ENVIRONMENTAL STATEMENT 2023–2025

Hamburg Airport

CONTENTS

FOREWORD

In your hands you are holding our current, comprehensive Environmental Statement. This Statement describes, as is typical, the development of environmental impact over the past three years. It thus presents a situation, throughout the entire reporting period, that can only be described as abnormal, for everyone and therefore also specifically for Hamburg Airport.

For Hamburg Airport, these most recent years, in particular 2020 and 2021, were associated with extremely limited activity. As such, the environmental impacts ascertained for these years cannot be compared with the equivalent figures from preceding years. As a consequence of the drop in income associated with the coronavirus pandemic, many projects, including those with environmental relevance, could not be realised, or not at the scale originally planned. Nevertheless, important environmental protection milestones were achieved over the past three years, and significant steps were taken to set the course for future environmental protection measures. This clearly shows that even in such difficult times as these, the airport has placed great value on its environmental work.

The most important example is the achievement of CO_2 neutrality at the end of 2021, accompanied by the decision to achieve complete emission neutrality for CO_2 by the year 2035.

We perceive this latter decision as the logical and consistent continuation of preceding projects working towards a sustainable, climate-neutra and thereby future-oriented mode of operation for the airport.

We wish you informative and enjoyable reading!

Christian Kunsch
Chief Executive Officer
Flughafen Hamburg GmbH

Berit Schmitz
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Flughafen Hamburg GmbH

Christian Kunsch, Chief Executive Officer of Hamburg Airport

Berit Schmitz, Managing Director

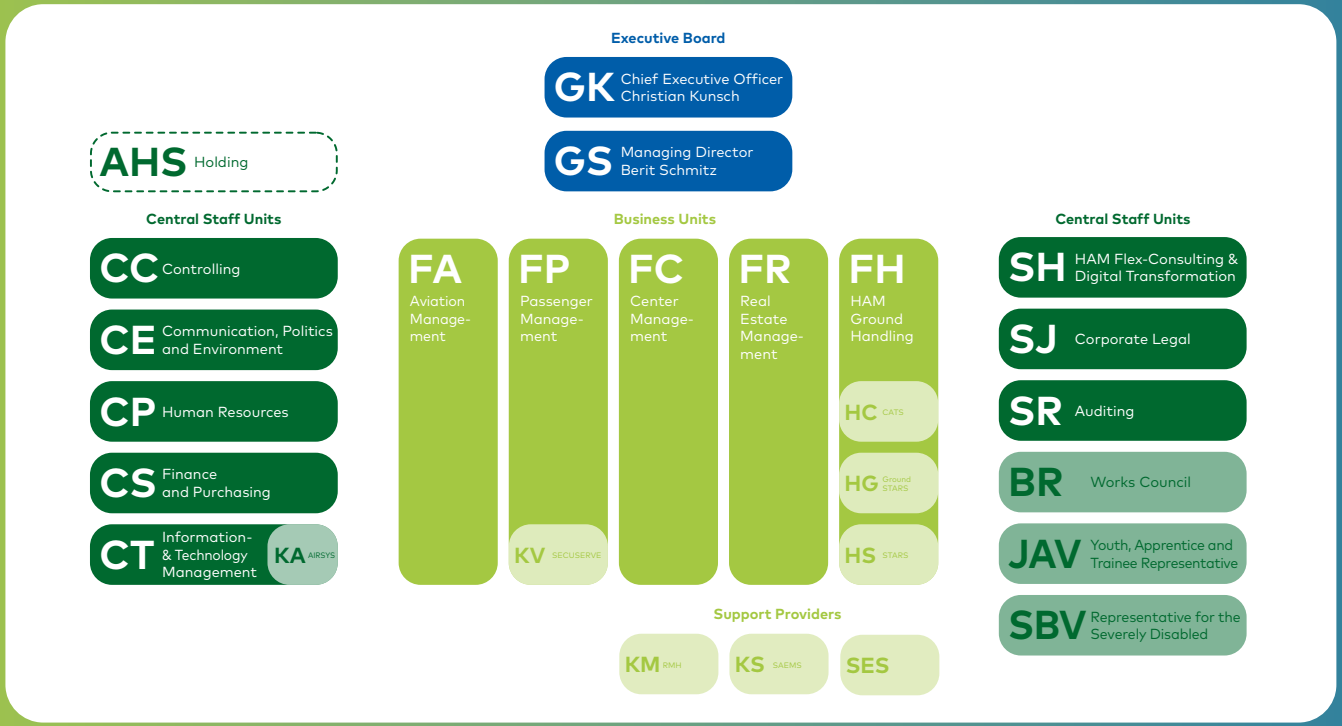
ACTIVITIES AND ORGANISATION OF THE AIRPORT, ENVIRONMENTALLY RELEVANT PROCESSES

Hamburg Airport, established in 1911, is used by some 17 million passengers each year (pre-corona-virus level from 2019). This makes it Germany's fifth-largest commercial airport. The airport operating company is Flughafen Hamburg GmbH with its diverse subsidiaries and holdings.

Hamburg Airport connects northern Germany (Schleswig-Holstein, along with parts of Lower Saxony and Mecklenburg-Western Pomerania) with global air transit. Its catchment area extends beyond these areas into southern Denmark. This gives the airport an important position in terms of transport policy. The airport also has a great significance for the Hamburg Metropolitan Region. As home to not only the airport but also two large aviation corporations, Lufthansa Technik and Airbus, the city is the world's third-largest aerospace centre.

The activities carried out here are diverse and bring with them highly specialised requirements, satisfied by the various operational units – departments and divisions of the airport and its subsidiaries.

Numerous other companies also have their headquarters at the airport or operate there, which makes the airport in general an imporant employer in the region for a very wide range of careers. As such, the complete range of airport operations, presented in the following chapters, are extremely heterogenous, as is the environmental impact produced here.



Organisational chart of Hamburg Airport Group (for scope of Environmental Management, see page 8).

Flight Operations and Aircraft Handling
Before the coronavirus pandemic, in the year 2019, the airport recorded 155,000 aircraft movements (take-offs and landings). To ensure effective operations, the airport maintains a range of physical structures, vehicles and necessary services. Highly significant facilities in this context are the aircraft movement areas (aprons, taxiways, runways). These satisfy, amongst other requirements, the provisions of Annex 14 of the ICAO air traffic directives, which has been adopted as binding European law by means of the European Aviation Safety Agency (EASA). These areas constitute a substantial portion of the sealed areas of the airport site. They also have an impact on the immediately adjacent airport areas, as these must be kept free of obstacles pursuant to the aforementioned EASA standards. With two runways (3.7 km and 3.2 km in length, 60 m wide), the airport covers a total of four take-off and landing headings. The principal air lanes are distributed across these four operational headings. The runways are connected by the taxiway system with a total of three aprons, available to both general and commercial aviation. Smooth taxiing operations for aircraft on the ground, as far as possible free of delay, are ensured by the taxiway system, providing the shortest connection between runway and apron. Two aprons are available for commercial aviation (Apron 1 with 33 handling positions, some of which can serve multiple aircraft, and Apron 2 with 11 handling positions for commercial flights, some of which can serve multiple aircraft). Handling processes encompass the boarding and disembarking of the aircraft by passengers, the loading disposal of freight and baggage, cabin cleaning,

COMPANY/ HOLDING	ACTIVITY	INTEGRATION IN EMAS	ENVIRONMENTAL RELEVANCE
Flughafen Hamburg GmbH (FHG)	Operation of the airport and its facilities, coordination of all work processes	yes	Overall EMS responsibility · Appointment of Compliance Officers · Waste management · Operation of facilities and buildings · Vehicle deployment · Energy production and consumption
AIRSYS	IT services	yes	Vehicle deployment · Waste (electrical applicances) · Energy consumption by IT systems
CATS	Ground handling (aircraft cabin cleaning)	yes	Deployment of vehicles · Waste
GroundSTARS	Ground handling (baggage, equipment and cargo transport on the aprons)	yes	Deployment of vehicles · Workshop operations
RMH	Maintenance of buildings and airport facilities	yes	Facility safety & security · Facility monitoring · Workshop operations · Waste (hazardous waste)
SAEMS	Maintenance of vehicle fleet	yes	Workshop operations · Waste (hazardous waste)
SecuServe	Car park management	yes	Vehicle operations (fuel and energy consumption)
STARS	Ground handling (passenger transport, pushback)	yes	Deployment of vehicles

Overview of corporate structure:
The most important activities and their associated environmental relevance are shown in the above table

disposal of waste water, supply of food and disposal of food waste and, in winter, de-icing the aircraft.

Operation and management of airport buildings and facilities
Hamburg Airport operates numerous buildings which serve highly varied purposes, for which they are suitably constructed. Essentially, these buildings include office buildings, vehicle garages, workshops, storage facilities, aircraft hangars and terminals for passenger handling. Multistorey car parks and service/access roads are also part of the airport's property. Larger units such as the terminals (and Passenger Pier) are also characterised by very diverse forms of usage, as they are home to both highly airport-specific activities (take-off and landing areas for passengers) and general facilities such as offices, shops and restaurants. Consequently, they are very complex buildings. Within these buildings, the airport also operates a baggage conveyor system as well as a block-type thermal power station, relevant to immission-protection regulations. The terminal areas play a significant role for the airport. Within these spaces, departing passengers are checked in, pass through the security checkpoint and go to their respective departure gates, whilst their checked baggage is processed for flight. Arriving passengers may have to pass through passport and customs checks and must collect their baggage. In view of all this, the terminals, Airport Plaza and Pier are characterised by their size and the many associated requirements.

Furthermore, the airport must maintain supplies of a wide range of materials. Fuels, de-icing agents for aircraft and surfaces, etc. Storage facilities must be operated for these substances, which are of particular relevance for waterway protection (water-hazardous substance facilities).

As such, the airport must be considered a major operator of buildings and their associated technical facilities. This must also be taken into account for environmental protection.

Air cargo handling
Compared to annual passenger volume, air cargo volume at Hamburg Airport is modest; transshipment volume (pre-coronavirus level) is approx. 70,000 tonnes per year. It nevertheless plays an important role with regard to on-site operational processes. From an environmental perspective, key aspects to be borne in mind are the usage of the cargo terminal building (energy requirements), vehicle deployment for cargo transport (landside transport and transshipment on the airport site) and, in some cases, dealing with potentially environmentally hazardous substances. To a limited extent, specific waste types are produced at the site, for which appropriate disposal is necessary.

Workshop operations and airport maintenance
Within the workshop buildings, important activities to maintain the operability of the entire airport infrastructure are carried out: repair work on vehicles and electrical equipment, and, building on this, the direct on-site servicing, repair and maintenance of buildings, technical facilities and operational spaces. These processes are important to ensuring constant and stable airport operations, but they also make demands on operational environmental protection (energy requirements, chemical use, production of waste water, waste, etc.).

Deployment of vehicles
Numerous operational processes are extensively associated with vehicle operation: Aircraft handling, passenger transport, baggage and freight, general works traffic and transportation, emergency and service vehicles in emergency deployment, etc. It is characteristic of these operations that, in many cases, very specific vehicles are used, especially developed for airport use. As such, there is a wide range of vehicles in use at Hamburg Airport, from conventional passenger cars to heavy emergency and service vehicles and buses. In total, the airport vehicle fleet consists of more than 600 vehicles. Beyond this, there are also the vehicle fleets deployed at the airport site by other companies operating on the premises.

Administration
Alongside all other processes, numerous administrative activities are also undertaken at the airport. In this respect, the airport is only marginally different from other Companies.

Induced processes
Much of the work carried out at the airport is performed neither by the airport itself nor by its holdings and subsidiaries. This is undertaken by numerous other companies with a presence at the airport, and includes servicing of light aircraft, apron services, security checks, shops, restaurants and travel agents.

The airport is also the cause of activities that take place outside of the airport site itself. This includes the landside journeys of passengers to and from the airport, mostly using either the access roads or the S-Bahn metro rail network. Accordingly, the airport is responsible for the maintenance of infrastructure such as roads and car parks in the immediate vicinity of the airport. The structural facilities required for S-Bahn metro railway operations are maintained by Deutsche Bahn and/or the City of Hamburg. Road traffic is also generated by the delivery of goods and air cargo.

Organisational structure of the airport
Activities associated with the operational processes described above are carried out by Flughafen Hamburg GmbH and its subsidiaries. These are listed in the organisational diagram on page 5.

Flughafen Hamburg GmbH (FHG) is the airport operating company. As owner of the airport and its structural facilities, it has overall responsibility for all operational processes carried out by the company and its subsidiaries. In part, this responsibility is delegated to the relevant subsidiaries.

The most important subsidiary companies integrated in the Environmental Management System are listed, together with their key areas of responsibility, in the adjacent table.

Overview of the Hamburg Airport Group and significant holdings

SUBSIDIARIES & HOLDINGS OF FLUGHAFEN HAMBURG GMBH AND THEIR FUNCTIONS

HOLDING COMPANY	ACTIVITY
AIRSYS Airport Business Information Systems GmbH	Planning and implementation of IT services for the airport
CATS Cleaning and Aircraft Technical Services GmbH & Co. KG	Cleaning of aircraft cabins
GROUNDSTARS GmbH & Co. KG	Transportation of baggage and air freight on the apron, disposal of waste water from aircraft and supply of fresh water to aircraft
RMH Real Estate Maintenance Hamburg GmbH	Repair and maintenance of plant equipment and technical building facilities on the airport site
SAEMS Special Airport Equipment and Maintenance Services GmbH & Co. GmbH	Servicing and maintenance of vehicles from the airport operational fleet
SECUSERVE Aviation Security and Services GmbH	Landside car park operations
STARS Special Transport and Ramp Services GmbH & Co. KG	Passenger transport on the airport site, aircraft towing operations, de-icing of aircraft

ENVIRONMENTAL MANAGEMENT, SUSTAINABILITY AND AIRPORT CARBON ACCREDITATION

Environmental impact of airport operations

The processes and activities described in the previous chapter result in diverse environmental impacts. Insofar as these are produced by the airport itself, they are termed direct environmental impacts and can also be directly influenced by the airport. In contrast to these are the indirect environmental impacts, which do not result from the airport's own activities but are nevertheless connected with its operation. The airport's ability to influence such impacts is, accordingly, less. The following table provides an overview of direct and indirect environmental impacts of the airport.

All environmental impacts, and measures taken to minimise them, are discussed in detail in the following chapters.

