



ntrikish Airlines Climate Transition Plan

May 2024

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About the Cover

Reflecting our company logo designed by Mesut Manioğlu, the image on the front cover features the wild goose, symbolizing our 'Tomorrow on Board' motto while underscoring our dedication to environmentally conscious operations.

Navigating the Report

Reflecting our sustainability journey, this report is designed as an interactive PDF document, and in order for readers to access the desired pages quickly and effortlessly, it features the quick-access buttons listed below.

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Explore Our Sustainability Journey

Navigation



Image Credits

You can discover our Previous reports here.



About the Report



About the Report

The Task Force on Climate-related Financial Disclosures

(TCFD) initiative encourages organizations to disclose more transparently their climate-related governance structure, business strategies, risks and risk management and objectives.

Climate-related governance structure

Business strategies

Risk management

With this report, as Türk Hava Yolları Anonim Ortaklığı (referred to as "Turkish Airlines"), we aim to convey our approach to sustainability in accordance with the TCFD recommendations within the organization and in our relations with our stakeholders in our value chain; primarily, this report communicates the identification of the climaterelated risks that have the potential to affect our operations in the short, medium and long term, the strategies we have developed to manage these risks, the actions we have taken and the targets we have set.

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About Turkish Airlines



Message From the Chairman



Dear Stakeholders,

On February 6, 2023, we were deeply distressed by a massive earthquake with its epicenter in Kahramanmaraş, which led to devastating consequences in the neighboring provinces. As Turkish Airlines, we are profoundly saddened by this historic disaster and wish Allah's mercy to those who lost their lives and our condolences to their relatives and our nation.

Since our foundation, and particularly in recent years, we have witnessed many challenges such as natural disasters and the Covid-19 pandemic, affecting the whole world and triggering remarkable fluctuations in the aviation industry. The global climate crisis is one of the most critical developments of today and the future, has a large-scale impact all over the world with ever-intensifying severity.

As the airline that connects the most countries in the world, we contribute to sustainable development and take pioneering steps in our industry while creating value for every destination we reach. We set out on this journey "Tomorrow On-Board" with the passion for discovery, and we share the pride and excitement of shaping a low-carbon future.

July 2023 was the hottest month ever recorded in world history. The Intergovernmental Panel on Climate Change (IPCC) emphasizes that a 1.5°C increase in global warming increases climate change-related risks compared to current levels, but that the risks are lower than a 2°C increase. As global warming is about to exceed 1.2°C, the impact of the losses we experience around the world each year continues to be observed in water management, the environment, food security, and human health.

Turkish Airlines, a global brand in the aviation industry, aims to be ranked among the most sustainable airlines of the future by carrying its vision and global success in the airline industry to the field of sustainability with its 17 subsidiaries and affiliates and its large family of approximately 84 thousand people as of the end of 2023. We place sustainability at the forefront of our management and growth strategy to effectively manage our environmental impact and combat climate change.

This report discloses our climate change efforts and climate strategy to our stakeholders in accordance with the TCFD framework as part of our commitment to be transparent and accountable in our sustainability journey.

The strategy we adopt in our sustainabilityoriented efforts is to create value for the future by going beyond today's achievements, embracing business excellence and innovation in light of global developments and the expectations of employees, customers, subsidiaries, business partners and stakeholders. We aim to holistically consider all environmental, social, and economic impacts and effectively manage our risks.

As a result of our decisive stance on tackling climate change, we are gradually advancing our sustainability performance with our projects and efforts, striving to improve our environmental impact on our planet. We embrace the United Nations Sustainable Development Goals (SDGs) as a guide in this journey. In 2022, we underlined our commitment to the SDGs by becoming a participant in the UN Global Compact, the world's largest corporate sustainability initiative.

As the global face of Türkiye, we continue to build domestic and international partnerships. With this approach, we became one of the signatories of the Global SAF Declaration, aiming to decarbonize the aviation industry. Additionally, at the Türkiye Sustainable Aviation Platform, we aim to create our country's roadmap for sustainable aviation fuels with our stakeholders in the industry. We are proud to be named the "Most Sustainable Flag Carrier Airline" for the second consecutive year at the World Finance Sustainability Awards. With our next-generation aircraft, our voluntary carbon offset platform CO_2 mission, our use of biofuels, our Zero Waste approach, our sustainable catering concept, and our operational improvements, we aim to offer our passengers a more sustainable travel experience and become a carbon neutral airline by 2050.

We are leaving behind another year of great achievements with the support of our valued employees and stakeholders, the strength we derive from our successful 91-year history, the support of our nation, and the responsibility of being the flag carrier airline of the Republic of Türkiye. We would like to express our sincere gratitude to our President Recep Tayyip Erdoğan, our ministries, our government, our subsidiaries, our shareholders, and our stakeholders for providing continuous support the whole time.

As the airline that flies the most countries in the world, we will continue to establish wider partnerships and work with determination for a sustainable future. As the Turkish Airlines family, we aim for a new era in which we lead as a powerhouse in the field of sustainability, offering the best travel experience to millions of passengers. We look forward to proudly sharing our achievements and reaching new heights with our nation.

Prof.Dr. Ahmet BOLAT

Chair of the Board of Directors and the Executive Committee

About Turkish Airlines

20 May 1933

Our journey started on May 20, 1933 with **5 aircraft and fewer than 30 employees.** We continue to progress today, earning the title of the airline which flies to the most countries in the world, **as we celebrate our 91**st **anniversary.**



1947

With the thrill of carrying Türkiye's national flag, we conducted our country's first international flight from Istanbul to Athens in 1947. 1951

In 1951, we started flights to new destinations such as Nicosia, Beirut, and Cairo with our fleet of 33 aircraft.

1955

The name "Turkish Airlines" which has been signed under our extraordinary achievements, was coined in 1955, and has represented us among the members of the International Air Transport Association (IATA). Turkish Airlines, the airline company that flies to the most countries and the most international destinations in the world, has a total of **345 destinations** in its flight network, including **53 domestic and 292 international destinations,** as of the end of 2023. The Incorporation has a total of **17 subsidiaries and affiliates operating in 11 different sectors.**

Of the 50.88% of the shares of the Incorporation that were offered to the public, 49.12% are owned by the Türkiye Wealth Fund; one Group C share is owned by the Privatization Administration of the Ministry of Treasury and Finance.

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Fleet Size

Established in 1933 with a fleet of five aircraft, Turkish Airlines' goal has been to diversify and expand its fleet over time. Aspiring to have the youngest and most modern fleet in Europe, we have expanded our fleet through the acquisition of high-tech, fuel-efficient, and environmentally-friendly aircraft that provide exceptional levels of comfort.

With one of the youngest aircraft fleets in the world in terms of fleet size and being named "Türkiye's Most Valuable Brand" for the fifth consecutive year, we, at Turkish Airlines, continue to acquire nextgeneration aircraft with high fuel efficiency and low noise levels.

As of 2022. Turkish Airlines flies to 342 destinations. of which 53 are domestic and 289 are international. At the same time, Turkish Airlines has increased the number of aircraft in its fleet to 394 by the end of 2022 and received its 400th aircraft in 2023. Within the framework of its 2023-2033 Strategic Plan, the number of aircraft is targeted to reach over 800 by 2033. With this vision created to generate high value for all stakeholders, our Incorporation aims to boost its revenue to 50 billion USD and reach over 170 million passengers.

Additionally, we prioritize aircraft modification projects that improve fuel efficiency, within the scope of our fuel efficiency policy. We take action to optimize our operations through fleet modernization with the continued addition of next-generation aircraft with high fuel efficiency and low emission values to our fleet. With our young fleet of 440 aircraft as of the end of 2023, we proudly carry Türkiye's national flag around the world, flying to 130 countries from our new home at Istanbul Airport.

Turkish Airlines' main targets within the framework of the 2023-2033 Strategic Plan:

• To increase the number of aircraft in the fleet, which was **440** at the end of 2023, to over 800 in 2033.

 To increase the number of passengers carried from 83.4 million to over 170 million.

 To double the passenger capacity in 2033 compared to 2023, with an annual increase averaging 7.7%.

• To increase the cargo carried to 3.9 metric tons in 2033 and become one of the top three cargo airlines in the world by taking advantage of the opportunities offered by SmartIST, one of the world's largest air cargo terminals.

• To transform the **AJet** brand into a global airline with its renewed branding, new logo and new staff and to reach 55 million passengers in 2033 with a fleet of 200 aircraft, all of which will be built with next-generation aircraft.

Market Share

billion USD.

- average.

- network.
- market share and service quality.

As one of Türkiye's largest corporations, Turkish Airlines increased its passenger revenues by 24% and its total revenues by 13.7%, raising its total revenues to 20.9

• As a result, in 2023, Turkish Airlines achieved a net operating profit of 2.9 billion USD and an operating profit margin of 13.7%, above the industry

Its EBITDAR exceeded the 2019 level with a margin of 29%.

According to data published by the International Air Transport Association (IATA), Turkish Cargo achieved the status of being the world's fourth largest air cargo carrier in terms of freight ton kilometers transported in 2023. With a market share of 4.8% in 2023, Turkish Cargo flies to the most international destinations in the world in the cargo flight network as well as in the passenger flight network, and the current number of direct cargo destinations has reached 100 with an increase of 36.98%.

Under the 10-year strategy, Turkish Cargo is set to multiply its cargo volume by 2.3 times that of 2022, capitalizing on the capabilities of SmartIST at Istanbul Airport, one of the world's largest hubs equipped with high technology, and Turkish Airlines' uniquely expansive flight

Turkish Cargo plans to increase cargo flight destinations from 104 in 2022 to 150 in 2033, aiming to become one of the top three air cargo brands in



First Airline to Directly Achieve IEnvA Stage 2 Certification

Participation in CDP Climate Change Program (B score)

2009

Disclosure of the

Sustainability

Vision

Supporting Task Force on Climaterelated Financial Disclosures (TCFD)

Ecovadis Silver Medal

Verification of GHG Emissions According to the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard

2023

World Finance 2023
 Sustainability Award

 Participation in CDP Climate Change Program (A- score)

 Joining as a founding member of the Türkiye Sustainable Aviation Platform

World Finance 2022 Sustainability Award

LACP (League of American Communications Professionals) Golden Award on our 2021 Sustainability Report

APEX World Class 2023 "Five Star Global Airline" Award

Launch of CO₂mission Voluntary Carbon Offset Program

- Joining the UN Global Compact
- Global SAF Declaration Signatory
- Green Class Flight
- Ecovadis Bronze Medal

 The First and Only Airline in the BIST Sustainability 25 Index

 Ranking First Among 47 Airlines in Refinitiv Sustainability Assessment

 CAPA "Airline of the Year for Sustainability Innovation"



Our Sustainability Approach



Our Sustainability Approach

Turkish Airlines both meets the growing need for air transportation with its unique flight network and also bears the responsibility of leaving a healthy planet for future generations.

> Combating climate change is one of the main priorities shaping Turkish Airlines' sustainability activities and is considered a strategic issue integrated into its decision-making and implementation mechanisms for business processes. Climate change is not addressed as a separate topic in our business development processes but instead is integrated into the workflows of all our business units.

> > The basis for Turkish Airlines' efforts in combating climate change is formed by the practices such as efficient energy and emission management, sustainable aviation fuels research, fleet modernization, and resource efficiency studies.

The main focus of the Turkish Airlines Sustainability Strategy is the social, economic, and environmental issues that may result from and/or have an impact on the Incorporation's operations, products, and services. These issues are prioritized, classified, and integrated into the sustainability strategy through a systematic process designed in line with international standards and incorporating the views and suggestions of external stakeholders.

The basis for Turkish Airlines' efforts in combating climate change is formed by the practices highlighted by both the IPCC and sectoral initiatives, such as efficient energy and emission management, sustainable biofuel research, fleet modernization, and resource efficiency studies.

TURKISH

Accordingly, Turkish Airlines adopts the targets set by the IATA and takes steps to mitigate the impacts of climate change, mainly by reducing greenhouse gas emissions resulting from its operations

aviation industry.

As a result, the social, economic, and environmental issues specific to the Turkish Airlines Sustainability Program were identified. In this process of identifying material topics, 17 Sustainable Development Goals have also been assessed in terms of their potential impacts, risks and opportunities on Turkish Airlines' activities, products, and services.

