Environmental Statement 2019

For the corporations Fraport AG, NICE, FCS, GCS und FraGround at Frankfurt Airport

Fraport

Including the Environmental Program until 2023

EMAS
Verified environmental management

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Dear Readers:

Owing to the COVID-19 pandemic, passenger traffic at Frankfurt Airport virtually came to a standstill in March 2020. Since then, the situation has only improved marginally. In July 2020, passenger numbers only achieved a rate of 19.1 percent compared to July 2019. We are assuming that, during the years 2022/2023, passenger volumes in Frankfurt will only amount to about 15 to 20 percent of the previous peak in 2019.

In response to the COVID-19 pandemic, we reduced costs at an early stage and introduced short-time working. In the second quarter of 2020, more than 16,000 of the about 22,000 employees at all Fraport Group companies in Frankfurt were on short-time working. We also took parts of the airside and landside infrastructure temporarily out of service in order to reduce costs. Furthermore, we cut material costs that were not operationally essential and significantly scaled back or deferred planned investments, with the exception of the Terminal 3 project.

The COVID-19 pandemic will also continue to have an impact on the environment and our environmental management in one way or another. Firstly, here will be fewer aircraft movements and ground-handling services. The reduced usage of infrastructure will act as a temporary brake on aircraft noise and air pollutants, as well as CO_2 emissions and the volume of waste. Secondly, we might have to defer some investments in environmentally friendly technology to a later stage than was planned before the crisis.

Nevertheless, we remain committed to noise abatement in the immediate environment of the airport. We will also further increase our efforts to contribute to reducing the global impact of CO_2 emissions – despite the coronavirus and the resulting sharp drop in revenue. On the basis of the CO_2 savings targets set by the German Government, we intend to reduce the CO_2 emissions attributable to Fraport's activities at Frankfurt Airport to 80,000 tonnes by the year 2030. This corresponds to a reduction of 65 percent compared with the emissions in the baseline year of 1990 even though the airport has been expanded in the meantime.

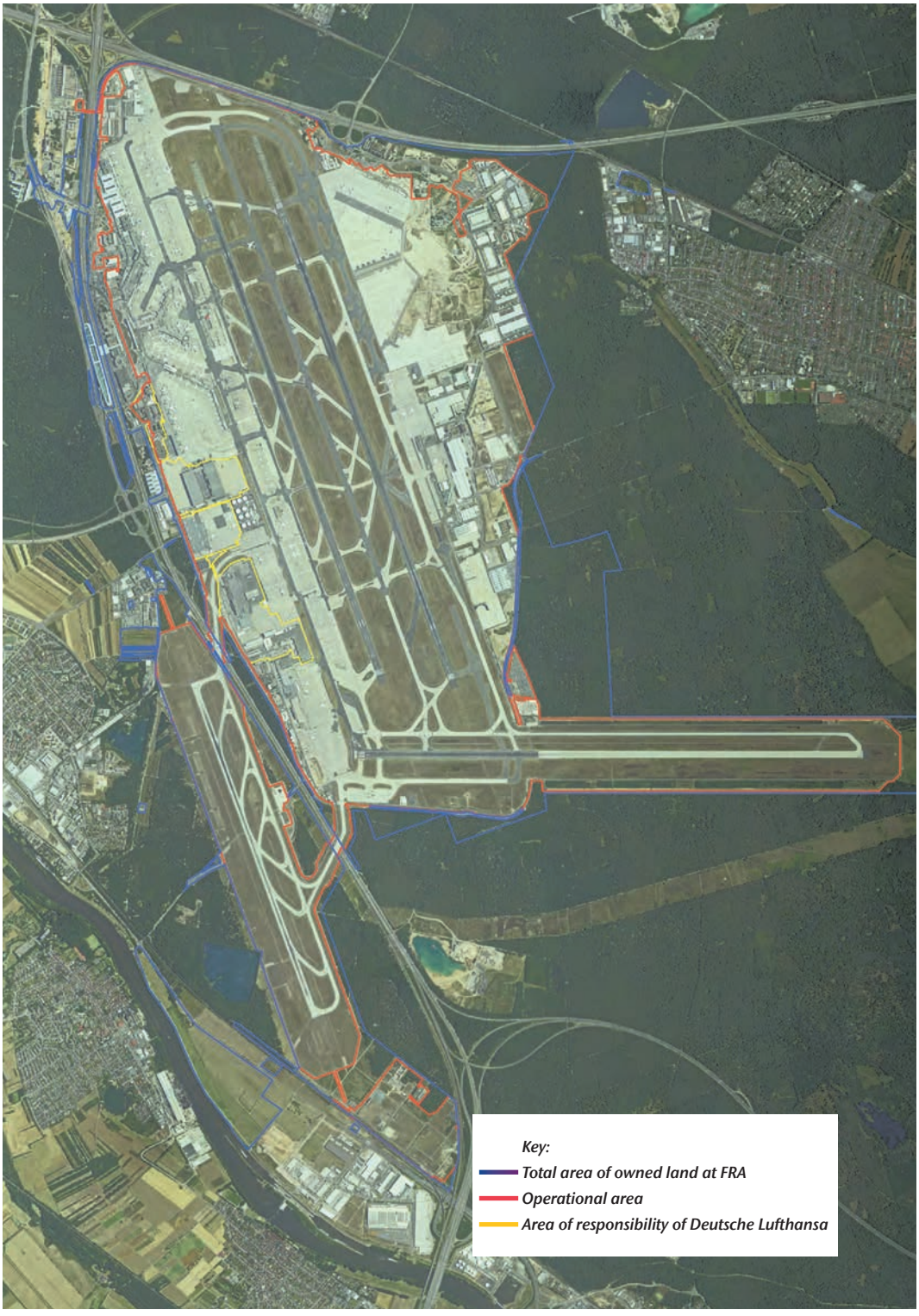
This "Fraport Environmental Statement 2019" presents the current status of the outlined environmental activities of our company at Frankfurt Airport and many other activities. The data and facts documented here have been audited by an independent environmental expert authorized by the government in accordance with the European EMAS Directive. They demonstrate how environmental management has developed over recent years and the approaches we pursue in implementing concrete action. Since we have been regularly subject to EMAS audits for the past 21 years, a high degree of transparency and reliability has been ensured for the joint Environmental Management System operated by the Fraport AG parent company and its subsidiaries at Frankfurt Airport, comprising FCS Frankfurt Cargo Services GmbH (FCS), NICE Aircraft Services & Support GmbH, FraGround Fraport Ground Services GmbH, and GCS Gesellschaft für Cleaning Service mbH & Co. Airport Frankfurt/Main KG.

This Environmental Statement fulfils our mission to communicate comprehensive information in the public domain. We hope that you find reading our report informative and we look forward to an ongoing constructive dialog with you.

Stefan Schulte

Owned land and operating area at Frankfurt Airport

The total owned land of the airport operator Fraport AG amounts to nearly 23 km². More than 18 km² of this area relates to the actual operation of the airport. The apron area for the ground handling operations for aircraft amounts to 14 km². Lufthansa is responsible for 0.77 km² of the airport area (area of responsibility).



General data for Frankfurt Airport in 2019

Criteria	Year 2019
Total owned land [km²]	22.87
Operational area [km²]	18.59
Takeoff and landing runways	2
Takeoff runways	1
Landing runways	1
Terminals	2
Number of aircraft movements[1)]	513,912
Coordinated aircraft movements (number of movements per hour)	104
Number of airlines (only passenger flights): summer schedule 2014	94
Number of destinations (only passenger flights): summer schedule 2014	306
Share of intercontinental passengers	36.3%
Number of high-speed trains each day (long-distance railway station)	204
Number of rapid-transit trains and regional trains each day (regional railway station)	266
Number of passengers	70.56 million
Cargo volume [tonnes]	2.1 million
Traffic units (without transit)	91.47 million
Number of employees at the airport[2)]	about 81,000
Number of employees at the Fraport parent company,	10,480
FCS	535
NICE	45
GCS	714
FraGround	3,963
Number of companies at the airport	over 500
Fraport Group revenues [million euros]	3,705.8
Fraport parent company revenues [million euros]	2,236.3
Fraport Earnings before Interest, Tax and Depreciation, and Amortization (EBITDA) [million euros]	1,180.3
Fraport Earnings before Interest, Tax and Depreciation, and Amortization (EBITDA) [million euros]	683.0

1) Commercial and non-commercial traffic (landing and takeoff and transit), of which 31,274 during the night

2) Fraport AG with subsidiaries and more than 500 additional companies at the airport

Fraport AG and the EMAS Association

Fraport AG is an international airport operator with head office at Frankfurt Airport (FRA). Apart from the FRA site, Fraport has operations at 25 airports on three continents and provides expertise through numerous subsidiary companies – including locations in Lima, Fortaleza, Porto Alegre, St. Petersburg, Ljubljana, Varna, Burgas Antalya, Delhi, Xi'an and at 14 Greek airports. The company's portfolio includes airport operation and management, as well as consulting services for all areas specific to airports, such as ground handling services, terminal, retail and real estate management.

The organization of Fraport AG at Frankfurt Airport comprises four Strategic Business Units, four Service Units and 13 Central Units.

FCS Frankfurt Cargo Services is a joint subsidiary of WFS Worldwide Flight Services, one of the world's largest cargo handling companies, and Fraport AG, the owner and operator of Frankfurt Airport as one of the most important European airports. FCS is the biggest cargo handler independent of an airline at Frankfurt Airport, offering comprehensive service packages relating to physical and documentary cargo handling. Around 700 experienced employees handle approximately 750,000 tonnes of airfreight here for more than 50 international airline companies. FCS boasts a state-of-the-art cargo terminal with a total floorspace of 47,000 m² and an additional hall of 5,000 m² in CargoCity South with direct apron access. This ensures secure and fast handling for freight. All the handling areas are compliant with the latest EU safety and security standards and are equipped with video cameras.

Alongside energy consumption, the key environmental aspects of FCS are hazardous goods and waste (in particular foils and wood) arising from the turnover of freight. FCS is licensed to handle all classes of hazardous goods and store them for more than 24 hours (aside from explosives).

Fraport organizational chart – issues, tasks and functions relevant to the environment

Chairman of the Executive Board (VV)	Member of the Executive Board and Executive Director Labor Relations (VA)	Member of the Executive Board and Executive Director Controlling and Finance (VF)	Member of the Executive Board and Executive Director Aviation and Infrastructure (VI)	Member of the Executive Board and Executive Director Operations (VO)
Segment Responsibility	Segment Responsibility	Segment Responsibility	Segment Responsibility	Segment Responsibility
International Activities & Services	Ground Handling		Aviation	Retail & Real Estate
Strategic Business Units	Strategic Business Units	Strategic Business Units	Strategic Business Units	Strategic Business Units
Global Investments and Management (BET)	Ground Services (BVD)		Airside and Terminal Management, Corporate Safety and Security	Retail and Properties (HVM)
	Loading and unloading aircraft Passenger transport Baggage transport Cargo transport Push-back Water supply for aircraft Toilet waste disposal from aircraft		Terminal operations Flight operations systems Traffic management Monitoring of aircraft noise Forest and biotope Environmental impacts (noise and air) Community issues Passive noise abatement Preventive fire protection Emergency management	Operation of miscellaneous buildings Energy supply Energy and meter management
Service Units	Service Units	Service Units	Service Units	Service Units
Airport Expansion South (PAS)		Real Estate and Facility Management (IFM)	Corporate Infrastructure Management (ZIM)	Information and Telecommunication (IUK)
Construction planning Terminal 3		Technical building management Operation of service workshops Operation of filling stations Operations management PTS Operational winter service Management of landscaped areas Vehicle engineering Geoinformation Water supply Waste management, remediation Operation of drainage systems Operation of sewage treatment plants Operation of the nitrate removal plant	Construction planning Energetic standards Officer for water protection Waste management for construction Compensation area management and floor waste	Environment databases
Central units	Central units	Central units	Central units	Central units
Corporate Development, Environment and Sustainability (UEW)	Occupational Health and Safety (VA 4)	Controlling (FCO)		Digitization, innovation and transformation (DIT)
Coordinator for the Environmental Management System Officer for waste	Officer for dangerous goods and radiation protection	Finance and Investor Relations (FIR)		HR Top Executives (PFK)
Environmental policy and strategy	Human Resources (PSL)	Sustainability reporting		Legal Affairs and Compliance (RAC)
Coordination of environmental management Environmental indicators Environmental reporting Environmental Fund Traffic data	Environmental training	Accounting (REW)		Environmental law
Corporate Communications (UKM)	Internal Auditing (REV)	Central Purchasing, Construction Contracts (ZEB)		
Environmental Communications	Central freight infrastructure and air freight development	Environmental procurement		

The hazardous goods warehouse with floorspace of more than 2,000 m² offers capacity of 200 tonnes. Regularly trained specialists manage and monitor hazardous goods in compliance with international regulations. Separate depot facilities are available for radioactive packages in transit.