Environmental Management and Airport Carbon Accreditation

Hamburg Airport's Environmental Management System (EMS) was constructed with the aim of addressing the environmental impacts listed above by systematically minimising them, decoupling them from commercial developments or completely eliminating them. Systematic means that environmental impacts are regularly investigated in terms of scale and cause, on the basis of which reduction measures are implemented, and that all areas of the airport are integrated in this process. Furthermore, systematic also means that environmental management is aligned with our Environmental Guidelines. A further important element of the Environmental Management System is the regular (annual) review and evaluation of which environmental

ENVIRONMENTAL IMPACT	ESSENTIAL CAUSES	INFLUENCE
Aircraft noise	Aircraft flyover or low pass	indirect
	Aircraft on the ground	indirect
Generation of greenhouse gases/ Energy and fuel consumption	Airport facilities	direct
	Airport vehicles	direct
	Vehicles of other companies at the site	indirect
	Aircraft	indirect
	Landside traffic to the airport	indirect
Generation of air pollutants	Airport facilities	direct
	Airport vehicles	direct
	Vehicles of other companies at the site	indirect
	Aircraft	indirect
	Landside traffic to the airport	indirect
	Aircraft braking	indirect
	Vehicle braking	direct, indirect
Drinking water consumption	Hygiene facilities (offices and terminals)	direct, indirect
	Operation of facilities	direct
Use of natural waterways	Discharge of surface water	direct
Pollution of water	Release of pollutants into surface waterways (potential hazard)	direct
	Release of pollutants into groundwater (potential hazard)	direct
	Operation of facilities for treatment of substances hazardous to water (potential hazard)	direct
Generation of waste water/ Contaminated surface water	De-icing of surface areas and aircraft	direct
	Operation of hygiene facilities	direct, indirect
	Other drinking water consumption (incl. restaurants)	direct, indirect
Generation of waste	Hazardous waste from the terminals	indirect
	Hazardous waste from operation of workshops and facilities	direct
	Hazardous waste arising from airport operations	direct
Interference with the ecosystem	Loss of open space from construction	direct
	Green waste from open spaces	direct
	Pruning of vegetation along airport fence	direct
	Pruning of trees to keep airspace free of obstacles	direct
Damage to soil ecosystem	Entry of pollutants via atmospheric pathway, dust or liquids	direct, indirect

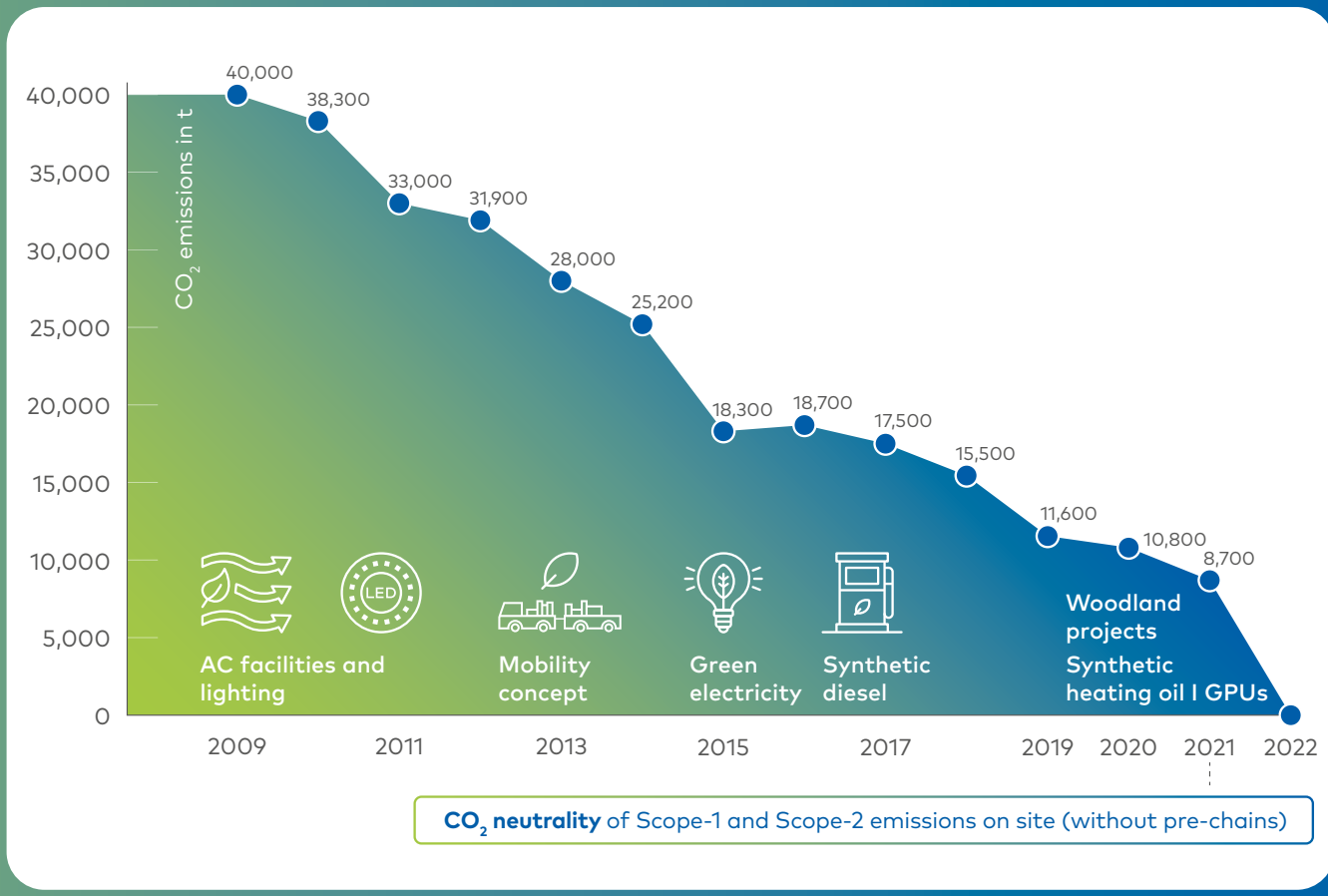
The primary environmental impacts of the Hamburg Airport Group and their causes

protection measures are successful and sensible and which may require revision and adjustment. Beyond this, the EMS considers all significant demands on the airport. Overall, it follows the principal of “plan, implement, act, review”. As such, the airport’s Environmental Management System is structured in such a way as to comply with the requirements of the two most important guidelines for such management systems: the international ISO 14.001 norm and the EU EMAS regulation.

Airport Carbon Accreditation (ACA) is a certification system developed exclusively for airports and targeted exclusively at the documentation and reduction of greenhouse gas emissions on airport sites. It prescribes how, and how often, these emissions are to be documented, fixed requirements for reduction targets and measures including regular, annual audits. ACA comprises six levels (Levels 1, 2, 3, 3+, 4, 4+), each higher level extending the level below, to encompass the regular documentation of an airport’s own CO_2 emissions, determining reduction targets (with auditing of a continuous reduction in emissions), determination of Scope-3 emissions and climate neutrality. The recently developed Levels 4 and 4+ are alternatives to Levels 3 and 3+. The essential differences are that CO_2 reductions are explicitly required to be absolute, and that there is a requirement for closer obligatory integration of business partners in (joint) measures to achieve these reductions.

The direct relevance of environmental and CO_2 management to the area of energy also means that the statutory requirements for Energy Management pursuant to ISO 50.000 are also satisfied.

Development of Scope 1 and Scope 2 emissions on site (without upstream chains, from 2021 with compensation for remaining emissions)



airport carbon accreditation

Airport Carbon Accreditation (Levels and Scopes)

Level 1 (Documentation)	Level 2 (Reduction)	Level 3 (Optimisation)	Level 3+ (Neutrality)	Level 4 (Transformation)	Level 4+ (Transition)
Calculation of all Scope 1 and Scope 2 CO_2 emissions	As for Level 1, plus the proven reduction targets of achievement	As for Levels 1 and 2 plus calculation of important Scope 3 CO_2 emissions (aircraft at the site, transit to the airport, etc.)	Fulfilment of all requirements of Levels 1–3 plus compensation for all remaining Scope 1 and Scope 2 CO_2 emissions to the point of climate-neutrality	As for Level 3 Additional requirements: Absolute CO_2 reduction, including third parties and business-related travel	As for Level 4 Additional requirements: Offset of remaining emissions with premium standards

Requirements of ACA for certification at various levels. FHG was certified at Level 2 from the start of 2011 and at level 3 from March 2014; Level 3+ certification was attained in 2022. The certification is a component within the Environmental Management System. The reduction measures required by the ACA Carbon Management Plan, for example, are a component within the Environmental Programme.

Interest groups
An essential goal of Environmental Management consists of the reconciliation of the interests of the various groups and persons influenced by airport operations. Whether occupied or not, the environment represents a stakeholder in itself, and is also represented by environmental organisations and public institutions. The weighting of the various demands may change over the years. The most significant impacts and affected stakeholder groups for Hamburg Airport at the present time are shown in the following table.

GROUP	DEMAND	CONSIDERATION IN ENVIRONMENTAL MANAGEMENT
Passengers	Clean buildings, effective airport operations	Waste management Energy management
Airlines	Functional, effective, consistent airport infrastructure Safe airport operations	Energy management CO_2 Management Plant safety Green space management (wildlife collisions)
City of Hamburg/other public institutions	International connections for the city, Consistent airport operations	Noise protection Climate protection Air pollution control Effective and consistent infrastructure Legal certainty underpinning airport operations
Direct neighbours/ Surrounding municipalities	Low noise pollution High air quality	Noise protection Air pollution control CO_2 management
Nature conservation organisations/ Occupied environment Environmental protection organisations/Unoccupied environment (air, water, soil, etc.)	Maintenance and improvement of natural biodiversity, Maintenance of natural habitats, Protection against contamination	Reduction of all environmental impact on protected resources: Water, Flora, Fauna, Soil, Landscape (space usage)
Climate protection organisations/Atmosphere	Reduction/slowing of global warming	Reduction of CO_2 footprint

Essential stakeholders of Flughafen Hamburg GmbH

Scope of Environmental Management System
Binding environmental management has been established for Flughafen Hamburg GmbH, including the aforementioned subsidiaries and holdings. This enables the recording of significant environmental impacts, both direct and indirect. The geographical scope has been defined as the entire airport site. Nomination of this scope ensures that consideration can be given to a sufficient extent of environmental aspects arising from airport operations and that it is possible to implement environmental targets and their associated measures. Beyond this, other requirements arising from energy management, Airport Carbon Accreditation and various codes for sustainable business operations can also be satisfied and developed.

Internal operational audits on environmental protection, energy and CO_2 management
Regular internal operational audits of these areas serve to maintain an up-to-date, comprehensive overview of various fields related to environmental management. This includes, but is not limited to, information on the extent to which environmental targets have been achieved, on awareness of statutory requirements, on environmental management, on the the development of environmental performance indicators and the primary driving factors behind them, and on the effective suitability of agreed operational processes.

Governing Statutory Regulations
Fundamentally, environmental management also means that the airport, at a minimum, complies with all environmental regulations to which it is subject. As such, environmental management is aligned with the content of these statutory regulations. This ensures, from an environmental perspective, a secure legal basis for the operation of the airport. The following table provides an overview of the significant statutory regulations applicable to airport operation.

ENVIRONMENTAL ASPECT	GOVERNING REGULATIONS
Aircraft noise	Aircraft Noise Protection Act (FluglärmG) Federal Pollution Control Act (BImSchG, Umgebungslärm)
Air quality	Federal Pollution Control Act (BImSchG)
Climate protection/ Energy management	Federal Climate Protection Act (KSG) Federal Pollution Control Act (BImSchG) Energy Industry Act (EnWG) Energy Service Provision Act (EDL-G)
Waterway protection	Water Resources Act (WHG) Ordinance on Installations for the Handling of Substances Hazardous to Water (AwSV) Hamburg Waste Water Act (HambAbwG)
Waste management	Waste Management and Recycling Act (KrWG) Packaging Act (VerpackG) Old Electrical and Electronic Devices Act (EEEG) Federal Nature Conservation Act (BNatSchG)
Nature conservation/ Biodiversity	Federal Pollution Control Act (BImSchG) Industrial Safety Regulations (BetrSichV)
Plant safety	Regulations for facilities dealing with water-hazardous substances (AwSV substances) Aviation Act (LuftVG)
Planing law	Building Code (BauGB) Federal Nature Conservation Act (BNatSchG, Regelung fon Eingriffen in den Naturhaushalt) Federal Pollution Control Act (BImSchG)

Overview of governing statutory regulations with which the airport must comply. For purposes of clarity, with a few exceptions, only federal laws are listed. Compliance with supplementary ordinances and state laws addressing the same matters, related to the laws listed, is also ensured.

STRUCTURE OF THE ENVIRONMENTAL MANAGEMENT SYSTEM

- Activation and resourcing of Environmental Programme (GF)
- Development and Publication of environmental policy (GF)
- Analysis of, and advice relating to environmental framework (Environmental Protection Centre)
- Collaboration in the implementation of the Environmental Programme
- Development and publication of Environmental Handbook

Executive Board

Chief Executive Officer
Managing Director

- Reporting to, and advising, the Executive Board from the Compliance Officer for Environmental Management

Environmental Protection Centre and Environmental Management Compliance Officer

- Carrying out internal Audits
- Facility inspection
- Training of personnel
- Analysis of, and advice relating to environmental legislative framework
- Collaboration in the implementation of the Environmental Programme

Executive Board

GK Chief Executive Officer

GS Managing Director

AHS Holding

Central Staff Units

CC Controlling

CE Communication, Politics and Environment

CP Human Resources

CS Finance and Purchasing

CT Information- & Technology Management

KA AIRSYS

Business Units

FA Aviation Management

FP Passenger Management

KV SECUSERVE

FC Center Management

FR Real Estate Management

FH HAM Ground Handling

HC CATS

HG Ground STARS

HS STARS

Support Providers

KM RMH

KS SAEMS

Central Staff Units

SH HAM Flex-Consulting & Digital Transformation

SJ Corporate Legal

SR Auditing

BR Works Council

JAV Youth, Apprenticeship a. Trainee Representative

SBV Representative for the Severly Disabled

All business units and central administrative units, along with support companies, which are integrated into Environmental Management System

- implement the Environmental Programme
- report environmental impact, etc., to the Compliance Officer for Environmental Management
- make resources avialable for the Environmental Programme
- participate in shaping and developing the Environmetal Handbook and Environtal Programme
- develop and adopt work processes which are environmentally friendly as possible and which are compatible with the Environmental Handbook, the Environmental Programme and technical and legal standards

ENVIRONMENTAL GUIDELINES

Environmental protection is a component of our corporate strategy.

