target
- Etihad Net Zero target

Sowing the seeds

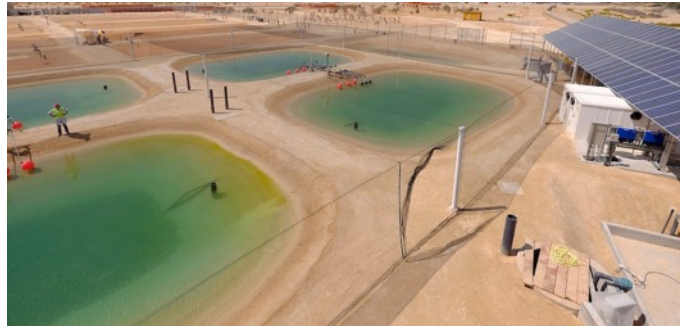
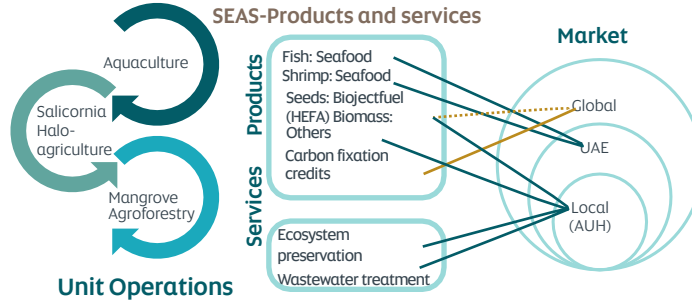
Research and development of sustainable fuels

Sustainable Bioenergy Research Consortium Saltwater Energy Agriculture System (SEAS)

Etihad and Boeing were among the founding partners of the Sustainable Bioenergy Research Consortium in 2010. Based at Khalifa University near Abu Dhabi and led by the Masdar Institute of Science and Technology, its flagship pilot project is the Seawater Energy and Agriculture System (SEAS) produces sustainable fuel from plants that grow in the desert, irrigated by coastal seawater. Etihad used the initial batch of fuel from the pilot project in January 2019 on a passenger flight from Abu Dhabi to Amsterdam.

Etihad believes that renewable biofuel production should not compete with food resources. As part of the SEAS pilot, six ponds of aquaculture generate the nutrient rich water which feeds fields of saltwater tolerant plants from which biomass and oil rich seeds are produced to be converted to liquid fuel. The pilot facility opened in March 2016 and sits on a two-hectare site at Masdar City in Abu Dhabi.

The objective of the SBRC is to establish a commercially viable SAF; unlocking the potential of seawater and arid land to produce biomass as a feed source of sustainable aviation fuel. The proving of its commercial viability is a significant win and improves possibilities of full-scale introduction.



Refusal to shy from a challenge

Among other activities, in 2020, our ecoDemonstrator arrived with the largest commercially viable SAF volume of c.50,000USG at 50:50 blend through ecoDemonstrator program, in partnership with Boeing, WorldEnergy and EPIC. The fuel is a blend of traditional jet fuel and sustainable fuel produced from inedible agricultural wastes to minimise emissions. The 50/50 blend demonstrated the maximum achievable greenhouse gas reduction commercially available for aviation fuel at the time.



Tadweer Waste-to-Fuel

Etihad and Tadweer (Abu Dhabi Waste Management Center) signed a Joint Project Development Agreement (JOP) on waste to fuel initiatives, as part of the nation's targets to divert 75% of waste from landfills by 2025 and the sectors compliance with CORSIA, toward decarbonisation through utilisation of Sustainable Aviation Fuels. The airline's history of SAF exploration, including production, supply chain development and offtake are vital to the integrity of the JOP Agreement with Tadweer to develop locally sourced SAF in the region.



Masdar hydrogen

In Q1 2021, Etihad continued close collaboration with Masdar, and partnered with Abu Dhabi Department of Energy, Lufthansa Group, Khalifa University of Science and Technology, Siemens Energy, and Marubeni Corporation to explore the Green hydrogen economy in the UAE with a demonstrator project. Targeting the meaningful production of green hydrogen, sustainable fuels and e-kerosene for transport, shipping, and aviation, the hope is the diversification and 'all of the above' approach to different types of sustainable fuels will allow them to become more widely available in reliable quantities and competitive costs.