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While addressing our priorities within the scope of sustainability, we took into consideration global risk megatrends, international initiative and reporting standards, such as WEF's Climate Risk Reports, GRI, SASB, and TCFD, and prominent practices in the



Management of Climate Change Issues





Management of Climate Change Issues

Organizational Structure Related to Climate Change Issues

Board of Directors

Turkish Airlines' Board of Directors (BoD) is the highest authority ensuring that existing risks do not threaten the long-term interests of the company and that effective risk management is in place. The Board of Directors of Turkish Airlines consists of the Chair, Vice Chair, CEO, CFO (Chief Financial Officer), as well as other members and independent board members. The BoD has established an internal control system that is compatible with the company's operations; within this scope, the roles of the Chair and the CEO have been separately defined.

On the other hand, due to the requirement that the chairs of the committees established within the BoD and the members of the Audit Committee must be elected from among the independent members of the Board of Directors, each board member may serve on multiple committees. The Board of Directors approves strategic targets for climate change issues and, when necessary, takes preventive measures against potential challenges in compliance with national and international standards. Through the Sustainability Committee under the authority of the BoD, the goals, activities, and past performance of Turkish Airlines are continuously and effectively monitored.

Sustainability Committee

The committee in which Board Members are also involved and where climate issues are predominantly discussed is the Sustainability Committee. This committee is authorized at the Board level and has the direct decision-making power on matters related to climate change.

Turkish Airlines continues to shape its sustainability strategy through the Sustainability Committee established in 2021. This committee plays a leading role in defining Turkish Airlines' strategies and goals regarding sustainability issues.

While issues related to combating climate change are addressed by the Sustainability Committee, the Corporate Sustainability Management Department is responsible for monitoring ongoing activities and for the planning and reporting of meetings. This unit serves as the secretariat for the Sustainability Committee and is responsible for building a bridge of communication between the Sustainability Committee and the Subcommittees within the Turkish Airlines governance structure.

The Sustainability Committee is chaired by the CEO of Turkish Airlines and vice-chaired by the Chief Investment and Strategy Officer. With the participation of the Chief Officers, the Director of Subsidiaries, and the CFO (Chief Financial Officer), the Sustainability Committee convenes a minimum of four times a year, with at least one meeting scheduled in each quarter. Apart from regular meetings, the Committee may convene again if necessary, without waiting for the meeting period.

Management of Climate Change Issues

Sustainability Subcommittees

In 2022, the sustainability governance structure was further strengthened with the establishment of four separate **Sustainability Subcommittees** at Turkish Airlines: Corporate Social Responsibility and Communications Projects, Emissions Management, Sustainable Practices, and Sustainability Strategy.

The Sustainability Subcommittees consist of unit managers responsible for issues pertaining to their respective subcommittees; committee meetings are held with the participation of the chairs designated by each committee, and the outcomes of the meetings are monitored by the **Corporate Sustainability Management.**

The subcommittees, which include unit managers who have various expertise in the field of sustainability, determine studies and projects in line with Turkish Airlines' sustainability strategy, with consideration for priority sustainability issues, prominent issues in the sector, successful sector practices and global trends.

Climate-related issues are discussed initially at the Sustainability subcommittees. Following the evaluations, the outcomes of these meetings are presented as agenda items at the meetings of the higher committee, the Sustainability Committee, and are assessed at the senior management level.

The issues evaluated by the subcommittees can also be presented to the Board of Directors after they have been submitted to the Sustainability Committee, depending on their strategic importance, risk, and financial impact. Action plans for the items evaluated and approved by the Sustainability Committee and/or the Board of Directors are then implemented by the subcommittees.

Organizational Structure Related to Climate Change Issues

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Sustainability Committee

• BoD

Chairman

• CEO

Vice Chairman

Chief Investment & Strategy Officer

Committee Members

Chief Human Resources Officer

Chief Cargo Officer

Chief Information Technology Officer

Chief Financial Officer

Chief Commercial Officer

Chief Operations Officer

Chief Flight Operations Officer

Chief Investment & Strategy Officer

Corporate Sustainability Management

Subsidiaries Directora

Sub-Committees

Emission Management

Corporate Social Responsibility and Communication Projects

Sustainable Practices

Sustainability Strategy

Figure 1: Turkish Airlines Organizational Structure Related to Climate Change Issues *The diagram above is not an organizational structure of Turkish Airlines, but illustrates the functions that represent the management of the relevant processes.

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Corporate Sustainability Management



 Turkish Airlines
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Duties and Responsibilities within the Climate-related Governance Mechanism

Sustainability Subcommittees

The duties and responsibilities of the four Subcommittees within Turkish Airlines have been planned in a way to implement the decisions of the Sustainability Committee and the BoD in the most efficient manner. Subcommittees report their work within their areas of expertise to the Sustainability Committee under the guidance of the Corporate Sustainability Management Department.



Emissions Management Subcommittee:

This group determines which projects can be implemented to reduce the greenhouse gas emissions of Turkish Airlines according to the sector trends, best practices, legal and other conditions, and stakeholder expectations. To implement the identified projects, it submits proposed decisions to the Sustainability Committee and executes the projects in line with their decisions, monitors the processes, and reports the results to the Sustainability Committee.



Sustainable Practices Subcommittee:

This group determines the projects concerning sustainable practices that can be implemented in flight operations and office activities at Turkish Airlines with regard to the sector trends, best practices, legal and other conditions, and stakeholder expectations. To implement the identified projects, it submits proposed decisions to the Sustainability Committee, executes the projects in line with their decisions, monitors the processes, and reports the results to the Sustainability Committee.



Corporate Social Responsibility and Communications Projects Subcommittee:

This group communicates sustainability and climate change-related issues with stakeholders at Turkish Airlines and identifies projects that are suitable for implementation at Turkish Airlines with regard to industry trends, best practices, legal and other requirements, as well as stakeholder expectations in the field of corporate social responsibility. To implement the identified projects, it presents proposed decisions to the Sustainability Committee, executes the projects in line with their decisions monitors the processes, and reports the results to the Sustainability Committee.



Sustainability Strategy Subcommittee:

This group determines Turkish Airlines' climate change and sustainability strategy, its short, medium, and long-term goals, and the necessary efforts to achieve these goals. To implement the identified projects, it presents proposed decisions to the Sustainability Committee, executes the projects in line with their decisions, monitors the processes, and reports the results to the Sustainability Committee.

Sustainability Committee and Board of Directors

The Sustainability Committee plays a leading role in defining Turkish Airlines' sustainability strategies and goals.

The Sustainability Committee is responsible for aligning climate-related strategies and goals with the company's Sustainable Management Strategy, Sustainability Policy, and short, medium, and long-term goals, and for monitoring and improving these goals.

The Sustainability Committee's agenda is enriched by the subcommittees whose task is to create improvement projects that will enhance Turkish Airlines' sustainability performance, monitor the progress of these projects, and present them to the Sustainability Committee.

The Sustainability Committee is also responsible for managing risks and opportunities related to climate change and ensuring that they are integrated into Turkish Airlines' sustainability strategy, as well as planning actions to address related risks.

The CEO of Turkish Airlines, who is a member of the Board of Directors, chairs the Sustainability Committee. The Sustainability Committee, chaired by the CEO, carries out activities to develop and maintain the sustainability strategy and policy as well as short, medium, and long-term goals, to monitor the status of sustainability performance indicators, to ensure that corrective measures are taken, and consider stakeholder expectations.

The Turkish Airlines Board of Directors regularly monitors the strategic decisions and goals established by the taking into account the company's activities and performance in previous years. Regarding the proposed decisions submitted to the BoD Committee, the BoD is involved in the decisionmaking process and provides guidance.

Sustainability Committee, through the Sustainability





Climate Change and the Aviation Sector

Climate change, which is seen as one of the most pressing global issues today, is also a priority on the agenda of the aviation industry. The aviation sector accounts for approximately 2% to 3% of human-induced greenhouse gas emissions that cause global warming.

On the other hand, according to IPCC findings, the aviation sector is among the most difficult sectors to decarbonize due to weight and size constraints, lengthy innovation processes, the relative cost of key technologies such as sustainable aviation fuels (SAF) and the fact that they have not yet been widely adopted.

This situation imposes greater responsibilities on sector players to combat climate change. In this context, air transportation was the first sector to take global action to reduce greenhouse gas emissions and set comprehensive targets.

Accordingly, the two major international organizations of civil aviation, the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA), have set targets to reduce the negative environmental impacts of civil aviation and requirements to achieve the targets.

In 2022, the International Civil Aviation Organization (ICAO) adopted a Long-Term Goal (LTAG) of net-zero carbon emissions by 2050. This has transformed aviation into a sector where industry and regulators are committed to a common goal. IATA has set long-term targets to reduce carbon emissions in the fight against climate change. These targets align air transport with the Paris Agreement's goals to limit global warming to scenarios below 2.0°C.

The industry's achievement of netzero emissions by 2050 depends on effective climate policies through a combination of SAF and hydrogen use, new technologies, operational improvements and carbon offsetting/ carbon capture practices.

In 2021, at the 77th Annual General Meeting of the IATA, a global trade association representing 320 airlines in 120 countries, IATA members pledged to achieve net zero carbon emissions across their operations by 2050. This commitment aligns air transport processes with the objectives of the Paris Agreement to limit global warming below 2.0°C. As shown in Figure 2, which reflects the IATA data, the sector can reach net zero emissions in 2050 through a combination of SAF and hydrogen use, emerging technologies, operational improvements, and carbon offset/carbon capture practices.



Figure 2: IATA's 2050 Net-Zero Roadmap



Climate-related Risks and Opportunities

When identifying climate-related risks and opportunities, Turkish Airlines categorizes its prospective business strategies as short, medium, and long-term.

Considering dynamic factors such as rapidly changing weather conditions, customer demands, and fuel prices, a time frame of **0-3 years** was selected for short-term strategies.

For the medium-term strategies, a time frame of **3-10 years** was selected, accounting for aircraft manufacturers' production slot availability. With this approach that incorporates sectoral metrics, the company's medium-term plans are developed within a comprehensive plan that closely follows trends.

When defining the long-term strategy, the fact that the economic life of passenger aircraft is 20 years, and that next-generation aircraft are generally introduced to the market in 20-year periods was considered. Therefore, a time frame of **10-20 years** was chosen for long-term strategies. Additionally, commitments that extend beyond 20 years also fall under the long-term category, including the carbon emission reduction targets of the international air transportation sector and Türkiye's 2053 net-zero target

At Turkish Airlines, the effects of climate change-related events on the usual workflow are evaluated according to the Environmental Risk and Opportunities Management Procedure. In the evaluation, the risks that may pose reputational risks are also considered within the category of risks with strategically significant impacts.

> Details of risk identification and assessment processes are given under the Risk Management heading on pages 51-54.



Figure 3: Turkish Airlines Strategic Time Frames

Risks and opportunities with significant

strategic impact are assessed based on which stage of the value chain they impact, the time frame in which they occur, the probability of their occurrence, the magnitude of their impact if they occur, and their financial implications. These assessments are based on the International Energy Agency's (IEA) climate transition scenarios, which provide short, medium, and long-term climaterelated projections, and the physical climate scenarios provided by the IPCC. Qualitative and quantitative analyses covering the short, medium, and long-term periods are conducted on the basis of these scenarios.



Physical Risk Assessment

Weather conditions are among the most critical factors that influence operational scheduling in the aviation industry. Takeoff and landing arrangements, along with flight conditions. depend on this factor.

As a result of the rapid fluctuations in atmospheric temperature, pressure, and humidity due to climate change, the frequency of abrupt changes in weather conditions has been increasing. Moreover, this situation affects the maintenance frequency of aircraft engines, the physical conditions of landing and takeoff areas, the take-off weight restrictions of aircraft, fuel consumption levels, and flight durations.

Within the scope of the **focal questions** *P* that were identified while assessing the physical risks associated with climate change, eighteen different potential risks were identified in relation to escalating extreme weather events, drought, rising sea levels, increasing average temperatures, and changing ice conditions. Both qualitative and quantitative analyses were conducted regarding these risks.

During the quantitative analysis process, the calculations of the variables relied on the most recent CMIP6 (The Coupled

Model Intercomparison Project) projections, which are based on the SSP Scenarios and are used by the IPCC in its own assessment reports. The variables include the variations in total precipitation figures in the short, medium and long-term periods, maximum temperatures, average and maximum number of days with temperatures above 35°C and 40°C, and average temperature change, via the 🔗 WGI Interactive Atlas created by the IPCC.

In order to deterimine low. medium, and high-impact factors, the CMIP6 outputs for the SSP1-2.6, SSP2-4.5, and SSP5-8.5 scenarios were taken into account. The SSP-based climate scenarios are among the most comprehensive scenarios that have been developed to date, and they proceed in parallel with the RCP scenarios corresponding to low, medium, and high radiative forcing levels RCP2.6, RCP4.5, and RCP8.5, respectively. These scenarios have been selected to provide a comprehensive assessment of potential future climate conditions.