As far as possible, we avoid environmental pollution. We use energy and raw materials sensibly and as economically as possible. We seek to influence our customers and contractual partners in accordance with this goal.

We take into account the interests and needs of the surrounding area.

We engage in open and critical dialog with the general public. The general public receives information about our company's environmental impact, and we take its concerns, questions and criticisms seriously.

We see environmental protection as a process of continuous improvement.

We identify, document and evaluate those activities which have an impact on the environment in order to identify possibilities for improvement. We aim to make progress in operational environmental protection by providing thorough education and training to our employees. We set measurable targets for improvement in environmental protection.

We are all responsible for the environment.

We promote consciousness of environmental responsibility on site at Hamburg Airport. We encourage every employee to make suggestions for the improvement of environmental protection, either within the framework of the company's employee suggestion system or by making direct contact with the relevant responsible persons.

We protect the environment beyond the level required by law.

We observe all legal requirements. As an innovative, environmentally conscious company, we desire to reduce environmental pollution associated with the operation of the airport in excess of legal requirements.

We are actively committed to climate protection.

We reduce or compensate the CO_2 emissions generated by our activities. We regularly measure and analyse our greenhouse gas emissions. We conduct an active dialog with our business partners in order to plan and execute joint reduction measures. Our long-term goal is the CO_2-neutral operation of our airport.

NOISE

Background
Noise emissions arising from aircraft deployment are typically classified as either flight noise or surface noise: The former arises from aircraft engaged in flyover or a low pass, whereas the latter is generated by aircraft taxiing on the airport site and by the operation of auxiliary power units (APUs) which are designed to supply parked aircraft with electricity and air conditioning during handling. Engine test runs are a further source of surface noise. In contrast to flight noise, the spread of surface noise is much more localised, but in individual cases the duration of noise pollution may be longer.

The impact of noise depends on various factors. Alongside the actual volume of individual noise events, their frequency and duration also play an important role. The time of day at which noise occurs is a further important aspect; in general, for example, noise at night is felt to be more disruptive. When evaluating noise impact, great significance is also placed on number of people affected. In the case of Hamburg Airport, the number of people is high, as the airport is increasingly surrounded by residential areas.

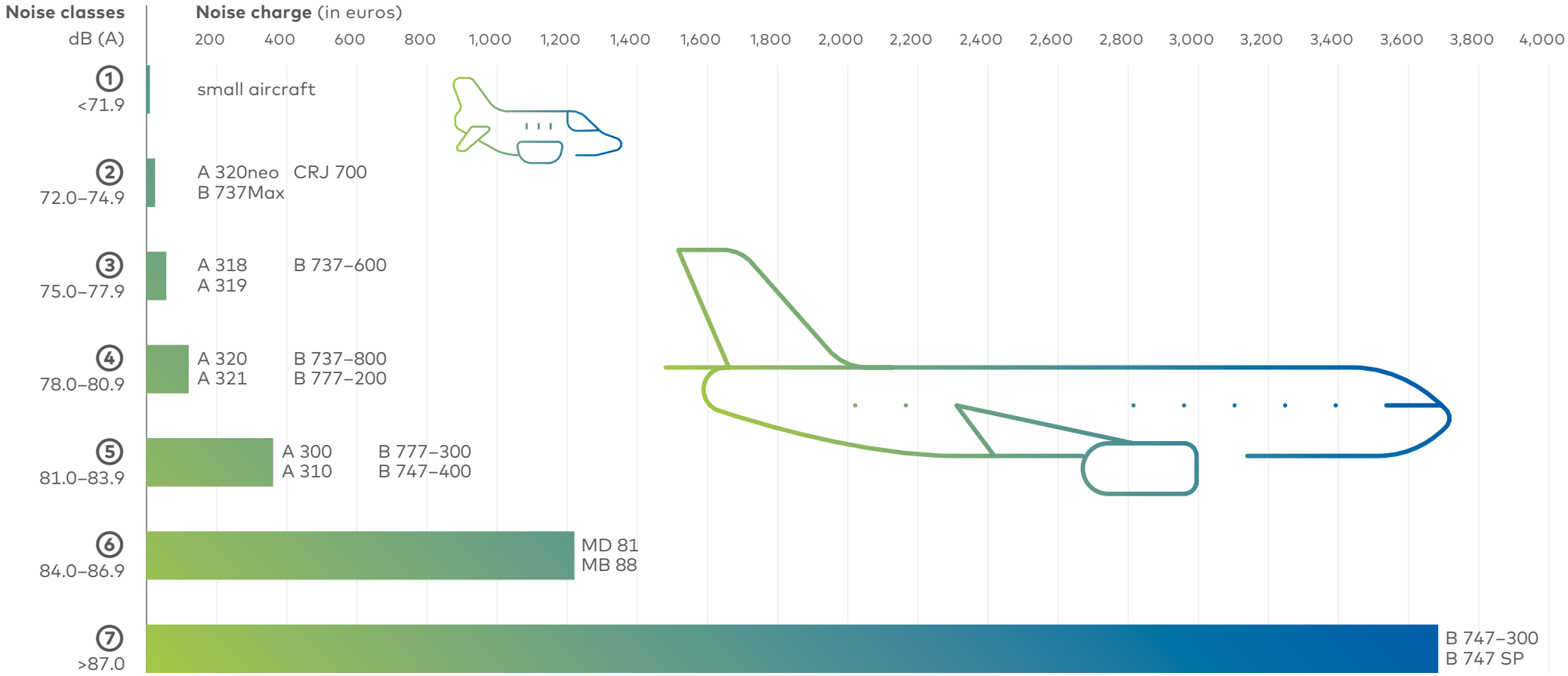
Noise is measured and calculated on the basis of various paramenters: Maximum Noise Level is the volume of individual noise events, whilst Continuous Noise Level describes the average noise level over a fixed time period in the airport vicinity.

Continual measurement of aircraft noise at suitable, representative sites provide an important data bases for the evaluation of noise events and for the assessment of potential noise protection measures and technical developments. Furthermore, measurements provide the foundation for objective discussion of the problems associated with aircraft noise.
For the continual measurement of aircraft noise, Hamburg Airport operates a network of noise measurement points, consisting of fourteen fixed and up to three mobile measurement stations. The measurement network has been designed to comply with the requirements of the Aircraft Noise Protection Act. Measurements are made available by various means, including publication on the website of the City of Hamburg.

In recent decades, the introduction of technical innovations has led to a continual reduction in individual flight noise events. This trend will continue into the future. Innovations in engine technology and in overall aircraft design are key factors here. These result in increasingly low-noise and generally more efficient aircraft models coming on the market.
The continuous measurement of flight noise in the airport vicinity proves this trend. An extremely low number of aircraft movements characterised the years 2020 and 2021, as a result of the coronavirus pandemic, so that these years cannot be compared with other years.

One of the airport's 14 fixed noise measurement stations

NOISE SURCHARGE ON LANDING FEES



The aircraft types listed above the columns are examples of the respective noise classes.

Noise Protection Programmes To Date

Programme	Period	Residential units**/ Applications processed		
		Windows + Ventilators + Roofs*	(installed only) Ventilators	Ventilators
Statutory programmes	1974–1982	800		
1st voluntary programme	1978–1982	1,600		
2nd voluntary programme	1978–1982	5,500		
3rd voluntary programme	1989–1992	3,000		
4th voluntary programme	1998–2001	383	300	1,001
5th mandatory programme	1999–2004	386	2,437	5,957
Total		**11,669**	**2,737**	6,958
6th voluntary programme	01.01.2003–31.12.2010	64		
6th+ voluntary programme	01.09.2007–31.12.2010	141		
7th voluntary programme	30.06.2006–31.12.2010	1,069	180	292
7th+ voluntary programme	01.09.2007–31.12.2010	1,983	322	470
8th voluntary programme	01.09.2007–31.12.2010	665	454	1,010
8th+ voluntary programme	01.12.2017–31.12.2017	197		105
8th++ voluntary programme	01.12.2017–31.12.2020	180		51
9th programme	03.03.2012–20.02.2022	938		1,096
9th+ voluntary programme	01.12.2017–20.02.2022	110		49
Total			**956**	
All programmes			**3,693**	

* Provision depends on programme

** Only residential units for which noise protection was requested are listed.
The number of residential units entitled to protection within the geographical area covered is as a matter of course higher.

Night-flying restrictions at Hamburg Airport

Period	Restriction Fee	Surcharge
22.00 – 22.59 p.m.		150%
23.00 – 23.14 p.m.	only	350%
23.15 – 23.29 p.m.	delayed	400%
23.30 – 23.44 p.m.	flights	450%
23.45 – 23.59 p.m.	permitted	550%
00.00 – 05.59 a.m.	no scheduled flights	700%

Noise Protection Measures

Noise protection plays a central role in environmental management for Hamburg Airport with its inner-urban location. The measures established here are associated with multiple strategic thrusts: the reduction of aircraft noise, avoidance of noise emissions and especially sensitive times, etc., improving protection against noise emissions and the detailed documentation, based on appropraite measurement, calculation and analysis, of noise and the areas impacted by noise.

Reduction in noise emissions is achieved by various means. For some time now, the airport has had an established landing fee system whereby aircraft types with high noise emissions are subject to significantly higher fees than quieter types. In this system, every aircraft type is allocated to one of seven different noise classes. This provides a financial impetus for airlines to deploy quieter aircraft. Complementing this, operation of the latest generation of aircraft (incl. the A320neo family) has been further premoted in recent years. In this way, the airport ensures that new technologies in aircraft construction are actually put into action.

In order to reduce noise emissions from auxiliary power units, the operation of these during handling is highly regulated. At the same time, the airport provides sufficient technical alternatives in the form of mobile surface power units and a stationary supply of electricity and air conditioning via the jetbridges.

In the course of the refurbishment of Apron 1, completed in 2019, the majority of the remote positions were equipped with stationary electricity supply facilities. The Airport Usage Regulations (AUR) mandate the use of these alternatives in order to implement the regulation consistently throughout the airport. This has brought a substantial reduction in surface noise resulting from flight operations. Compliance with these regulations is monitored. A further reduction in surface noise results from the use of a Noise Protection Hangar, especially developed for engine test runs.

The result of the noise reduction measures becomes plain when one examines the noise quota, an area around the airport defined on the basis of noise pollution levels as they were in 1997. This area must never expand (as a result of increasing noise pollution) beyond the boundaries determined at that time. Annual investigations show that the affected area today, at approximately 14 km^2, is significantly below this limit.

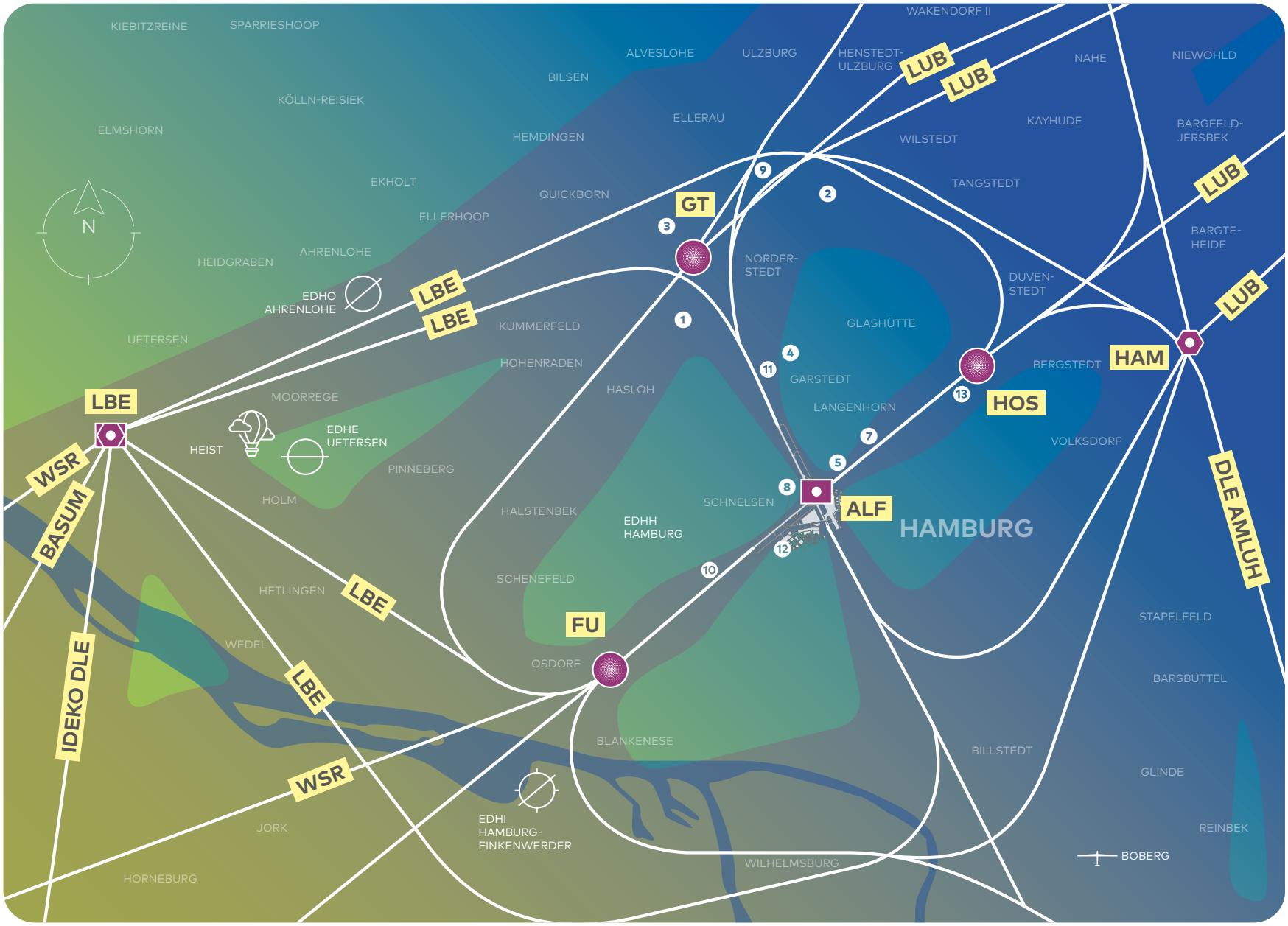
Strict restrictions on night flying apply at the airport, according to which no scheduled flight operations take place between 11 p.m. and 6 a.m.; for specific aircraft types, restrictions already apply from 8 p.m. and are not lifted until 7 a.m. The airport has to remain open for emergency flights. Furthermore, delayed take-offs and landings are permitted in the hour between 11 p.m. and midnight. For all flights after 10 p.m., varying levels of surcharge are applied to the fees, in order to further reduce the number of night flights. These surcharges also apply to flights within the period permitted for delayed aircraft movements.