The open bonded customs warehouse allows companies to store uncleared goods at the warehouse facilities for an indefinite period of time. The transfer to the customs warehouse becomes particularly important if the final destination for the goods is not yet known at the time of import.

Packaging, allocation and quality control of the products can all be carried out in the open bonded customs warehouse without customs duties being incurred.

FCS's innovative order-picking and deconsolidation services save freight forwarders several hours of handling time. The import freight is handled preferentially by specialist teams directly after landing. Frankfurt Cargo Services GmbH takes care of freight breakdown and undertakes recompilation in accordance with recipient lists. In the case of export freight, Frankfurt Cargo Services GmbH picks consignments in accordance with instructions from customers.

NICE Aircraft Services & Support GmbH was established in July 1999. The company is a 52% subsidiary of Fraport AG. By implementing innovative procedures and continuous improvements, aircraft deicing at Frankfurt Airport is consistently developed further. The aim is to limit the time lag between completed ground servicing and deicing to a minimum.

Training for deicing crews is a top priority. The personnel at FRA are inducted into the routines of aircraft deicing by specially qualified trainers. In addition to basic training measures, a practical training session is carried out in which the processes are practiced under real conditions. Key environmental aspects are the use of energy and the consumption of deicing agent.

GCS is a wholly-owned subsidiary of Fraport AG and it is a service provider for cleaning, logistics, and engineering. The focus of GCS is on cleaning Terminal 1 at Frankfurt Airport. The service portfolio comprises cleaning areas at and in buildings, car parks, facades, baggage handling systems, walkways, and cleaning equipment and systems. Another branch is provision of technical services such as maintenance of sanitary and ventilation facilities (e.g. fault elimination in WC facilities, servicing of induction units and fire dampers), maintenance of fire protection doors (inspection, servicing and repair), inspection of electrical equipment (e.g. sub-distributors, end devices), elevator inspections and technical cleaning for ventilation and air-conditioning technology.

A new sector for this portfolio is the provision of intralogistics services such as transport services for concessionaires at FRA. Key environmental aspects are energy use and consumption of cleaning agents and detergents. In 2019, the total volume of detergent containing hazardous substances deployed in cleaning amounted to 31,626 kg. This corresponded to a quantity of 10.5 kg/100,000 m^2. A total of 10,225 kg of detergent was used at our own washing facility for washing mops and cleaning cloths.

FraGround is also a wholly-owned subsidiary of Fraport AG. On 1 July 2017, FraGround, Fraport AG, and FRA Vorfeldkontrolle GmbH formed a joint establishment.

The objective of this joint establishment is to provide services in air traffic, particularly in ground handling services. FraGround also carries out winter services by cleaning the runways from snow and ice, and provides personnel for aircraft deicing at Frankfurt Airport. The portfolio includes the following services: baggage, airfreight and aircraft handling, passenger, baggage and cargo transport, and check-in, VIP support, and technical services. The most significant environmental aspect of FraGround is energy consumption.

Indicators on key environmental aspects of Fraport AG and the subsidiaries in the EMAS network are reported in the financial statements for the environmental situation 2016 to 2019.

The Environmental Management System of Fraport AG

Since 1999, Fraport AG at Frankfurt Airport has been subject to a regular audit by government accredited and supervised environmental experts. The European directive on the "Eco-Management and Audit Scheme" (EMAS) has formed the basis for such audits. Since 2002, the review has also been carried out in accordance with the international ISO 14001 standard. Subsidiary companies FCS Frankfurt Cargo Services GmbH (FCS), NICE Aircraft Services & Support GmbH (NICE), FraGround Fraport Ground Services GmbH (FraGround) and GCS Gesellschaft für Cleaning Service mbH & Co. Airport Frankfurt/Main KG (GCS) also joined the Environmental Management System of Fraport AG and participated in the audits in accordance with EMAS and ISO 14001.

The functions in the *Environmental Management System (EMS)* are based in the appropriate units of the company – in conformity with the strategic and operational functions and processes. The description of the key functions and processes in the EMS and their allocation within the organizational structure of Fraport AG is shown in the organizational chart presented below.

Structure and Functions of the Environmental Management System

The responsibility for the Environmental Management System lies with the Chairman of the Executive Board of Fraport AG.

The Coordinator for the Environmental Management System is based in the Central Unit for Company Development, Environment and Sustainability. This Coordinator handles the necessary organizational and coordination functions, authorizes the internal environmental audit and external auditing of the Environmental Management System (in conformity with EMAS and ISO 14001), and advises the Executive Board and senior management on all issues relating to environmental management. The Coordinator for the Environmental Management System reports to the Chairman of the Executive Board in management reviews.

The functions in environmental protection defined under statutory regulations are performed by the operating officers for water protection (Service Unit for the Central infrastructure management), waste or construction and soil waste (Central Unit for Corporate Development, Environment and Sustainability), hazardous goods and radiation protection (Central Unit for Occupational Health and Safety). The operating officers perform monitoring, advisory and facilitating actions within their specialist functions. They also report to the Executive Board.

Noise and air pollution monitoring is the responsibility of the Department "Environmental Impacts Noise and Air" (Strategic Business Unit Airside and Terminal Management, Corporate Safety and Security). The Neighborhood Dialogue Service Center and the program for passive noise abatement are also allocated to this department.

Fraport AG has an Airport Fire Department, an Emergency Medical Center and a Rescue Service to deal with emergencies. They are managed by the Security Operations Center which operates round the clock as the central command center for emergencies. If a serious emergency occurs, the "Emergency Response and Information Center" (ERIC) is alerted. This then acts as the central control unit for crisis management at Frankfurt Airport. Some functions relating to crisis management are mainly executed by the Airport Fire Department. It has a broadly based range of functions: aircraft fire protection, building fire protection, preventive fire protection (fire protection for buildings and systems) and other fire protection services (Fire-fighting Training Center, maintenance of extinguishing systems, aircraft rescues). The Airport Fire Department also deals with any operations relating to the area of transport of dangerous goods, accidents involving hazardous materials and issues relating to water protection.

The heads of the units have operational responsibility for environmental concerns. Functions are organized by delegation to the relevant management levels. The operating units receive supporting advice on environmental issues from the Coordinator for the Environmental Management System and the operating officers.

The Central Unit for Human Resources (PSL) is responsible for providing basic training and advanced training on environmental issues to employees, environmental auditors and senior management. This unit is also responsible for organizing the training courses defined under statutory regulations for the transport of dangerous goods and radiation protection.

Influence on third parties

Fraport AG is able to exert indirect influence over the environmental behavior of the companies and government agencies located at the airport on the basis of the airport user regulations and the airport charges (landing fees). If any discrepancies or irregularities are identified by Fraport AG, we discuss potential solutions with the management of the individual process owners causing the problem and record them in writing. The solution is then implemented with appropriate support.

Instrumente des UMS

The most important tools of the Fraport Environmental Management System:

- *Environmental Policy:* Framework defined by the Executive Board for environmental targets and measures.
- *Environmental Program:* Encompasses targets, measures, resources, responsibilities, and schedules for implementing the measures.
- *Internal procedure, process, operating and work instructions:* Include binding regulations that permit transparent workflows.

– *Internal environmental company audits:* Audits which review compliance with statutory, official and internal company specifications.
– *Evaluation of environmental aspects:* Key factors here are statutory regulations, target values of accredited institutions, benchmarks, scientific and engineering findings, and the attitudes of different interest groups.
– *Environmental indicator system:* The evaluation of environmental aspects is supported by an environmental indicator system that represents all the relevant environmental aspects over an extended timeframe.

The Environmental Policy of the Fraport Group

The Executive Committee of Fraport AG adopted an Environmental Policy for the entire Group in spring 2008. This policy covers a number of fundamental issues including the principles of the UN Global Compact. This allows all the sites, where the Group has operations, to benefit from the long track record of experience gained by the parent company of Frankfurt Airport in environmental protection, for example in training courses and expert support, including on the ground.

– In developing and operating all our business locations, Fraport AG is committed to manage all airport activities in an environmentally responsible manner. We will strive to protect and create a safe living environment at all our business locations by providing our employees with healthy and safe working conditions.

– Maintaining, developing and systematically improving our system of environmental management will support compliance with the applicable laws and regulations and lead to a continuous improvement of our environmental aspects.

– We will undertake initiatives to promote greater environmental responsibility by training our employees and providing awareness programs for the employees on our business locations.

– Our business will support a precautionary approach to environmental challenges respecting the principle that our Environmental Programs will be cost-effective, economically viable and sustainable.

– We will encourage the development and dissemination of environmentally friendly technologies by applying environmental criteria when selecting goods and services.

– We will provide an annual environmental report of our environmental activities making the information available to both employees and community

Principles for environmental policy

The environmental policy issues relating to climate protection, biodiversity and stakeholder engagement are underpinned by additional principles:

Climate protection principles
We participate in climate protection to ensure the sustainable development of our Group. Fraport is committed to the Kyoto Protocol and aspires to limit the output of relevant greenhouse gases to minimum emissions. We are also involved in local and regional initiatives addressing climate issues within the Agenda 21 process concerning issues relevant for climate protection. Our climate protection activities also make a long-term contribution to limiting the risks arising from altered weather conditions caused by climate change. We are therefore contributing to the sustainable development of our locations.

Biodiversity principles
Our businesses and the protection of natural biodiversity can be reconciled. Natural areas and their inherent biodiversity are conserved and supported to the extent possible within operational guidelines, and operational disruptions are kept to a minimum. If significant interventions are made in the natural environment, equivalent mitigation or substitution is provided including the guarantee of long-term maintenance of purpose.

Stakeholder engagement principles
We engage in a regular dialogue with our community stakeholder groups and we incorporate their concerns and points of view in our corporate decision-making processes. We communicate closely with our partners in the air transport chain and work together to develop joint strategies and concepts directed toward continuous improvement of environmental compatibility in air traffic.

Environmental aspects

The following section provides a description of the important environmental aspects for Fraport AG. These include aircraft noise, climate gases, energy consumption, traffic, air pollutants, impacts on biodiversity, water consumption, wastewater, contamination of soil water and groundwater, dangerous goods and hazardous substances, and waste. The individual impacts, sources, responsibilities, indicators and trends are described on the basis of the environmental aspect. Each environmental aspect is assessed on the basis of its materiality and controllability. The description of our management initiatives presents the activities to reduce negative impacts on our environment.

Key for the assessment of materiality and controllability of the environmental aspects

Categories	**Materiality**
Low	In standard operation, no or negligible quantities occur/no or negligible quantities are implemented **or** if an irregular operating status occurs there is no material risk.
Moderate	In standard operation, minimal to moderate quantities occur/ minimal to moderate quantities are implemented **or** if an irregular operating status occurs there is a risk but it is classified as low.
High	In standard operation, large quantities occur/large quantities are implemented **or** the risk in the case of non-standard operation is high.
Categories	**Controllability**
Poor	Difficult, can only be changed with a high level of technical or organizational input or under the responsibility of third parties.
Medium	Medium, can only be changed with an enhanced level of technical or organizational input, technology may not (yet) be available.
Good	Easy, can be changed without high level of input.

