CARBON FOOTPRINT REPORT FOR ZADAR AIRPORT 2025

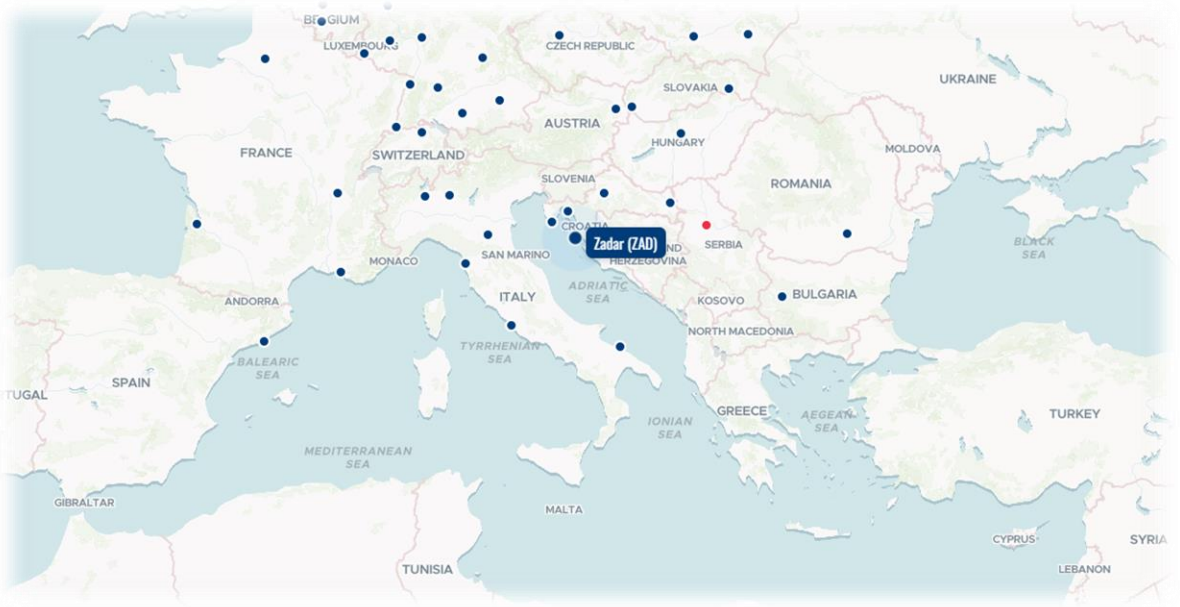
ZADAR AIRPORT

Contents

1. Introduction

The Carbon Footprint Report for Zadar Airport 2025 has been drafted for ACI ACA Accreditation and Renewal of Level 1 for the full calendar year 2025 (i.e., January – December 2025). Zadar Airport has been part of the ACI ACA Accreditation program since 2020, with the first ACI ACA Accreditation certification acquired for 2019 carbon emissions data.

Zadar Airport acknowledges that its activities and operations have an environmental impact and is committed to continuously improving them through the implementation of an Environmental Management System and a Carbon Management Plan. This report provides emissions breakdowns by scope 1 and scope 2, as well as emission sources.