Transition Risk Assessment

The aviation sector accounts for 2% of energyrelated CO₂ emissions on a global scale. Additionally, developments in aviation's main source of emissions. aviation fuel, are proceeding in parallel with global innovations in the energy sector.

Therefore, the transition risk assessment draws on the outputs of the STEPS and NZE2050 climate scenarios presented in the IEA's World Energy Outlook (WEO) report, which provides a comprehensive analysis of the energy and transportation sectors. These scenarios provide short, medium, and long-term sectoral projections based on climate policies countries currently have in place and have committed to enacting in the future.

Based on the focal questions and the findings of the IEA's latest report dated October 24, 2023, a total of thirteen different risks concerning Turkish Airlines have been identified in the following categories: political and legal, market, technology, and reputation. Assessments were conducted with due consideration to the probability and severity of these risks.

Following the assessment of climaterelated physical risks and transition risks, a total of 11 risks that may have a significant impact on the business strategy of Turkish Airlines were identified. Of these, 4 are physical risks, and 7 are transitional risks. The details regarding these risks are presented in **A** Table 1.

WEO 2023 Scenario-based Projections

- Policies play a critical role in determining the rate at which innovative clean technologies are scaled up.
- While the STEPS scenario is modeled to incorporate carbon pricing initiatives that are in place and in the process of being planned, the NZE Scenario incorporates additional measures. For example, in the NZE Scenario, carbon prices increase rapidly across all regions, reaching an average of 250 USD/metric ton CO₂ in advanced economies and 200 USD/metric ton CO₂ in other major economies by 2050.
- In the STEPS scenario, oil continues to meet the majority of the aviation sector's energy demand until 2030.
- The possibility for passengers to change their modes of transportation due to their habits, socio-economic status, and changing climate policies is a significant factor in the decarbonization of the aviation sector in the NZE scenario. According to this scenario, without any behavioral changes, aviation activities increase 10% by 2030 and more than 20% by 2050.
- Despite the significance of efficiency enhancements in the pursuit of decarbonization, they cannot mitigate the entirety of emissions caused by the growing demand in aviation, which is expected to lead to a 4% increase in flight activity each year. This emphasizes the urgent need for the development and deployment of low-carbon fuels.
- In the STEPS scenario, biofuels account for 2% of total aviation energy demand in 2030 and 6% in 2050, compared to over 11% and 70%, respectively, in the NZE Scenario.
- Notwithstanding a significant increase in demand for SAF, high costs continue to be a significant impediment to its widespread deployment. Even though the number of SAF off-take agreements more than doubled between 2021 and 2022, the limited capacity of announced projects can only meet 1-2% of global aviation demand by 2027.
- Average sustainable aviation fuel prices are expected to be approximately twice as much as conventional fuel prices in 2030.



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Climate-related Risks

Climate-Related Physical Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Ir Range	npact		Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
F1	Chronic Physical	Increasing average temperatures	The thrust of an airplane at take-off is determined by the density of the air. Air density is a critical factor affected by temperature. Increased atmospheric temperature due to global warming reduces the density of the air, causing airplanes to require more thrust during take-off.		•	Impact of Risk on Strategic Planning: According to the analysis conducted on different aircraft types and sectors at various distances, it is estimated that a one degree average temperature increase expected according to the mid-term (2041-2060) projections of the IPCC RCP4.5 and RCP8.5 scenarios could lead to an increase in fuel consumption in our operations. Climate Adaptation Strategy:	
			This requires aircraft to consume more fuel during take-off.				 Our specific units operating under the Integrated Operations Control Directorate carry out studies on fuel policy such as monitoring fuel consumption, and developing strategies to reduce consumption within the Incorporation. They also prepare the necessary forecasts and reports to minimize meteorological disruptions in flight operations. An advanced flight planning software application using data analytics is integrated into our flight planning system to dynamically optimize flight routes both during planning and after aircraft take-off.
F2	Acute Physical	Increasing frequency and severity of extreme weather events	Climate change is increasing the severity and frequency of extreme weather conditions, such as heavy snowfalls, severe storms or thunderstorms. These adverse weather conditions affect aviation operations, causing flight cancellations, diversions and delays.			•	 Impact of Risk on Strategic Planning: According to the data predicted by the climate scenarios used and the IPCC SSP1, SSP2 SSP5 scenario projections, an increase in thunderstorms is predicted. Cancellation and rescheduling of flights may create additional costs for airline companies. Climate Adaptation Strategy: More precise calculations allow us to avoid unnecessary changes and minimize disruption to our operations. Our Meteorological Analyzing and Reporting unit provides

Airport, predicting the period 6 hours ahead.

Planned Action Time Frame

On-going

integrated into g planning and

< 5 years/Short-term

CC SSP1, SSP2, ncellation and

inimize general visibility forecasting and analysis, which is very important for our base, Istanbul

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Climate-related Risks

Climate-Related Physical Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Ir Range	npact		Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
F2							• Work is underway to establish an automatic forecasting system developed Integrated Operations Control Directorate, and Information Technologies of of our Incorporation, which is planned to generate warnings for the value occur half an hour later. We continuously evaluate and update our use of the expand mitigation and response capabilities, supporting our ability to bette extreme weather events.
							 Additionally, pilot training and qualifications at our Incorporation cover m phenomena, including conditions suitable and specific to the climate of Ti which is located in the temperate and sub-tropical zone, and the destination flight network.
							 Meteorological Emergency Committee (MADKOM) meetings are held be heavy snowfall season. Preparation procedures, regulation of flight times/ according to the storm and precipitation period, and determination of alte airports are regularly discussed at MADKOM meetings with the participation Incorporation operation representatives and representatives of the Gener of Meteorology throughout the operation.
							• Prior to severe weather events, our Incorporation's Integrated Operation Center transmits warning messages, including the severity, scope, and pe weather event, to all relevant units and airports, and broadcasts are made possible impacts and additional measures.
							 The application of flight planning software, which uses advanced data ar dynamically optimize flight routes both during planning and after take-off, integrated into our flight planning system.
							• To provide Enhanced Weather Awareness and weather monitoring, analy performed through the Enhanced Weather Awareness System (eWAS), wh system procured from outside the Incorporation.

able 1: Climate-related Risks

Planned Action Time Frame

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Climate-related Risks

Climate-Related Physical Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Ir Range	npact		Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
F3	Chronic Physical	Increasing average temperatures	In order for flights to take place, a number of suitable conditions must be met simultaneously, including on criteria such as atmospheric temperature values, altitude information, aircraft weight and runway length. If any of these criteria cannot be met, the take-off weight of the aircraft must be reduced to ensure compliance with the criteria reduction in aircraft weight can be achieved by reducing the weight of passengers and/or cargo on flights.				 Impact of Risk on Strategic Planning: In this study, long-haul flights departing from Istanbul Airport during the h the day were analyzed using the historical impact analysis method to ass of temperature increase on flight weight. Potential capacity changes were based on the "maximum temperature" value, which includes every 1°C inclus?", the highest temperature observed in 2021, up to 45°C. In IPCC's Interactive Atlas, the number of days with temperatures above 3 for the region where Istanbul is located is analyzed annually in the short (and medium (2041-2060) term periods according to the IPCC SSP2.6, SS SSP8.5 scenarios. As a result of the analysis, the payload loss that may be these temperature increases was estimated. Climate Adaptation Strategy: Dispatchers make flight plans with detailed calculations according to the destinations within the scope of fuel saving and weight reduction in aircraft. Operational plans are prepared for airports that may cause sublo restrict weight restrictions) within the framework of air temperature forecasts. Aircraft payload reduction and fuel-saving practices form the basis of Tu strategy to combat climate change and reduce greenhouse gas emission Cabin modification projects aim to reduce the total aircraft weight.

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Planned Action Time Frame

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35°C and 45°C (2021-2040) SP4.5 and be caused by

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Climate-related Risks

Climate-Related Physical Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Ir Range	npact		Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
F4	Chronic Physical	Increasing average temperatures	For parked aircraft, energy consumption may increase due to additional cooling requirements such as Auxiliary Power Unit (APU), Ground Power Unit (GPU) or air conditioning.			•	Impact of Risk on Strategic Planning: The effects of climate change can have a direct impact on operational cost increasing the need for air conditioning for parked aircraft. This, coupled of average temperatures, may lead to higher energy consumption and there APU or GPU utilization. This can lead to an increase in costs in operational Climate Adaptation Strategy: • There is currently no need for improvement in the ventilation systems in terms of the performance of both the system and system components, fauld fault analysis is carried out on a fleet basis and as a result, corrective/rema- are taken, if necessary. In addition, necessary procedures for resource effor- within the scope of APU/GPU are followed. It is evaluated that costs can be by increasing the use of bellows for air conditioning, and related studies br initiated.

Planned Action Time Frame

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Climate-related Risks

Climate-Related Transition Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Impact Range			Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
G1	egal	SAF usage obligations	The European Union (EU) has announced the Fit For 55 Package,				Impact of Risk on Strategic Planning:
	al and L	within the scope of Fit for 55, and	which sets a target to reduce greenhouse gas emissions across the EU by at least 55% by 2030 compared				Such obligations, expected to become widespread in locations outside th to an increase in demand for SAF in civil aviation.
	Politic	other SAF obligations at regional and	to 1990 levels. The ReFuelEU Aviation regulation included in the package will				Along with adopting the ReFuelEU Aviation regulation, regulatory authorit announced a series of measures during the implementation phase to miti
		national levels	It requires that all fuels offered by fuel suppliers to aircraft operators at				that positively affect SAF and e-fuel prices, such as allowing the use of nu in e-fuel production and introducing a flexibility mechanism for SAF suppl ten years. These facilitating steps are expected to reduce the severity of t
			EU airports must contain a minimum proportion of sustainable aviation fuel (SAE) by 2025 and a minimum				impact of the regulation.
			proportion of SAF by 2050. The proportions of both fuel types in the fuel				Recognizing the importance of global cooperation and participating in jo
			mix will gradually increase until 2050. Fuels will need to contain 2% SAF in 2025, 6% in 2030 and 70% in 2050.				stakeholders in the aviation, space and fuel sectors to decarbonize sustai fuel (SAF), Turkish Airlines continues to invest in and support SAF, as well reducing its emissions through investments in the inclusion of next genera
			From 2030, 1.2% of fuels will also need to be synthetic fuels, reaching 35% in				the fleet, operational improvements and advanced fuel saving practices.
			2050.				 Since 2022, potential partnerships and procurement opportunities are be evaluated to secure future access to SAF, which we have been using volu agreements are being planned and incentive mechanisms are being appl
							the high SAF premium cost. Within the scope of our Corporate SAF Progra working to develop partnerships to help our corporate customers reduce

able 1: Climate-related Risks

flight emissions.