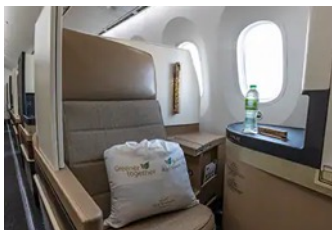
Beyond operations

Single-use plastics

An environmental threat, a difficult challenge

No simple alternative to single use plastics

The Environmental Agency of Abu Dhabi has flagged single-use plastic as a major environmental threat to the UAE and Abu Dhabi's biodiversity; in line with global perceptions of fossil fuel-based plastics. Etihad, being a proactive proponent of the environment set out a single-use plastic policy across the group in March 2019; to reduce by 80% the single-use plastics used by 2022. This target continues to stand, however efforts made prior to 2020 were invalidated when COVID precautions took hold. Etihad is working with the Environmental Agency of Abu Dhabi in SUP reduction, through MoU signed in Sept 2020.



The complete removal of SUP in an ultra-long-haul flight of about 14 hours for a full-service airline was a first. That allowed us to better understand issues around waste management restrictions, as well as undertake a full supply-chain analysis. We removed 43 items from service. That in turn saves 17 tonnes from landfill annually.

We have identified the important obstacles which prevent aviation from achieving waste management goals. The international waste regulations that exist at many destinations in our network categorically prohibit waste segregation and enforce incineration. Understanding and complying with these customs laws is a requirement but our targets remain a priority, and testing lends the necessary insight into how to navigate this ecosystem and inform future product and service offerings.



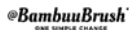
Al Ain Water

Proudly the first airline in the region to showcase our local water partner, Al Ain Water's sustainable, 100% plant-based water bottles (including the cap). This product is biodegradable and compostable within 80 days and contains no petroleum.



Packing and loading

For blankets, headsets, and various service items, linen products that can be washed and reused multiple times, while maintaining the safety and hygiene add a benefit of removing almost 400 single use items from on board service.



Non-Plastic Beach, Yaleen Smile & Bambuu Brush

Trials of Non-Plastic Beach and The Yeleen 'Toothpaste in Tablet' form requires no water and no toothbrush. Bambuu Brush toothbrushes allow our guests to deviate from plastic alternatives. They fund charity projects in Ghana to utilise and combat plastic waste.



Locally sourced dining

Seeking both sustainable and locally produced meal ingredients ensures both benefits to the environment and the UAE agriculture sector. Ensuring no palm oil is used on board, menu options include fresh vegetables and greens from sustainable vertical farms.



Sola Cutlery

Airlines are limited in resources to provide eco-friendly dining wares are both non-single use plastic and lightweight. Sola Cutlery offers lightweight stainless-steel cutlery, with a potential reduction of more than 900 single use plastic items per flight.



Butterfly Cup

Packaged without single use plastic, Butterfly Cups are made from food grade paper, they are 100% recyclable and 80% compostable, while reducing plastic by being innovatively designed to remove the need for an additional lid.



EcoWare Bagasse Pots

Providing high quality biodegradable and compostable products made from plants, Eco Ware's product potential lies in its compostable materials that can be safely disposed off in airport incineration; as many international waste regulations mandate.



Looking ahead

2022 will see Etihad apply the learnings from each ecoFlight, ongoing development of innovative solutions and diligent research to introduce a circular theory service that reduces single use plastics on board by 80%, uses reusable service items made from recycled material and maintains high health, safety and quality standards.

80%

Single-use plastic Reduction Target by 2022

4

ecoFlights operated specifically targeting waste management

1,731

Single Use Plastic items removed on Rome ecoFlight

2,639

Single-use plastic items removed on Brussels ecoFlight

1,725

Single-use plastic items removed on Etihad Sustainable Flight

342m²

Aircraft scrap material upcycled for Etihad Sustainable Flight

Innovation

Managing waste at the source

Lumitics

In September 2020, Etihad partnered with Singapore food technology start up Lumitics to use computer vision and machine learning to reduce food waste in its catering facilities.

Targeting waste remaining from unconsumed Economy-class meals, the pilot project analysed data to better inform inflight catering planning and meal ratios. Types and quantities of meals were analysed using AI and image recognition, allowing the preservation of health and safety standards.

Lumitics



The Concept: NEOS Fly+

In February 2021, Etihad partnered with The Concept, a UAE-based start up to develop sustainable inflight solutions for the monitoring of food consumption and reducing food waste in the aviation industry. With Etihad Airways the official airline partner of Hub71 (a start-up incubator) at Abu Dhabi Global Market, the start up has joined the tech accelerator to develop the NEOS Fly+ meal tray.

The product was tested on board an ecoFlight to Rome, and each meal tray was made from 20 recycled PET bottles used in our economy class service, allowing for closed loop recycling within Etihad's operations. Etihad signed a partnership agreement with The Concept to co-develop further iterations of the tray which will include the addition of an anti-microbial additive proven to be 99% effective against microbes into the tray's production. Development includes the technology for improving meal planning, reducing operating costs and promoting a circular economy system.