For a long time now, legally mandated and voluntary soundproofing programmes have played a central role in Hamburg Airport's noise protection concept. They have seen a large number of buildings in the airport vicinity updated in terms of improved sound insulation. This has been achieved by the airport funding the installation of soundproof windows and soundproof ventilators, along with other work on the building shell. In an urban environment such as the area surrounding Hamburg Airport, this also helps mitigate other sources of noise such as road traffic. These programmes vary in terms of geographical scope, whether determined by statutory definition or other criteria, but essentially they apply in those areas subject to the specific type of noise pollution addressed by the respective programme.

Prescribed Noise Quota, based on noise emissions in 1997 (area 20.39 km²) and equivalent noise quota from 2019, 2022 and 2023 (area 14 km²)

Noise Protection Zone according to Aircraft Noise Act of 2007, also the area of applicability of the 9th Noise Protection Programme

Average distribution of take-offs and landings over the four available operating directions



Flight paths and locations of noise measurement stations at Hamburg Airport

CLIMATE PROTECTION, ENERGY USE, AIR QUALITY

Background

In general, combustion processes produce greenhouse gases and air pollutants.At Hamburg Airport, the most important direct sources are in the fleet of vehicles operated at the site, the energy-generation facilities for the airport buildings and the electricity bought in by the airport each year. In the case of internal airport sources, emissions arising from energy use in buildings significantly exceed those from vehicle operations. Central heating is largely powered by natural gas; this is also true for the generation of some of the electricity required at the site. To a more limited extent, central heating is also powered by fuel oil. Indirect sources of air pollution and greenhouse gases (those sources over which the airport has only minimal influence, if any) are landside commuter traffic, vehicles operated at the site by other companies and tenants, and the aircraft using the airport. The pollutant levels of these indirect sources significantly exceed emissions level from airport operations.

Greenhouse gases and air pollutants worthy of mention here are carbon dioxide (CO_2), nitric oxides (NOx), carbon monoxide (CO), unburnt hydrocarbons (HC) and particles (soot), measured both as PM 10 and PM 2.5. Sulphur oxides (SOx) have for a long time not been present in measurable concentrations, as today's aviation fuels contain significantly less sulphur. The concentration levels of several organic compounds have also been low for a long time now.

Measurements taken by the Hamburg Air Quality Measurement Network corroborate these low concentrations of immissions. Values are well below the official limits for all air pollutants subject to statutory regulation. The airport's contribution to air pollution can therefore be considered slight – in particular when one considers the much higher concentration of pollutants in the City of Hamburg itself. Furthermore, it is characteristic of the airport that immissions attributable to airport operations are already untraceable directly outside the airport premises.

The annual greenhouse gas audits for the airport show that emission levels for CO_2 have been in continual decline for the past 12 years. Since the end of 2021, airport operations are CO_2-neutral (Scope 1 and Scope 2 emissions), whereby this is currently achieved by means of compensatory offsets for a residual amount of CO_2. The airport aims to operate free of its own CO_2 emissions by 2035.

Ground Power Units at remote positions contribute to the reduction of CO2 emissions at the site.

Relevant facilities and areas

The table below shows all airport-operated facilities governed by the Federal Pollution Control Act (BImSchG), including their size and the fuels used. These facilities are used to generate energy (electricity and heat) used in the airport buildings. Because of their size, the block-type thermal power station (BHKW) and southern central heating plant are the most significant of these facilities. They provide heat and electricity for the terminal areas. Smaller facilities supply heat to the cargo terminal and the airport's decentralised buildings. Emissions from vehicle operations make a substantially lower contribution to air pollution. Although these take place throughout the airport site, they are largely concentrated in the area of the aprons. These and he aircraft movement system (including runways) also influence the emission of greenhouse gases (Scope 3) from aircraft operations during the LTO cycle.

EMAS core indicators Year	2020	2021	2023
Total energy consumption per traffic unit in kWh and per employee in MWh			
per traffic unit	17.93	18.11	7.80
per employee	48.05	51.61	48.33
Emission of CO_2 per traffic unit in kg and per employee in t (including CO_2 from vehicles)			
per traffic unit	2.24	2.28	1.09
per employee	6.02	6.50	6.77

Emission of other greenhouse gases and air pollutants

in t CO_2 equivalent, kg – CO_2 equivalent/employee and air pollutants in kg according to EMAS III from energy generated on site

	2020		2021		2023	
	Total	per employee	Total	per employee	Total	per employee
CH_4	9.2	4.9	9.8	5.2	7.4	4.1
N_2O	–	–	–	–	–	–
Hydrofluorocarbon	–	–	–	–	–	–
Perfluorocarbon	–	–	–	–	–	–
SF_6	–	–	–	–	–	–
SO_2	89.3	47.9	97.6	52.2	73.7	41.1
NO_x	10,711.1	5.7	11,716.8	6.3	8,844.7	5.9
PM10	35.71	9.2	39.1	20.9	29.4	16.4

Measures Adopted

A reduction concept targeting all significant sources is lowering the emissions of greenhouse gases and air pollutants. There is a particular focus in this regard on energy generation, building management and the technical building facilities in use. The block-type thermal power station plays a central role here. It has a very high efficiency of 90% achieved by means of coupling power and heat. This alone already results in comparatively low natural gas consumption. Electricity bought in from external suppliers comes from completely climate-neutral sources.

Measures taken in recent years to reduce the energy 'required for the buildings include the deployment of new cooling equipment, a new ventilation concept and the installation a thermolabyrinth for simple use of geothermic energy. The airport's energy management aims to maximise the intelligent useage of energy within buildings.

Where appropriate to requirements, old buildings are being replaced by new buildings with up-to-date, high-efficiency energy standards. Lighting in use on the airport site has largely been converted to LED-based technology, even on the aprons. Mobility concepts ensure that the airport's vehicle fleet increasingly consists of vehicles with alternative power: baggage tugs and some of the passenger buses operate on natural gas. electric vehicles are increasingly being used, for example the cars deployed on the aprons. A synthetic alternative, 95% CO_2-neutral, is used for diesel fuel.

The rule banning the use of auxiliary power units, detailed in the Noise chapter, makes a major contribution to reducing emissions (Scope 3 in the case of CO_2) from aircraft in the airport area. As part of the apron refurbishment, a new guidance technology for aircraft was installed (Follow The Greens), resulting in measurable reductions in waiting times during aircraft taxiing. This has led to a significant decrease in fuel used during these processes.

To reduce the emissions from commuters, the airport provides very affordable "job tickets" to its staff for using public transport. Most recently, this has been expanded with generous subsidies for the national "Deutschlandticket" rail pass. Free annual maintenance and a service center are provided for bicycles used to get to work. Flughafen Hamburg GmbH planted a forest to effectively offset the entirety of greenhouse gas emissions arising from staff business travel. Publicly accessible charging points for electric vehicles are available to passengers in the airport carparks.

These measures all have a positive effect on energy consumption, air quality and greenhouse gas emissions. For some years now, the Hamburg Air Quality Measurement Network's measuring stations on the airport site have been recording low concentrations of pollutants, with a downward trend. The CO_2-certification system ACA shows that CO_2 emissions resulting from airport operations have declined by more than half over the last decade. Remaining emissions should be further reduced by technological means in the near future. Where further reductions are not possible, carefully chosen offset projects are to achieve CO_2 neutrality for the airport by the end of 2021. Projects were chosen not only because they would achieve the desired offset performance but also because they had the highest possible ecological and social benefit.

WATER

Background
Airport operations influence the protected resource of water in various ways. One of these influencing factors is the yearly consumption of fresh water in the washroom facilities and for provisioning aircraft. Other (to some extent, potential) forms of influence include the generation of waste water, the use or storage of water-hazardous substances, potentially water-hazardous operational processes and the use of waterways including ground water. The airport stores large quantities of various water-hazardous substances, including fuels (gasoline, diesel, heating oil, kerosene) and de-icing agents. Processes relevant to waterway protection include vehicle and aircraft refuelling and, as necessary in winter, aircraft de-icing and the de-icing of the aircraft movement areas. De-icing processes release larger quantities of de-icing agents, depending on weather conditions, which collect on the apron surfaces and are drained from there. This necessitates separation of resultant contaminated surface water from normal, clean rainwater which is drained via the Tarbenbek runoff catchment (see overview on page 33). Waste water produced at the airport consists largely of domestic waste water from the passenger and office areas and the airport's own workshops.

EMAS core indicators Year	2020	2021	2023
Drinking water consumption			
Total consumption in m^3	116,013	116,047	134,647
per employee in t	25.435	21.82	12.13
per employee in m^3	62	62	75

Relevant facilities and areas
Large quantities of the consumables used at the airport, such as the de-icing agent referred to above as well as fuels, are stored on the site. Appropriate storage and transfill facilities (including site fuel stations) for these water-hazardous substances are located in various areas of the airport site. They all satisfy the requirements, in both technical and legal terms, of the Ordinance on Installations for the Handling of Substances Hazardous to Water (AwSV) and are continually monitored and maintained. An overview of these facilities is provided in the table below. The airport apron areas, in particular the aircraft parking positions, are not a facility in the classical sense, but defined areas which, because of their usage, are similar to the aforementioned facilities in many ways. The stipulations of the Water Resources Act (WHG) also apply here.

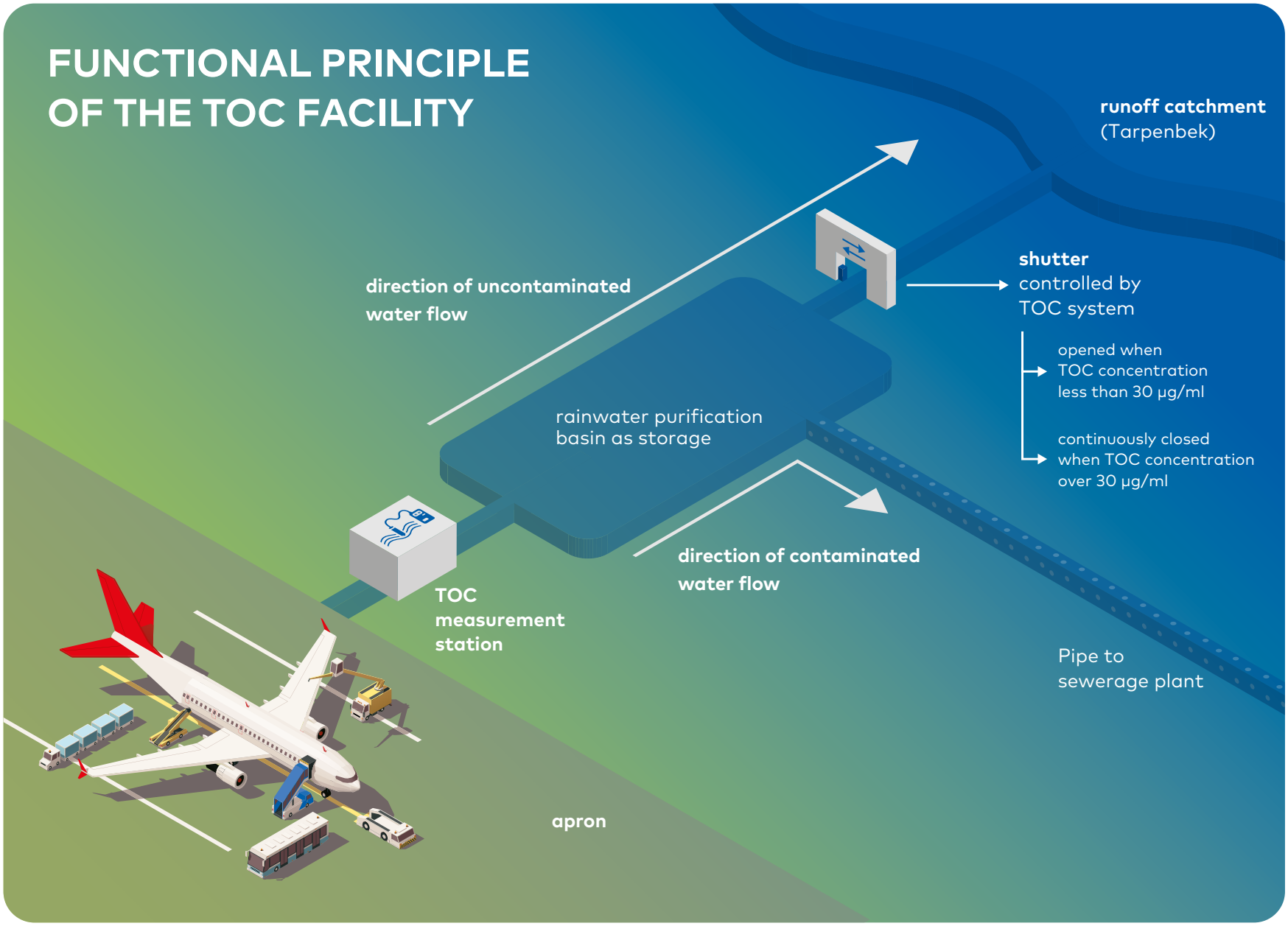
To purify waste water from workshops and handling areas, oil separators of various sizes are in place throughout the airport site. Similar waste water treatment equipment can be seen in the grease traps operated for the restaurants and site canteen. The rainwater purification basins for monitoring surface water draining from the airport also serve as safety separators. A permit has been obtained, pursuant to water laws, for the feeding of clean surface water into the Tarpenbek runoff catchment.

Environmental protection measures
All measures undertaken by the airport for waterway protection are aimed at reducing freshwater consumption, preventing or limiting contamination of waste water, and keeping waterways and the groundwater in the area free of pollution.

The consumption of fresh water is achieved by numerous measures, including the extensive use of water-saving and/or water-free systems in washrooms and kitchens. A rainwater utilisation system reduces the need for drinking water in the terminals and the Pier by a further 10,000 m^3 each year. All facilities dealing with water-hazardous substances satisfy the highest technical requirements and are continually monitored, meaning that leaks and accidents are very rare. One of the central goals of the comprehensive refurbishment of Apron 1, completed in 2020, was to even more effectively prevent the release of kerosene and de-icing agents into groundwater. In addition, all aircraft parking positions have been constructed so as to be safely and demonstrably sealed against the relevant fluids.