Planned Action Time Frame

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Climate-related Risks

Climate-Related Transition Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Ir Range	npact		Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
G2	Political and Legal	Increasing number of countries implementing carbon tax	According to the CORSIA proposal drafted and voted on by ICAO, flights to or from Least Developed Countries, Small Island Developing Countries, Landlocked Developing States and states which represent less than 0.5% of international RTK in 2018 will be exempt from the offsetting requirements unless these states voluntarily join the proposal. Some of the countries that are not required to participate in CORSIA have voluntarily declared their support for the proposal. There are currently 62 countries that are not obliged to participate and have not announced their voluntary support. In the coming years, these countries may voluntarily announce that they will implement the CORSIA draft, or they may mandate different taxation or emission offsetting through national decisions independent of the CORSIA draft.				Impact of Risk on Strategic Planning: Considering that non-CORSIA countries will either voluntarily comply with or mandate different taxation or emission offsets through their own nation is predicted that these regulations may create additional costs for airlines. Climate Adaptation Strategy: • New environmental regulations regarding aviation on a global scale are monitored, followed closely and necessary actions are taken. Our perspect the impact of various environmental regulations on the aviation industry a lacorporation is actively discussed in relevant arenas, emphasizing global As the flag carrier airline, we ensure that this viewpoint is shared with all or stakeholders, including policymakers, industry authorities, and association

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Planned Action Time Frame

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Climate-related Risks

Climate-Related Transition Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Impact Range			Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
G3	Political and Legal	Rising prices of carbon credits	According to the International Energy Agency (IEA) in its World Energy Outlook 2023, about 23% of the world's energy- related emissions are currently priced through various systems. Despite the global energy crisis and significant price volatility in the energy markets, carbon prices increased in about half of existing carbon pricing arrangements in 2022. In the framework of the WEO-23 scenarios, STEPS includes existing and planned carbon pricing initiatives, while the NZE Scenario covers additional measures of varying frequency and scope. According to the NZE Scenario, carbon prices are projected to be set rapidly across all regions, with developed economies paying an average of 250 USD per ton by 2050. For other major economies (e.g., China, Brazil, India and South Africa), it is estimated to rise to 200 USD per ton.				Impact of Risk on Strategic Planning: Making long-term price predictions for CORSIA eligible emission units is challenging due to the difficulty to determine credit demand and supply, that programs certifying eligible units are not determined by ICAO at one uncertainty about how the supply of credits to be delivered for compliants shape up in the long term and whether it will meet the demand. It is assure the development of CORSIA eligible emission units prices will follow simil voluntary carbon credits, leading to similar trends for both types of credit. Despite all uncertainties, credit price forecasts made by management cos show that credit unit prices tend to increase in the future, while the probarealization of scenarios that predict stagnant prices or decreases is weak these projections, there may be an increase in the offset costs to be increased to construct the CORSIA. Climate Adaptation Strategy: • Uncertainties and fluctuations in emission reduction credit prices, partic are seen as possible financial risks. Market dynamics are monitored by o departments and risk mitigation strategies such as hedging are evaluated financial dimension of the risk.

able 1: Climate-related Risks

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Turkish Airlines Climate Transition Plan

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Climate-related Risks

Climate-Related Transition Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Ir Range	npact		Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
G4	Political and Legal	Climate policy development	In this period of increased global climate change efforts, stringent climate policies in line with the Paris Agreement targets continue to be developed. In this context, the revision to the EU Energy Tax Directive, which is included in the RefuelEU Aviation regulation and presented under the Fit for 55 Package, anticipates new steps		•	•	Impact of Risk on Strategic Planning: Emissions from our flights between EU airports are described in detail in Sustainability Report. These emissions include cargo and passenger activities. If taxation on conventional jet fuel starts in the future, it may can in the operational expenses of airline companies. Climate Adaptation Strategy:
			to be taken in the taxation of aviation fuels. This development may require a reconsideration of future energy utilization strategies and operational planning.				 New environmental regulations regarding aviation on a global scale are monitored, followed closely and necessary actions are taken. Our perspect the impact of various environmental regulations on the aviation industry a Incorporation is actively discussed in relevant arenas, emphasizing global As the flag carrier airline, we ensure that this viewpoint is shared with all stakeholders, including policymakers, industry authorities, and association

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Turkish Airlines Climate Transition Plan

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Climate-related Risks

Climate-Related Transition Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Ir Range	npact		Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
G5	Market	Failure to meet SAF demand	 According to the STEPS scenario presented in the IEA World Energy Outlook 2023, the share of biofuels in the energy demand of the aviation sector will increase from merely 2% in 2030 to 6% by 2050. Meanwhile, in the NZE Scenario, this share is projected to be much higher, over 11% in 2030 and even over 70% in 2050. Despite the rapid growth in SAF demand, high costs remain a major barrier to large-scale deployment. Although agreements for the use of SAF are increasing, announced projects appear to be on the level to meet only 1-2% of global aviation demand by 2027. According to these projections, global SAF supply may be insufficient to meet demand in the medium term. 			•	Impact of Risk on Strategic Planning: Under current regulations, the obligation to use SAF is imposed on fuel a airlines. However, in the scenario where SAF supply cannot meet the defuture, fuel suppliers may want to pass on their penalty fees to the airline lead to an increase in operational costs. Climate Adaptation Strategy: Securing SAF supply for a future period of time through SAF offtake age provide the ability to take precautions against sudden supply disruptions market and to adapt to environments where this risk occurs. To identify a the reasons that may cause SAF supply to fall below demand, joint adapt can be developed with other stakeholders in the industry affected by the alliances, airport operators, industry organizations, etc.), and the severity the duration of exposure can be relatively reduced. Developing models mechanisms based on SAF supply and demand trends to predict potent and price increases can also be implemented as another element to ensign of the severe of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be implemented as another element to ensign of the price increases can also be im

able 1: Climate-related Risks

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Climate-related Risks

Climate-Related Transition Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Impact Range			Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
G6	Market	Failure to meet growing demand for next-genera- tion aircraft supply	According to sectoral decarbonization scenarios to achieve the 2050 net- zero target set by IATA and ICAO, the key driver of the aviation industry's emission reduction efforts is aircraft technology developments and the use of sustainable aviation fuels. These instruments play an important role in reducing fuel consumption and CO_2 emissions. Technological innovations such as lightweight materials, improved aerodynamics, fuel-efficient engines and all-electric aircraft are crucial to this goal. For example, the transition to next-generation aircraft can reduce fuel consumption by around 15-20%. If there is a delay in the adoption of new technologies or if the supply of next- generation aircraft is insufficient to meet demand, CO_2 emissions may not be reduced to the desired level through next-generation aircraft.				Impact of Risk on Strategic Planning: Considering the aviation industry's limited instruments for achieving its degals, coupled with growing demand from major airlines for next-generate and potential supply challenges for manufacturers, emission reductions to generation aircraft may not reach the desired levels. This may increase the alternative instruments to effectively reduce emissions. Climate Adaptation Strategy: • Making fleet plans accounting for the current situation in the aircraft maindustry, the global economic outlook and our commercial targets is the planeadapt to the risk environment. By adapting strongly to risk conditions, enabled to perform our operations efficiently by carrying out up-to-date set the optimum level, carefully following modern trends, and working in liconditions.

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lecarbonization tion aircraft through nexthe need for

anufacturing primary method we will be studies during in the inventory ine with current

Turkish Airlines Climate Transition Plan

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Climate-related Risks

Climate-Related Transition Risks

Risk Number	Type of Risk	Risk Factor	Risk Description	Risk Ir Range	npact		Impact of Risk on Strategic Planning and Climate Adaptation Strategy
				Short	Medium	Long	
G7	Reputation	Increasing customer expectations for combating climate change The association of the aviation sector with environmental impact and global warming due to high carbon dioxide emissions and greenhouse gas emissions	According to studies conducted by the IPCC, the aviation sector contributes to approximately 2% of the human-induced greenhouse gas emissions responsible for global warming. The IPCC also highlights that the aviation is among the sectors that are difficult to decarbonize due to its structure. Nonetheless, despite these challenges, the aviation industry has taken proactive steps by becoming the first sector to establish a collective carbon reduction target and implement a comprehensive emission reduction strategy.			•	Climate Adaptation Strategy: • Turkish Airlines gives utmost importance to communicate with its stakeh transparent manner. Turkish Airlines aligns with customer and stakeholde as part of its strategy by calculating emission data using the latest referent and having them verified by independent bodies. Furthermore, the airline enhances its sustainable travel experience to meet customer demands, or improving its initiatives. Turkish Airlines also ensures transparent communi- sustainability efforts to all stakeholders.

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holders in a er expectations ence values e consistently continually unication of its On-going

Risk Heat Maps

In the assessment of climate risks, of the 11 risks that have a significant impact, only 6 have been identified as likely to have short-term impacts. When these short-term risks are analyzed according to their severity and potential impacts, it is concluded that only the G5 risk is of high priority, while the other risks are at an acceptable level.

- Concerning the medium-term period, 8 out of 11 risks were identified as likely to have significant impacts.
- In the assessment of these risks, G5 stands out as unacceptable/high priority, while G2, G3, and G4 are identified as high-priority risks.
- In the assessment of long-term impacts, out of 11 risks, F1, G1, G2, and G3 were identified as unacceptable/high Priority risks, while G4 and G5 were identified as high priority risks.

Medium Term Risk Heat Map

• These findings allow Turkish Airlines to prioritize the management of risks with significant impact and to optimize its strategic planning accordingly.



Short Term Risk Heat Map

Long Term Risk Heat Map

Assessing Climate-related Opportunities

The aviation industry contributes considerably to greenhouse gas emissions; however, it also offers various opportunities in the fight against climate change. For example, sustainable aviation fuels obtained from renewable sources can reduce CO_2 emissions by up to 87% compared to conventional jet fuel.

As aircraft manufacturers are developing more efficient designs, airlines have the capacity to minimize their emissions by implementing operational improvements. Market-based measures such as carbon pricing are anticipated to provide additional incentives for airlines to adopt sustainable practices.

The aviation industry plays a key role in the transition to a low-carbon economy through investments in sustainable aviation fuel studies, the development of next-generation aircraft, the implementation of operational optimizations, and the promotion of market-based measures.

Opportunities with the potential for substantial strategic impact have been assessed and incorporated into Turkish Airline's strategic plans. The results of these assessments are presented in **? Table 2.**





Climate-related Opportunities with Significant Impact

Opportunity Number	Type of Opportunity	Opportunity Description	Opportu Time Fra	unity ame	Impact of Opportunity on Strategic Planning
1	Resource Efficiency	 About 97% of emissions in the aviation industry come from jet fuels. An analysis of IATA and ICAO's Achieving Carbon-Neutrality by 2050 Scenario shows that one of the most important factors in emission reduction is the development of aircraft technology. Technologies that play a key role in reducing fuel consumption and CO₂ emissions include improved aerodynamics and lightweight composite materials, more efficient engines, advanced systems such as electric aircraft, and integrated designs. The transition to next-generation aircraft has resulted in fuel consumption reductions of around 15-20%. Turkish Airlines' investments in next-generation aircraft will make a significant contribution to reducing its' fossil fuel emissions and directly reduce the operational costs associated with carbon pricing. 			Turkish Airlines is rapidly progressing towar most modern fleet in Europe. With the aim of taking important steps towards strengthenin technology-equipped, fuel-efficient and envi- evolving passenger traffic and changing cus- and attaching importance to passenger com- detailed under the section titled 2 "Fuel E With a fleet age of 9.3 at the end of 2023, Tr and youngest fleets in the world. Furthermo- generation aircraft in the fleet will constitute fleet. Wide Body Aircraft Purchase In line with our Board of Directors has decided to purch from Airbus to be delivered in 2025, 2026 at
2	Energy Source	SAF significantly reduces CO ₂ emissions and particulate emissions over its lifecycle compared to conventional fossil jet fuel. It also contributes to improved air quality thanks to its lower content of impurities such as sulphur. Increasing the use of SAF, which plays an important role in the decarbonization process of the aviation industry with these advantages, will significantly contribute to mitigating our fossil fuel-based emissions and reducing the operational costs associated with carbon pricing. Turkish Airlines also collaborates with climate-focused coalitions in areas such as sustainable aviation, innovation, green finance and job creation to support both environmental and economic sustainability. Turkish Airlines believes that such efforts provide an important roadmap for tackling the climate crisis.			In line with the 10-year strategy, Turkish Airlin over 800 in the fleet by 2033 and become a this goal, Turkish Airlines regularly use SAF Istanbul Airport to Paris, Oslo, Gothenburg, O Stockholm and Lyon. Turkish Airlines plans to expand our SAF usa destinations in the coming years. In addition SAF is used on Lyon, Marseille, Oslo, Strasb proportions specified in the country regulati In the coming years, Turkish Airlines aims to products through long-term Sustainable Avi different production technologies and SAF p works in coordination with sectoral and non such as the Türkiye Sustainable Aviation Pla information and experience and work on joi on SAF can be found under the section title



ards the goal to become the youngest and of expanding and rejuvenating the fleet, it is ning Turkish Airlines brand by purchasing new nvironmentally friendly aircraft that meet the ustomer needs, accounting for cost analyses omfort and safety. Related practices are Efficiency Practices".

Turkish Airlines has one of the most modern hore, it is planned that by 2033, nextite at least 95% of the Turkish Airlines' total with the growth targets of our Incorporation, chase 10 A350-900 type passenger aircraft 5 and 2027.

rlines aims to increase the number of aircraft e a carbon-neutral airline by 2050. To achieve F once a week on routes departing from g, Copenhagen, Stuttgart, Brussels, London,

usage to higher frequencies and different on, on return flights departing from Europe, sbourg, Bordeaux and Toulouse ratios at the ations.

to support domestic producers and domestic viation Fuel purchase agreements to support production in Türkiye. Turkish Airlines also on-sectoral stakeholders through coalitions Platform-Global SAF Declaration to exchange oint projects. Details of Turkish Airlines' work led one matchesistic function fuel (SAF).

that contrails account for 61% of total aviation CO_2 emissions.

Climate-related Opportunities with Significant Impact

Opportunity

Description

visible contrails.