Waste Master

In early 2021, working with Green Eco Tech, Etihad Airport Services Catering (EASC) held a site demonstration of an on-site solution for the conversion and re-purposing of this organic waste into reusable resources; called the Waste Master. It uses unique, proprietary technology to accelerate the decomposition of food waste, converting it without using additives or water, into a much reduced and virtually odor-free residue. This compost-like material can be used in agricultural systems or potentially as green energy.

Ditto

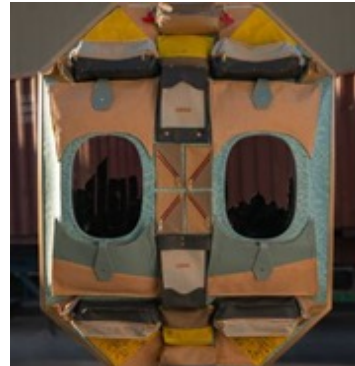
Tried on the ecoFlight to Rome, Ditto is a cross-platform database that enterprises can embed in their mobile, web, IoT, and server applications which can sync data in real-time with or without an internet connection. Ditto's patented technology allows communication in real-time, digitally recording guests' orders and replacing paper-based ordering method.

Supporting Eco-innovators

In April 2021, Etihad partnered with NYU Abu Dhabi's startAD NextGen Incubator to launch a challenge looking for innovative solutions to improve waste management onboard. The challenge was open to all university students based in the UAE, and five talented student startup groups were shortlisted as finalists. The students underwent a bootcamp programme and worked closely with mentors from Etihad to refine their proposition. The winner of the Etihad Challenge 'Replate' received a chance to trial their solution on an ecoFlight.

Upcycling

In February 2021, Etihad partnered with local UAE artists to repurpose aircraft cabin interior scrap into art installations. As an industry, excess or scrap aviation material can be difficult to process, and innovative solutions such as upcycling offer an opportunity to identify alternative and environmentally friendly waste management. Materials included carpet, fabric rolls, emergency equipment, sidewalls and windows, floor mounting rails and seats.



On the ground

The scope of business activity for Etihad Airways is extensive; not limited to our own flight operations, and including our UAE based offices, service centers, accommodations, warehousing, technical facilities, training academy and others. Etihad monitors the utilities consumption under our Scope two and three emissions reporting. Etihad Airways has a dedicated Asset Management team that has implemented a concerted and strategic effort to improve consumption of ground utilities and resource to improve overall emissions reductions.

In October 2020, Etihad Airways formed a partnership with the Environmental Agency of Abu Dhabi under guidance of an MoU to ensure alignment to AD's waste management and environmental standards mainly around SUPs and Emissions. Striving to fulfil the sustainability goals of Abu Dhabi, the MoU served to collaboratively devise climate change mitigation projects with shared objectives.

IATA Environmental Assessment (IEnvA)



Etihad Airways successfully completed IATA's Environmental Assessment stage 2 and received accreditation in four key operational areas. The areas include facilities management (including corporate activities), flight operations, Etihad technical division and Etihad Catering Services. The IATA Environmental Assessment (IEnvA) Program is an evaluation system designed to independently assess and improve the environmental management of an airline. Stage 2 represents the highest level of IEnvA compliance and is a voluntary programme that enables us to track, mitigate and manage environmental and sustainability risks. Etihad is one of only 9 airlines to have achieved the certification.

Sustainable living accommodation

Since 2015, Etihad has been strategically locating offices and company provided accommodation (CPA) to remove the number of factors impeding the application of emissions reduction strategies. In 2020 and 2021, this allowed the teams to focus on efficient energy practices and maximised capacities. A total of four CPA's were vacated, and residents were moved to Al Forsan, Etihad Plaza and Masdar Eco-Residences. Etihad undertook CPA home & building automation projects across multiple locations. This included energy optimisation, smart monitoring, 'Flight Mode', Home and Secure Mode. These improved performance across a range of factors, including reductions on consumption, improved health and safety monitoring and improved quality of life. Etihad also operated a pilot project with Hyet Solar focusing on solar energy.

Company Provided Accommodation	2019	2020	2021	2020-2021 Impact	
Occupancy (persons)	2,727	3,243	3,842	+ 599	+18.4%
Cooling (THr)	30,985,047	33,438,896	25,271,968	- 8,166,928	-24.4%
Electricity (KWh)	35,008,030	33,170,972	26,678,578	- 6,492,349	-19.6%
Water (m ³)	200,749	310,565	205,320	- 105,245	-33.8%

Transportation

The average distance of the since-closed buildings to Abu Dhabi Airport was between 18-25+ kilometers. Etihad Plaza is located within 200m of Etihad Airways Complex, where the majority of core employees work, resulting in a reduction of emissions caused by transport. The Masdar Eco Residence is located 4kms from AUH Airport, and Al Forsan at 13kms – a travel distance of less than 10 minutes to airport, Etihad Head Office and Training Academy.