Particular attention is paid to the treatment of surface water contaminated with de-icing agents, which may occur in large quantities in certain weather conditions. Surface water is continuously monitored for TOC (total organic carbon) in order to protect the Tarpenbek runoff catchment from contamination with de-icing agents from surface water: water with a TOC content exceeding 30 µg/ml is automatically fed into the waste water treatment plant. Furthermore, surface water is collected in a total of 9 rainwater purification basins, where it is cleansed of suspended particles. The rainwater purification basins also serve as a retention tank in the event of an accident. The water quality of all rainwater purification basins is continuously monitored. Water running off from the aprons is also fed through a gravel bed filter, ensuring further purification of the water where necessary.

Water quality is regularly inspected.



Functional principle of the TOC facility and the separator gate system it controls to protect Tarpenbek from de-icing agents.

WASTE MANAGEMENT

Background
The quantity and composition of waste generated at the airport varies greatly in accordance with the diverse operational processes undertaken at the site. Waste arising in passenger areas consists almost exclusively of commercial waste (paper, plastic, etc.), packaging and food scraps. These areas are responsible for the largest quantities of waste for disposal by the airport. Commercial waste also occurs in the air cargo handling facilities and in the airport's office and administration areas, but the quantities are much smaller and the composition somewhat different. Commercial waste is collected and disposed of daily at more than 200 internal locations. The separation of the various commercial waste categories is carried out in accordance with the requirements of the Commercial Waste Ordinance at the site where it is technically feasible. Other, similar commercial wastes arise from aircraft cabin cleaning. They are disposed of by internal collections. Furthermore, food scraps are produced at the site canteen and the restaurants operating in the terminals. Food scraps from aircraft must be disposed of in line with strict hygiene rules. This falls within the area of responsibility of the catering companies that supply food to the aircraft.

Hazardous waste occurs primarily in the airport workshop areas. This encompasses used oil, brake fluid, leftover paint, grinding oil, etc. Hazardous waste also includes the content of oil separators used for waterway protection. The quantities of this portion of waste are comparatively low. Such waste is collected in relatively small quantities as required.

One-off and irregular waste consists of electrical equipment, scrap metal and construction waste. The latter can, depending on the construction work in question, reach considerable amounts; as a rule, they are disposed of in the course of that construction work.

The collection and disposal of waste is undertaken exclusively by suitable specialist operators. All disposal processes are fully documented.

Relevant facilities and areas
Due to the requirement to separate the various categories of waste from another as cleanly as possible and make them available for collection on a regular basis for disposal as frequently as necessary, and to avoid uncontained accumulation of waste, suitable containers are available throughout the entire operational site. At areas where larger quantities of waste are produced (terminals, air cargo facilities and along the edge of Apron 1) there are larger containers, in some cases waste compaction containers. For hazardous waste, only containers permitted for the individual categories of waste are used. All container locations are structurally secured against the release of waste, in particular liquid and hazardous waste, into the environment.

For irregular waste
such as used electrical equipment, scrap metal and similar items, along with waste inappropriately dumped and waste collected by airport personnel within

EMAS core indicators Year	2020	2021	2023
Hazardous waste			
Total in t	543.7	427.7	810.6
per employee in t	0.3	0.2	0.5
per TU in g	108.8	80.3	73.0
Development of residual waste quantity per pax and employee			
per traffic unit	192	519	137
per employee	0.47	0.18	0.85

the context of area cleaning, including very small quantities of hayardous waste, there is an additional central collection point.

Environmental protection measures

Environmental management targets associated with waste management consist initially of reducing the quantity of waste produced on site to a minimum and of ensuring the most environmentally sound disposal of waste possible. Measures to reduce the quantity of waste include the use of returnable packaging, return agreements with manufacturers, regular educational activities, etc. For similar reasons, the airport is aiming to achieve a uniform allocation of waste to the individual internal producers thereof. For example, waste containers are coded, waste chutes are deployed and documentation of the source of various waste types is required. Environmentally sound disposal of waste is achieved by selecting appropriate disposal methods, monitoring disposal processes on site and consistently storing waste in suitable, approved containers.

Waste arising from the cleaning of aircraft cabins is disposed of correctly and professionally.

BIODIVERSITY

Background
The airport makes use of space for the construction of buildings, roads and airport facilities. More than half of the company premises, however, is characterised by diverse and comparably undisturbed green space. Of these, the extensive grassland areas dominate; these must be kept free of obstacles for flight safety reasons. They are a habitat for a diverse range of flora and fauna. This makes the airport site very valuable from an ecological perspective, especially in a city-state such as Hamburg. For Hamburg Airport, this has led to a voluntary commitment to maintaining the status of these areas whilst simultaneously ensuring operational safety at all times, in particular safe flight operations. This applies above all to preventing collisions between wildlife and aircraft.

Safety requirements for flight operations also lead to measures undertaken outside the airport site so as to eliminate obstacles for aircraft and ensure security along the airport perimeter fence. These also have an impact on the ecosystem and may necessitate subsequent landscape management measures.

Relevant facilities and areas
The safety areas alongside the taxiways, runways and aprons constitute an extensive, almostcontiguous green space of almost 150 ha. This space consists of grass-

EMAS core indicators Year	2020	2021	2023
Area in ha			
Paved area in ha	197	199	206*
Near-natural area in ha	320	318	321

land (mesophilic green space, rought meadow and other types of grass biotope) of diverse, and to some extent great, ecological value. Compared to roads within the city of Hamburg, traffic levels on the airport site (vehicle and aircraft movements) are low.
As such, the airport site, in comparison to its environs, is relatively undisturbed, which significantly increases its attractiveness for the local fauna. As the airport site is directly adjacent to Ohmoor (a Natura 2000 protection area), some of the green spaces have a moor-like character with the typical plant communities. The western portion of the airport site is characterised by numerous groves and a small natural body of water. Compensatory areas on the airport site make up a major portion of the airport's area. These areas must not be treated in an ecologically negative way; in particular, their identified ecological characteristics (species composition, soil quality, nutrient and water availability, etc.) must be maintained.

Apart from this, the tree stock on the airport site is very extensive. This consists of a mix of naturally occuring woodland, roadside greenery and compensatory planting of trees, groves and hedges as visual screens.

Outside the airport site are areas where the tree height must regularly be inspected and trees pruned where necessary. This is essential in order to keep the airspace reserved for air traffic free of obstacles. As such, these rules apply primarily to larger trees which grow into the obstacle space.

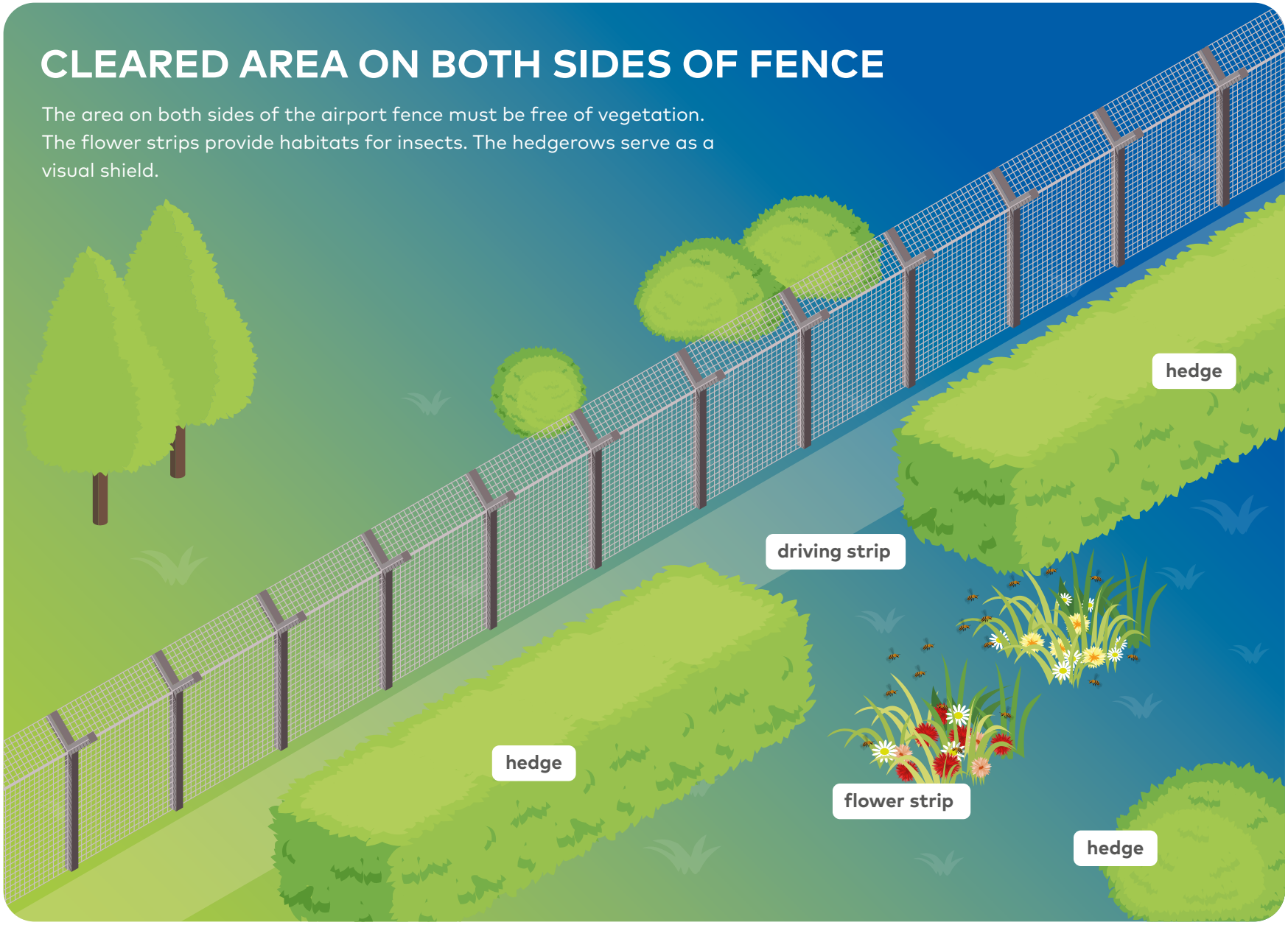
* The increase in sealed area is attributable to construction work that has been undertaken on Apron 1. During construction phases, large areas are listed as unsealed In point of fact, no areas have been newly sealed.

Environmental protection measures
Air safety has first priority in care of open spaces, as this is also targeted at measures including minimising birdstrike. For open land biotopes, this is also of great ecological benefit. Grasslands are only minimally mowed or fertilised so as to make them less attractive as a habitat for birds. This treatment increases the occurence of rare animal and plant species there, thus expanding biodiversity. Other green areas, for example the groves, are left as undisturbed as possible for natural development. Increasingly, flower strips develop at suitable locations, providing new habitats for native insect populations, in particular communal bees.

Where unspoiled areas are used for construction, the associated ecological interference must, in accordance with the Federal Nature Conservation Act, be offset, either by creating new green space or by ecologically upgrading existing green spaces. Animals may also be affected by building demolition insofar as they have used these buildings as nesting grounds (e.g. bat and swallow species). In such cases, suitable alternative nesting aids are established close to the original location. When trees are felled, new trees must be placed, where possible nearby.
As a consequence of these measures, those airport areas defined as compensatory spaces benefit from particular legal protection. The creation of compensatory areas, planting of new trees, installation of nesting aids, etc., is carried out with the goal of maintaining the greatest possible benefit for nature and preserving biodiversity. In order to offset disadvantages resulting from pruning of the perimeter fence area or from keeping airspace free of obstacles, native trees or groves with lower natural height are often planted, so that these will not have to be pruned in the future. In this way, future additional disadvantages can be prevented. FHG is also involved in extensive new planting of trees and groves (for example meadow orchards) within the City of Hamburg. The airport is participating in the renaturation of Tarpenbek directly alongside the airport fence.

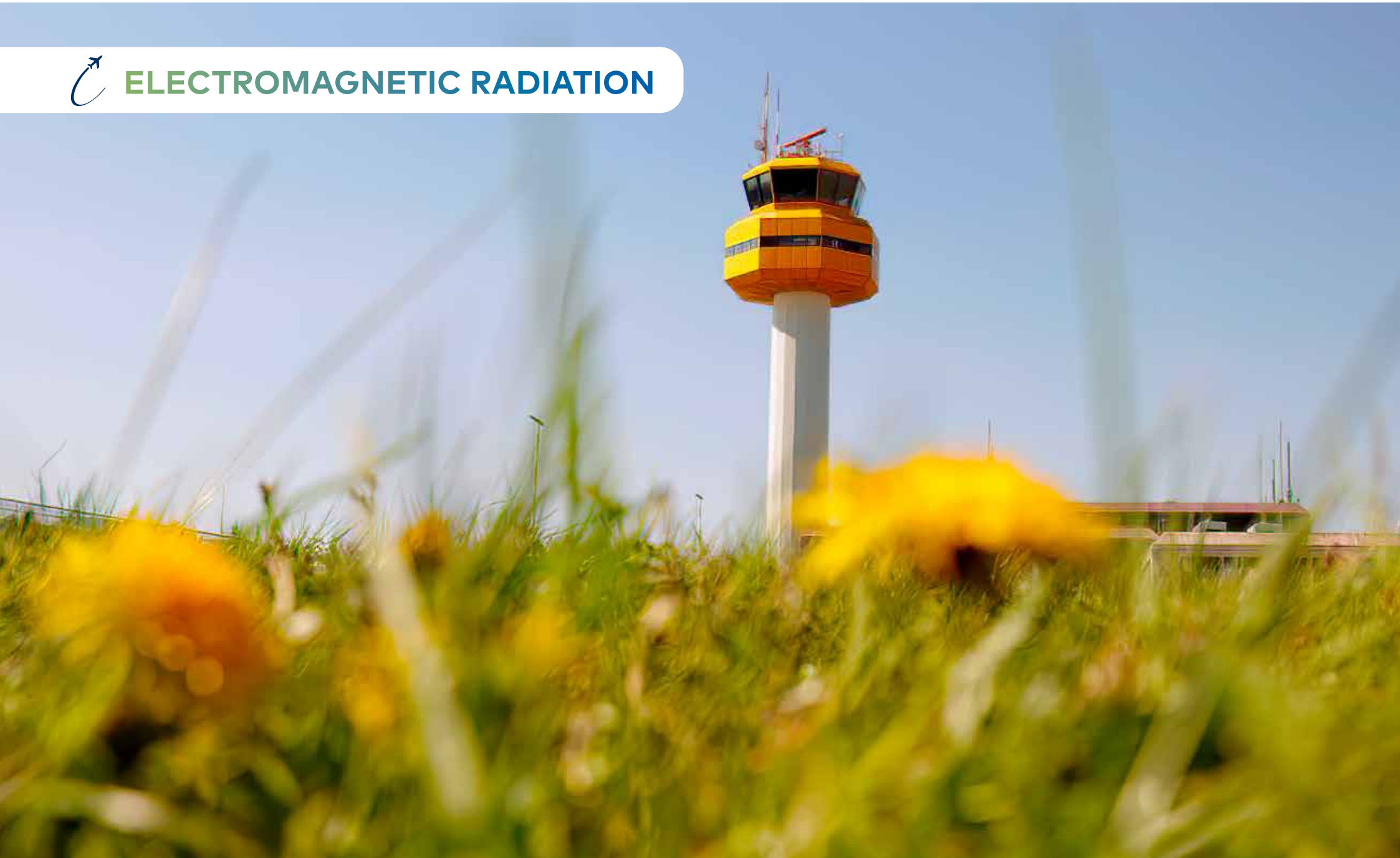
Regular cataloguing of both fauna and flora species on the airport site and in nearby impact areas serves for ongoing monitoring of nature conservation measures. These investigations are undertaken regularly. Counting and surveys of the local bird population are carried out with a view to preventing birdstrike. In the case of compensatory areas, nesting aids and planted flower strips (cataloguing insect populations), these investigations serve to monitor the effectiveness of conservation and replacement measures undertaken. Interference in natural spaces is always assessed in terms of severity, regardless of the size or legal necessity. The results of such assessment serve for planning of compensatory measures.