The use of SAF has been found to significantly reduce the emission of particulate matter that generates contrails. A study cited in a report by the European Aviation Safety Agency (EASA) concluded that a 50% SAF mix can reduce the climate impacts of contrails by over 20%, while 100% use can reduce them by 50%.

Aircraft engines release various emissions into the atmosphere, including

3.16 kilograms of carbon dioxide (CO₂) and about 1.23 kilograms of water

vapor (H₂O) for every kilogram of fuel combusted. In the low temperature

and high humidity conditions that occur at cruising altitudes, the gaseous

The persistence of these contrails depends on atmospheric conditions and the ratio of H_2O mixing. If they form at night or persist for a long time, they may trap thermal radiation and cause potential warming. Studies' suggest

particles released along with H₂O condense in the atmosphere to form

A different study also found that using low aromatic sustainable aviation fuel can reduce contrail and ice number concentrations by 50% to 70%. These reduced contrail ice counts result in less energy accumulation in the atmosphere and less warming.

Significant reductions in aviation's climate impact are expected through widespread adoption of low aromatic fuels and regulations to reduce the maximum aromatic fuel content.

Impact of Opportunity on Strategic Planning

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Strategy

on Strategic Planning

Currently, Turkish Airlines continues to reduce the fuel emissions through route optimization and alternative fuel use. In addition, it is closely following the developments and regulations regarding contrails and researching technical information on the monitoring, measuring and reporting of these pollutants. Following the clarification of technical details on monitoring and measurement, efforts to reduce contrails will be planned.

1. "Voigt vd., 2021, Cleaner burning aviation fuels can reduce contrail cloudiness"

2. https://rmi.org/contrail-mitigation-a-collaborative-approach-in-the-face-of-uncertainty/

3. https://renewable-carbon.eu/news/significantly-lower-climate-impact-of-contrails-when-using-sustainable-fuels/

Opportunity Type of

Opportunity

Energy Source

Number



Climate-related Opportunities with Significant Impact

Opportunity Number	Type of Opportunity	Opportunity Description	Oppor Time F	tunity rame	Impact of Opportunity on Strategic Planning
4	Energy Source	According to the 2035 and 2053 projections of Türkiye's National Energy Plan, the share of renewable energy sources in primary energy consumption will increase from 16.7% in 2020 to 50% by 2053. In line with this target, our country is rapidly increasing renewable energy incentives and making them accessible to all sectors. These efforts increase the possibility of using renewable energy sources in our operations. Increasing the use of renewable energy in our operations will reduce our Scope 2 emissions and contribute to a fuel procurement strategy that is more resilient to potential future fossil fuel price increases.			As Turkish Airlines, we constantly review the energy investments in suitable areas. In our of our energy needs from renewable source Certificate for our entire electricity consump existing buildings in the Atatürk Airport (AH consumption from renewable sources in the electricity consumption considering the tota of the electricity used in the buildings in the producing from renewable resources. In thi GJ of renewable energy with I-REC Certificat We plan to avoid 4,558.7 tCO ₂ /year emission implement with a total investment cost of 3 detailed under the title <i>C</i> "Resource Efficient
6	Market	Nowadays, consumers take environmental sensitivities into consideration when determining their brand preferences. In this context, the next- generation aircraft and the use of SAF, as well as the carbon offset opportunity offered to customers, strengthen Turkish Airlines' positive brand image and contribute to its strong reputation with both passengers and investors. Our Company's focus on environmental responsibilities plays an effective role in increasing customer loyalty as part of its sustainability efforts.			In line with the increasing awareness of sus offering <i>P</i> CO mission, a voluntary carbo 2022, both to meet passenger expectations action together in the fight against climate of With this program, Turkish Airlines offers trad development projects and participate in the are offered three different portfolio/package "Renewable Energy", "Social Benefit" and "u the desired amount to the portfolio of their certificate in return for their contribution. Pa at any time on the platform, share their cert offsetting to their loved ones. As of August 1, 2022, a total of 4,832,178 kg of 2023. In addition, within the scope of the offsets emissions from its employees' duty-



he needs and requirements and plan solar ur new buildings, we aim to meet at least 5% ces. In this context, we received the I-REC aption in the AHL Region in 2023 in our HL) region. We provide 100% of our electricity he AHL region, and approximately 14.4% of our tal of AHL and Istanbul Airport (IHL) regions. All he AHL region was purchased from suppliers his context, we purchased a total of 57369.6 cate in 2023.

ions with the solar power projects we will 3 million US dollars. Relevant projects are ciency Practices."

ustainability issues, Turkish Airlines began bon offset program, to its' customers in August ns and to emphasize the importance of taking e change.

ravelers the opportunity to support sustainable ne process of improving the world. Passengers ge options to offset their emissions:

"Green World". Passengers can contribute r choice and receive a special carbon offset Passengers can access their online certificates rtificates on social media and even gift carbon

te CO₂ emissions were offset by the end ne CO₂mission program, Turkish Airlines also *y*-flights.

Climate-related Opportunities with Significant Impact

Opportunity	Type of	Opportunity	Opportunity	Impact of Opportunity
Number	Opportunity	Description	Time Frame	on Strategic Planning
7	Resource Efficiency	Resource efficiency practices provide a critical advantage for the company to fulfill its environmental responsibilities. These practices significantly reduce environmental impact through environmentally friendly approaches inplemented in various operational fields. In particular, they make a significant contribution to the achievement of the company's sustainability goals by reducing its carbon footprint. Another important impact of these practices is long-term cost savings. Through energy and resource efficiency, operational processes become more efficient, which results in lower fuel costs and operational overheads in the long run. Therefore, the adoption of resource efficiency practices reduces Turkish Airlines' operational costs and increases financial sustainability. These environmentally friendly practices also play an important role in demonstrating the company's environmental awareness and responsibility to customers and industry stakeholders. This improves the company's sustainability reputation and gives it the advantage of being an airline preferred by environmentally conscious customers.		 As Turkish Airlines, we prefer specially certification of a context, EPD certified glasses, MAS a materials, GUT labeled carpets, FSC certifies materials with recycled content, Oeko-Tex of transformers, green building certified water and internationally standard certified solar p such projects. On top of that, 9 different buildings at Istant Green Building Council with the LEED v4 BD Domestic Lounge and Main Lounge building ID+C certificate. In addition to these building Terminal (OC) Building received platinum but Terminal received a LEED v4 BD+C Certificat Lounges received a Silver LEED v4 ID+C certification for the Building to the OC-Flight Crew Term Airlines aims to obtain LEED certification for Istanbul Airport Main & Domestic Lounges Facility - LEED BD+C, Food Production Facility - LEED BD+C buildings.

The actions that have been taken and will be taken in response to risks and opportunities with significant impact are detailed in the section titled "Decarbonization Strategy of Turkish Airlines".



tified products with reduced environmental energy-efficient products, in all new building ation works, as much as possible.

approved green label acoustic baffle ceiling ied wood veneers, green labeled LVT flooring certified upholstery fabrics, Tier-2 certified er faucets, Eurovent certified HVAC equipment, panels are among the preferred materials in

nbul Airport have been certified by the US 3D+C certificate, and the Turkish Airlines ngs have been certified with the silver LEED v4 ngs, in 2022, the Operations Center and Crew business certification, while the Smartist Cargo cate and Istanbul Airport Main & Domestic ertification.

third airline in the world and the first airline cate after the LEED Certification process minal Building. For the 2023 period, Turkish or the Taksim Sales Office - LEED BD+C, Expansion Project - LEED ID+C, Main Catering cility - LEED BD+C and Smartist Cargo Phase 2

Decarbonization Strategy of Turkish Airlines



Combating climate change is recognized as one of the material issues in the business strategy of Turkish Airlines. Therefore, climate change-related issues are integrated into the existing risk assessment, decision-making and implementation mechanisms.

Turkish Airlines adopts the climate change targets that the IATA has set for the aviation industry and integrates them into its business strategies. Within this scope, Turkish Airlines improves its performance in various areas, including energy and emission management, resource efficiency, fleet modernization, and sustainable aviation fuel studies throughout its operations and incorporates industry best practices into its business strategy.

Turkish Airlines recognizes Türkiye's ratification of the Paris Agreement in 2021 and its commitment to reach net zero carbon emissions by 2053, as well as other agreements to which Türkiye is a signatory, global developments, and stakeholder expectations; it plans its business strategies accordingly

In this context, Turkish Airlines supports the fight against climate change and pledges to be "Carbon Neutral by 2050."



1,192,632

tons

of fuel savings

will be

achieved

by 2033

Next-Generation Aircrafts

- generation aircraft.

Sustainable Aviation Fuel Use

- suppliers are planned.
- and provide easy access to SAF.

Operational Improvements

Carbon Offsetting

- 2024.
- various investment models.

Renewable Energy

- LEED certification.
- needs of the Incorporation.

• In 2033, at least 95% of our total fleet will consist of next-

 Our next-generation aircraft reduce carbon emissions by 15%-20% compared to the previous generations of aircraft.

• In 2022, our first flight using SAF was taken and as of this date, SAF has been used regularly on one flight per week. SAF will continue to be used in increasing frequencies and destinations.

- Long-term guaranteed purchase agreements with SAF
- Partnerships/collaborations with companies planning
 - production in Türkiye are also planned to secure SAF supply

• By 2033, a total of 1,192,632 tons of fuel savings will be achieved through operational improvements.



• Within the scope of CORSIA, our emissions will be offset as of

We plan to develop carbon emission reduction projects with



• We aim to produce at least 5% of the energy needed in our new buildings from renewable sources. An increase in energy efficiency will be achieved with our 9 separate buildings with

• We plan to invest in SPP projects that can reduce the energy

Strategy to Achieve Carbon Neutrality by 2050



Figure 4: Turkish Airlines' Strategy to Achieve Carbon-Neutrality by 2050

Fleet Modernization and Operational Optimization

Next-generation aircraft consume approximately 15% to 20% less fuel than older generation models.

95% of our fleet will consist of nextgeneration aircraft by 2033.

Sustainable Aviation Fuel

SAF plays a key role in reducing carbon emissions. Turkish Airlines plans to expand our current SAF usage as the availability increases globally.

Carbon Offsetting

Emissions that cannot be prevented will be offset voluntarily, in addition to the regulatory offsetting schemes (CORSIA, EU ETS, UK ETS).

Fuel Efficiency Practices

Fuel efficiency is a key component of Turkish Airlines' strategy to combat climate change and reduce greenhouse gas emissions.



Next-Generation Aircraft

Integration of fuel-efficient aircraft

into the fleet allows for significant savings on maintenance, repair, and operating costs. Furthermore, nextgeneration aircraft positively impact customer satisfaction and loyalty due to their interior design and amenities that meet changing passenger expectations. Therefore, when introducing new aircraft to its fleet, Turkish Airlines' strategy is to prioritize models with low emission levels and high fuel efficiency. The incorporation of next-generation aircraft into Turkish Airlines' fleet not only has a direct impact on its capital assets but is also a significant factor in the company's medium and long-term financial planning.

Following IATA's comprehensive fuel

efficiency policy which supports short and

long-term targets, a number of fuel efficiency

parameters are continuously measured and

monitored. The Board of Fuel Efficiency,

chaired by the CEO, reviews and monitors

framework of the Fuel Efficiency Program.

fleet modernization activities fall under the

responsibility of the Investment Management

Next-generation aircraft purchases and

Department.

the implementation of action plans within the

- Next-generation aircraft such as A321 NEO and B737 MAX, which were ordered in 2013, were integrated into the fleet in 2018, leading to a 15% reduction in fuel consumption
- Next-generation aircraft like A321-NEO and B737-MAX are employed more frequently than other narrow-body aircraft in order to maximize the benefits of product quality and fuel efficiency.
- 13 A321-NEO and 8 B737-8 MAX aircraft were delivered in 2022.
- As of the end of 2023; Turkish Airlines' fleet, one of the most modern fleets in Europe, consists of a total of 440 aircraft, including 120 wide-body, 296 narrow body, 416 passenger aircraft and 24 cargo aircraft. With the historic order it placed with the European manufacturer Airbus in December 2023, it plans to add 355 new generation aircraft to its fleet in the coming years. Turkish Airlines, which continues to invest in its fleet environmentally friendly and maximum comfort aircraft in order to maintain its award-winning service quality, aims to reach a fleet of more than 800 aircraft in its 100th year.
- As of the end of 2022, the Turkish Airlines fleet has 27 next-generation wide-body aircraft, including 16 B787-9 Dreamliners. In addition to the wide-body aircraft, the fleet has 37 next-generation narrow-body A321 NEO aircraft, which were ordered in 2013 and delivered by the end of 2022; the deliveries that are currently underway are estimated to be finalized by the end of 2028.
- Thanks to the high product quality and cost advantages of the next-generation aircraft, Turkish Airlines has increased its revenues and market share, especially by increasing the frequency of certain long-haul flights in the US market.