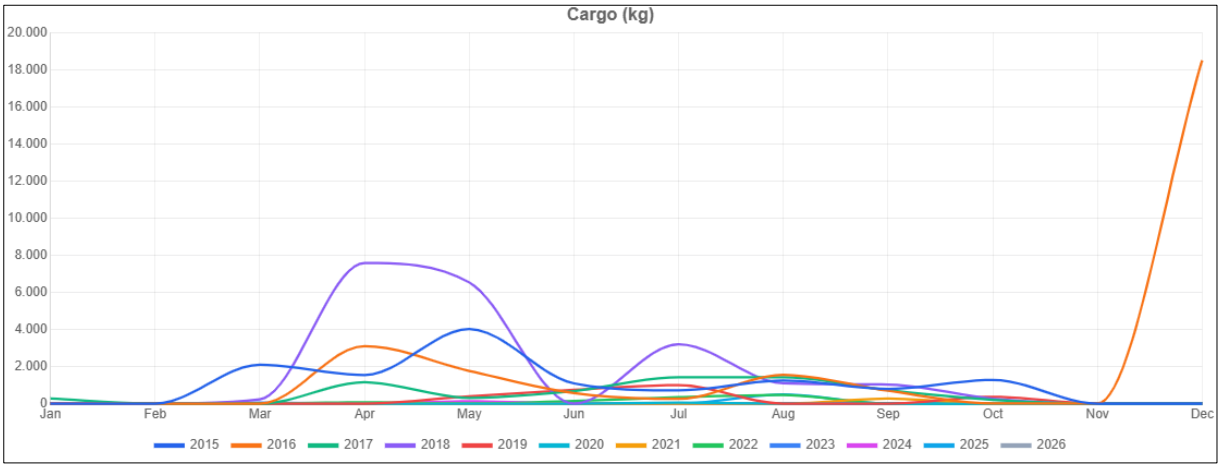
Picture 1. Location of Zadar Airport

2. General information

Zadar Airport was officially established in 1968, and the official opening was a year later, in 1969. Zadar Airport is an international airport of strategic importance to the Republic of Croatia and of particular significance to the city of Zadar. Located in Zemunik Donji, just 10 km from the city centre and near the Zagreb–Split motorway, the airport is classified as a Category 4D facility under ICAO standards. It plays a crucial role in supporting tourism, a key economic driver for the Zadar region. As a central entry point for foreign visitors, Zadar Airport is essential to the city's tourism sector and, by extension, to the broader regional economy. The airport is operated by Zadar Airport Ltd, a company jointly owned by the Republic of Croatia (55%), Zadar County (20%), the City of Zadar (20%), and the Municipality of Zemunik Donji (5%). At the end of 2025, Zadar Airport had 245 employees, 10 more than the previous year.

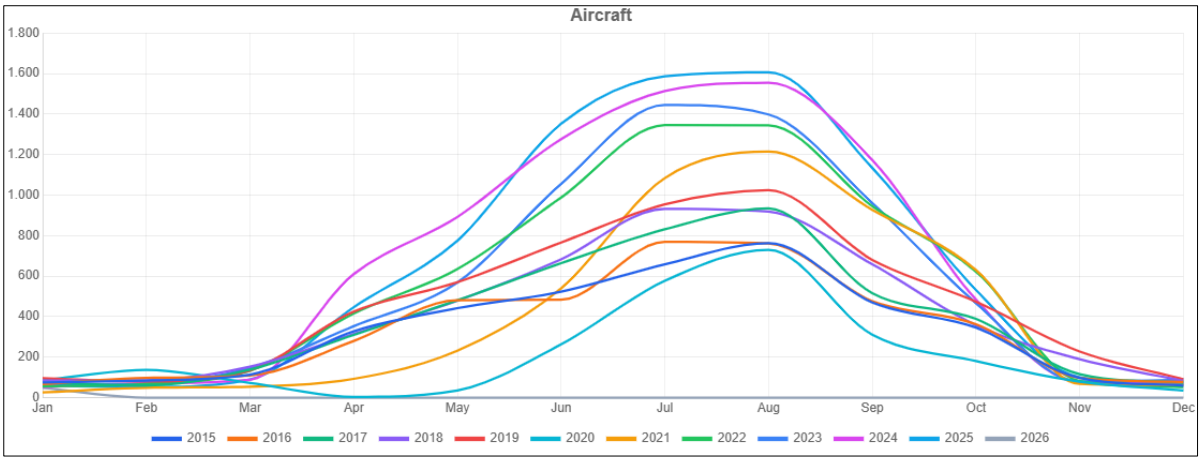
Zadar Airport is the only airport in Croatia with two runways, arranged in an open "V" configuration, supported by a network of taxiways. Thanks to favourable weather conditions, it operates nearly all year-round, up to 320 days annually, except for foggy days. The airport supports three core functions:

- Civil Aviation: Passenger and cargo operations, with a sharp increase during the tourist season (May–October). Freight traffic is projected to grow alongside regional economic development (Picture 2).
- Military Operations: Year-round training and air force activity.
- Emergency Services: Hosting Croatia's firefighting aircraft and Search and Rescue (SAR) units, especially active during the fire season.

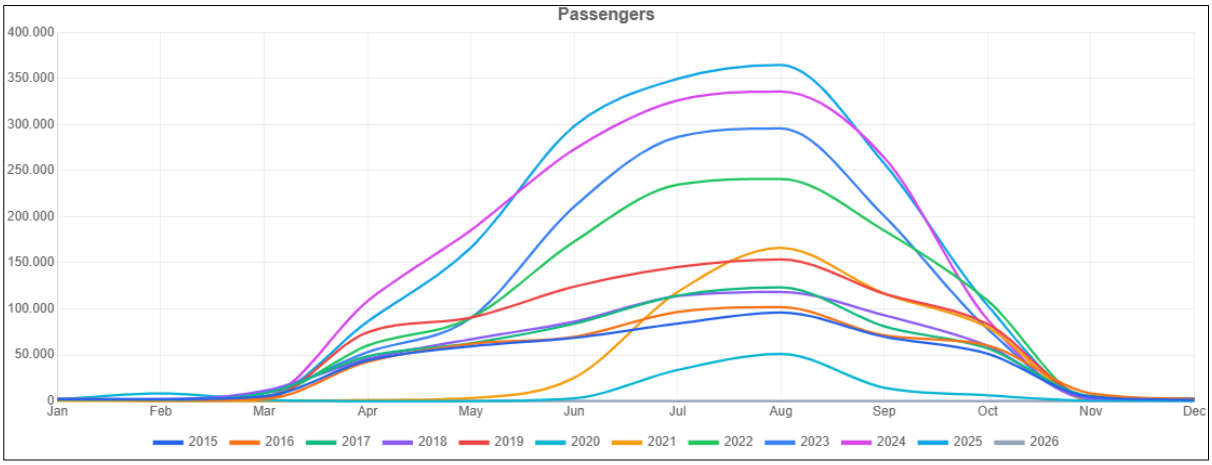


Picture 2. Cargo transport (kg) throughout the years (2015 – 2025)

Driven by tourism growth and rising international interest, Zadar Airport is expected to see continued growth in passenger numbers and flight operations (Pictures 3 and 4).