Environmental aspect: Aircraft noise

Type of environmental aspect	*Indirect*	
Assessment of the environmental aspect	*Materiality:*	*High*
	Controllability:	*Poor*
Environmental impact(s)	*Impact of noise on the population in the vicinity of the airport*	
Source(s)	*Aircraft, helicopters*	
Responsible process owner(s)	*Airline companies: Use and operation of aircraft.* *German Air Navigation Services (DFS): Air traffic management, definition of landing and takeoff. procedures, infrastructure for air traffic, Federal Air Safety Authority (BAF): Licensing of flight routes.* *Fraport parent company: Planning, construction and operation of takeoff and landing runways, aprons and parking positions, measurement and reporting of aircraft noise.*	
Indicator(s)	*Number of aircraft movements* *Equivalent continuous sound level Leq(3), 06:00 to 22:00 hours, for the six months with the heaviest traffic.* *Equivalent continuous sound level Leq(3), 22:00 to 06:00 hours, for the six months with the heaviest traffic.* *Frequency with which aircraft exceed the maximum level of 68 dB(A) each night for the six months with the heaviest traffic (see accounting principles).*	

Trend(s)

The development of aircraft noise in the neighborhood of Frankfurt Airport is closely associated with a number of factors including the development of aircraft movements on different flight routes.

In the initial years after the inauguration of the Runway Northwest in October 2011, the number of annual aircraft movements was stagnating. This was due to airlines using bigger aircraft. However, since 2017, there has been a steady increase in aircraft movements because the increase in passenger numbers could no longer be compensated by the use of larger aircraft. A large number of active noise abatement measures result in reduced aircraft noise in the region of the airport during the day time. The most effective measures are as follows:

Equipping the A320 Family with vortex generators which reduce the approach noise of a retrofitted aircraft by up to 4 dB. The reduction effect can be particularly noticed in areas far away from the landing threshold. Out of the aircraft in the A320 Family landing at Frankfurt Airport in 2019, 92% were equipped with a vortex generator.

Raising the approach glide angle on the Runway Northwest from 3.0° to 3.2° started in a test operation on 18 October 2012 and was incorporated into regular operation on 9 December 2014 owing to the verified reduction in noise by approx. 0.8 dB during the approach.

Since 30 March 2017, use of the Ground Based Augmentation System (GBAS), a satellite-based precision approach system, has been possible for appropriately equipped aircraft. This system enables the aircraft to approach at a raised glide angle of 3.2° on the Center and South Runway.

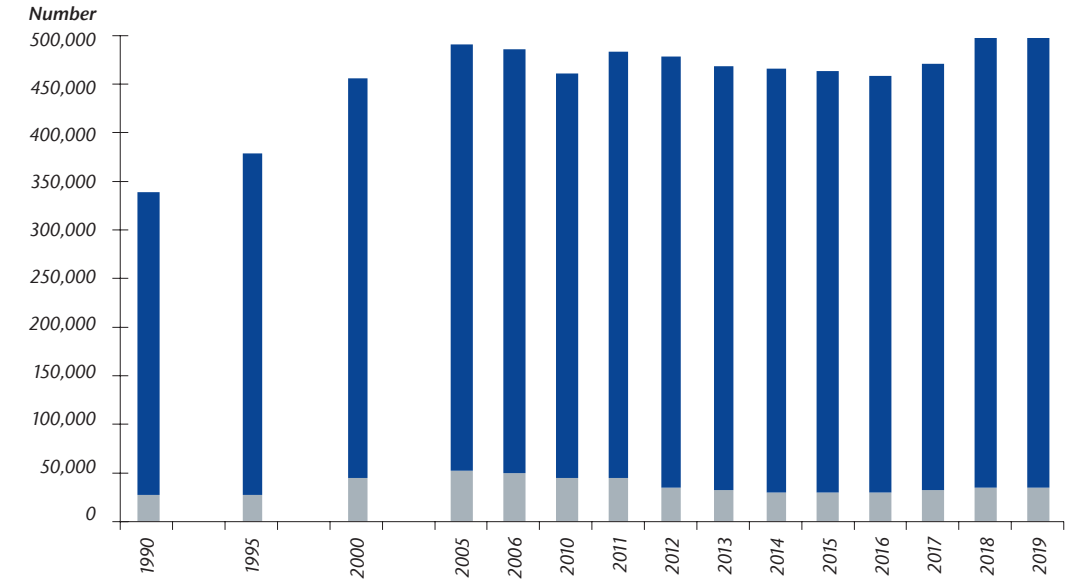
The introduction of the noise respite model in April 2015 slightly relocates the approaches from the Runway Northwest to the parallel runways for flights routed in a westerly direction during the night. As a result of the noise break concept, the Runway Northwest is no longer used for landings during the period from 22:00 to 23:00. This slightly raises the continuous noise level at the approach measuring stations of the South and Central Runway. Furthermore, the South Runway is used for takeoff in flights routed in a westerly direction during the period between 5:00 and 6:00.

The “DROp Early Morning” measure was re-introduced so as to also create noise respites for flights routed in an easterly direction. This measure bundles takeoffs on uneven days on Runway 18 West during the period from 5:00 to 6:00.

In areas where takeoff noise is generated, noise reductions are achieved by the introduction of aircraft types with the latest engine technology. Examples of these aircraft types include the Airbus A350, the Boeing 787, the Airbus A380, the Boeing 747-8, the BCS 100 and the Airbus A320Neo. The proportion of modern aircraft types used at Frankfurt Airport is continuously increasing and in 2019 it was nearly 16%.

The current monthly measuring results of all aircraft noise measuring stations are documented at *www.fraport.de* in the menu item “Infoservice aircraft noise and aircraft noise measurement”.

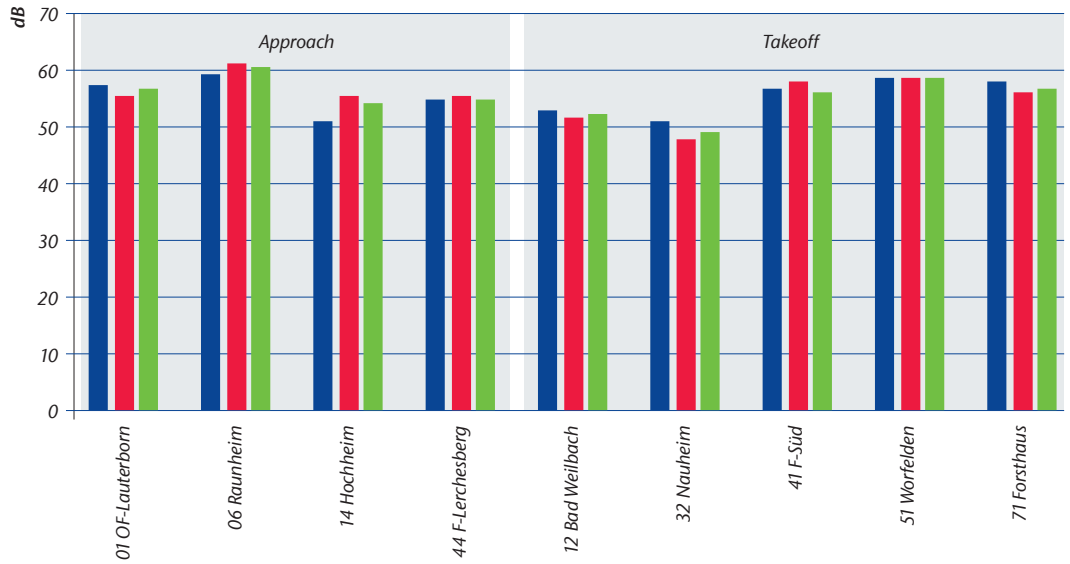
Number of aircraft movements per year, day and night



Number of aircraft movements per year during the day (incl. military aircraft up to 2005)

Number of aircraft movements per year during the night (incl. military aircraft up to 2005)

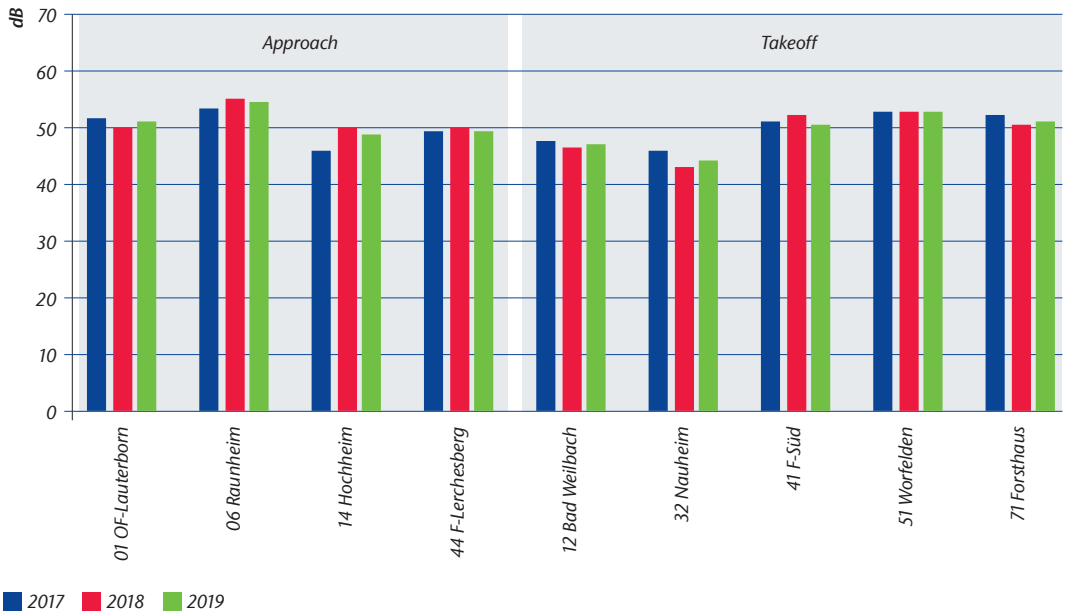
Energy equivalent continuous sound level Leq(3), by day (06:00 to 22:00 hours) at the 28 measuring stations of the Fraport parent company



2017 *2018* *2019*

Assessment period: the six months of the year with the heaviest traffic, usually May to October

Energy equivalent continuous sound level Leq(3), by night (22:00 to 06:00 hours) at the 28 measuring stations of the Fraport parent company



Assessment period: the six months of the year with the heaviest traffic, usually May to October

Management initiative

Monitoring aircraft noise
Fraport AG operates a total of 28 stationary measuring stations and three additional mobile measurement containers in the neighborhood of the airport. A final position for a stationary measuring point in the city of Mainz was agreed with the city governement following test measurements at different locations. The data from the measuring stations provide continuous monitoring of aircraft noise development. They are used to categorize aircraft types for noise-dependent takeoff and landing fees, and for documentation of unusual aircraft noise events.

The position of the measuring points and the associated current maximum level can be viewed in real time –120 minutes in the interactive app "FRA Noise Monitoring" at *https://franom.fraport.de/*

New package of measures for active noise abatement published
Measures for active noise abatement are directed toward avoiding or reducing the noise directly at the source, or at least achieving a better distribution. The expert committee Active Noise Abatement of the Airport and Region Forum (FFR), consisting of experts, representatives of the aviation industry and local authorities, is continuously working on noise abatement. The committee develops measures to reduce noise, assesses the results and makes recommendations on implementation.

In January 2018, FFR published a new package of measures for active noise abatement based on three pillars. Specifically, the cooperation partners agreed a long-term strategy consisting of Pillar I "Measures implementable over the short and medium term, Pillar II "Perspective measures" and Pillar III "Political and legal framework conditions". Furthermore, the package of measures provides for a consultation process in the case of noise-relocating measures in order to create a new quality of transparency and participation. In the case of the projected relocation of the AMITX short route, the procedure was completed at the end of 2019 with consultation on the measure in the Aircraft Noise Commission.