In terms of environmental management, the overarching goal of green space management and development is to achieve and maintain the largest possible diversity of species on the airport site. The cataloguing measures referred to above show that this has been successful in recent years.



Examples of planting green areas which combine operational necessity (hedges as visual screens) with ecological needs (flower strips)

ELECTROMAGNETIC RADIATION



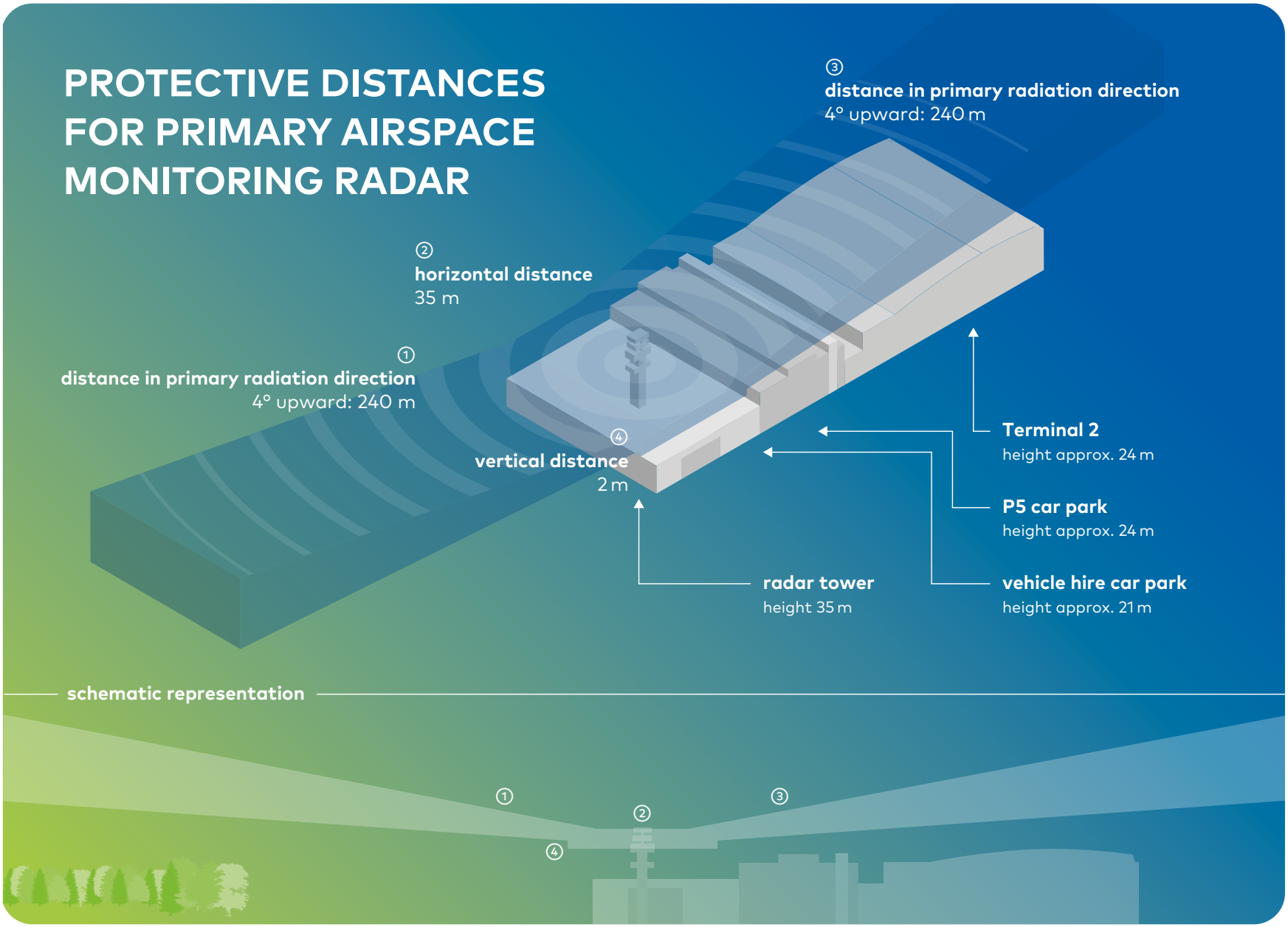
Background
The facilities on the airport premises to monitor airspace are significant structures for air safety in and around Hamburg Airport. Airspace monitoring is carried out with several radar systems. They are supplemented by a radar system for monitoring surface vehicle and aircraft movements on the airport site. These are essential for smooth and safe operations, in particular during periods of poor visibility due to weather conditions. All systems are operated by German Air Traffic Services (DFS).

Relevant systems in detail
A total of three systems at the airport ensure flight safety. The radar tower near the terminals, approx. 35 meters high, is operated to monitor extended airspace within the airport catchment area. It consists of primary and secondary airspace monitoring radar (transmission power of 1.2 and 2 kW). The radar system installed in the ATC tower has a substantially lower transmission power and monitors airspace in the immediate vicinity of the airport. In the west of the airport, a smaller air surveillance system is currently under construction, due to enter operation around 2025. This will be a radar system with low radiant power. The ground radar system, also located there, consists of a primary radar system with a transmission power of 16 kW, installed on a 25-meter tower in the western area of the airport site.

This system is complemented by 23 smaller transmitters (100W transmission power) installed throughout the airport site.

Environmental protection measures
All of these systems satisfy the requirements of the 26th Federal Immission Protection Regulations to protect against electromagnetic radiation fields. These regulations define threshold values for electrical field strength in the vicinity of the transmitters and prescribe safety zones in the immediate area of the emitting systems. Safety zones are defined as those areas in which the aforementioned threshold values are exceeded. For all of the airport's systems, the safety zones are at a significant distance (both in terms of height as well as horizontally) from both residential and commercial areas and buildings. All safety zones determined on the basis of the regulations are within the airport site and, in terms of height profile, are located above the relevant residential buildings.

One of the three radar towers in operation on the airport site



Safety zones for primary airspace monitoring radar

OPERATIONAL SAFETY, PRODUCT PROCUREMENT DEVELOPMENT PROJECTS

Safety
Preventive enivronmental protection at the airport is also largely built on the safe operation of facilities and spaces and on effective emergency response. The latter plays a major role in the case of accidents with hazardous potential for the environment: In this context, the Emergency Plans, with the reporting chains they contain, ensure that the appropriate persons and/or teams and units for damage repair and elimination are notified promptly. A central role in this concept is played by the Airport Fire Brigade. The Brigade is equipped and trained for such incidents. In order to prevent accidents from occurring, operational processes are regularly reviewed, and plants and facilities are continuously monitored and maintained. Part of this is achieved by means of automated monitoring systems and in the course of use of the plants and facilities. In-house airport personnel are responsible for the self-monitoring systems. Appropriately certified specialist firms are called upon for regular mandatory inspections and maintenance. To ensure the long-term safety of plants and facilities, these are modernised at appropriate intervals.

Consideration of environmental aspects in product selection
Products purchased by the airport can influence some of the environmental impacts arising at the site; one example is in terms of packaging waste. Conversely, decisions of the airport relating to environmental protection can influence the choice of products available for procurement. To this end, the airport places great import on procuring products that only make a limited contribution to the generation of certain waste quantities or are made of the least hazardous materials, and products that contribute to a reduction in resource consumption (energy, water, etc.). In some areas, strict procurement criteria have been put in place, in each case favouring more environmentally friendly alternatives. Examples of this include the purchasing of office paper (recycled paper), operationally essential chemicals (usage only after prior testing and subsequent clearance) and vehicles (mandatory selection of vehicles with alternative, ideally emissions-neutral but at the least low-emissions power sources). Procurement also takes into consideration the content of FHG's policy statement on the Supply Chain Act (Lieferkettensorgfaltspflichtengesetz).

Development of the airport
Due to the coronavirus pandemic, air travel was subject to restrictions that lasted almost two years, leading to a massive fall in passenger figures and aircraft movements.
As a consequence of this, the need for some projects planned prior to the pandemic was no longer there, and so they were temporarily suspended. This primarily affected larger projects such as the new construction of a shuttle gate on Apron 2, which was interrupted, and the modification of the rear side of the Passenger Pier in the southern area of the apron. These projects will be resumed when needed.
The current focus of all the airport's development acvitivies is therefore on the measurements to improve existing infrastructure. Alongside the effective structuring of operational processes, a key role is played by developments that improve the airport's overall energy and resource efficiency. Environmental programmes constitute one context for such projects.

Further information on development projects can be found in the following chapter.

OVERVIEW OF AREAS AND BUILDINGS

1 **Regular Pruning of Trees** (to ensure absence of obstacles)
2 **Cleared Area Along Perimeter Fence** (required by Aviation Security Act)
3 **Site Sports Facility** (decentralised heating system)
4 **Rainwater Retention Basin**
5 **DWD Weather Station** (decentralised heating system, heating oil storage)
6 **Radar Tower** (surface radar)
7 **Compensatory Areas**
8 **Compensatory Planting of Trees**
9 **Tarpenbek** (runoff catchment)
10 **Fuel Station for General Aviation**
11 **General Aviation Terminal** (decentralised heating system, heating oil storage)
12 **Tower** (decentralised heating system, heating oil storage)
13 **TOC Facility**
14 **De-icing Agent Storage** (surface de-icing)
15 **Airport Fire Brigade**
16 **Site Fuel Station**
17 **Thermolabyrinth in Terminal 1**
18 **Rainwater Utilisation System in Terminal 1**
19 **Block-type Thermal Power Plant**
20 **Radar Tower** (airspace control)
21 **Fuel Station and Car Wash Facility for hire car centre**
22 **Southern Central Heating Plant**
23 **Waste Storage Area** (for site management dept)
24 **Waste Collection Point – Aircraft Cleaning Material**
25 **Kerosene Storage**
26 **Natural Gas and Hydrogen Fuel Stations**
27 **De-icing Agent Storage** (aircraft de-icing)
28 **Noise Protection Hangar**

CURRENT CONSTRUCTION AND PLANNING WORK

Due to the coronavirus cirsis, the majority of construction projects planned until 2019 have been either discontinued or put on hold dependent on traffic development over the years ahead. Currently, the project to refurbish and modernise the baggage transportation infrastructure is being progressed, nevertheless adapted to suit the challenges of the current situation. This means that the refurbishment is taking place in various modules, so as to guarantee effective baggage handling at the current site into the future using modern systems. For this project, a new building is being built on the site of the old police building next to Terminal 1. Overall, the baggage conveyor system is being modernised at a much smaller scale than that originally planned in the HAM BAG project. Natural, undeveloped land is not being used. The energy requirements of the new system will be significantly lower than those of the existing system.

At a planning level, focus continues to be on the maintenance of infrastructure. As with all projects to date for the renewal of existing, older infrastructure at the airport, there is an extensive consideration of environmental aspects. Furthermore, neither the scale nor the visual appearance of the airport is changing.

Infrastructure maintenance necessitates regular construction work

ENVIRONMENTAL PROGRAMME 2020 – 2022

Climate protection
As the year 2021 drew to a close, airport operations were CO_2-neutral. A key environmental goal had thus been achieved. In view of the individual measures implemented in the context of this target, achieving it meant:

The block-type thermal power station (BHKW) was comprehensively refurbished and rebuilt. In the process, some new motors were installed to replace existing generators. Two module blocks were completely demolished, meaning a reduction in the quantity of natural gas required by the BHKW.
In combination with the maintenance and modernisation of technical building facilities, this meant that the targeted 5% reduction in natural gas consumption was achieved across large sections of the airport.

During the period of the Environmental Programme, in the framework of the mobility programme, conventionally powered vehicles were replaced with appropriate vehicles fitted with alternative powerplants.

All electricity required by FHG and supplied by external providers is sourced from renewable generation (hydroelectric power stations).

For the remaining CO_2 emission levels (Scope 1 and Scope 2), premium offset certificates were procured for the years 2021 and 2022. In 2022, the quantity required for complete compensation was approx. 9500 t.

The free bike check for airport personnel was continued and proved very popular.

Despite achieving the overall goal, some projects from the previous Environmental Programme could not be achieved. This applies to the following original projects:

- The acquisition of new hydrogen-powered baggage tugs could not be completed, as they were not available at the required time. A purchase will take place as soon as the vehicles are on the market.

- The construction of a plant to use solar energy to generate climate-neutral hydrogen as fuel for the planned hydrogen-powered baggage tugs was postponed. The delay in implementing this project arose from the temporary suspension – due to the coronavirus pandemic – of the project to build a new baggage handling building.