Picture 3. Number of flights throughout the years (2015 – 2025)



Picture 4. Number of passengers throughout the years (2015 – 2025)

Zadar Airport's dual-runway setup positions it as one of the most promising Croatian airports for expansion. While current operations focus on short- and medium-haul traffic, there is growing interest in establishing long-haul flights with wide-body aircraft, particularly from China (e.g., Hainan Airlines and China Southern Airlines). In Picture 5, airlines operating at Zadar Airport are shown.

Picture 5. Airlines operating at Zadar Airport

3. Organizational boundary

Zadar Airport is responsible for all airport services. These include the following: aircraft, passengers, luggage, aircraft catering services, cargo and mail handling, parking, and advertising. Aircraft fuel supply is carried out by the independent company "*INA - Industrija nafte d.d.*". Taxi services are under concession with several taxi agencies. Zadar Airport is responsible for the entire infrastructure (apron, runway, buildings, roads, etc.), the main electrical supply, the main water supply, and waste management at the Airport. The purchased electricity is supplied by HEP Opskrba d.o.o. and distributed by HEP ODS. Zadar Airport has contractual agreements with these companies.

4. Operational boundary

The GHG Protocol categorises carbon emissions into scopes 1 and 2, as defined below.

Scope 1 Emissions: Direct GHG emissions occur from sources owned or controlled by the organisation, for example, combustion emissions from owned or controlled boilers, furnaces, vehicles, etc.

Scope 2 Emissions: Electricity – indirect GHG emissions arise from generating purchased electricity that the organization consumes.

In Table 1, the emission sources, scope, and departments responsible for Zadar Airport are listed.

	CONTROL Facilities, services, activities, and equipment for which the airport company has ownership/control	**GUIDE** Facilities, services, activities, and equipment owned/controlled by subcontractors, close partners, and suppliers for which the airport	**INFLUENCE** Facilities, services, activities, and equipment owned/controlled by loose partners, tenants, customers, government agencies, etc., which the airport company can only influence	**INTERNAL** Department or third party with responsibility for the emission source

		company can provide guidance		
SCOPE 1 DIRECT EMISSIONS				
STATIONARY SOURCE	Boilers for heating water			Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department
	Generators			Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department
	Firefighting exercises			Zadar Airport Ltd: Ground operations management - Fire and rescue department
MOBILE SOURCES	GSE & company cars			Zadar Airport Ltd: Technical, development, and maintenance division - Maintenance department
PROCESS EMISSIONS	Wastewater management			Zadar Airport Ltd: Technical, development, and maintenance division
	Refrigerants and air conditioning equipment			Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department
	Airport de-icing			Zadar Airport Ltd: Ground operations management - Fire and rescue department
SCOPE 2 INDIRECT EMISSIONS				
PURCHASED ENERGY		Purchased electricity		Distribution: HEP ODS Supply: HEP Opskrba d.o.o. Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department

ADDITIONAL INFORMATION ON ENERGY				
SELF-PRODUCED ELECTRICITY ON-SITE	Renewable production (solar) – operating since March 2025			Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department

Table 1. Emission sources, emission scope, and the responsible departments for Zadar Airport

5. Zadar Airport's carbon management policies and other initiatives

Zadar Airport began its transition to reduce carbon emissions in 2018, with the adoption of the **Main Development Study of Zadar Airport** (revised in 2021). This strategic document defines the guiding thread and a clear focus for a strategic turn and transformation into the **region's first green airport**. The realisation of this vision demands changes to the business model and processes, the implementation of new sustainable practices, and the launch of projects to reduce Zadar Airport's carbon footprint.

A flagship project in the journey to transform Zadar Airport into the region's first green airport was *"Implementation of a fully electrified and greened aircraft ground handling system at the Zadar Airport"*. The project was funded by Croatia's National Recovery and Resilience Plan 2021 – 2026, and was implemented from October 2021 until October 2024. The project included the implementation of the following key activities:

- Implementation of fixed connections for supplying electrical power to stationary aircraft with the necessary design and safety adaptations (without increasing the apron capacity),
- Replacing diesel-fuelled mobile ground handling equipment with electrically powered units, and
- The construction of a 610kW photovoltaic powerplant.

In 2020, Zadar Airport enrolled in the **Airport Carbon Accreditation** program and successfully applied for Level 1. Zadar Airport has been participating in the ACI ACA program since and has renewed its Level 1. Zadar Airport aims to upgrade to Level 2 in 2027.

In 2021, Zadar Airport implemented the **Environmental Management System (ISO 14001:2015)**. The scope of certification covered aircraft services, passenger services, and freight ground handling. The ISO 14001 standard sets requirements for environmental management systems, including planning, establishment, implementation, and monitoring.