Implementation of the measures and the effects were managed with comprehensive monitoring for each of the measures introduced up to now, and the results were documented on the website of the UNH community information center (Environmental and Neighborhood House/ Umwelt- und Nachbarschaftshaus) .

Detailed information on the package of measures can be accessed on the UNH website at *https://www.aktiver-schallschutz.de/aktiver-schallschutz/aktiver-schallschutz-im-rhein-main-gebiet/* (in German).

Vortex generator reduces noise emission – upgrading the A320 Family
A circular pressure equalization opening of the tank on the underside of the aircraft generates tonal sounds during the course of the flight. The noise produced during this process is comparable with the noise that arises when air flows over the opening of a glass bottle. The faster the air flows over the opening, the louder the noise becomes. These characteristic sounds for the A320 Family are particularly noticeable in the approach phase when engine power is low. A vortex generator attached in front of the opening swirls the incoming air around and this prevents generation of tonal sounds. Evaluation of the measurement results indicates that the vortex generators reduce the level of noise during approach by up to 4 dB. Out of the aircraft from the A320 Family landing in Frankfurt, more than 90 percent have meanwhile been equipped with vortex generators.

New technology for precision approaches and a steeper approach is introduced
In 2014, installation of "Ground Based Augmentation System" (GBAS) navigation made Frankfurt Airport the first international air traffic hub in Europe to host satellite-based precision approaches for appropriately equipped aircraft. Together with our project partners, German Air Navigation Services (DFS) and Lufthansa, we hope that GBAS will make an important contribution to increasing efficiency and further noise-reducing approach procedures. An important target is the development of GBAS-based approaches with 3.2 degree approach glide angles for all runways. Up to now, these have only been possible using conventional ILS technology (instrument landing system) on the Runway Northwest, and here they have already been integrated into regular operations. Since the second quarter of 2017, the steeper approaches using GBAS navigation are being tested on the South and Center Runway. Up to 49 different approach routes can be supported with a single GBAS ground station. The new airport charges introduced in early 2017 incentivized the use of GBAS to make application of the GBAS navigation system even more attractive for airlines.

Procedure for alternate use of runways permits noise respites
From 23 April 2015, the noise respite model 4 recommended for testing by the Frankfurt Aircraft Noise Committee (FLK) and by the Airport and Region Forum (FFR) 2016 underwent testing for flights routed in a westerly direction, which is the main operating direction for the airport. This means that specific takeoff runways are not used alternately in the early morning and late evening Hours. Frankfurt is the first major international airport to support an operational restriction on nighttime flights including a preferred runway usage concept. This extends the nighttime quiet period by one hour in the approach corridors.

The main beneficiaries from bundling landings in the evening hour between 22:00 and 23:00 on the South Runway are the people living in the south of Frankfurt and to the north of Offenbach. However, Neu-Isenburg and southern Offenbach experience more noise pollution by the exclusive use of this runway during this hour. Nevertheless, the nighttime quiet period here is extended beyond the core time between 23:00 and 5:00 because the South Runway is not used for landings between 5:00 and 6:00. The morning approaches are then scheduled on the Runway Northwest and the Center Runway, all morning takeoffs are scheduled for the South Runway. The monitoring results obtained during the course of the test phase confirmed the potential for reducing noise pollution that had previously been calculated, such that the "noise respite" concept was incorporated into regular operations after a year of testing.

Since October 2015, the "DROps Early Morning" (Dedicated Runway Operations) procedure has been used for flights operated in an easterly direction. This procedure had to be temporarily suspended in conjunction with testing the noise respite model 4. In combination with the noise respite model, this procedure is pursuing the approach of creating local times with reduced noise pollution during periods with low traffic as a result of alternating use of the takeoff runways.

System of noise-related airport charges is further nuanced
Since as early as 1993, landing and takeoff charges based on aircraft noise have been used as an additional component in active noise abatement. The charges were initially based on the noise certification data of the individual aircraft types (so-called "noise certificates") but from 2001 the charges were based on the takeoff and landing noise values measured at Frankfurt Airport. This allowed the charges to be based on the noise footprint actually documented at the location itself and facilitated a more nuanced differentiation of the noise-related charges. The differentiation system was determined by Fraport on the basis of measurements for the level of noise for different aircraft types. The system has since undergone continuous advanced development. The new airport charges introduced effective 1 January 2017 provided an even more nuanced distribution of charges between quiet and loud aircraft.

From 2020, the airport charges will include a new element in relation to noise charges for aircraft movements during the marginal nighttime hours (between 22:00 – 23:00 and 5:00 – 6:00) or during core nighttime. If an aircraft does not comply with the noise abatement requirements of chapter 4, ICAO Annex 16 as a minimum, the relevant noise charge will increase. This is intended to provide an incentive to use aircraft during the hours of nighttime that meet the noise conditions for the licensing of aircraft in force since 2006.

You will find additional information on active noise abatement at *https://www.fraport.com/en/business-areas/operations/airport-charges.html*

Financial resources provide for passive noise abatement measures

The aim of passive noise abatement is to reduce the external noise impacts in interior rooms by carrying out appropriate adjustments to building structures. Around 150 million euros have been provided for the current passive noise abatement program. Structural noise abatement measures on buildings (exceeding statutory requirements) have been brought forward and expanded using additional financial resources from Fraport's regional fund.

The passive noise abatement program is based on the Zoning Plan Procedure Resolution adopted by the Hessian Ministry of Economics, Energy, Transport and Housing (HMWEVL) relating to the expansion of Frankfurt Airport on 18 December 2007 and the definition of the corresponding noise abatement area by the State Government through a legal directive. This came into force on 13 October 2011.

Residents whose property is located in the daytime abatement zone 1 within the noise contour LAeq 65dB(A) or in the nighttime abatement zone within the noise contour LAeq 60dB(A) were able to apply for resources to finance passive noise abatement over a period of five years immediately after the Regulation on the Noise Abatement Zone came into force on 13 October 2011.

After the expiry of this five-year period on 12 October 2016, claims relating to structural noise abatement measures on builidngs could be made by residents with property in areas less impacted by noise in accordance with the Act for Protection against Aircraft Noise from 13 October 2016 for a further five years, i.e. until 12 October 2021. By the middle of 2020, approximately 12,000 applications had been submitted for approximately 23,500 households within the abatement zone.

Further information at
www.fraport.de/schallschutz


KBU 0003
ITW GSE

Environmental aspect: Climate gases

Type of environmental aspect		*Direct*	*Indirect*
Assessment of the environmental aspect	*Materiality:*	*High*	*High*
	Controllability:	*High*	*Poor*
Responsible process owner(s)	*Fraport parent company: Operation of buildings, plants and vehicles.* *Third parties at the airport: Operation of buildings, plants, vehicles, aircraft.*		
Indicator(s)	*Frankfurt Airport, limit of the LTO cycle: CO_2 emissions (absolute) [CO_2 t].* *Fraport parent company: CO_2 emissions (absolute, relative to the traffic unit) [CO_2 t; t CO_2/traffic unit].*		

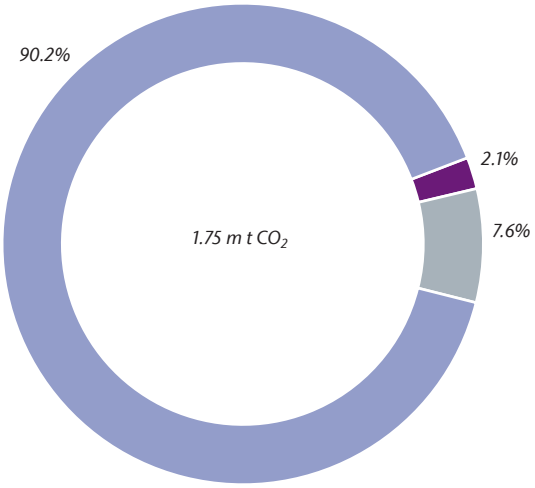
Trend(s)

CO_2 emissions by the airport
Total CO_2 emissions by Frankfurt Airport were approx. 1.75 million tonnes of CO_2 in 2019, calculated within the limits of the LTO cycle (= Landing and Take Off Cycle) up to an altitude of 3,000 feet (914 m) above ground level. More than half of these emissions (58%) originated from the operation of the aircraft (including use of Auxiliary Power Units – APU), 23% from inbound and outbound travel by passengers and employees to and from the airport. Some 16% of emissions are generated by electricity, district heating and district cooling, and only 3% were caused by vehicles and ground support equipment at the airport itself. Over recent years, the CO_2 emissions from the airport have been roughly at the same level in spite of a huge increase in traffic units (plus 29% since 2005).

CO_2 emissions by the Fraport parent company
The proportion of the Fraport parent company in the total emissions by the airport was 9.8% in 2019. 2.1 percentage points of total emissions were caused by direct emissions, primarily by the operation of the vehicles and mobile ground support equipment. The remaining 7.6 percentage points were attributable to the energy supplied (electricity, district heating and district cooling). Systematic quantifying of CO_2 emissions commenced at the beginning of 2005 and since then CO_2 emissions have come down by 35.5% in absolute terms despite growth in infrastructure and increased air traffic. In 2019, the absolute and the specific CO_2 emissions at Fraport AG amounted to 170,310 tonnes and 1.86 kg CO_2 per traffic unit respectively.

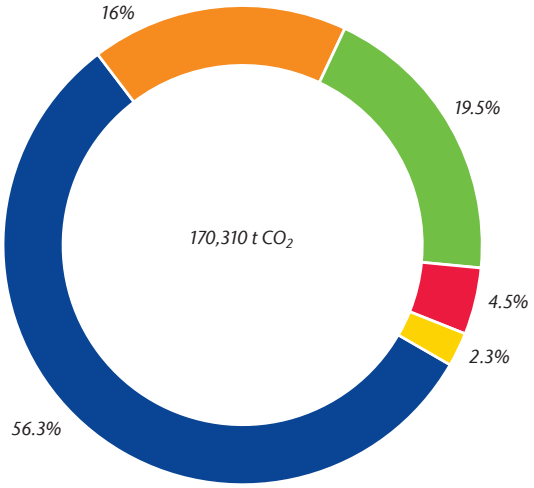
Apart from measures to improve energy efficiency, the main factor influencing emissions here is the continuous reduction in the ecological impact of purchased electricity caused by a number of factors including the rapidly expanding proportion of renewable energy.

CO_2 footprint for Frankfurt Airport ...