De-routed transportation resulted in an overall reduction of 6,050 tonnes of carbon emissions from 2020 to 2021.

In 2021, Etihad partnered with Porsche to install electric vehicle charging stations across Etihad office locations.



6,050 tCO₂

Tonnes CO₂ reduced between 2020 and 2021 from transport

51.9 tCO₂

Reduced through use of biofuel on buses



Run on biofuel

In June 2021, following a trial period between March and May, Etihad and Looatah launched the use of biofuel on our fleet of 85 contracted buses. Within the first month, 7.3 tonnes (7,394kg) CO₂ emissions were saved. In the last 6 months of 2021, the total emissions savings from use of biofuel was 51.9 tonnes.



Masdar Eco Residence



In 2017, Etihad Masdar Eco-Residence officially opened, the world's first purpose-built, sustainable, Platinum rated LEED (Leadership in Energy and Environmental Design) building. The Eco-Residence comprises of 11 buildings, housing Etihad cabin crew and pilots. By 2019, Phase II was completed, and in 2020, audit findings stated the Eco-Residence consumed 45% less energy than average multi-unit buildings in Abu Dhabi, as per the Urban Planning Council benchmark, with a 91% occupancy.





Beyond carbon

Greater than the sum of its parts Creating the blueprint

Financial commitment

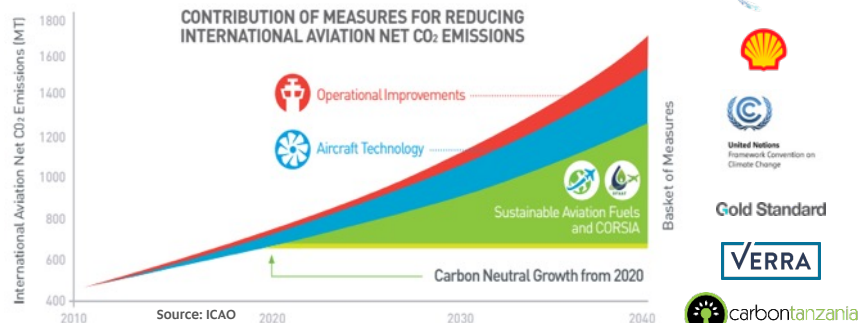
Our commitment extends beyond our flying. We believe that all parts of our operations must be focused on sustainability. That includes the ways in which we raise finance and the uses we put that finance towards.

In January 2020, Etihad became the first airline to secure commercial finance based on verified compliance with the Sustainable Development Goals of the United Nations. In issuing a Sustainability-Linked Sukuk, Etihad is voluntarily adding to its existing commitments under CORSIA, committing to also invest in additional climate reduction projects to promote its target to reduce carbon emissions intensity by over 20% from the 2017 baseline (based on Fleet Transformation efforts).

Our first financing was in 2019, in partnership with First Abu Dhabi Bank and Abu Dhabi Global Markets. Etihad Airways raised 100 million euros to fund part of the Etihad Eco Residence, sustainable crew accommodation.

In September 2020, Etihad launched the world's first transition sukuk and the first sustainability-linked financing in global aviation, under a transition finance framework. The US\$ 600 million transaction supports Etihad's drive for sustainable aviation by linking the sukuk terms to Etihad's carbon reduction targets.

In 2021, Etihad once again impressed upon the importance of sustainable finance by raising \$12 billion in the first sustainability-linked loan (SLI) tied to environmental, social and governance (ESG) targets in global aviation. Etihad picked HSBC and First Abu Dhabi Bank (FAB) as the strategic partners and financiers for the deal.



Carbon offsetting

The United Nations has set a target of zero net carbon emissions by 2050. The UAE is among the first countries to agree to the International Civil Aviation Organization's (ICAO) Carbon Offset and Reduction Scheme for International Aviation (CORSIA). CORSIA pledges carbon neutral growth by airlines from 2020, with net emissions by 2050 reducing to 50 per cent of 2005 levels.

As such, Etihad Airways is committed to zero net emissions by 2050, and electively to halving its 2019 net emission levels by 2035. This obligation extends to all parts of our operations, and Etihad has committed to compliance in the voluntary pilot phase commenced in 2021. However, if the target is not met, Etihad will be obliged to purchase carbon offsets to cover post 2020 absolute emissions.