In 2024, Zadar Airport developed an **Action plan for climate change adaptation,** which should further help reduce carbon emissions. The Action plan is uploaded on the Zadar Airport's website: https://zadar-airport.hr/wp-content/uploads/2025/05/Akcijski-plan.pdf

In 2023, Zadar Airport issued a **Policy commitment to emissions reduction,** and it was signed by the general manager. It's displayed on notice boards, on the company intranet, and on the Zadar Airport's website: https://zadar-airport.hr/wp-content/uploads/2025/05/Opredjeljenje-ZLZ-za-smanjenje-emisija-staklenickih-plinova-2023.pdf

In 2025, the Zadar Airport Management Board decided to develop a **Carbon Management Plan** with the explicit aim of identifying the most appropriate measures to further reduce Zadar Airport's carbon footprint. Zadar Airport has defined its **carbon emissions reduction target.** The document is uploaded on Zadar Airport's website: https://zadar-airport.hr/wp-content/uploads/2026/01/Carbon-Management-Plan_-Final.pdf.

In 2025, Zadar Airport developed a **Sustainability strategy**, an integrative framework for environmental, social, and corporate transformation of businesses.

6. Carbon footprint calculation

6.1 Details on the responsibilities regarding the carbon footprint process

The Head of the Health, Safety, and Environment Division is responsible for collecting invoices and delivery notes required for the ACI ACA Certification and for overseeing the overall carbon footprint process.

Carbon Management Plan Steering Committee comprised of the following members:

- Zadar Airport Ltd director,
- Traffic operations sector (1 person),
- Technical, development, and maintenance sector (2 people),
- Finance and accounting sector (1 person),

is responsible for the following:

- Approving the Carbon Management Plan strategy and budget,
- Setting targets aligned with the ACI ACA program,
- Monitoring the progress of implementation, including monitoring and measuring achieved savings,
- Preparing and approving annual carbon footprint reports,
- Developing emissions reduction projects,
- Engaging with stakeholders and regulators.

In 2021, Zadar Airport implemented the **Environmental Management System (ISO 14001:2015)**. The scope of certification covered aircraft services, passenger services, and freight ground handling. Other certifications were also implemented: **Quality Management System QMS, ISO 9001:2008, ISO 27001:2013 Information Security, and ISO 22000:2018 Food Safety Management.**

6.2 Procedure for the collection, documentation, and processing of emissions data

Zadar Airport implemented the project *"Implementation of a fully electrified and greened aircraft ground handling system at the Zadar Airport",* as a step towards the transformation of Zadar Airport into the region's first green airport. During the project implementation period, an internal CO2 emissions monitoring system was established. From August 2023, data were collected monthly based on the ACI ACA methodology (https://www.airportcarbonaccreditation.org/) and the Greenhouse Gas (GHG) Protocol, with a particular focus on the improvements made by the implemented project. An Action Plan for Climate Adaptation was also developed with a special focus on all project elements.

To ensure continuous measurement of the project's impact, Zadar Airport has implemented an upgraded CO2 data-collection system that has remained operational after the project's completion. This system enables ongoing monitoring of CO2 emissions and supports the airport's long-term sustainability efforts. This system defines evaluation parameters and procedures in accordance with regulations, controls implemented activities, determines compliance with defined parameters, and provides a report on compliance with DNSH principles and CO2 emissions.

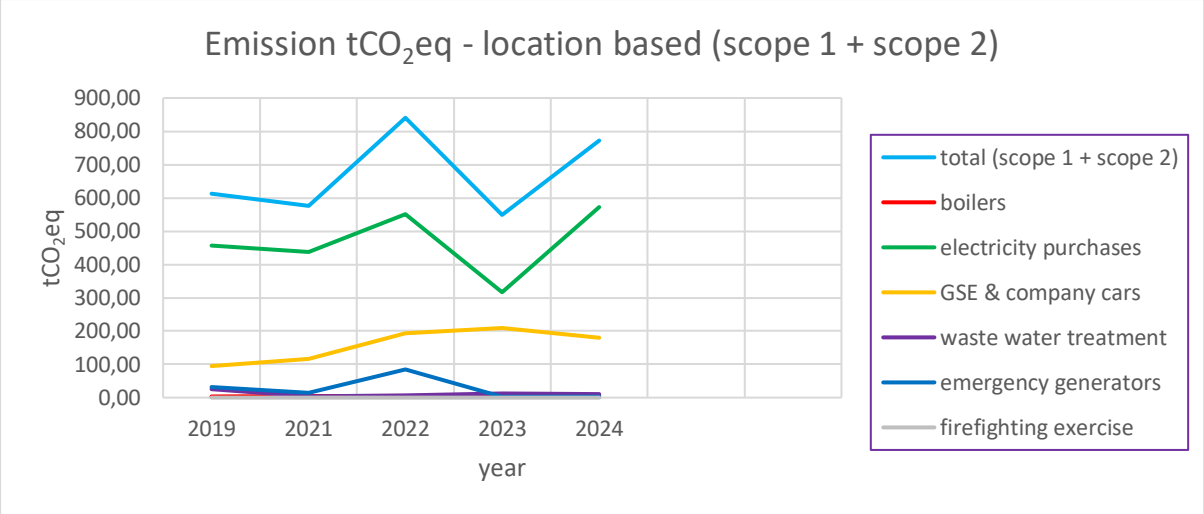
The Head of the Health, Safety, and Environment Division is responsible for collecting invoices, delivery notes, and other relevant data required for the ACI ACA Certification, as seen in Table 2.