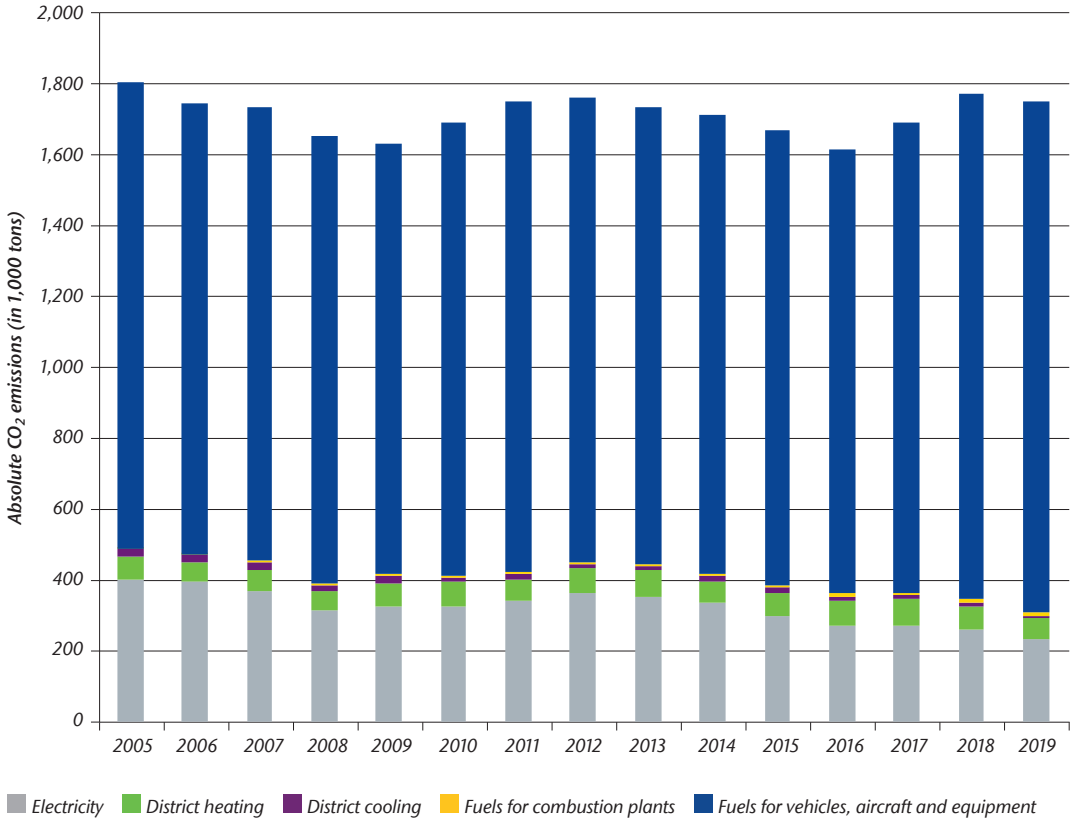
- Scope 1 (own consumption by the Fraport AG)
- Scope 2 (purchasing of energy by the Fraport AG)
- Scope 3 (third parties at the airport including air traffic in the landing and takeoff cycle)

... and Fraport AG, calendar year 2019

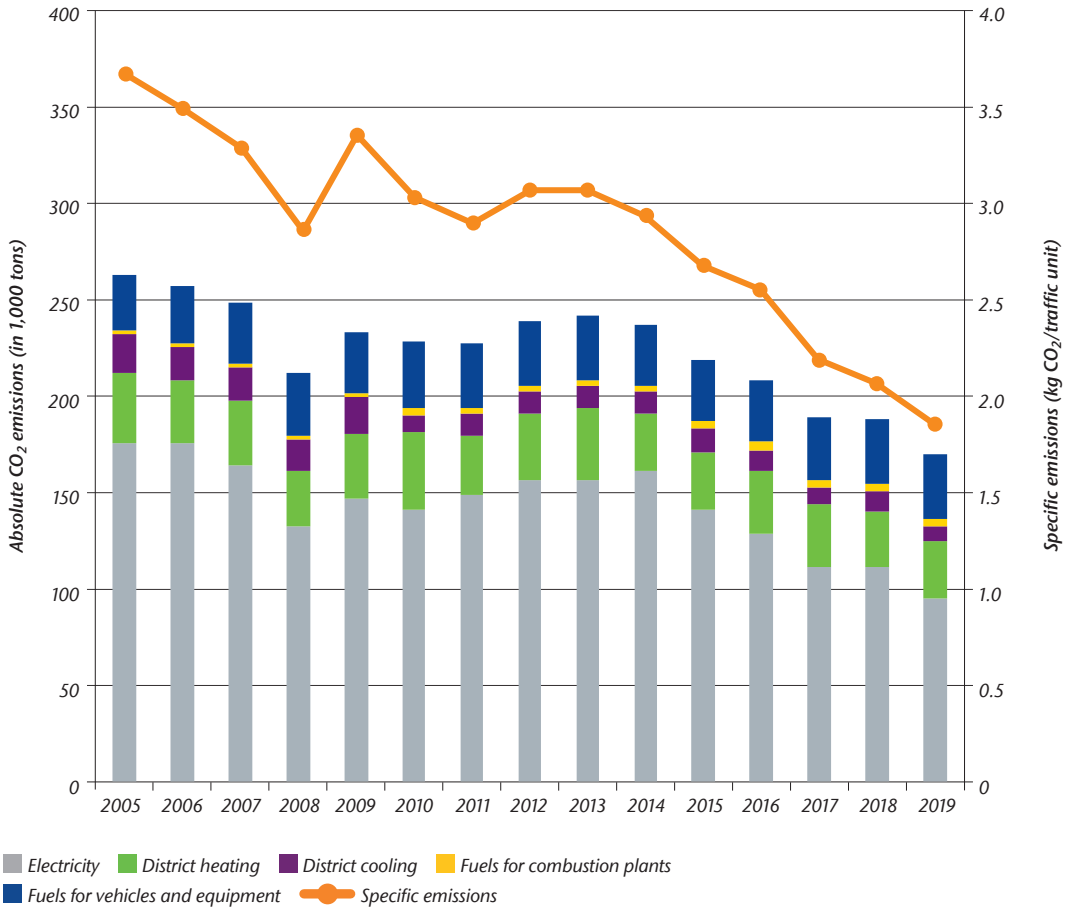


- Electricity consumption by the Fraport parent company (Scope 2)
- Consumption of district heating by the Fraport parent company (Scope 2)
- Operation of vehicles and equipment (Scope 2)
- Consumption of district cooling by the Fraport parent company (Scope 2)
- Miscellaneous
- Operation of emergency power units (Scope 1)
- Operation of fire-fighting training facilities (Scope 1)
- Operation of fuel combustion plants (Scope 1)

CO_2 emissions at Frankfurt Airport (Fraport parent company, flight operation of the airlines up to an altitude of 914 m and third parties)



CO_2 emissions Fraport parent company



Management initiative

In 2017, we defined new climate protection targets for the year 2030 based on the climate protection plan drawn up by the German Federal Government. By that date, the CO_2 emissions from Fraport AG are projected to have fallen to 80,000 tonnes. Compared with the status in 1990, which is the baseline year for the international climate protection agreement, this is equivalent to a reduction of 65%. The relative emission per traffic unit (one passenger or 100 kg airfreight or airmail) is projected to fall to 0.9 kg CO_2.

Improvement in environmental performance with the Airport Carbon Accreditation Program
Fraport participates in Airport Carbon Accreditation (ACA), a program of the Airports Council International Europe (ACI Europe), the umbrella organization for the airport operators, with the objective of motivating the maximum number of European airports to implement comprehensive CO_2 management and CO_2-neutral operation. The Airport Carbon Accreditation Program has meanwhile become the global sector standard for CO_2 management at airports.

This program will enable the environmental performance to be improved in relation to climate gases. The highest level of 3+ (climate neutrality) can be reached in four stages. Frankfurt Airport was the first airport to be included in the program and was accredited to Level 2 of the Airport Carbon Accreditation in 2009. Reporting was expanded for the upgrade to Level 3 by including information on emission sources which have to be allocated to “Scope 3” in accordance with the Greenhouse Gas Protocol (GHG Protocol) and the upgrade was granted at the beginning of 2012. These include operation of aircraft in their parking positions on the ground in stationary operation and ground run-ups, the landing and takeoff cycle up to 3,000 feet, and the operation of buildings and ground handling vehicles of third parties, the supply of aircraft with ground power supply, travel to and from the airport by passengers and employees, and business trips. The dialogue with companies based at the airport was also intensified.

Fraport implements company-wide climate protection project
The management activities of the Fraport parent company primarily relate to the emissions within their direct responsibility. However, they also have a role to play in those emissions where managers are only indirectly involved in their generation and they can only exert an indirect influence. Fraport

has brought together activities on climate protection in a project which essentially concentrates on three fields: energy refurbishments, implementation of investments in environmental efficiency measures, and operational energy management.

Portfolio of buildings is upgraded to low-energy status
A rolling program of refurbishment has been ongoing in a project for the air-conditioning control centers at Terminal 1 since 2007.

Energy-saving measures are also being optimized in office and service buildings at the Fraport parent company. Typical measures include replacing pumps and fans with more efficient components, hydraulic balancing of heating systems, and upgrading windows and doors.

Digital rendering of buildings helps chosing the correct measures
Fraport uses the innovative instrument of digital rendering to select the right energy efficiency measures in buildings. This involves examining all the marginal conditions for a building: the structural engineering properties of the building shell, internal heat sources such as illumination and operational equipment, and the outside temperature, wind speed and the wind direction impacting on the building. The performance data of the equipment providing a comfortable interior climate are entered in a software tool. This software then integrates additional factors such as the influence of external air through doors and heat dissipation and CO_2 emissions from passengers.

Temperature and CO_2 sensors in buildings and operational analyses for technical building equipment are then used to calibrate the model and this is adjusted to match the actual energy status. A range of optimization measures is then played through virtually and evaluated. The result is a comprehensive picture of the energy budget for the building and the energy required for it.

Lighting and air-conditioning are harmonized at sites of use
Alongside very intensive measures to reduce CO_2 in the portfolio of buildings, a series of operational measures is being implemented as follows:
– Optimization of control for ventilation systems in the terminals.
– Scaling back lighting in the terminals when they are not being used through adjustment of the switching times. Shutting down air-conditioning systems in the terminals at night.
– Dimming lighting in parking garages at Terminal 1 and in the employee parking garage during the period from midnight to 4:00
– Equipping lighting in the vicinity of the exterior walls of the parking garages with sensors to detect exterior light.

New buildings are planned for optimum energy use
The key issue in new buildings is to ensure maximally efficient use of energy for subsequent operation. Dynamic building simulations are carried out for selected building projects with the aim of reviewing energy use in the building plans and optimizing efficiency measures at the planning stage. The cornerstones of energy concepts at Terminal 3 include the following:
– Covering the cooling requirement by free cooling and highly-efficient refrigerating machinery.
– Usage of internal loads and dissipated heat from the baggage handling system to provide heat.
– Use of LED lighting.
– Intelligent use of daylight.
– Short pipe and wiring distances with local configuration of air-conditioning centers.

Energy use optimized for baggage conveyor system
Fraport is committed to a variety of measures including exchange of old motors for more efficient ones, downsizing of power units, systematic shutdowns of conveyors if utilization capacity permits, and installation of lower-friction components.

The use of LED lamps is gradually being expanded
The use of LEDs is an important lever in relation to energy savings and the reduction of maintenance costs. Fraport is gradually introducing LED technology in various areas at Frankfurt Airport.

Vehicle fleet is gradually being converted to alternative drives
The use of low-emission vehicles is a key focus of our efforts directed toward protecting the climate. Compared with the vehicles powered by an internal combustion engine, this drive technology is particularly suitable for the short distances covered by traffic at the airport and makes a contribution to limiting the impact on air pollution. Approximately 14 percent of Fraport vehicles operating at Frankfurt Airport today are powered by electric motors. This includes a lot of energy-intensive special-purpose vehicles, such as pallet loaders, tow-tractors and conveyor-belt trucks, but also cars and other transport vehicles. At the end of 2019, around 500 electric vehicles were in use at Fraport AG. As part of a funding project by the State of Hesse, Fraport is currently testing two electric buses for passenger transport.

Fraport and the Lufthansa Group have bundled their individual activities at Frankfurt Airport with support from the State of Hesse in the initiative “E-PORT AN – Electromobility at Frankfurt Airport”. The aim is to convert aircraft handling to alternative drives over the long term. The fuel-cell drive for individual types of vehicle is also an option here and this is increasingly becoming the focus for Fraport.

Bike pool for employees
It is becoming increasingly possible for employees to borrow bicycles and pedelecs for cycling to various building locations of Fraport AG. This provides the option of environmentally friendly transport. The offer has been well accepted. A total of some 900 employee bicycles are in use at Frankfurt Airport.

Conclusion of a power-purchase agreement for green electricity
In future, a large proportion of the electricity requirement of Fraport AG at Frankfurt Airport is to come from wind energy. Fraport intends to conclude an agreement with an operator of an offshore wind farm to take a minimum amount of green electricity every year from 2025 at the latest. As a consequence, Fraport will be able to significantly reduce its CO_2 emissions in Frankfurt from the current level of around 170,000 tonnes a year to 80,000 tonnes a year by 2030. As part of this "power-purchase agreement", Fraport intends to source electricity from wind-power turbines being newly constructed.