- Next-generation narrow-body aircraft use 15% less fuel, whereas next-generation wide-body aircraft use 20% less fuel, resulting in a 310 million USD average fuel cost savings in 2022.
- In line with its expansion targets in its cargo operations, the Incorporation continued to operate its A330-200F and B777-200LRF aircraft throughout 2022. In 2022, the cargo operation was supported by leasing wet lease cargo aircraft in addition to the cargo aircraft added to the fleet from manufacturers.
- In 2023, 16 aircraft joined the TK fleet, 4 aircraft joined the cargo fleet and 30 aircraft joined the AJet fleet. The ratio of new generation aircraft in the fleet by the end of 2023 is 31% in the entire fleet, 34% for narrow body aircraft and 32% for wide body aircraft.
- In addition to the European, Asian, Middle Eastern, African, and Eastern markets, which have significant passenger potential, capacity growth was also achieved in the American market. Deliveries of next-generation wide-body aircraft are expected to be completed by the end of 2027. According to the projections, incorporating these nextgeneration aircraft to the fleet by 2028 will result in considerable savings in fuel consumption per seat in narrow-body aircraft.
 - The ratio of next-generation aircraft to passenger aircraft is expected to reach 50% by 2026 and above to 70% by 2030. By December 2033, 95% of the Turkish Airlines fleet will consist of nextgeneration aircraft, which produce 15%-20% less carbon emissions compared to the previous generation of aircraft.

Fleet Modernization

Recognizing that fuel consumption constitutes a substantial part of its climate change-related

activities, Turkish Airlines continues to invest in lowcarbon technologies such as avionics applications. Fuel costs are the most significant direct cost item for Turkish Airlines. Fuel costs for the reporting year accounted for approximately 34% of total operational expenditure. Changes to the fuel budget in response to climate change-related risks and opportunities will have a direct impact on Turkish Airlines' costs.

Accordingly, project-based fuel-saving practices

are currently underway, including high-intensity cabin modification projects and engine upgrades. Fuel-saving systems are continuously tested in line with the avionics solutions offered by Boeing and Airbus, and selected solutions are made available for use. A number of systems have been developed by aircraft manufacturers to optimize flight speed and descent profiles in order to save fuel.



DPO (Descent Profile Optimization) is a system enhancement that aims to save fuel by optimizing landing and approach routes to the airport. This optimization reduces idle thrust margins during descent and speed margins during the approach phase. With DPO, a steeper descent route is used to keep the engine at idle for a longer period of time, aiming to achieve fuel reduction. Additionally, there are ongoing projects to replace steel brakes and wheels with carbon alternatives on a number of the Boeing 737-800 aircraft in the fleet. Carbon brakes are significantly lighter than steel brakes, resulting in a weight reduction of 300 kg per aircraft. This practice directly contributes to the reduction of fuel consumption levels and fuel-related greenhouse gas emissions.



Fleet Modernization



Following these collaborations, Turkish Airlines aims to equip its A320 and A330 Current Engine Option (CEO)* fleet with Descent Profile Optimization (DPO) in the following years. These implementations are estimated to contribute to an annual CO_2 emission reduction of approximately 40,262,000 kg.

*Current Engine Option

Cabin Modification Projects

Evolving passenger expectations and

consumption habits have necessitated the

Technological developments in the aviation

industry have led to the continuous renewal of

in-flight equipment. When implementing such

changes, Turkish Airlines prefers to implement

the latest technology in cabin seats and interior

and lower the overall aircraft weight. Such

components that use a minimal amount of materials

improvements are included as a financial metric in

the decision-making processes of Turkish Airlines.

unavoidable upgrading of in-flight arrangements.

Therefore, cabin modification projects are considered a part of short and mediumterm financial plans. Our subsidiary company manufactures the next-generation seats using lighter materials compared to the current seats in use. This approach aims to improve material efficiency as well as reduce aircraft weight. The use of lightweight materials consequently lowers fuel consumption, thereby reducing operating and maintenance costs.

Through improved fuel efficiency rates, the in-cabin configuration transformation

projects contribute to Turkish Airlines' commitment to be "Carbon Neutral by 2050" in its fight against climate change, and to achieve the sub-target of "a 5% increase in fuel efficiency by 2033 compared to 2023 through operational improvements." Additionally, in line with the 1.5°C target of the Paris Agreement, the company supports its industry's goal to reach net zero emissions by 2050.

Furthermore, Turkish Airline's improved fuel efficiency and emission reductions, which are achieved by in-cabin configuration transformation projects, contribute to the United Nations Sustainable Development Goals of SDG 7: Affordable and Clean Energy, SDG 12: **Responsible Consumption and Production,** and SDG 13: Climate Action.

Route Optimization

approach procedures to optimize the use of airspace.

Route optimization is performed automatically by the flight planning system. This structure impacts flight duration, flight route-related costs, and consequently, fuel consumption and greenhouse gas emission figures. Route optimizations help minimize flight route-related costs, required fuel volumes, and the amount of emission generated. Additionally, by comparing planned and actual flight routes, routes with a potential for improvement are monitored manually.

Turkish Airlines works in close cooperation with both domestic and international air navigation service providers to improve its air traffic management system. Alongside a team devoted to conducting continuous research on optimal flight routes, a multi-divisional committee has been established to work on the SESAR (Single European Sky ATM Research) project. Infrastructure projects aimed to improve operational efficiency include various airport improvements, such as constructing new parking lots and improving



Within the scope of the cabin modification projects planned to be implemented in 2024, a total weight reduction of 382,649 kg is targeted for a total of 45 aircraft.

 It is estimated that this reduction will bring a total annual fuel saving potential of 6,894,542 USD.

Sustainable Aviation Fuel (SAF)

At the 77th General Assembly of the IATA, a resolution was passed for the global air transportation industry to achieve net zero emissions by 2050. In line with this objective, Turkish Airlines started implementing a recommended practice into its operations by incorporating biofuels, also referred to as SAF, in its flights in 2022. Such fuels can reduce greenhouse gas emissions by up to 87% compared to conventional **kerosene fuel.** Turkish Airlines intends to increase the amount of biofuels used on its flights depending on departure and landing destination and the frequency of the flights.

Sustainably-sourced aviation fuel was first used by Turkish Airlines on the TK1823 flight that took place on February 2, 2022, between Istanbul Airport and Paris Charles De Gaulle Airport. The sustainable aviation fuel (SAF) has since been used regularly on routes to Paris, Oslo, Gothenburg, Copenhagen, Stuttgart, Stockholm, London, Brussels and Lyon. It is also used on flights returning to Istanbul Airport from Lyon, Marseille, Oslo, Strasbourg, Bordeaux and Toulouse.

Turkish Airlines actively uses sustainable aviation fuels in its operations and is involved in various collaborations that are aimed at improving these fuels. Turkish Airlines is a signatory to the Global SAF Declaration, which is also signed by Rolls-Royce and AIRBUS, and plans to maximize the use of SAF in its operations within technical, regulatory, safety, and

In 2023, Turkish Airlines joined Türkiye's first sustainable aviation platform, which was established in a joint effort between Boeing and Istanbul Technical University. This platform aims to accelerate the sustainable transformation and the decarbonization journey of the Turkish aviation industry. It also aims to raise awareness and provide more information in this field through training programs and social activities. In collaboration with other stakeholders in the Türkiye Sustainable Aviation Alliance, platform members are in the process of developing a SAF Roadmap for Türkiye. Powered by the long-standing cooperation between Turkish Airlines, Boeing, and Istanbul Technical University, the platform was established to facilitate collaborations in the field of sustainable aviation and to develop joint projects by exchanging ideas and experiences. The platform is expected to expand further with the arrival of new participants.





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Resource Efficiency Practices

The majority of energy used in Turkish Airlines' operations comes from aircraft fuels. Although ground operations constitute a smaller portion of total energy consumption, extensive energy efficiency practices are conducted for these operations. The majority of the energy needed in these operations is generated from electricity and natural gas resources. In energy-intensive ground operations, energy efficiency improvement projects in line with energy audit reports are implemented regularly.

In addition, apart from our flight activities, energy saving practices are also carried out in our buildings. With our energy efficiency studies in our Incorporation's facilities, 30,728.7 GJ of energy savings were achieved in 2023.

- In 2022, efficiency projects helped reduce electricity consumption by approximately 21.8% in 2022 compared to 2019. These projects included adjusting ambient air temperatures, installing heaters in boiler systems used in buildings to provide hot water, upgrading the heating lines, and replacing gases used in cooling systems with alternatives that have a lower impact on global warming.
- Within the scope of the Operation Center indoor car park project planned as of 2022, it is planned to install a total of 560 charging units for electric vehicles in an area for 3,700 vehicles.

RKIS

In line with the long-term strategy of Turkish Airlines, assessments are being conducted on operational areas suitable for renewable energy applications, and investments in solar energy are currently in progress.

- An estimate of at least 5% of the energy needs of new buildings are supplied from renewable sources. Accordingly, the YEK-G Certificate was acquired, which certifies that the entire electricity consumption of buildings at the Atatürk Airport (AHL) in 2022 was generated from renewable resources. Consequently, 100% renewable electricity is used in the AHL site. Approximately 12% of the total energy need of the AHL and IHL (Istanbul Airport) sites is obtained from renewable sources.
- Numerous solar electricity system projects are scheduled to commence operations in 2023 to increase renewable electricity consumption in operations.



The long-term strategic plans of Turkish Airlines include necessary resources, such as people, technology, infrastructure, and finance, in order to improve energy efficiency and reduce the use of natural resources. In support of this approach, Turkish Airlines implements the ISO 50001 Energy Management System standard.



Our planned Solar Power Projects:

- » Installation of an SPP with a capacity of 4,365.45 kWp/3,360.00 kWe on the roof of the AHL Cargo facility (the prevention of an average of 3.341.900 tCO₂ emissions per year is anticipated).
- » Installation of an SPP with a capacity of 534 kW at the TAFA Aydın Çıldır Facility (It is anticipated that CO₂ emissions equivalent to 419,801 kg/ year will be prevented.)
- » Installation of an SPP with a capacity of 1,110.71 kWp / 875 kWe on the roof of the Sedat Şekerci Flight Training Center (the prevention of 797.000 tCO₂ emissions per year is anticipated).



Carbon Offsetting

Carbon Offsetting Practices

Turkish Airlines manages the greenhouse gas emissions resulting from its operations in compliance with national and international regulations and standards. In this context, emission sources are meticulously monitored, emission volumes are calculated, and data on emissions are periodically reported and verified by independent third parties.

Reporting processes are carried out in line with the requirements of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), European Union Emissions Trading System (EU-ETS), United Kingdom Emissions Trading Scheme (UK-ETS) and GHG Protocol Corporate Accounting and Reporting Standard.

Moreover, carbon credits are purchased in exchange for the emissions certified by the EU-ETS and the UK-ETS, and these credits are submitted to the relevant Emissions Trading System authorities. In 2023, credits corresponding to a total of 14,337 tons of CO, were surrendered. Within the CORSIA framework, offsetting obligations have not yet started; however, in the following years, the emissions exceeding the base year emissions values will be compensated with carbon credits obtained from projects in compliance with CORSIA.



As the voluntary and mandatory carbon offsetting practices indirectly affect Turkish Airlines' operations and provide input to its strategic planning processes, the impacts of these practices are also included in the long-term financial plans.

Voluntary Carbon Offsetting Program

In line with its climate change mitigation efforts, Turkish Airlines launched CO₂mission, a voluntary carbon offsetting program, in August 2022.

With this program, Turkish Airlines offers its passengers the opportunity to contribute to sustainable development projects and thereby participate in the global recovery effort. The project allows passengers to offset their flight emissions not only on Turkish Airlines flights but also on flights operated by other airlines. With the CO₂mission Program, which uses the ICAO (International Civil Aviation Organization) carbon emission calculation methodology, passengers who wish to offset the emissions of their flights can choose from globally-accredited climate change mitigation and social development projects included in the "Renewable Energy", "Social Benefit" and "Green World" portfolios, which generate carbon credits and support nine different Sustainable Development Goals. They contribute to the projects of their choice in the desired amount and can access their online certificates on the platform at any time, share their certificates on social media, and even gift carbon offsets to their loved ones.

Within the scope of the CO₂mission program, Turkish Airlines also offsets the emissions resulting from the duty flights of its employees.