Source	Company/Department	Source of emission data	Collected by
Boilers for heating water	Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department	Info on quantities, invoices	Health, Safety, and Environment Division
Generators	Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department	Fuel consumption data, invoices	
Firefighting exercises	Zadar Airport Ltd: Ground operations management - Fire and rescue department	Fuel and foam consumption data, invoices	
GSE & company cars	Zadar Airport Ltd: Technical, development, and maintenance division - Maintenance department	Fuel consumption data, invoices	
Wastewater management	Zadar Airport Ltd: Technical, development, and maintenance division	Invoices, influent and effluent measurements reports	
Refrigerants and air conditioning equipment	Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department	Internal reports and records	
Airport de-icing	Zadar Airport Ltd: Ground operations management - Fire and rescue department	Internal reports on usage	
Purchased electricity	Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department	Data on electricity used, Invoices	
Self-produced Electricity On-site (Renewable production (100 % Solar))	Zadar Airport Ltd: Technical, development, and maintenance division - Electrical department	Photovoltaic power plant application	

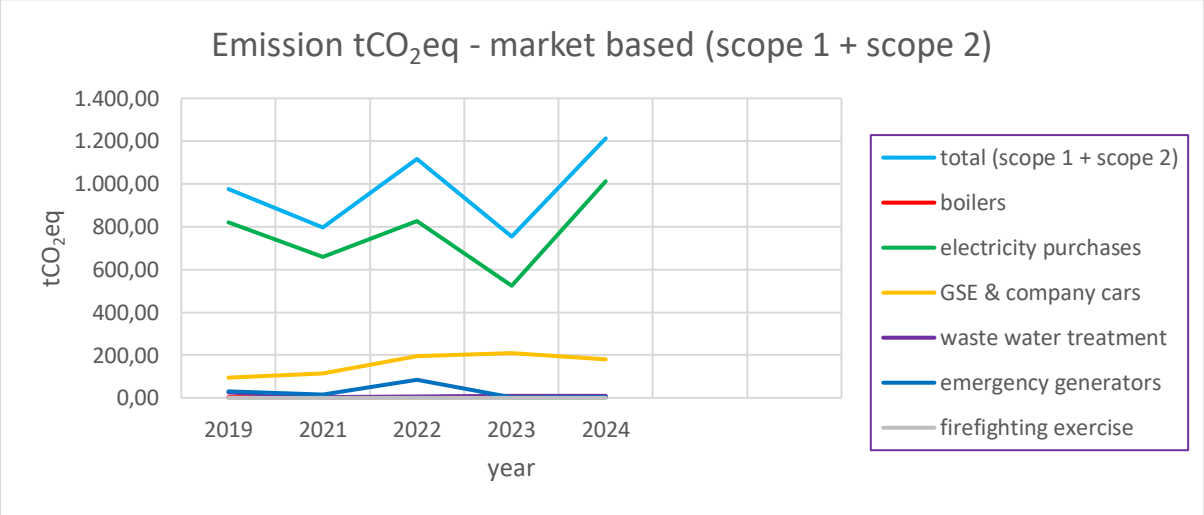
Table 2. Procedure for collecting data for CO2 emissions calculations

6.3 Information on past CO2 emissions

Calculations for CO2 emissions have been conducted since 2020 (using 2019 data), when Zadar Airport joined the ACI ACA Program. The only year that was not used in the calculations was 2020, as it was the "COVID-19 year". As seen in Graphs 1 and 2, CO2 emissions increased in 2024. However, in 2024, most construction work was carried out as part of the project *"Implementation of a fully electrified and greened aircraft ground handling system at the Zadar Airport"*, which contributed to increased electricity purchases.



Graph 1. Emission tCO_2eq – location based (scope 1 + scope 2) from 2019 to 2024



Graph 2. Emission tCO_2eq – market based (scope 1 + scope 2) from 2019 to 2024

However, if we look specifically at sources of emissions (see Tables 3 and 4 below), there is a decrease in direct emissions, e.g., generators, GSE, and company cars, as well as wastewater treatment emissions.