Expansion of solar energy at the airport
Fraport is committed to generating its own electricity at the airport. At the moment, the first large-scale photovoltaic plant at Frankfurt Airport is being constructed on the roof of a new cargo hall at CargoCity South. In future, this is intended to generate more than 1.5 million kilowatt hours of electricity each year. This is enough electricity to supply more than 450 households of four people with electricity for one year. Fraport is also committed to construction of a photovoltaic plant on the parking garage for the new Terminal 3. One of the functions could be to supply the charging stations located in this parking garage with renewable electricity.

Environmental aspect: Energy consumption

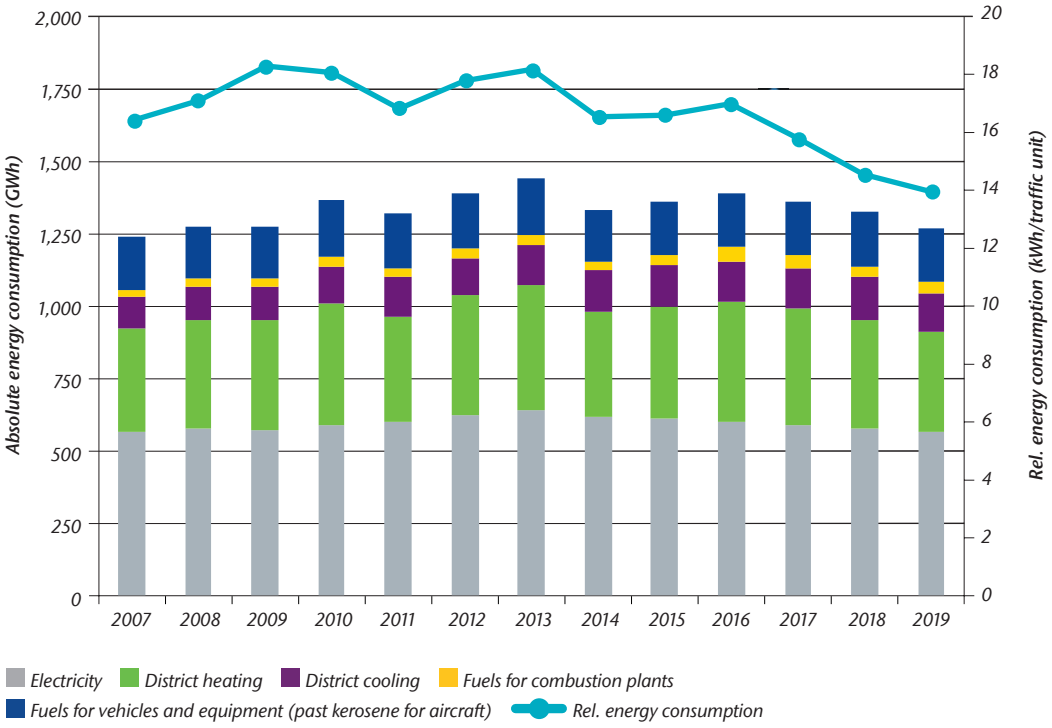
Type of environmental aspect		*Direct*	*Indirect*
Assessment of the environmental aspect	*Materiality:*	*High*	*High*
	Controllability:	*High*	*Medium*
Responsible process owner(s)	*Fraport parent company: Operation of buildings, equipment and vehicles.* *Third parties at the airport: Operation of buildings, equipment and vehicles.*		
Indicator(s)	*Frankfurt Airport: Consumption of electricity, heat (district heating, local heating), district cooling, fuels for vehicles (absolute, relative per traffic unit) [GWh, kWh/traffic unit].* *Fraport parent company: Consumption of electricity, heat (district heating, local heating), district cooling, fuels for vehicles (absolute, relative per traffic unit) [GWh, kWh/traffic unit].*		

Trend(s)

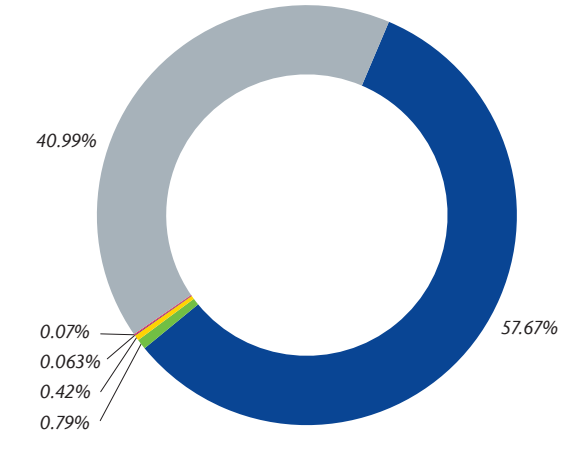
Energy consumption at Frankfurt Airport
The primary energy sources are electricity and district heating. The development of total energy consumption reflects the continuous expansion of infrastructure and growth in traffic volume. During the years from 2011 to 2013, the absolute energy consumption rose to 1438 GWh. This was due, among other things, to the opening of Runway Northwest, Pier A-Plus at Terminal 1, including the associated expansion of stationary ground power supply units, the baggage handling system, and the apron lighting, the Group headquarters, two additional new buildings and Fire Station 4. The energy measures described in the section on climate gases counteracted the increase in absolute consumption driven by the expansion so that in 2019 a value of 1268 GWh was achieved. In 2016, the specific value amounted to 13.9 kWh per traffic unit.

Energy consumption of the Fraport parent company
The Fraport parent company itself is the biggest consumer of energy at Frankfurt Airport. Energy consumption here remained relatively constant at approx. 750 million kWh per year between 2005 and 2009. Starting in 2011, consumption started to rise as a result of the expansion. The absolute and specific consumption by the Fraport parent company essentially reveals the same trend as total energy consumption at the airport and in 2019 amounted to 731 GWh or 8.0 kWh per traffic unit.

Energy consumption broken down by energy carriers at Frankfurt Airport (Fraport parent company, FCS, NICE, third parties) and specific energy consumption (kWh per traffic unit)

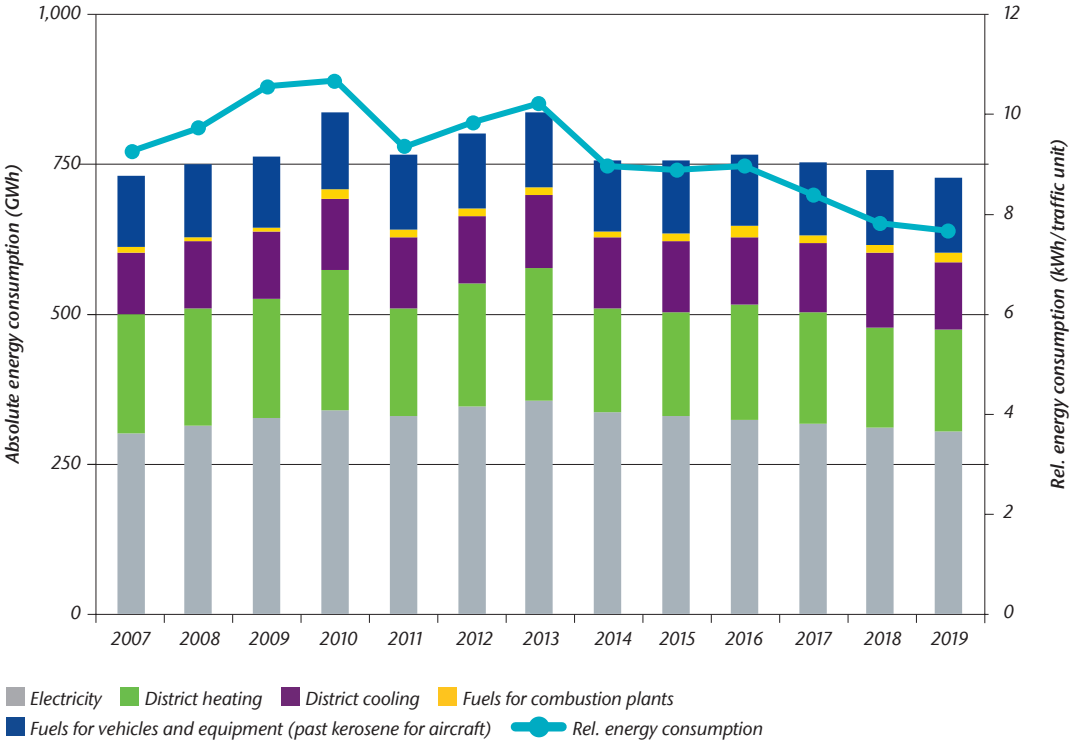


Energy consumers* at Frankfurt Airport in 2019



** Fuels for vehicles, electricity, heating, cooling*

Energy consumption at the Fraport parent company broken down by energy sources and specific energy consumption (kWh per traffic unit)



Management initiative

The issues
- Energy savings in buildings and equipment in the portfolio of buildings and new buildings
- Equipping the vehicle fleet with electric motors
- Procurement of regenerative generated electricity
- Photovoltaics on site

are described in the section on climate gas emissions.


KPMG
Lufthansa
DB

Environmental aspect: Traffic

Type of environmental aspect	*Indirect*	
Assessment of the environmental aspect	*Materiality:*	*Moderate*
	Controllability:	*Poor*
Responsible process owner(s)	*Passengers: Choice of transportation to and from the airport.* *Employees: Choice of transportation to and from the airport.* *Public carriers: Offer of rail and bus connections.* *Airline companies: Offer of integrated products rail/flight.* *Truck and cargo forwarders: structure of smooth-running airfreight dispatch and return.* *Fraport parent company: Impact on the appeal of the link between the airport and the public transportation network.*	
Indicator(s)	*Frankfurt Airport: Proportion of passengers who use public transport (Percent originating passengers).* *Fraport parent company: Proportion of employees who use public transportation (Percent employees).*	

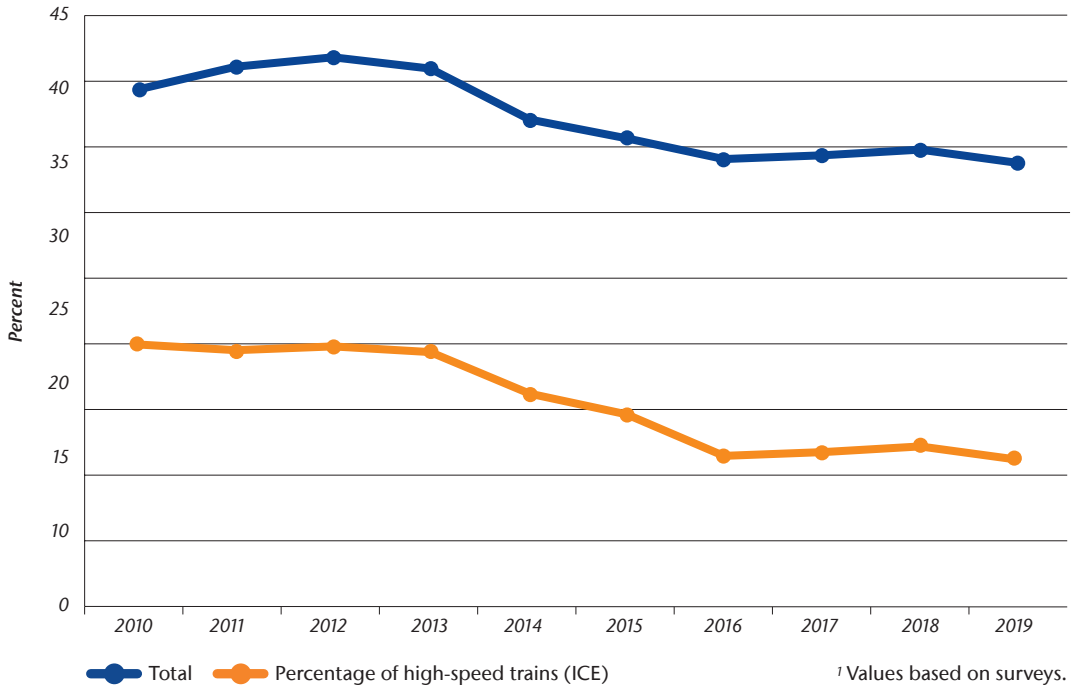
Trend(s)

Intermodal traffic links give passengers and employees the opportunity to go to or leave the airport using public transportation.