Under the CO₂mission Voluntary Carbon Offsetting Program, which began on August 1, 2022, a total of 4,832,178 kg of CO₂ emissions were offset by the end of 2023. These contributions also include the carbon offsetting of the IATA's 2023 General Assembly Meeting.

Internal Carbon Pricing Assessment

Internal carbon pricing assumes a theoretical cost per metric ton of carbon emitted. This cost clarifies the potential impact of any possible external carbon pricing on the profitability of a planned project, a new business model, or an investment.



In the planning of its business strategy, Turkish Airlines utilizes a shadow price mechanism for internal carbon pricing. This mechanism enables Turkish Airlines to better understand the impacts of climate-related risks on its strategic planning and to better estimate the financial impacts of nextgeneration aircraft, sustainable fuel solutions and emerging regulations. Additionally, this mechanism also benefits business processes, such as meeting stakeholder expectations, promoting internal behavioral change, identifying and evaluating low carbon opportunities, and supplier relations.



Determining the internal carbon price helps to calculate the internal rate of return (IRR) of investment expenditures in the calculation of the impacts of climate-related risks and opportunities, which in turn contributes to better predictions of investment outcomes.



Following the evaluation of STEPS, NZE2050 and SDS climate scenarios and relevant calculations, Turkish Airlines set its internal carbon shadow pricing at a minimum of 90 USD and a maximum of 140 USD.



Resilience of the Strategy

Scenario analysis is a crucial instrument for comprehending the impact of global climate change on business strategies. Despite the absence of conclusive evidence, assumptions about climate scenarios are derived from scenarios developed at the global and macro levels. These assumptions allow future climate change risks and opportunities to be more easily assessed, thus enhancing the strategy's resilience.

The assessment of climate change-related risks is carried out within the framework of the following focus questions:

- How will the increase in air temperatures, pressure changes, and frequency of extreme weather events due to climate change affect Turkish Airlines' direct and indirect operations?
- How will increasing global climate awareness and the development of mandatory carbon offsets progress?
- How will the global demand for Sustainable Aviation Fuel (SAF) change, and to what extent will producers be able to meet it?
- How will expectations of changes in fuel prices and the ability of suppliers to meet global demand affect Turkish Airlines' operations in the long term?
- How will changing socio-economic conditions around the world shape aviation operations in the short, medium, and long term?

Within the scope of these focus questions, various parameters and assumptions are integrated into the scenario analysis study using different scenarios. The scenarios used cover a broad spectrum, ranging from the implementation of existing climate policies with continuous improvement to no implementation of climate policies at all.

These scenarios are based on different metrics to predict the factors affecting global warming by the end of the century and the metrics which will be impacted by global warming. Each risk category is therefore assessed on an impact scale from low to high impact.



Figure 5: Climate Scenarios Used

The NZE 2050 scenario takes an approach that envisions the energy sector achieving net zero emissions by 2050, with developed economies reaching this target earlier than 2050. This scenario is consistent with the 1.5°C target for global warming reduction below levels observed before the industrial revolution, as outlined in the Paris Agreement. Conversely, the STEPS scenario presents projections predicated on the unlikely event that nations neglect to honor their current climate obligations and no novel climate policies are established.

Beyond the commitments outlined in the **Paris Agreement, Shared Socioeconomic**

Pathways (SSPs) provide an extensive array of emission growth scenarios, including more comprehensive emission reduction scenarios that may persist until the end of the century. Although these scenarios do not provide precise figures for emission reductions, they illustrate the viability of strategies to mitigate climate change and reduce emissions. Their evaluation accounts for societal factors, including technological advancements, regional cooperation, and population size, along with other potential obstacles.

Pessimistic climate scenarios anticipate circumstances in which efforts to mitigate global warming do notmaterialize due to the failure to implement necessary actions and policies. Such scenarios are expected to have significant strategic and financial impacts on the sectors.

Optimistic scenarios, on the other hand, anticipate that the decarbonization and low-carbon energy transformation of sectors will be accelerated and completed and that climate policies will be developed and implemented rapidly. It is assumed that these scenarios will have low strategic and financial impacts on the sectors.

Turkish Airlines strengthens its business strategies in anticipation of forthcoming uncertainties by integrating various climate

scenarios into the risk assessment procedure. The required actions are implemented by identifying risks of strategic importance and analyzing the potential impacts over the short, medium, and long term. This methodology guarantees the business's sustainability and continuity through efficient risk management.



Risk Management



Risk Management

Risk Identification and Assessment Process

Turkish Airlines has established the Treasury and Risk Management Committee to determine the financial risk management strategy and manage financial risks effectively.

This committee holds periodic meetings and is chaired by the CFO with the participation of the Head of Finance, Head of Accounting and Financial Control, and other relevant executives.

The functionality and efficacy of Turkish Airlines' risk management strategy are consistently assessed by the Treasury and Risk Management Commission. Current financial conditions, macroeconomic outlook, industry dynamics, and geopolitical developments are assessed during the Commission's periodic meetings, and decisions are rendered as required to mitigate the identified potential financial risks.

A mechanism integrated into the overall risk management process is utilized by Turkish Airlines to identify, manage, evaluate, and respond to climate-related risks and opportunities. There are various departments within Turkish Airlines that address risks and opportunities, as discussed later in the report.

Risks and opportunities, including climate-related ones, are assessed at least once a year across the company's entire value chain, and short-, medium-, and long-term climate-related risks and opportunities are considered. The company's Risk and Opportunity Management Procedures covers risks such as operational risks, supplier risks, and customer risks.

			LIK	ELIH
	1.5 Hardly Ever	1.8 Rare	2.5 Occasionally	4. Le: Lik
	*	¥	¥	4
20 Very High	30 Acceptable/ Assessable	36 Acceptable/ Assessable	50 High/ Prioritized	8 Unacce High/Pri
15 High	★ 22.5 Low	27 Acceptable/	37.5 Acceptable/	60 Hig
× 	*			
Medium	10.5 Negligible	12.6 Low	17.5 Low	Accep Asses
μ ω 3.5 Low	5.25 Negligible	5.30 Negligible	8.75 Negligible	14 Lo
2.0 Very	∱ 3 Negligible	3.60 Negligible	5 Negligible	8 Neglig
Low	A	¢ 018	A 0.25	4
Almost	Negligible	Negligible	Negligible	Negli

Figure 6: Risk and Opportunity Assessment Matrix

HOOD



Risk Identification

A risk assessment methodology is utilized to evaluate climate-related risks and opportunities to accomplish the intended results of the Environmental Management System. The Environmental SWOT Analysis thoroughly identifies internal climate-related strengths and weaknesses and external opportunities and threats.

The assessment of risks and opportunities is conducted by identifying existing measures and determining the risk/opportunity severity, probability level, and risk/ opportunity coverage actions.

This evaluation is conducted annually along the entire value chain of the organization, encompassing upstream, downstream, and direct operations. It includes an analysis of climate-related risks and opportunities in the short, medium, and long term.

The following topics are considered to accomplish the desired outcomes and to prevent or limit negative impacts:

- Risks defined by the Process Risk and Opportunity Assessment Procedure
- Legal and voluntary regulations that the company is obliged to comply with
- The company's environmental
 processes
- Stakeholder expectations

Environmental risks and opportunities are assessed on a regular basis, more than once per year, and revised accordingly if resources pertaining to the aforementioned matters undergo modifications.

Risk Assessment

The Environmental Management System

is used to evaluate the risks and opportunities identified by the environmental SWOT analysis within the activities managed by the Corporate Sustainability Management Department under the Chief Investment and Strategy.

Risks and opportunities identified by the Environmental Risk and Opportunity Assessment Form, Climate-related Risk and Opportunity Assessment Form, and Emission Risk Assessment Form are analyzed. Environmental risks and opportunities are analyzed by considering the potential outcome of uncertain situations and the probability of those outcomes.



In this assessment, the outcomes of uncertain situations are categorized as severity points, and the probability of outcomes are categorized as likelihood points. This assessment determines the final assessment score of risks and opportunities and is carried out at least once a year, covering short, medium, and long-term time frames, including upstream, downstream, and direct operations of the company. This score is calculated, and environmental risks and opportunities are prioritized considering measures currently in place to reduce the risk's severity and/or likelihood.

Including environmental impact, the fulfillment of compliance requirements, and company reputation, the Risk/Opportunity Severity Level figure determines the severity levels of risks and opportunities.

For opportunities, the criteria are considered positive, while for risks, they are considered negative. For instance, when the severity impact level of a risk is assessed as 20, the risk level is considered Very High, while a severity level of 0.1 would be Almost None.

Risks with "High" and "Very High" severity may have low-Risk Levels when they have low levels of probability. These risks should be taken into consideration in implementation. Whatever their possibilities are, risks with a severity of "High" or "Very High" should be assessed as risks with a Risk Level of "High" or "Unacceptable".

Risk Management

Environmental risks and opportunities identified by Turkish Airlines as Unacceptable/High Priority, High/Priority, and Acceptable/Assessable are presented at Compliance **Review Board and Sustainability Committee Meetings** according to their priorities.

Senior management approves or rejects the acceptability or applicability of these risks and opportunities in accordance with the Risk and Opportunity Assessment Matrix. The unit responsible for evaluating risks and opportunities designates the unit responsible for the risk/opportunity when a decision is reached to mitigate an identified risk to an acceptable level or to pursue an identified opportunity. This determination is made annually and encompasses short-term, medium-term, and long-term perspectives, with consideration given to the organization's direct, upstream, and downstream business operations.

- **Risk Acceptance:** If the necessary precautionary measures have been taken and the assessment • shows that the current risk level is acceptable, the risk is considered acceptable in its current form.
- Reducing Risk Level (Risk Avoidance): Establishing additional controls to reduce the risk's • severity and/or likelihood is considered risk mitigation. These controls may include new investments, process redesign, termination of the relevant activity, and similar measures.
- **Risk Transfer:** Risk transfer reduces or eliminates the impact of risk and can be accomplished through financial instruments, third-party companies, or outsourcing and service provision contracts.





Metrics and Targets



Metrics and Targets

Energy Usage

Aircraft fuels constitute the basis of the energy consumed in aviation activities, which is an energy-intensive sector.

Table 3 shows the energy consumption of Turkish Airlines between 2019 and 2022 in MWh units.



3,717,489.97 3 47,293.09 70,062.81	34,886,842.08 40,278.37	51,864,224.55 35,050.03	69,969,642.92 74,242.84
47,293.09 70,062.81	40,278.37	35,050.03	74,242.84
70,062.81			
	58,607.07	90,690.88	125,113.75
N/A	N/A	80,348.62	13,180.46
,834,845.87 3	34,985,727.51	52,871,521.63	70,182,179.97
	,834,845.87	,834,845.87 34,985,727.51	,834,845.87 34,985,727.51 52,871,521.63

Table 3: Energy Usage, MWh

Greenhouse Gas Emissions

Turkish Airlines calculates and reports its greenhouse gas emissions from fuel consumption, complying with CORSIA implemented by the ICAO and compliant with the GHG Protocol Corporate Accounting and Reporting Standard and ISO 14064-1 standards.

Turkish Airlines started reporting Scope 3 emissions as of 2021. Figure 7 shows the Scope 1, Scope 2 location-based, and Scope 3 emissions from Turkish Airlines' solo operations in 2019-2022. In Turkish Airlines' GHG emission inventory, aircraft fuel emissions account for over 99% of the total Scope 1-2 and 80% of Scope 1-2-3.

More than 80% of Scope 3 emissions are emissions related to Category 3 fuel and energy that do not fall into Scope 1 and Scope 2. Accordingly, other Scope 3 categories have low materiality and priority in Turkish Airlines' GHG inventory.

25,000,000.00 20,000,000.00

10,000,000.00

5,000,000.00

Scope 1

Scope 2 location-ba

Scope 3 Category 3 Fuel and Energy Rela Emissions N Included in Scope 1 and Scope 2



Figure 7: Greenhouse gas emissions between 2019 and 2022

	2019	2020	2021	2022
	17,834,081.11	9,059,793.45	13,462,857.64	18,170,029.62
sed	43,043.04	35,205.27	56,377.41	64,219.33
ited lot	3,696,689.28	1,876,907.43	2,790,238.50	3,764,914.26

Figure 8 displays the out-of-scope ASK (Available Seat Kilometers) to total ASK rates of Turkish Airlines' CORSIA data, which comply with the recommendations of TCFD. The values for 2030 in this graph are approximations derived from the CORSIA country list after 2027. 44% 36% 35% 30% 20% 2031 2030 Figure 8: Non-CORSIA ASK/Total ASK Ratio

Weight Reduction and Fuel Savings

Operational Activity Metrics

Steel brakes and wheels on some Boeing 737-800 aircraft in the fleet were replaced with carbon wheels and brakes, reducing the amount of fuel consumed per aircraft for each unit of transportation by 300 kg.