LOCATION BASED	**2019**	**2021**	**2022**	**2023**	**2024**
SCOPE 1 DIRECT EMISSIONS					
Boilers for heating water	3,45	4,07	5,09	8,14	7,13
Generators	31,24	15,07	84,68	2,38	2,56
Firefighting exercises	0,05	0,00	0,00	0,00	0,00
GSE & company cars	94,81	115,77	194,05	209,17	180,61
Wastewater treatment	25,41	3,74	6,60	12,72	10,08
Refrigerant leakages	0,00	0,00	0,00	0,00	0,00
De-icing	0,00	0,00	0,00	0,00	0,00

SCOPE 2 INDIRECT EMISSIONS					
Purchased electricity	457,14	436,59	550,19	316,50	572,28
TOTAL SUM (SCOPE 1 AND SCOPE 2)	**612,08**	**575,24**	**840,61**	**548,91**	**772,66**

Table 3. CO2 emission data – location-based – 2019 – 2024

MARKET BASED	**2019**	**2021**	**2022**	**2023**	**2024**
SCOPE 1 DIRECT EMISSIONS					
Boilers for heating water	3,45	4,07	5,09	8,14	7,13
Generators	31,24	15,07	84,68	2,38	2,56
Firefighting exercises	0,05	0,00	0,00	0,00	0,00
GSE & company cars	94,81	115,77	194,05	209,17	180,61
Wastewater treatment	25,41	3,74	6,60	10,08	10,08
Refrigerant leakages	0,00	0,00	0,00	0,00	0,00
De-icing	0,00	0,00	0,00	0,00	0,00
SCOPE 2 INDIRECT EMISSIONS					
Purchased electricity	820,90	657,98	825,12	524,07	1.012,15
TOTAL SUM (SCOPE 1 AND SCOPE 2)	**975,85**	**796,63**	**1.115,53**	**753,84**	**1.212,52**

Table 4. CO2 emission data – market-based – 2019 – 2024

6.4 2025 Emissions summary

Zadar Airport's carbon footprint is reported in line with the Greenhouse Gas Protocol and includes sources 1 and 2.

In line with the GHG Protocol, Zadar Airport's carbon footprint is reported as tonnes of carbon dioxide equivalent (tCO2eq), which is the universal measurement of emissions from six greenhouse gases (CO2, CH4, N2O, HFCs, PFCs, SF6).

We used calculation tools from the GHG Protocol, which were also used in previous years, to obtain accurate comparisons. The other GHG emissions (PFCs, BFC, SF6, and NF3) were estimated to 0, as the inventory was examined to ensure there were no gas leaks and thus no emissions. This calculation did not affect the total amount of tCO2eq.

The carbon footprint underwent internal quality control in accordance with Section 7 of the GHG Protocol. Refrigerants and air conditioning equipment have been accounted for and examined to ensure there are no gas leaks and thus prevent emissions. This ensured the inventory was complete. Zadar Airport is aware of EC regulations and Directives such as the Regulation (EU) 2024/573 of the European Parliament and of the Council of 7 February 2024 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014 on how to handle and

reduce GHG emissions from gases used in refrigeration and air conditioning equipment. In the next period, Zadar Airport plans to upgrade to Level 2, and we will comply with Regulation (EU) 2024/573, ensuring that refrigerants and air-conditioning equipment are secured and have the lowest GWP.

All methodologies and tools have also been used in previous years to enable proper comparisons of tCO2eq emissions.

For Scope 1 (Stationary sources, Mobile sources, and Process emissions), the default emission factors were used in the calculation.

For Scope 2, purchased electricity (location-based), the default emission factors were used in the calculation. For purchased electricity (market-based), the residual mix for Croatia 2024 was used.

De-icing was not used by Zadar Airport in the reporting period (2025), and thus, there were no fugitive emissions from de-icing chemicals to report (use), they are excluded.

In 2025, generators and firefighting exercises were recorded as 0, as no fuel was used. According to the Zadar Airport Ltd, Ground operations management – Fire and rescue department, no firefighting exercises were performed in 2025.

The electricity purchased was used solely for Zadar Airport and was not resold to tenants or third parties, as such relationships do not exist.