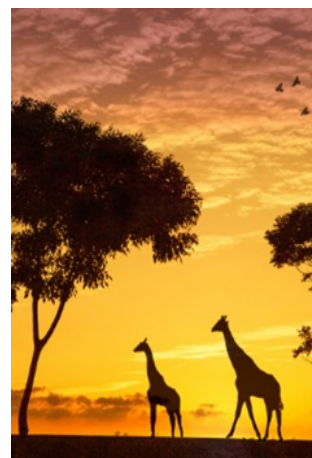
The airline seeks to ensure that any offset initiatives add value to local markets and complement its direct initiatives to reduce carbon emissions across its global operations. Etihad is committed to continuously explore meaningful and quickly deliverable initiatives.

Where feasible, credits will be purchased from the offset schemes verified by the CORSIA Technical Advisory Body, aligning to the WWF's guidance on voluntary purchases of carbon credits. Etihad will ensure that projects avoid leakage and comply with all social and environmental safeguards. For the avoidance of doubt, where Etihad purchases offsets under its commitments in this framework, these will be in addition to credits that are purchased as part of CORSIA commitments.

In 2020, Etihad began to develop and implement a relevant and considered programme of carbon offsets, both within its home market of the UAE and in selected markets which it serves. The flexibility to approach offsets within and without immediate-effect permits the airline to explore industry compliance projects and support the development of new projects. If Etihad can demonstrate it has met the decarbonisation performance indicators through demonstrated reductions in emissions via improvements in the energy efficiency of the fleet, operational efficiencies, and sustainable aviation fuels, the company will benefit from a bonus premium which rescinds the commitment to offset.

Makame Savannah REDD Project: Tanzania Forestry

In 2019, Etihad Airways electively purchased 80,000 tonnes of carbon offsets with Carbon Tanzania, covering the full year operation of the Etihad Greenliner flagship aircraft. Due to significant disruptions from Covid-19 and a number of emissions reductions initiatives, Etihad achieved net 50% reduction in emissions in 2021. With participation in the voluntary pilot phase of CORSIA, Etihad chose to voluntarily purchase offsets in order to better inform and support macro ambitions. The project promotes better management of local and natural resources in the southern extension of the Tarangire-Manyara ecosystem and is the largest community conservation project in Sub-Saharan Africa.



- 80,000 tonnes**
Etihad Greenliner full year operation
- 30 year**
Lifetime by Carbon Tanzania
- 15,000 people**
Among 5 communities supported
- 268,000 trees**
Saved per year
- 100,000 hectares**
Promoted and protected
- 1.36 million**
Emissions reductions in first 10 years
- 41 mammal species**
supported
- 252 bird species**
supported

Certified by VERRA (an independent carbon offset quality assurance body, under its Verified Carbon Standard), this certification ensures carbon offsets are quantifiable, additional, and fully sustainable. In addition, the Tanzanian project conforms to Climate, Community and Biodiversity Alliance (CCBA) standards, which protect endangered species and local communities. First offset vintage was certified in early November 2020.

Biodiversity

Wildlife, conservation and protection

Botanical Gardens Conservation International (BGCI)



Attended by countries that signed the United Nations Framework Convention on Climate Change (UNFCCC), COP26 (Conference of the Parties) held in Glasgow 2021 saw The Botanical Gardens Conservation International (BGCI) announced the Global Biodiversity Standard.

In support of the world's first and only of its kind, Etihad became the official airline partner of the standard. With the value of reforestation efforts not only lying in the preservation of existing habitats and recovery and regeneration of biodiversity, climate change benefits such as carbon absorption further the importance of such a standard.

As the world turns to tree-planting and reforestation efforts to improve the environment, short term initiatives with insufficient research and maintenance can introduce alien species and diseases which adversely threaten ecosystems. The standard aims to inform, promote and support schemes by addressing the importance of native species, appropriate land management, use of threatened species where possible and appropriate evaluation techniques.

Etihad identifies the opportunity for BGCI as incredibly valuable to the corporate sector, as well as the unique access airlines have to an international audience. Botanical knowledge and training opportunities allow well-meaning organisations to participate with trust in the integrity of planting or carbon-capture schemes through biodiversity practice. Through our Conscious Choices and Corporate Conscious Choices Programmes, such standards as the Global Biodiversity Standard add a science-based framework whereby all actions taken are for the world.

Etihad Mangrove Forest

The airline adopted a mangrove from Abu Dhabi's Jubail Island for each passenger on board the Etihad Sustainable Flight. Aligned to the Environmental Agency of Abu Dhabi, and the Abu Dhabi Mangrove Planting Initiative, the efforts resulted in the launch of the Etihad Mangrove Forest to support mangrove conversation in the nation.