The use of public transport (suburban rail service, regional rail network, regional express, ICE, IC, long-distance trains, buses) by originating passengers to travel to and from the airport has been declining during recent years and most recently amounted to 34 percent in 2016, in spite of further improved intermodal service packages and services, such as expansion of ICE Rail & Fly and Code Share connections. In 2012, the proportion was still 41.6 percent. Potential causes for this trend are the development of the originating passenger volume and petrol prices, the availability of value-for-money vacation parking spaces around the airport and strike-related cancellations of train connections. Irrespective of this, Fraport will continue to pursue the improvement of intermodal service packages and services, and support the airline companies and German Rail (Deutsche Bahn) in expanding the new product LH Express Rail. This product is geared toward transferring further short-distance flights to rail, for example from Hanover or Leipzig to Frankfurt Airport.

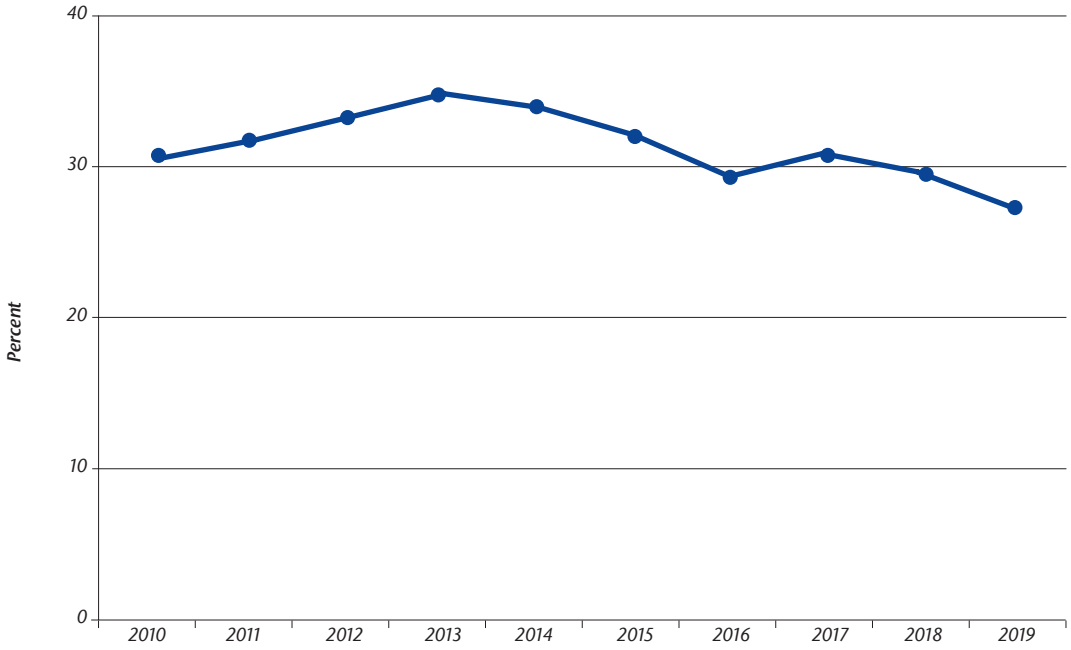
The proportion of employees at Fraport AG using public transport to get to their workplace is also declining and stood at 28.6 percent in 2019.

Proportion of passengers who use public transportation (rapid transit trains, regional trains, regional express, high-speed trains (ICE), intercity trains (IC), buses)[1]



[1] Values based on surveys.

Proportion of employees of the Fraport parent company who use public transportation to travel to and from work[1]



[1] Values based on surveys.

Management initiative

Further optimizing appeal of intermodal packages at Frankfurt Airport
Fraport works together with German Rail (Deutsche Bahn), Lufthansa (product name: ExpressRail) and other airlines to enhance the appeal of intermodal packages at Frankfurt Airport. Measures designed to promote this appeal include the development of integrated travel offers and support for expanding rail links (routes, frequencies) and ongoing development of the AIRail product. Furthermore, the package of scheduled long-distance bus connections is being improved from and to the German regions which are not optimally connected to the long-distance rail network of German Rail (DB) to Frankfurt Airport. Long-distance bus stops are being set up to serve this mode of transport.

Car-sharing platform launched
In November 2019, Fraport AG partnered with provider Ride2go to launch a car-sharing platform for employess at Frankfurt Airport. *(https://frankfurt-airport.ride2go.com/)*

The aim of this cooperation is to make it simple for employees to set up car clubs, thus reducing the number of employees driving alone in their cars to the workplace.

The user figures show that there was a lot of interest in the car-sharing platform before the outbreak of the coronavirus pandemic. When the car-sharing platform was launched in November 2019, the site immediately received almost 3000 hits.

Fraport provides Job Ticket for employees
Fraport employees are motivated to use public transport with the Job Ticket provided free of charge. Nearly 30 percent of the workforce took up this offer. However, many timetables frequently preclude more extensive use of the Job Ticket because they fail to meet the requirements of shift work. Additional negative factors are the lack of connections between the airport and some residential areas where employees live, or connections only at unattractive times. To this end, the regional RMV public transportation network (Rhein-Main-Verkehrsverbund) introduced 24-hour operation at Frankfurt Airport for suburban train services routed to the airport in order to be able to provide commuters with an improved level of service. Other companies operating at the airport (DHL) are now also offering the Job Ticket to their employees.

Environmental aspect: Air pollutants

Type of environmental aspect		*Diredt*	*Indirekt*
Assessment of the environmental aspect	*Materiality:*	*Low*	*High*
	Controllability:	*Medium*	*Poor*
Responsible process owner(s)	*Third parties outside the airport: Road traffic, trade and industry, direct heating, etc.* *Third parties at the airport: Operation of buildings, equipment, vehicles, aircraft.* *Fraport parent company: Operation of buildings, equipment and vehicles.*		
Indicator(s)	*Air traffic at Frankfurt Airport (up to an altitude of 300 m): Emissions of the air pollutants NOx, benzene, PM 10 (absolute, relative per traffic unit) [t, g/traffic unit].* *(see accounting principles for the environmental situation, air emissions).*		

Trend(s)

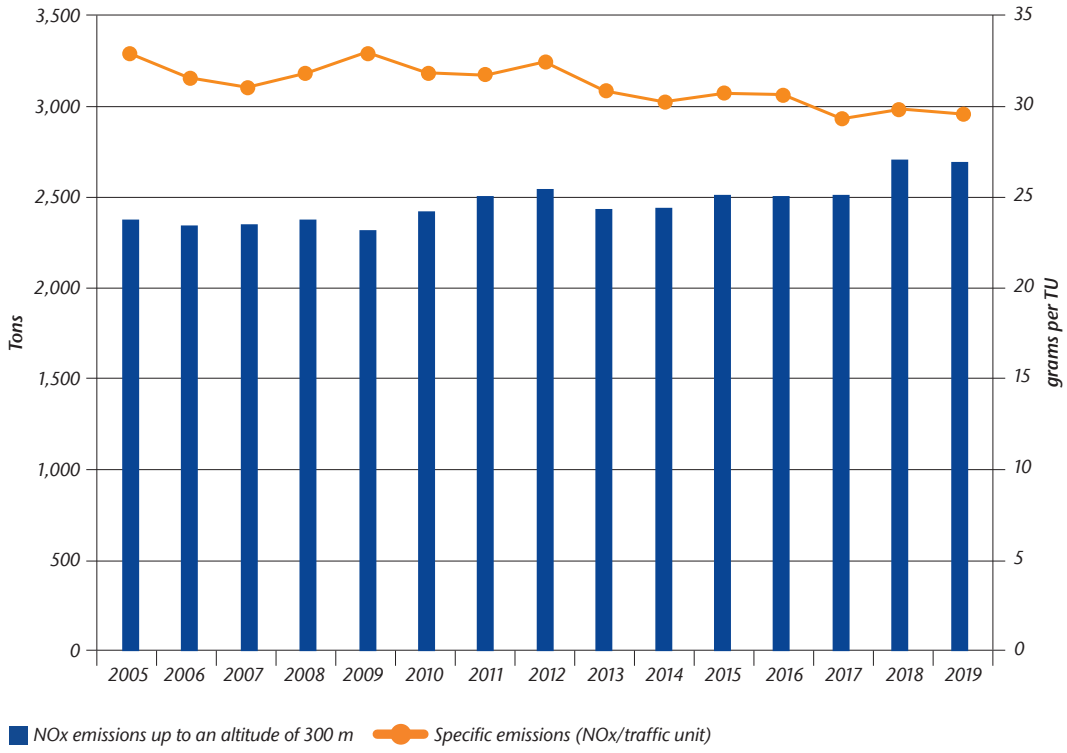
Emissions from the airport

The emissions from the airport are primarily caused by air traffic. The second most important cause relates to emissions on the ground generated by traffic on the apron and by automobiles travelling to and from the airport, and road traffic at and around the airport.

Aircraft emissions have been calculated continuously since 2000. The method of logging pollutant emissions from aircraft to create an inventory was adjusted to comply with the ICAO-Doc 9889 “Airport Air Quality Manual”.

The most relevant pollutant in aircraft emissions is nitrogen oxide (NOx) with 2,694 tonnes in 2019. This value is slightly below the year-earlier level. The increase in NOx emissions in 2018 resulted from a significant increase in the volume of traffic. The specific emission amounts to approximately 29 grams per traffic unit. The data relate to aircraft emissions up to an altitude of 300 m. The impact of emissions from a greater height makes an impact of less than 10% at ground level.

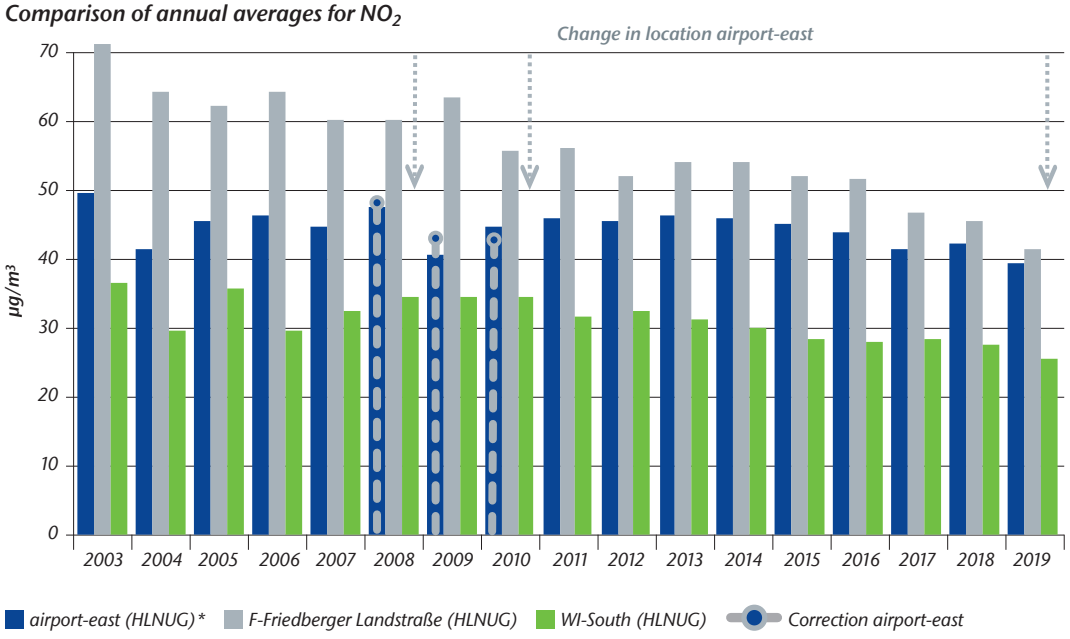
NOx aircraft emissions (absolute and specific) at Frankfurt Airport up to an altitude of 300 m