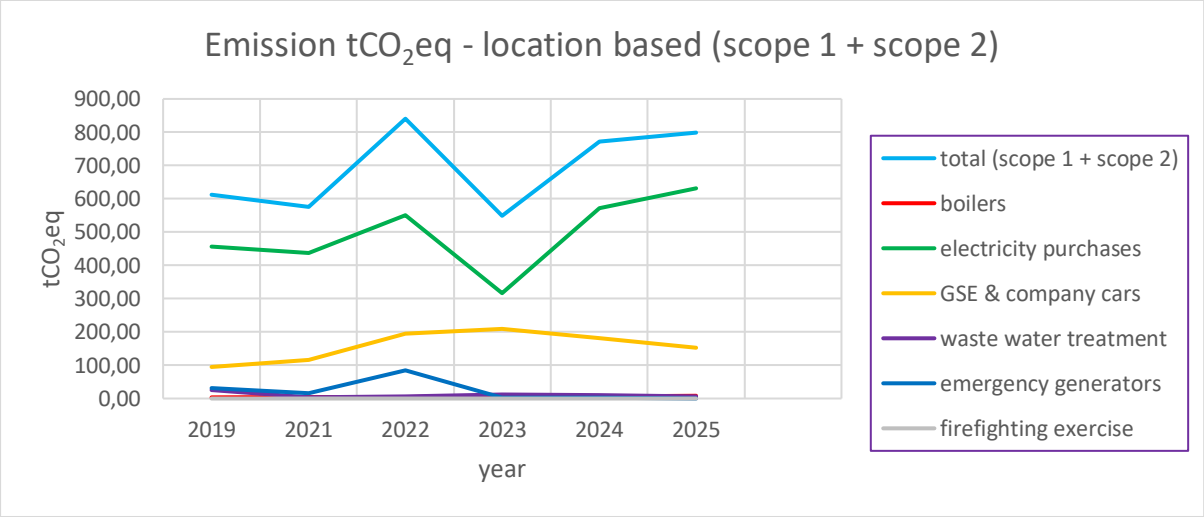
Scope	Group	Source	Fuel/energy type (unit)	EF Source	tCO2eq
Scope 1	Stationary sources	Boilers for heating water	Natural gas (m^3)	GHG Protocol: Stationary_combustion_tool_Version4-2	8,03
		Generators	Diesel (L)	GHG Protocol: Stationary_combustion_tool_Version4-2	0,00
		Firefighting exercises	Gasoline (L)	GHG Protocol: Stationary_combustion_tool_Version4-2	0,00
	Mobile sources	GSE & company cars	Gasoline (L)	GHG Protocol: Transport_Tool_v2_7	152,29
			Diesel (L)	GHG Protocol: Transport_Tool_v2_7	
	Process emissions*	Wastewater treatment	Wastewater (m^3)	Greenhouse Gas Emissions Estimation Methodologies for Biogenic Emissions from Selected Source Categories: Solid Waste Disposal, Wastewater Treatment, Ethanol Fermentation; RTI International, 2010 for US EPA	6,51
Scope 2	Purchased electricity (location-based)			GHG Protocol: Purchased_Electricity_Tool_Version_4_9_0	631,47
	Purchased electricity (market-based)			European Residual Mixes 2024, Association of Issuing Bodies, European Residual Mixes 2024, Association of Issuing Bodies, Version 1.1, 2025-08-11	1.163,55
TOTAL (LOCATION-BASED):					**798,30**
TOTAL (MARKET-BASED):					**1.330,38**

Table 5. 2025 tCO2eq emissions summary

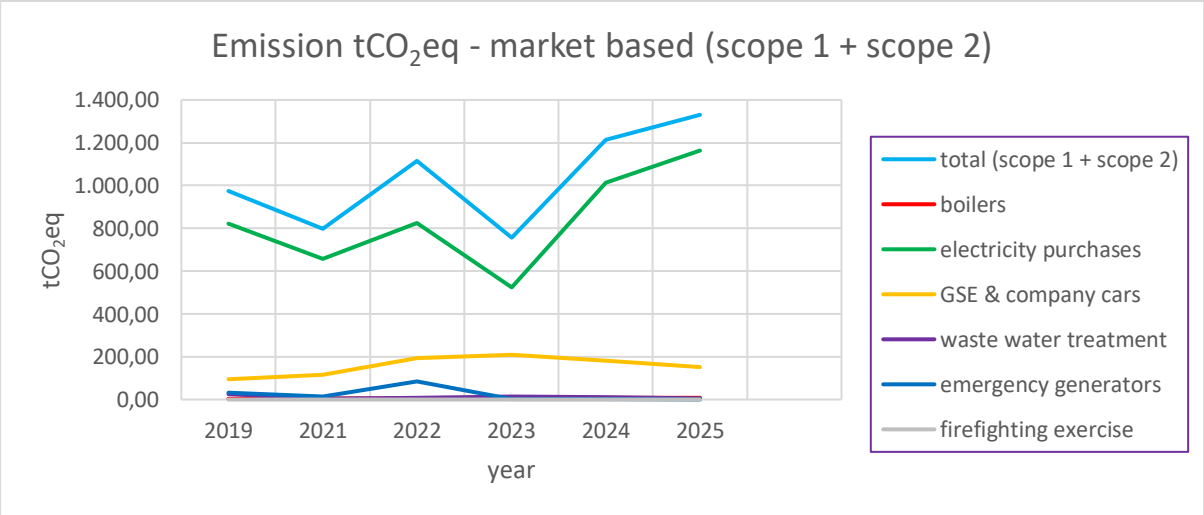
*Other emissions from processes are not included, i.e., they are excluded (refrigerant losses and de-icing)

There is an increase in CO2 emissions compared to previous years (i.e., 2023 and 2024). Zadar Airport has installed a photovoltaic powerplant, which began operating in March 2025. The electricity produced from solar energy for Zadar Airport in 2025 was 483.317,00 kWh. The amount of energy produced by the photovoltaic powerplant was calculated based on the purchased energy, in accordance with ACI ACA rules, since on-site solar energy production still does not have a Certificate of Origin. The contractual agreement with the electric supplier HEP Opskrba d.o.o., also states that all generated (produced) energy is fed into the grid. We expect a decrease in CO2 emissions from purchased energy in the coming years, once the Certificate of Origin is approved. We plan to do this in 2026.

If we look specifically at sources of emissions (see Graphs 3 and 4 below), there is a decrease in direct emissions, e.g., generators, GSE, and company cars, as well as wastewater treatment emissions.