Currently, mangroves hold up to 6.4 billion tonnes of CO₂ globally and on average, in three years, one mangrove can capture 12.3kg of CO₂. Such projects suitably permit the airline to explore opportunities in carbon projects to further endorse the nation's commitment to sustainability ahead of hosting COP28 in 2023.

In 2021, Etihad signed an MoU with The Storey Group to explore the long-term benefits and requirements of the initiative; seeking solutions 'for the now' in the promotion and conservation of natural habitats, while building a substantial sequestration path and maintenance commitments for the future.

The aspirations are to establish a mangrove forest in Abu Dhabi of up to 182,000 mangroves in 2022, with the ability to develop forests in destinations across our network. The mangroves and international forests will be monitored through EcoMatcher for 10 years, with carbon sequestration and geographical location updates shared through the digital platform.

The efforts over the last two years seek to demonstrate genuine commitment allows our guests to also make significant and trustworthy choices for the world.

30%

of world's tree species at risk of extinction

440

Tree species have less than 50 individuals remaining

64%

of tree species are found in at least one protected area globally



Animal Welfare and Protection

Minimising our 'animal footprint'

Ethiad Airways has a strong commitment to the protection and preservation of wildlife. Ethiad has published an Animal Welfare and Conservation Policy to support all efforts in the protection of wildlife and animal species.



Ethiad Airways Aviation Group, including Ethiad Cargo, have been signatory to United For Wildlife since March 2016. United For Wildlife is a programme run by The Royal Foundation by the Duke and Duchess of Cambridge. It works to combat the illegal trade in wildlife products around the world by bringing together conservation organisations, law enforcement, governments and global corporations. The Programme brings together sector specific Taskforces to assess and address the issue of illegal trade in animals.

With over 150 private sector companies involved, representing large proportions of the global shipping, airline, and financial industries, the Taskforces have supported over 70 law investigations, contributed to 18 trafficker arrests and played a key role in disrupting a major international ivory, rhino horn and heroin syndicate in East Africa.

As one of the participating airlines, Ethiad has taken significant action in implementing checks and policies to prevent wildlife trafficking.

Animal Transportation Association Ethiad Cargo

Key to supporting the airline's commitment to protection of endangered species, in March 2020 Ethiad Cargo sponsored the 46th Annual Conference of the Animal Transportation Association (ATA) in Abu Dhabi.

Ethiad committed to applying for a third International Air Transport Association (IATA) certification, IATA CEIV (Center of Excellence for Independent Validators) Live. The certification will provide further accreditation to support the handling of live animals on Ethiad's cargo planes, and ensure all commitments made as signatory are maintained.

Routes "Step up to stop wildlife trafficking"

On 5th June 2021 – UN Environment Day – under the Conservation/ Biodiversity Signatory, Ethiad supported United for Wildlife and ROUTES (USAID Reducing Opportunities for Unlawful Transport of Endangered Species) launched a "Step up to stop wildlife trafficking" campaign to stamp out this illegal trade.

Alongside other industry organisations, including Kenya Airports Authority (KAA), Kenya Airways, Malaysia Airlines and Royal Schiphol Group the initiative sought to raise awareness, and insist on the importance of developing wildlife conservation policies, identifying risk areas in procedures where trafficking may occur, and awareness for staff to promote vigilance of the workforce.



Anti-Wildlife Trafficking Taskforce (MOCCAE)

In March 2020, Ethiad launched a project with the UAE Ministry of Climate Change and Environment (MOCCAE) in a bid to combat illegal wildlife trafficking. The project included hosting a Combating Wildlife Trafficking workshop in Abu Dhabi. The workshop included speakers from The Royal Foundation and United For Wildlife, and representatives from The International Fund for Animal Welfare (IFAW) and Al Ain Municipality led an in depth introduction to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). The UAE has been signatory to CITES since 1990.

37 representatives of national entities and key stakeholders participated in the workshop focused on enforcement in wildlife trafficking, insights into the international methods used to counter smuggling and guidance on CITES permits to help prevent identity forgery and ensure authenticity.





The journey so far...

There is no enough

Sustaining sustainability

Etihad has no delusions about the severity of the climate crisis. Nor misconceptions of the contribution the aviation industry has and will continue to have. As we collectively race towards 2050, the achievements documented in this report and celebration of the Etihad Greenliner and our inclusion of Sustainable50 are not to distract from a fundamental truth: there is no enough. The most valuable piece to the aviation sustainability puzzle is knowledge sharing. We speak as a member of the industry and to the industry; to be told what we are missing, to learn from each other, and most of all, to be told where we are going wrong. We call this our **call to arms**, because whether in competition or in collaboration, we are all going on this journey together.