- A geothermal energy probe, due to be installed in the same building, was similarly affected. This project, too, will be implemented when the new building for baggage handling is constructed, as soon as this project is replanned.

Waterway protection
Due to the coronavirus pandemic, which affected a substantial part of the period of this Environmental Programme, drinking water consumption over the past three years was significantly below the level of 2019. This relativises the targets set for the period. The targeted reduction of drinking water consumption by 3% has, accordingly, been carried over to the new programme.

This carrying over also applies to the construction of a rainwater utilisation system, which was coupled with a new building for internal baggage transportation.

The same approach has been adopted with the rainwater utilisation system planned to be constructed in conjuction with the development of the southern Passenger Pier gate area.
This project has also been suspended, in part because of the coronavirus pandemic.
Investigations of water quality continue.

Noise protection
The Noise Protection Programmes planned for the period of the completed Environmental Programme were completed and the associated environmental targets were achieved.

Waste management
In consequence of the low number of passengers in recent years due to coronavirus, waste quantities generated in the period of this Environmental Programme were significantly under the quantities of previous years. In this context, the goal of reducing the annual volume of waste by 5%, was deferred.
It has been resumed in the new Environmental Programme. This defferal also applies to the planned acquisition of waste locks for the terminals, which

were not installed during the period of this Environmental Programme. New options for further waste separation on site are currently under development; in view of the locational setting, there are substantial spatial limitations on comprehensive separation measures.

Biodiversity
Although site visits to investigate the status of the undisturbed natural spaces of the airport did take place during the period of the completed Environmental Programme, the lack of resources due to the coronavirus pandemic meant that no new natural biotopes and biocenoses could be developed. As such, the environmental target associated with this measure was not achieved. The measure has been carried over to the new Environmental Programme.

Environmental Management
In the procurement of services and products, wherever it was reasonable to do so, environmental aspects such as potential waste volumes, resource protection and the search for suitable alternatives were taken into account. This target is therefore to be seen as achieved. The underlying process will be continued.

ENVIRONMENTAL PROGRAMME 2023 – 2025

Noise protection
Primary target
For the future, the Airport aims to achieve the highest possible noise protection for the neighbourhood. This is achieved by the following measures.

Evaluation of soundproofing programmes to date, with focus on potential for future programmes
Soundproofing programmes carried out to date are to be evaluated. In line with the 21-point plan agreed in 2018, the evaluation will take into account the large number of programmes conducted thus far, the associated support measures and the persons who have benefited from these programmes.

This measure forms a basis for the effective design of new soundproofing programmes to be launched either in response to changing aircraft noise protection regulations or as voluntary initiatives of the Airport. Potentially, this measure also serves to reach a wider group of persons and provide them with structural soundproof.

Carrying out of a further soundproofing programme
From July 2024 to the end of December 2028, Flughafen Hamburg GmbH is carrying out a further soundproofing programme for the neighbourhood. This takes into account other municipalities in addition to the Noise Protection Zone. In the context of this programme, support will be provided for the installation of soundproof windows and ventilators along with window automation systems for bedrooms.

Modernisation in noise measurement network
The Airport's measurement station network will be renewed and/or expanded in terms of individual components. This encompasses the following individual components:
- Installation of an additional stationary measurement station
- Determination of further locations for the deployment of mobile noise measurement stations
- Technical improvements to stationary measurement stations

With these measures, the quality of noise measurements should be further raised, in order to increase the reliability of measurements with regard to the flight-driven noise situation in the vicinity of the airport.

Climate protection/Air quality
Primary target
Over the next three years, in view of the existing bottom-line CO_2-neutrality and the long-term goal of achieving complete emission neutrality in terms of CO_2-emissions, the aim is to further cut emissions, thereby reducing the number of offset certificates required by 15 %. The reference value for this reduction is the offset certificate requirement for 2022. This is to be achieved through the following individual measures.

New procurement guidelines for company vehicles
The procurement guidelines for company vehicles will be tightened up with regard to the use of climate-neutral powerplants.

Conversion of baggage tug fleet
It is planned to convert the baggage tug fleet to hydrogen-powered (fuel cell) vehicles. In future, the required hydrogen will be produced using electricity from climate-neutral generation. A refuelling facility will be made available for these vehicles. This affects some 60 vehicles currently powered by natural gas. An annual CO_2 emission reduction on the scale of approx. 700 t will result.

Expansion of the recharging infrastructure for electric emergency and service vehicles
In order to handle the anticipated increase in use of electric vehicles in an operationally efficient way, the existing recharging infrastructure, especially airside, will be further expanded. This expansion will be needs-driven, in association with the increase in electric vehicles in operation. The expansion serves to reduce vehicle-specific CO_2 emissions by a further 700 t per annum.

Energy renovation of building technical facilities and building management
The software used for energy management is to be changed so as to ensure continuing compaliance of energy management with DIN EN ISO 50.001.

In this context, the recirculating pumps used in buildings will also be replaced, as their energy requirements are very high due to their age. These pumps will be replaced by models with 50% lower energy requirements. Investigations will be conducted to identify further potential for increasing energy efficiency, subjecting options to a cost-benefit analysis.

Older, oil-burning heating systems not attached to FHG's site heating network are to be replaced with alternative heating systems in the years ahead.

Connecting FHG to district heat distribution network
These measures will substantially reduce emissions of the Airport's own BHKW and heat-generating facilities. During the period of the Environmental Programme under consideration here, all necessary work will be conducted, up to and including the actual connection of FHG with the district heat distribution network.

Creation of a wind farm
To ensure FHG's climate-neutral electricity supply into the future, Flughafen Hamburg GmbH will construct a wind park on the company's own land in Kaltenkirchen. The electricity generated there will be fed into the public network and then, in accounting terms, withdrawn again in the form of CO_2-free electricity from the public network for airport operations.

Purchase of climate-neutral electricity
The shortfall of electricity FHG requires beyond what it generates will continue to be covered by electricity from climate-neutral generation, as it has been in recent years. The Airport's Scope-2 emissions will thus remain at 0.

Research projects for the development of sustainable aircraft fuels/cooperation with other airports on the reduction of important Scope 3-emissions

Development and test flight of an H_2-powered aircraft for short and medium-haul aircraft
Within the Baltic Sea Region Project and in the context of the Green Corridor with Rotterdam, FHG is working towoards the goal of deploying an H_2 fuel cell aircraft for up to 20 passengers on test routes by 2026. This project is being carried out in conjunction with a long-term project to convert short and medium-haul aviation overall to hydrogen power.

Waterway protection
Primary target
Over the coming three years, the Environmental Programme will continue to pursue targets for reducing drinking water consumption and improving the level of protection of groundwater and local natural bodies of water. These are long-term goals which are also factored into future development projects.
In this context, for the period of the Environmental Programme, the following measures are planned.

Continuation of water investigations at rainwater retention basins
The investigations carried out in recent years on water quality in the rainwater retention basins will be continued. Weekly test intervals will continue.

Planning and installation of a rainwater utilisation system
With the installation of a new rainwater utilisation system, the drinking water consumption in washroom facilities is to be reduced by up to 3000 m^3 per year. The construction of this facility is linked with the construction of a new building for baggage handling. This project has been in place for some time, but planning was subject to a lengthy deferral due to the coronavirus pandemic. As such, the commissioning of the rainwater utilisation system depends on the planning status for this building.

Construction and operation of additional groundwater measurement stations
Comprehensive additional investigations on the state of groundwater are being undertaken, for reasons including the planned future renewal of airport facilities and systems. These should deliver an understanding of the quantity and level of groundwater and potential contamination thereof.

Development of concepts to improve surface drainage
Suitable concepts are being developed to raise today's (already high) standard of drainage, interim storage and, where necessary, purification of surface

water, driven by factors including future modernisation of airport operating areas. These concepts relate to various aspects including the central storage of surface water, options for purifying surface water.

Waste management
Primary target
In the next three years, Flughafen Hamburg GmbH plans to reduce residual waste per traffic unit by 10%, based on the reference value of 2022.

This is to be achieved by means of the following measures.

Installation of waste locks
In those areas where different types of commercial waste are produced by various internal departments or units. The installation of locks should reduce the quota of incorrect disposal and allow for a better allocation of waste volume to the producers.

As a first step, therefore, suitable sites for such locks will be identified and selected.

Investigations of the possibility of better waste separation
Over the coming three years, investigations will determine the sites offering the best possibilities for separated collection of waste. These investigations will take into account the various types of waste, the use of waste disposal containers and the internal waste collection processes.

Biodiversity
Primary target
For the coming three years, FHG is pursuing a goal of supporting the development of existing habitat types and monitoring their status. As in previous years, the improvement of living conditions for endemic insects will play an important role here.

Securing biodiversity at the site
The efforts of past years to increase biodiversity at the site will be continued. Furthermore, over an areal in the region of 2,000 m^2 in size, new flower strips will be planted. These will consist of a diverse range of blossoming plant species, so as to create attractive locations for insect populations.

In addition to this, existing flower strips created in previoius years will be rejuvenated by sowing new plants so as to ensure their continuity. In total, an area of 2,500 m^2 will be sown. This should achieve a stabilisation of the total flower strip volume.

Outside of the airport site, FHG is creating new meadow orchard areas from endemic fruit trees. These also serve to improve the habitat quality for insects.

Status assessments for habitat types
All habitat types on the airport site and the immediate vicinity will be investigated with regard to natural state, current species and future development potential. These investigations will serve to determine the effect of newly created areas as well as to enable planning of additional future initiatives to increase the biodiversity at the site.

Environmental management
Primary target
Over the long term, the Environmental Management System is to be adapted so that, as well as taking into account the mandatory requirements of EMAS, it also considers the environmentally relevant requirements arising from sustainability law. In this way, the creation of parallel systems and requirements can be avoided.

To this end, FHG is planning the following concrete measures:

Harmonisation of indicators and reporting requirements
As a first step, over the coming two years the EMAS indicators will be extended and harmonised with those indicators required for the Corporate Sustainability Reporting Directive (CSRD = and the European Sustainability Reporting Directive as it applies to environmental protection. The same applies for comparing the content of Environmental Statements and Sustainability Statements.

HAMBURG AIRPORT IN FIGURES

Shareholders of Hamburg Airport			Holding in %
Free and Hanseatic City of Hamburg			51
AviAlliance GmbH, Essen			49
Year	**2020**	**2021**	**2022**
Turnover in € million	119.6	128.9	216.7
Employees *	1,864	1,869	1,793
Total passengers	**4,562,014**	**5,318,700**	**11,097,688**
of which:			
Transit	4,642	2,608	4,682
Domestic	1,476,983	1,297,915	2,377,769
International	3,080,389	4,018,177	8,715,237
Average passengers per aircraft movement	**88.1**	**99.5**	**121.1**
Total air cargo in t	**43,405**	**58,624**	**54,802**
of which:			
Flown air cargo	9,992	21,935	21,169
HGV cargo	33,412	36,676	33,939
Transit	1	13	3
Airmail in t	0	0	3
Traffic units ** (TU)	**4,566,355**	**5,324,562**	**11,103,168**

* Annual mean values excluding trainees/apprentices and Executive Board

** One Traffic Unit is either a passenger (100 kg), 100 kg of air cargo or 100 kg of airmail

HAMBURG AIRPORT IN FIGURES

Year	2020	2021	2022
Aircraft movements (total)	**66,585**	**69,838**	**109,856**
of which:			
Non-commercial	14,510	16,170	18,104
Commercial traffic	52,075	53,668	91,752
of which over Alsterdorf			
Take-offs (15)	297	780	1,738
Landings (33)	538	1,418	2,844
of which over Langenhorn			
Take-offs (05)	1,316	1,459	4,536
Landings (23)	17,906	17,278	27,204
of which over Niendorf			
Take-offs (23)	12,940	10,426	15,446
Landings (05)	4,346	5,938	8,698
of which over Ohmoor			
Take-offs (33)	17,566	21,110	31,961
Landings (15)	9,324	9,151	14,940
Usage of delay provisions			
(Scheduled and charter traffic)			
11 p.m. – midnight	91	139	899
Individual exemptions from night flying restrictions			
midnight – 6 a.m.	153	133	112

*In individual cases, the Aircraft Noise Protection Compliance Officers may grant exemptions to the night flying restrictions, especially if this is necessary to avoid significant disruption to air traffic or due to special public interest.
Flights for medical emergencies and rescue operations along with sovereign service flights (military, state or federal police) are exempt from the night flying restrictions and are therefore not listed.