Graph 3. Emission tCO_2eq – market based (scope 1 + scope 2) from 2019 to 2025



Graph 4. Emission tCO_2eq – market based (scope 1 + scope 2) from 2019 to 2025

6.5 Emission target setting

Zadar Airport's carbon emissions reduction target includes **reducing tCO2eq per passenger by 20% below 2021 levels by 2030, across both scope 1 and 2** (location-based and market-based calculations).

To meet the target, Zadar Airport has installed a photovoltaic powerplant. It began operating in March 2025. The electricity produced from solar energy for Zadar Airport in 2025 was 483.317,00 kWh. The amount of solar energy produced was calculated based on the purchased energy for 2025 CO2 emissions, since on-site solar energy production still does not have a Certificate of Origin. However, Zadar Airport plans to apply for the Certificate of Origin in 2026, so the CO2 emissions from purchased electricity should decrease in the following years.

Furthermore, to meet the target, Zadar Airport plans to implement several initiatives/projects. The main initiative includes the development of the Passenger Terminal Building with a photovoltaic plant, phases 4-6. The objective is to achieve high energy efficiency standards and meet the requirements for the A+ energy class, as well as the criteria for designing and constructing a nearly zero-energy building (nZEB).

7. Adjustments for new assets or asset divestment

There were no new assets nor asset divestments in 2025. Zadar Airport is still operating with one terminal.

8. Quality control procedures

The carbon footprint process underwent **internal quality control** in accordance with Section 7 of the GHG Protocol.

First, we established clear organizational boundaries and defined reporting scopes (Scope 1 and 2). Roles and responsibilities were assigned to ensure accountability for data collection and review.

Second, we implemented data quality checks during the collection phase. Activity data (e.g., fuel consumption, electricity use) were collected from primary sources, such as utility bills and fuel purchase records, on a monthly basis. These data were cross-checked against financial records and prior-year data to identify inconsistencies.

Third, we verified the emission factors by ensuring they were sourced from recognized, up-to-date databases. We confirmed that the correct units and conversion factors were consistently applied throughout the calculations. Furthermore, we used methods and tools from previous years to enable fair comparisons.

Fourth, we performed technical reviews of calculation spreadsheets and tools. This included:

- Recalculating a sample of emission sources,
- Checking formulas and unit conversions.

Fifth, we conducted year-to-year variance analysis to identify significant deviations. Any material discrepancies were investigated.

Sixth, we assessed uncertainty qualitatively by identifying high-risk emission categories and evaluating the reliability of underlying data. Where uncertainty was high, improvement actions were defined.

Finally, all methodologies, assumptions, and data sources were documented to ensure transparency and reproducibility.

This internal quality control process ensured that the reported carbon footprint is accurate, consistent, and aligned with GHG Protocol quality principles. The final carbon footprint report was reviewed and approved by the Carbon Management Plan Steering Committee prior to submission for ACI ACA certification.

Table 6 below lists several types of quality control assessment procedures at Zadar Airport.

Type of Assessment	Purpose	Methodology / Standard	Frequency	Responsibility	Suggested tools
Carbon Footprint Assessment (GHG Inventory)	Quantify Scope 1 and 2	Based on the ACI ACA, or the GHG Protocol	Annually	Sustainability Manager, with possible third-party verification	Carbon assessment tool, carbon accounting software (e.g., ACERT tool)
Energy Audit	Identify energy inefficiencies and opportunities for savings	Aligned with ISO 50001 (if applicable) or EU Energy Efficiency Directive	Every 4 years (or more frequently for major assets)	Engineering team or external energy consultants	Energy Management Self-Assessment Tool
Internal Carbon Management Plan (CMP) Audit	Evaluate the effectiveness of the CMP and compliance with internal policies	Implementation status, policy adherence, staff awareness, and target alignment	Bi-annually	Carbon Management Working Group (CMWG)	Internal tools
ACI ACA Verification	Achieve and maintain ACI's ACA certification (e.g., Level 1 and upgrade to Level 2)	Based on the ACI ACA, and the GHG Protocol	Annual submission with third-party verification, every second year if Zadar Airport remains at the same level	Sustainability Manager, in coordination with the ACI-approved verifier	GHG Protocol, ACERT tool
Stakeholder Feedback Assessments	Assess engagement effectiveness and collect input from airlines, tenants, ground handlers, and the public	Surveys, workshops, and interviews	Annually or following major CMP milestones	Carbon Management Steering Committee (CMSC) or Communications Team	Internal tools
Training Effectiveness Assessment	Evaluate whether training programs lead to measurable knowledge and behaviour change	Pre/post-training surveys, tests, and feedback forms	After each training cycle	HR and Sustainability leads	Internal tools

Regulatory Compliance Review	Ensure compliance with EU and Croatian environmental regulations (e.g., the EU ETS and Fit for 55).	Desk research	Annually or as regulation changes	Legal/Compliance team in coordination with Sustainability	Internal tools
Management Review	Top-level review of CMP performance and strategic direction	Audit results, KPI performance, stakeholder feedback	Annually (as part of ISO 14001/EMS or CMP review cycle)	Carbon Management Steering Committee (CMSC)	Internal tools

Table 6. Different types of quality control procedures

9. Contact person responsible for the carbon footprint process and the report

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