It remains untenable to compromise financial viability in the name of environmental sustainability; the ultimate juxtaposition. Without finely balanced, considered, measured investment and action, any impact will not achieve the longevity, meaningfulness and conservation we come to associate with sustainability.

The climate crisis is an immediate threat to all regions of the world, and sustainability is a privilege to the more developed. The solutions require all of us to be responsible and accountable, and recognise that our inherent abilities to do more, and develop more, is an obligation to work tirelessly for the world.

A fundamental truth of sustainability is that it is inevitably only going to be achieved within the world as it exists today. Among governments, regulatory bodies, global economies, entire industries, the ever-reaching corners of the supply chain; this is our ecosystem. Therefore, the most effective solutions will require complete transformation to these structures, but to expect any industry to sacrifice itself entirely is a sad, though very real, delusion. Therefore, any commitment to sustainability is to accept fault and agree: there is no enough.

At what cost

Sustainable aviation fuels offer an attractive mid-term solution for decarbonisation. SAF promises a potential 80% reduction of lifecycle emissions; however, though some variants may alleviate emissions intensity, aviation will continue to produce emissions when using these fuels.

Frameworks such as CORSIA convert the benefits of SAF usage into carbon credits, to encourage airlines to adopt these fuels. The long-term impact of reliance, however, will result in significant cost bearing to aviation, with no direct emissions reduction. The percentage of aviation emissions, already at 2%, will grow exponentially in comparison to industries capable of faster technology advancements.

Despite this, airlines have committed to shoulder this burden, yet under current global energy policy settings, these fuels are approximately four times more expensive than regular jet fuel. Even under the most ambitious scenario, the International Transport Forum estimates that alternative fuels will still be in the order of three times the cost of conventional supplies. Many airlines have made million-to-billion-dollar pledges to the use of SAF, yet they are, and will continue to be inhibited due to severe lack of supply. Even then, supply points and delivery logistics are too far behind.

But, before we commit to the huge investments required to adopt SAF with the current relative ease and cost of Jet A-1, we must ask ourselves the question; with questionable emissions reductions, does the investment outweigh the benefit?

The lesser of two evils

Single-use plastics do not just offer a more commercially beneficial option; the weight differential compared to glass, bamboo, or metal means a direct and measurable reduction of emissions. The irony.

Non-plastic alternatives are rarely mutually inclusive in cost and weight. The cost to source sustainable materials for in-flight service and products remains a major deciding factor; particularly for airlines suffering the impact of the Covid-19 pandemic.

Further, attempts to seek alternative materials are often short-sighted or ultimately redundant given strict waste regulations for international carriers.

The same countries with strict waste regulations are the same countries that impose severe bans and impose fines on those airlines which carry single use plastics. As a result, airlines bear the brunt for unsustainable practices, while being left with a choice; either significantly impact the guest experience – and thus impacting their business viability – or invest in significantly more expensive products – and thus impact their business viability. More irony.

Help us, help us

Operational efficiencies and fuel conservation efforts seek to confirm what is commonly known; that the most effective and urgently required initiative to reduce aviation's emissions lies in the reform of airspace and airspace management. Greater alignment of air navigation service providers, together with increased investment in traffic management infrastructure and continuous development of efficient traffic management practices, would deliver seismic improvement to the airline industry's efforts to achieve carbon-neutral growth.

In and of itself this would derive greater benefit than the wholesale introduction of SAF. By incorporating initiatives like SATAVIA into aviation's existing flight planning, it proves the potential of adaptation to technological advancements; a demonstration of a coordinated, strategic and practical solution.



The [easy] way out

Etihad has committed to net zero in an effort to avoid the false-gratification of carbon neutral targets. Reliance on carbon offsets to solve the problem will be nothing more than a tragic misstep of intention. Yet, as an industry solely reliant on the creation of emissions to simply leave the ground, we are desperately short of solutions which solve the root of the problem.

Framed against industry forecasts that air traffic will double within 20 years, and passenger kilometers will more than triple by 2050, compared to 2015, there is pressure on airlines to increase and accelerate carbon reduction targets. With carbon offsets often seen as a short-term solution to decarbonisation, Etihad has ensured a robust and valuable approach that is complimented by and does not rely on offset relief.



FROM ABU DHABI *for* THE WORLD

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AGREED UPON PROCEDURES REPORT ON COMPLIANCE OF KEY PERFORMANCE INDICATORS APPLICABLE TO BORROWINGS OF ETIHAD AIRWAYS PJSC

Board of Directors
Etihad Airways PJSC
P.O. Box No. 35566,
New Airport Road, Khalifa City A,
Abu Dhabi, United Arab Emirates.