HAMBURG AIRPORT IN FIGURES

Year	2020	2021	2022
Noise complaints	75,478	22,217	32,176
Annual noise levels (L_{eq3}) at aircraft noise measurement points**			
Measurement point			
1 Hasloh	53.7 (48.6)	65.3 (49.0)	55.1 (51.4)
2 Norderstedt	54.6 (36.0)	51.8 (37.9)	52.4 (41.9)
3 Quickborn School	52.9 (49.5)	53.2 (49.2)	55.4 (51.6)
4 Norderstedt	55.3 (45.5)	54.9 (45.7)	55.2 (47.0)
5 Langenhorn	56.5 (54.7)	56.9 (54.8)	59.1 (57.8)
7 Fuhlsbüttel	61.9 (58.6)	60.9 (57.9)	62.4 (60.5)
8 Receiver station	54.2 (49.7)	53.9 (50.2)	54.6 (51.9)
9 Quickborn Heide	51.3 (40.3)	54.4 (41.5)	53.4 (44.8)
10 Stellingen	56.2 (54.4)	56 (54.7)	58.1 (41.9)
10 Norderstedt	56.7 (54.4)	56.9 (54.9)	58.6 (41.9)
12 Grossborstel	54.1 (52.0)	53.3 (51.1)	55.1 (41.9)
13 Poppenbüttel	57.2 (54.8)	56.6 (54.0)	58.4 (41.9)

HAMBURG AIRPORT IN FIGURES

Year	2020	2021	2022
Energy	**66,585**	**69,838**	**109,856**
Natural gas usage in MWh	**49,589**	**54,245**	**40,949**
of which:			
in BHKW	46,060	47,939	30,261
in the Central Heating Plant	3,101	5,876	10,261
in the Air Cargo Center	438	430	650
Energy production in MWh	**57,539**	**62,121**	**44,619**
of which:			
in BHKW (electricity)	13,294	13,688	8,350
in BHKW (heat)	41,454	43,145	27,235
in the Central Heating Plant	2,791	5,288	9,034
Consumption of electrical energy in MWh (climate neutral)	**32,028**	**34,329**	**42,036**
Total energy consumption / TU and employee			
per traffic unit (TU)	17.93	18.11	7.80
per employee	48.05	51.61	48.33
CO_2 per TU (kg) and employee (t) including vehicles before offsetting			
per traffic unit (TU)	2.24	2.28	1.09
per employee	6.02	6.50	6.77
CO_2 from energy generated on site	9,299.60	10,375	8,140.66
and externally sourced electricity			
CO_2 compensation in t, including own forest		12,145	9,300.00
Remaining CO_2 emissions after offsetting	-	0	0

HAMBURG AIRPORT IN FIGURES

Year	2020	2021	2022
Usage of natural gas as vehicular fuel in kg			
Business unit			
CATS	191	4,353	12,597
STARS	40,159	17,921	28,701
GroundSTARS	138,042	175,530	268,005
SAEMS	100	128	952
AIRSYS	-	-	
RMH	6,567	7,298	8,152
FHG	4,672	7,240	7,666
SecuServe	4,760	3,545	6,925
Gasoline and diesel consumption of FHG and subsidiaries			
Business unit			
CATS	13,529	7,565	7,660
STARS	101,650	118,484	186,364
GroundSTARS	151,547	160,408	82,025
SAEMS	1,037	1,127	678
AIRSYS	1,081	1,233	101,425
RMH	74,638	107,037	114,103
FHG	119,875	109,717	127,027
SecuServe	4,837	2,539	6,268

HAMBURG AIRPORT IN FIGURES

Year	2020	2021	2022
CO_2 from vehicles (before offsetting)			
Business unit			
CATS	32	32	36
STARS	365	366	108
GroundSTARS	910	911	816
SAEMS	3	1	3
AIRSYS	3	3	3
RMH	293	293	38
FHG	314	145	118
SecuServe	10	7	5
Electricity consumption of subsidiaries			
Business unit			
SecuServe	17,306.05	17,207.41	19,441.04
AIRSYS	469,336.54	446,815.17	429,090.99
RMH	435,203.23	350,917.24	469,614.65
SAEMS	104,776.38	113,969.52	117,811.26
HAM GH	492,623.30	565,448.19	604,350.14
Immissions at site east of airport			
Particulate dust (PM 10)	15	13	14
Nitrogen dioxide	15	15	14
Nitrogen monoxide	4	5	9

HAMBURG AIRPORT IN FIGURES

Year	2020	2021	2022
Resource consumption			
Lubricant oils in l	11,621	13,924	
Lubricant grease in kg	175	151	
Commercial waste in t			
Total	1,098	1,216	1,805
of which:			
Sheeting, DSD	22	25	17
Mixed paper	149	148	197
Waste wood	72	73	73
Non-recyclable waste	876	970	1,518
Hazardous waste (selection of most important materials)			
Waste oil (in l)	12,422	14,244	15,238
Oil filters/oil-contaminated materials in m^3	2	4	3
Fluorescent tubes	4,760	3,545	6,925
Paint shop waste in kg	1,016	1,270	1,152
Fat separator contents in m^3	357	161	216
Dry batteries in t	0.2	0.4	1
Total in t	543.7	427.7	810.6
per employee in t	0.3	0.2	80.3
per TU in g	108.8	0.5	73.0

HAMBURG AIRPORT IN FIGURES

Year	2020	2021	2022
Facilities relevant to immissions protection			
Identifier/Site	**Energy generated**	**Fuel**	**Size of facility**
Block-type thermal power plant	electricity, heat	natural gas	12.0 MW
Boiler house south	heat	natural gas	19.9 MW
Central heating for shuttle gate	heat	heating oil	450 & 500 KW
Central heating GAT	heat	heating oil	682 KW
Central heating tower	heat	heating oil	457 KW
Central heating weather station	heat	heating oil	15.2 KW
Central heating site sports facility	4,672	natural gas	165 KW
Facilities dealing with water-hazardous substances (AwSV substances)			
Identifier/Site	**Type of facility**	**Substances**	**Capacity**
Fuel services' kerosene storage	storage, filling	kerosene	4,150 m^3
Light aircraft fuel station on Apron 2	storage, filling	aviation gasoline	50 m^3
Site fuel station	storage, filling	diesel, gasoline	230 m^3 (5 tanks)
Car hire center fuel station	storage, filling	diesel, gasoline	100 m^3 (3 tanks)
de-icing agent storage, STARS	storage, filling	Aircraft DA**	10x30 m^3, 1x20 m^3
Emergency power supply	storage	diesel	30 m^3
Heating supply, GAT	storage	heating oil	50 m^3
Heat supply – weather station	storage	heating oil	6 m^3
Heat supply – shuttle gate	storage	heating oil	40 m^3
Heat supply – tower	storage	heating oil	30 m^3
De-icing agent storage	storage, filling	surface DA**	30 m^3
Waste oil tank SAEMS	storage	used oil from vehicle repair	5 m^3
FHG main storage	containerised storage	miscellaneous	1 m^3

± AwSV: Ordinance on Installations for the Handling of Substances Hazardous to Water. This ordinance defines the protective measures necessary for operation of facilities so that there is no danger to water (incl. groundwater).

** De-icing Agent

GLOSSARY

ACA (Airport Carbon Accreditation)
Certified system for documenting and reducing airport emissions of greenhouse gases.

Acetates
Water-soluble salts of acetic acid, e.g. potassium acetate, sodium acetate. Acetates serve as environmentally friendly de-icing agents.

APU (Auxiliary Power Units)
Used to provide the aircraft with electricity and air during ground handling, and to provide air to start the main engines immediately before take-off.

AwSW Ordinance
New federally applicable ordinance on Installations for the Handling of Substances Hazardous to Water. Replaces VAwS, which was separately implemented in each state.

Gasoline separator (Oil separator)
Equipment for separating mineral oil hydrocarbons from waste water. Separators take advantage of the fact that these substances are lighter than water and therefore collect on the surface of the water.

Benzene
Hydrocarbon compound with an aromatic ring system. Benzene (C_6H_6) is highly inflammable, toxic and classified as a carcinogen. It is used as a fuel additive and is found in motor vehicle exhaust gases.

Biotope
A biotope is a habitat for specific plant and animal species, characterised by its abiotic factors.

Block-type thermal power station (BHKW)
Small, normally natural-gas-fired power station for generating heat and electricity. Functions according to the principle of power-heat coupling, whereby waste heat from electricity generation is used for heating and cooling.

Surface noise
Noise emanating from aircraft when they are on the ground, arising from engine tests, taxiing, and/or APU operation. Noise generated by take-off and landing is not considered to be surface noise, not even for the phases when the aircraft is on the ground.

Continuous noise level (equivalent continuous noise level, Leq_3)
Average level of noise pollution measured (calculated) over a defined period of time. In general, the energy-equivalent continuous noise level (Leq_3) is used today, as an increase in this noise level of 3 db(A) is equivalent to doubling the noise energy.

dB(A) (decibel)
Acoustic logarithmic unit of measurement showing the peak of an acoustic event. As the human sensitivity to high and low tones varies, these tones are evaluated differently in measurements and calculations from mid-range tones. This A-evaluation is identified by the unit db(A).

DIN EN ISO 14000 ff.
The ISO 14000 ff. series of standards developed by the International Organization for Standardization refers to the organisation of operational environmental management. The most important of these standards is ISO 14001: this standard forms the basis for a certifiable environmental management system.

EU-Eco-Management and Audit Scheme (EMAS III)
The European Union has enacted a second set of regulations for voluntary participation in the Eco-Audit (EU) No. 1221/2009), which applies to all EU member states. It entails setting up an environmental management system in conformity with the 2004 edition of ISO 14001. Further elements include the publication of environmental statements for public release and an environmental review.

Electrical field strength
Measurement of the effect that an electrical field can have on a charge located within the field.

Emission
Output or emission into the environment of irritating or harmful substances (gas, liquid or solid), noises, vibrations or radiation.

Energy efficiency level
The ratio of transformed and usable energy to the total energy contained within the energy source used (also known as “effectiveness level”).

Thermal output capacity
The maximal thermal output of a combustion facility based on the specific calorific value of the fuel in use. The calculation is based on the amaximal quantity of fuel burnt within a specific timeframe.

Formates
Salts of formic acids. Increasingly preferred over acetates for use as surface de-icing agents due to their lower TOC content.

Hazardous waste
The legally correct term, since 2006, for waste matter previously classified as "requiring monitoring" or "requiring special monitoring". This is the common terminology used throughout the EU for identifying such waste.

Commercial waste
Commercial waste are similar in nature and consistency to waste generated in private households.

Glycols
Water-soluble liquids, similar to alcohol, which are used as antifreeze. Diethylene glycol and propylene glycol are the main agents used for de-icing aircraft.

ICAO (International Civil Aviation Organisation)
Committee of the UN, responsible amongst other things for creating standards for civil aviation. Aircraft licensing is subject to various chapters of Appendix 16 of the ICAO guidelines on noise emissions and air pollution. Chapter 4, finalised in 2006, currently contains the strictest noise limits for licensing aircraft types.

Immission
Harmful or undesired emissions, such as noise, vibrations, hazardous materials or radiation at a specific location.

Kerosene
Fuel for aircraft engines, chemically and physically similar to diesel fuel.

Carbon dioxide (CO_2)
Colourless gas, produced in various ways including as a result of burning fossil fuels. CO_2 released in large quantities as a result of human activities is one of the main causes of the global greenhouse effect.

Leq_3
See Continuous noise level.

PAH (Polycyclic aromatic hydrocarbons)
PAHs are compounds with several benzene rings, produced as a result of combustion processes. Some PAHs are classified as carcinogenic and/or may cause genetic defects.

PCA systems (Pre-conditioned air systems)
Equipment to provide external air conditioning for aircraft. PCA systems are employed to make the operation of aircraft auxiliary power units unnecessary.

PM10
Specialist term for airborne particles 10 µm or less in size.

PM2.5
Specialist term for airborne particles 2,5 µm or less in size.

Primary energy source
Natural energy source immediately after extraction or mining, e.g. crude oil, coal, gas.

Pushback
As aircraft can only move by means of engine propulsion, even on the surface, they cannot move in reverse under their own power. They must therefore be pushed back from their parking position by an aircraft tug if they are parked at a position with a jetbridge. This procedure is known as "pushback".

Renaturalisation
The restoration of a biotope or ecosystem to (a state as close as possible to) its natural state.

RiStWag
German guidelines for construction measures in waterway protection areas. Amongst issues covered by these guidelines are the criteria for constructing separator systems.

Red-list endangered species
Lists of animal and plant species in varying degrees of danger of extinction, compiled by an international commission.

Soot
Fine graphite particles resulting from the incomplete burning of hydrocarbon compounds.

Sulphur dioxide (SO_2)
Colourless, foul-smelling, cough-inducing gas. Reacts with water to form an acid which can, amongst other things, be harmful to plants and buildings.

Nitric oxide (NO_x)
Oxygen compound of nitrogen. Nitrogen monoxide (NO) is a colourless, non-water-soluble gas, which is converted to nitrogen dioxide (NO_2) upon contact with air. NO_2 reacts with water to form nitric acid which can damage both the natural environment and buildings. When exposed to high temperatures and intense sunlight, NO_2 is a trigger for so-called "summer smog" with increased concentration levels of ozone. Nitric oxide can function as a greenhouse gas.

Take-off power
Engine power of at least 90 per cent, as required at take-off.

TOC (Total Organic Carbon)
Total quantity of organically bonded carbon. A unit of measure for quantities of dissolved organic substances.

Toluene (also known as methylbenzene)
Chemically very similar to benzene, but less toxic. It is used as a fuel additive and is found in exhaust gases.

Environmental impact
Negative (or positive) effect on the environment, resulting from the various environmentally relevant activities carried out by a company. EMAS III differentiates between direct and indirect environmental impact. According to this classification, direct environmental impact consists of those effects on the environment over which the company has direct influence. If the company only has indirect influence over an effect, this is considered to be indirect environmental impact.

Environmental management system (EMS)
System for the coordinated processing of operational environmental protection, geared towards concrete local environmental impact. The core aspects of an environmental management system are a company's environmental policy and environmental programme.

Environmental policy
Component of an EMS, establishing guidelines for environmental protection at the highest level within a company.

Environmental Programme
Within the framework of an environmental management system, a plan of measures to be applied for a specified period of time in order to minimise environmental impact.

Unburnt hydrocarbons (C_xH_y)
Organic compounds in exhaust gases as the product of incomplete combustion processes. When exposed to high temperatures and intense sunlight, unburnt hydrocarbons contribute to so-called summer-smog with increased concentration levels of ozone.

Traffic unit (TU)
One TU is the equivalent of either a passenger with 30 kg of baggage or 100 kg of air cargo or airmail.

Water hazardousness classification (WGK)
Measurement and classification of the hazardousness of a substance for water, according to legally prescribed criteria. The WGK has to be individually measured for every material.

Effectiveness level
See Energy efficiency level

Xylene
Used as a solvent, a typical component of vehicle exhaust fumes. It is less toxic than benzene.

VALIDATION

The undersigned Bernd Eisfeld, EMAS environmental auditor with the registration number DE-V-0100, licensed for areas 51.1, 51.21, 52.21 (NACE code), confirms that he has audited the site and/or the entire organisation, as specified in the updated Environmental Statement of Flughafen Hamburg GmbH with the registration number D-131-00019, to determine whether all requirements of the regulation (EC) No. 1221/2009 of the European Parliament and Council from 25 November, 2009, relating to the voluntary participation of organisations in a community system for environmental management and auditing (EMAS), in conjunction with amending Commission Regulation (EU) No. 2017/1505, are met.

The signature on this Statement confirms the following:

- The audit and validation have been carried out in full compliance with the requirements of Regulation (EC) No. 1221/2009 in conjunction with the amending Commission Regulation (EU) No. 2017/1505.
- The result of the assessment and validation confirms that there is no evidence for non-compliance with the applicable environmental regulations.
- The data and claims contained in the organisation's updated Environmental Statement provide a reliable, credible and faithful representation of all of the organisation's activities within the area delineated in the Environmental Statement.
- This Statement is not to be equated with an EMAS registration. EMAS registration may only be carried out by a competent authority as defined in Regulation (EC) No. 1221/2009 in conjunction with the amending Commission Regulation (EU) No. 2017/1505.
  This statement must not form the sole basis of communications with the general public.

Hamburg, 06.05.2024

B. Eisfeld

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