A reduction in fuel consumption is directly correlated with a reduction in aircraft weight, subsequently leading to reduced emissions. With more than 100 operational optimization projects and aircraft configuration projects that we have successfully implemented to reduce our carbon footprint since 2008, we have saved 75,148 tons of fuel and prevented the release of 236,751 tons of carbon emissions into the atmosphere in 2023. Thus, since 2008, when we started the Fuel Saving Project The total amount of fuel savings we have achieved since then has been 748,496 tons, and the carbon emission prevented has been 2,357,764 tons. The 2023 target to save 60,000 tons of fuel and reduce 189,000 tons of CO₂ emissions; was successfully achieved by saving 75,148 tons of fuel in 2023 and thus preventing the release of 236,751 tons of greenhouse gases into the atmosphere. In 2024, it is aimed to save 68,000 tons of fuel and reduce 214,200 tons of CO₂ emissions.

Thanks to the fuel efficiency projects implemented since 2008, the amount of fuel consumed for transportation activities has significantly decreased.



Figure 9: Amount of fuel saved between 2008 and 2023

When 2003 is accepted as the "reference/base line" at the end of 2023, it is seen that the transportation performance increases by 1,306 percent as of 2023, while the corresponding fuel consumption increases by 809 percent. In other words, thanks to the fuel efficiency projects that have been successfully implemented since 2008, the amount of fuel spent for unit transportation activity is gradually decreasing, and our efficiency performance is increasing year by year.

Emission	Reduction	Initiative

Emission Reduction	CO ₂ Reduction	Explanation
	(metric ton)	
NADP2 (Noise Abatement Departure Procedure)	53.174	The reduction is achieved by aiming to perform flap pickup at 1000ft after take-off.
Idle Reverse on Landing	39.187	The reduction is achieved by using minimum engine braking on landing.
Reduced Flap Landing	23.619	The reduction is achieved due to low flap landing.
Dispatcher/Ops Extra	14.264	The reduction is achieved in line with the increase or decrease in the planned amount of extra fuel compared to the previous year.
Engine Out Taxi-in	3.017	It is the emission reduction achieved by taxiing with only one engine before take-off.
CG optimization	432	The reduction is achieved by optimizing the aircraft's center of gravity within a certain range.
CDA (Continuous Descent Approach)	15.114	The reduction is achieved by the continuous descent of the aircraft from the start of descent to landing.
Reduced Flap Takeoff	10.980	The reduction is achieved through low flap take-off.
Commander/Fueller Extra Fuel	14.264	The reduction is achieved from the increase or decrease in the amount of extra fuel transported in line with extra fuel demands compared to the previous year.
APU Policy (Fuel)	3.185	The reduction is achieved from the increase or decrease in auxiliary power unit utilization compared to the previous year.
Airframe/Engine Drag/ Aerodynamics/Wash/Paint	1.967	The reduction is achieved through technical maintenance practices.
Engine Out Taxi-out	29.954	It is the emission reduction achieved by taxiing with only one engine during taxi-out.
Statistical APU Fuel Planning	3.185	Using historical data, the reduction is achieved by planning fuel purchases for auxiliary power unit use.
Potable Water	4.591	The reduction is achieved by monitoring the amount of potable water loaded on board and avoiding unnecessary weight.

Table 4: Fuel Efficiency Initiatives Implemented in 2023

Optimizing flight operations and reducing aircraft weight reduces fuel consumption.

The practices carried out by Turkish Airlines for this purpose and the amount of emissions reduced can be seen in Table 4.

- By painting the aircraft with the base coat
 & clear coat system, the aircraft weight is reduced, contributing to fuel consumption reduction.
- This painting system allows the aircraft in the fleet to be painted 2 times instead of 3 times on average for their 20-year economic life. This reduces the use of chemicals by 33%, resulting in savings of 0.8 million USD in 2022.
- In 2021 and 2022, a total of 331,631 kg
 of plastic was saved with the practice of
 reducing the micron thickness of plastic
 bags for under-flight baby strollers, which
 has been implemented since 2019. As
 a result, 30,290 kg of fuel was saved.
 This equals to 34,464 USD of financial
 savings and 95,411 kg of CO₂e emission
 reduction.
- With the Mobile Boarding Pass Project, it is aimed to prevent paper waste and reduce the carbon footprint by reducing the paper boarding pass used in check-in processes.
 In 2022, 4,822,000 mobile boarding passes and Miles&Smiles digital card

applications prevented the production of **6.2 million** pieces of paper and cards, **saving 2.5 million USD**. In 2023, a total of 14,038,433 mobile boarding passes were produced, preventing the printing of 14,038,433 physical boarding passes. With the introduction of the Mobile Boarding Pass option to passengers in 2023, **CO₂ emissions have been reduced by 42%**.

- In-flight travel and toy set packaging and use of plastic toys, which have been offered to passengers, were abandoned in 2022, preventing 46,693 metric tons of plastic consumption and waste generation.
- In 2023, a weight reduction of 1,723 kg was achieved thanks to High Density cabin modifications.
- In 2023, 29 aircraft with new generation engines with increased fuel efficiency and reduced noise impact were added to the fleet.
- By installing the Water Quantity Indicator on 15 aircraft in 2023, annual fuel savings of 250,000 USD were achieved.

Capital Activity Metrics

Seat Weights

By incorporating the **lighter** next-generation aircraft seats manufactured by the subsidiary company into Turkish Airlines' fleet, the airline can achieve fuel savings and CO₂ emission reductions through improved material efficiency and weight reduction.

Solar Panels

A design was developed for a 4,365.45 kWp/3,360.00 kWe power plant, and 8,010 545W PV Panels were installed on the roof of the AHL Cargo Facility so that at least 5% of the electricity in our new buildings could be derived from renewable sources. On the Sedat Şekerci Campus, a power facility of 1,110.71 kWp/875.00 kWe was designed, and 2,008 545W PV panels were installed. Solar energy research is likewise in progress at Aydın Çıldır Airport.

LEED-certified Buildings

Turkish Airlines prioritizes using specially certified products that feature recycled materials, reduced environmental impact, and high energy efficiency when renovating its offices and facilities as well as in all new construction projects.

9 Different Operational Buildings at Istanbul Airport
Turkish Airlines Domestic Lounge
Turkish Airlines Main Lounge
Operation Center and Team Terminal
Smartist Cargo Terminal
Taksim Sales Office
İstanbul Airport Main and Domestic Lounges
Main Catering Facility
Food Production Facility
Smartist Cargo 2 nd Phase Facility

Table 5: Turkish Airlines LEED-Certified Buildings



Descending Profile Optimization (DPO)

DPO optimizes the calculated vertical profile and updates the Flight Management System. This saves fuel by reducing idle thrust margins during landing and speed margins during approach. Turkish Airlines plans to upgrade its A320 and A330 CEO fleet with DPO in the coming years. With this optimization, it is expected to achieve an annual CO₂ emission reduction of approximately 40,262,000 kg.

Plain LEED v4 BD+C
Silver LEED v4 ID+C
Silver LEED v4 ID+C
Platinum Operating Certificate
Plain LEED v4 BD+C
LEED BD+C
LEED ID+C
LEED BD+C
LEED BD+C
LEED BD+C

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Targets

Carbon Neutrality by 2050

Turkish Airlines aims to become a carbon neutral airline by 2050 by optimizing emission reduction initiatives in the long-term with new generation aircraft, Sustainable Aviation Fuel (SAF), renewable energy sources, and operational improvements, while implementing carbon offsetting practices to manage unavoidable emissions.

Carbon Offsetting

Within the scope of **CORSIA**, our emissions are aimed to be offset as of 2024. We plan to develop carbon emission reduction projects with various investment models.

New Generation Aircraft

It is aimed that the new generation aircraft in our fleet will constitute at least 95% of the total fleet in 2033. With our new generation aircraft, we reduce carbon emissions by 15%-20%

compared to old generation aircraft.

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SAF Purchasing

To mitigate the risks arising from the developing regulations on SAF in the aviation sector, Turkish Airlines aims to conclude longterm SAF fuel purchase agreements with potential companies planning to produce SAF in Türkiye.

Renewable Energy

Turkish Airlines currently uses renewable resources to meet at least **5%** of the energy needs of our new buildings, we aim to continue this practice. We plan to invest in SPP projects that can reduce the energy needs of the Incorporation.

Offsetting the Emissions of Our Employees' Duty-Flights

Within the scope of the CO₂mission program, Turkish Airlines aims to regularly offset the emissions from all our employees' duty-flights. In 2023, 8,090 tons of carbon emissions resulting from our employees'

duty-flights were offset by our Incorporation.

Operational Improvements

By 2033, a total of **1,192,632 tons** of fuel savings will be achieved through operational improvements.



Conclusion





Conclusion

Turkish Airlines is undertaking significant measures to guarantee that our stakeholders possess a thorough comprehension of our climate-related strategy, governance, risk management, and objectives.

Our dedication to transparency and accountability regarding climate-related risks and opportunities is reflected in this report. We recognize that climate change poses both challenges and opportunities for Turkish Airlines, and we are committed to developing climate change-focused strategies to make our business and our world sustainable.

Conclusion

We will continue to improve and develop our climate-focused reporting to provide transparency to our investors, passengers, and all stakeholders.



Glossary

CMIP	The Coupled Model Intercomparison Project: A collaborative framework designed by the World Climate Research Programme (WCRP) to enhance the know-how among climate scientists and provide climate projections to understand past, present, and future climate changes.	NZE2050	Net Zero Emission 2050: A commitment to reduce total greenhouse gas e emissions, capturing the unavoidable portion fro balancing methods.
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation: A climate protection program developed by the ICAO, established in 1947 under the United Nations (UN). The program aims to offset and reduce carbon emissions in the international aviation industry.	RCP	Representative Concentration Pathways: A set of scenarios represents trajectories for futu atmosphere and climate modeling characterized
EBITDAR	Earnings Before Interest, Taxes, Depreciation, Amortization, and Restructuring/Rent Costs: A measure of company profitability used by investors to compare one company to another in the same line of business.	SSP	Shared Socioeconomic Pathways: A set of scenarios used in conjunction with clima and societal developments and developed for cl
FSB	Financial Stability Board: An international organization established in 2009 to coordinate the efforts of national financial		socioeconomic conditions.
	authorities and international standard-setting institutions to ensure financial stability and to oversee and provide recommendations for the global financial system.	STEPS	Stated Energy Policies Scenario: A trajectory based on current government policy world, aiming to mirror the plans of today's polici
IATA	International Air Transportation Association:		how policy preferences may change in upcoming
	An organization that develops industry standards provides training and consulting services, advocates		
	for the interests of its member airlines, and plays a significant role in shaping the policies and regulations that govern international air travel for sustainable air transportation.	TCFD	Task Force on Climate-related Financial Disclo A framework and set of recommendations develor climate-related risks and opportunities in their fir
ICAO	International Civil Aviation Organization:		
	A specialized agency of the United Nations that sets international standards and regulations for the civil aviation sector aims to promote the safe and orderly development of international civil aviation worldwide.	WEO	World Energy Outlook: An annual report published by the International E source of information for policymakers, industry comprehensive analysis of global energy trends
IEA	International Energy Agency:		
	An independent organization established within the framework of the Organization for Economic Cooperation and Development (OECD) in the aftermath of the 1974 oil supply crisis that advocates for developing policies to ensure energy security and affordable sustainability today.	WGI	Working Group I: A group convened under the auspices of the IPC present, and future climate change and to contril
IPCC	International Panel on Climate Change:		
	An international scientific body established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 that conducts scientific assessment and comprehensive reviews on climate change, its impacts, and potential adaptation and mitigation		

strategies, preparing assessment reports.

emissions to zero by 2050 through preventing om the atmosphere, and/or offsetting through carbon

ure changes in greenhouse gas concentrations in the d by different radiative forcing levels.

ate models to explore a range of potential future climate climate change research that describe plausible future

y and those that are under development around the cies and illustrate their consequences rather than guess ng years.

osures:

Conclusion

loped to help organizations assess and disclose inancial reporting.

Energy Agency (IEA) is recognized as a valuable professionals, and the public because it provides a s and projections for the coming decades.

CC to scrutinize the physical science foundation of past, ibute to the Sixth Assessment Report.



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