Our report is solely for the purpose of determining whether **Etihad Airways PJSC** (the “**Company**”) is compliant to the **Key Performance Indicators** (“**KPI**”) as applicable to the Borrowings of the Company. This report is intended solely for the **Etihad Airways PJSC** and the **Facility Agent**, and should not be used by, or distributed to, any other parties.

Responsibilities of the Engaging Party

Etihad Airways PJSC, has acknowledged that the below procedures are appropriate for the purpose of the engagement.

Etihad Airways PJSC, is responsible for the subject matter on which the agreed-upon procedures are performed.

Practitioner’s responsibilities

We have conducted the agreed-upon procedures engagement in accordance with the *International Standards on Related Services (ISRS) 4400 (Revised) - Agreed-Upon Procedures Engagements*. An agreed-upon procedures engagements involves our performing the procedures that have been agreed with **Etihad Airways PJSC**, and reporting the findings, which are the factual results of agreed-upon procedures performed. We make no representation regarding the appropriateness of the agreed-upon procedures.

This agreed-upon procedures engagement is not an assurance engagement. Accordingly, we do not express an opinion or an assurance conclusion.

Had we performed additional procedures, other matters might have come to our attention that would have been reported.



AGREED UPON PROCEDURES REPORT ON COMPLIANCE OF KEY PERFORMANCE INDICATORS APPLICABLE TO BORROWINGS OF ETIHAD AIRWAYS PJSC (CONTINUED)

Professional Ethics and Quality Control

We have complied with the ethical requirements of the International Ethics Standards Board for Accountants *Code of Ethics for Professional Accountants* ("IESBA Code") and the independence requirements in accordance with the IESBA Code.

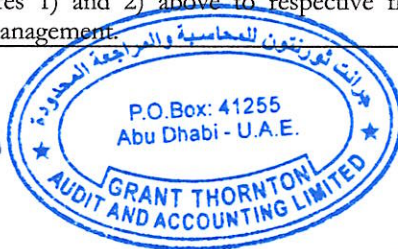
Our firm applies International Standard on Quality Control (ISQC) 1, *Quality Control for Firms that perform Audits and Reviews of Financial Statements, and Other Assurance and Related Services Engagements*, and accordingly, maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements

Procedures and Findings

We have performed the procedures as described below, which were agreed upon with **Etihad Airways PJSC** in the terms of engagement letter dated June 6, 2022;

	Procedures	Findings
	Procedures on Sustainability KPI 1 – Climate and Energy Efficiency	
1	We have obtained from the management, carbon dioxide emitted (in grams) calculated as the total fuel consumed (US Gallons * 3 * 3.16) for passenger fleet.	No exceptions noted. refer to Annexure I.
2	We have obtained from the management the calculation of revenue tonne kilometers calculated as revenue payload, using *great circle distance, Revenue PAX weight (100 KG) + Saleable Seats assume 50 KG each + Gross cargo payload in belly of passenger aircraft. (*distance covered by a plane in a flight)	No exceptions noted. Refer to Annexure I.
3	Based upon the information received in procedure 1) and 2) above, we have calculated the carbon emissions per revenue tonne kilometers. Furthermore, we traced the information obtained in procedures 1) and 2) above to respective fleet records kept by the management.	No exceptions noted. Refer to Annexure I.

Grant Thornton



GRANT THORNTON AUDIT AND ACCOUNTING LIMITED (ABU DHABI)
Abu Dhabi, United Arab Emirates

Anand Prabhu
Partner
June 27, 2022

**AGREED UPON PROCEDURES REPORT ON COMPLIANCE OF KEY PERFORMANCE INDICATORS
APPLICABLE TO BORROWINGS OF ETIHAD AIRWAYS PJSC (CONTINUED)**

Annexure I

Findings on sustainability KPI-I

Sr. No	Procedures	Results
1	Carbon dioxide emitted (grams) (A) <i>(total fuel consumed by the passenger fleet)</i>	3,599,897,280,000 grams
2	Revenue tonne kilometers (RTK '000s) (B) <i>((Revenue PAX weight (100KG) + Saleable seats (50KG) + Gross cargo payload) * great circle distance)</i>	5,856,318,430
3	Carbon emission per revenue tonne per kilometer (grams) $C = (A)/(B)$	614.7

*Above computations are on the basis of management records kept for fuel consumption, numbers of passengers, saleable seat, cargo payroll and distance covered in a flight by each plane during the period from January 1, 2021, to December 31, 2021.



Stamp for identification purposes