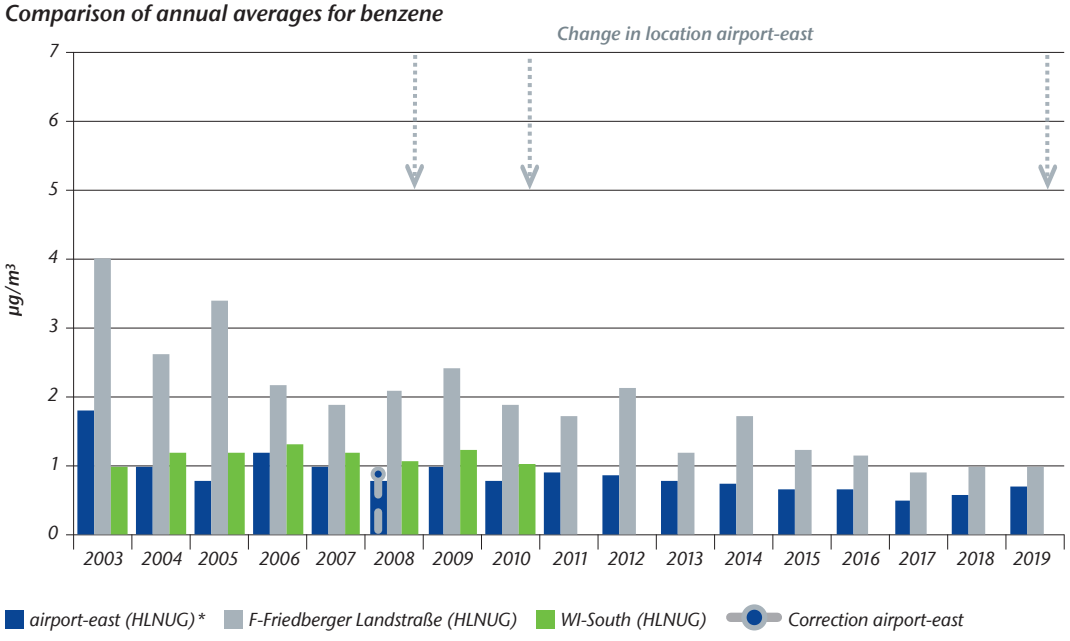
Comment: The engine database and the LASPORT calculation software were updated in 2019. Emissions were recalculated retroactively from 2019 to 2005.

Air pollutants at Frankfurt Airport
The results of the air quality measurements at Frankfurt Airport fit well into the existing knowledge about the regional pollution situation and since the beginning of continuous monitoring in 2002 pollution has been at the level of the urban surroundings. Emission levels reflect the strong local influence of road traffic. Even if an impact from aircraft emissions is assumed, this impact is very difficult to identify using measuring instruments. Even after the expansion of the airport, pollutant concentrations have tended to come down, in line with expectations in the forecasts used for the expansion licensing procedure.

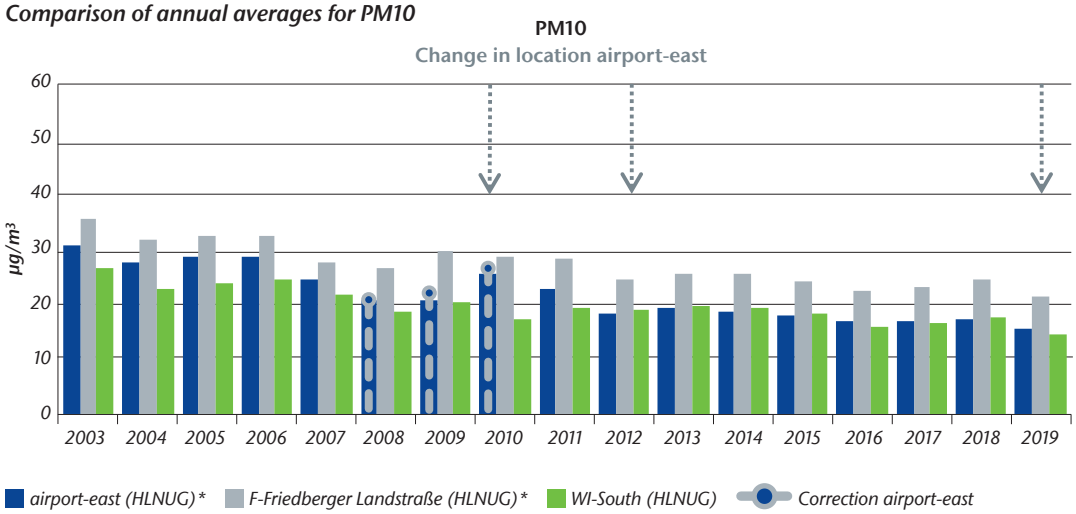
Comparison of annual averages for NO_2



Comparison of annual averages for benzene



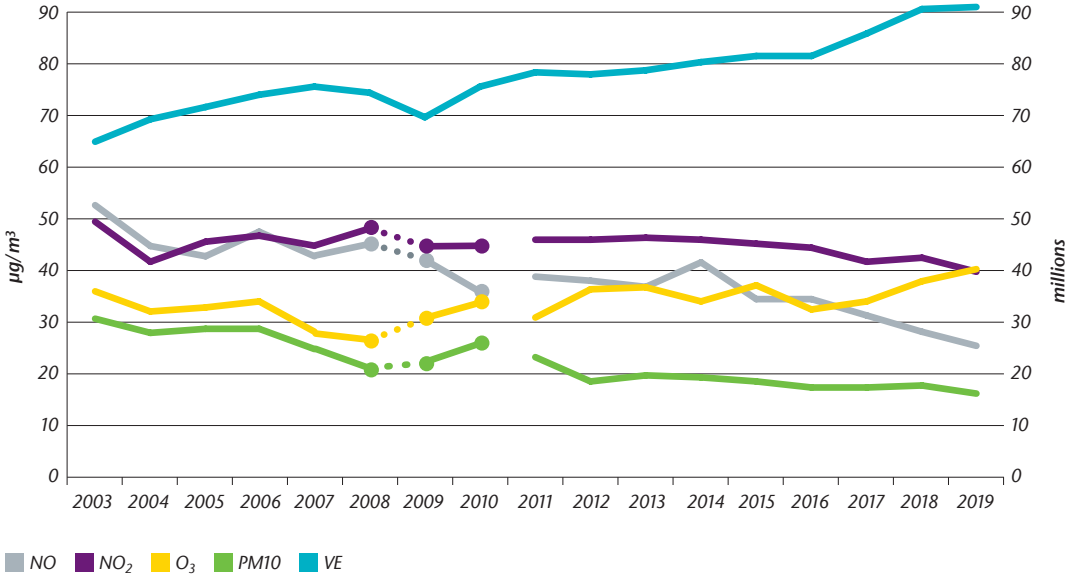
Comparison of annual averages for PM10



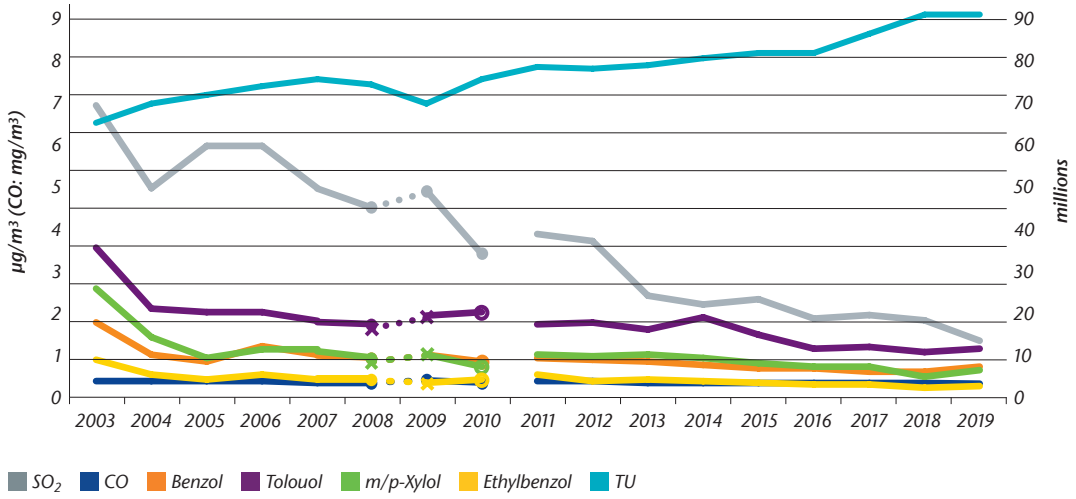
** In 2017, the air monitoring station Flughafen-Ost (formerly SOMMI1) was transferred to the non-profit Umwelthaus GmbH (UNH) in Kelsterbach, an institution of the State of Hesse. The specialist authority HLNUG (Hessian State Agency for Nature Conservation, Environment and Geology) is responsible for operating the stations and evaluating the data.*

Comment on the air monitoring station Airport East Corrections for data gaps at the site due to operational or equipment failures. 2008/2009 Small-scale relocation from 400m in a south-westerly direction. November 2010 Relocation of the air monitoring station by approx. 1000 m in a north-northeast direction. In October/November 2019, small-scale relocation < 250 m in a south-westerly direction. The station relocations took place due to structural changes to the flight operation areas.

Development of the annual average (Station S1) and traffic units (TU)
Annual time series (a)



Annual time series (b)



1 VE = 1 passenger with baggage or 100 kg air freight or air mail
Solid lines: Measured values of a site, dotted lines: small-scale relocation 2008 / 2009 to the southwest, 2010 relocation by approx. 1000 m in a north-northeasterly direction.
Thick dots: Correction for data gaps at the site, crosses: small-scale data at the site without correction, circles: Data from two sites without correction possibility, squares: data from two sites without correction due to a small-scale site change < 250 m in October/November 2019 in south-western direction.

Management initiative

Air pollutants are measured continuously
Air pollutants have been continuously recorded on the airport site by two measuring stations since 2002. Measurements have been taken at up to five measuring stations. In September 2017, the air quality stations initially operated by Fraport itself were handed over to the non-profit Umwelthaus GmbH (UNH) in Kelsterbach, an institution run by the State of Hesse. The Hessian Agency for Nature Conservation, Environment and Geology (HLNUG) is now responsible for operating the measurement containers, and for the evaluation and provision of the measurement data. The Fraport parent company publishes detailed information on airport quality in its Air Quality Annual Report: *https://www.fraport.com/de/newsroom/fraport-mediathek/publikationen.html#luft*

Since December 2019, the latest measurement values from the airport stations are available (in German) for the public on the HLNUG website at: *https://www.hlnug.de/themen/luft/flughafen-frankfurt*

Calculation of pollutant emissions caused by air traffic
The contribution of air traffic to the total concentration of air pollutants at Frankfurt Airport is determined using the LASPORT dispersal model. Expert support from Fraport continuously provides assistance for further development of the model of LASPORT and the latest traffic and individual aircraft data are evaluated for this purpose (Test and Start-up of the LASPORT Version 2.3.10). This data platform provides nuanced information for the assessment of the air-pollution situation which can be used to provide transparent communication.

Emissions from stationary sources (e.g. heating, emergency power units) and the ground processes were determined during the course of the planning approval procedure for expansion of the airport for the baseline year 2005 and as a forecast for 2020. These data were continued for the reference year 2015 as preparatory work for the Rhine-Main Air Purity Maintenance Plan. A further update is currently being carried out for the project of the Federal Environment Agency to investigate ultrafine particles in the area surrounding the airport (reference year 2015). On this basis, the air pollutant emissions of all relevant emitters from airport operations are to be recorded by 2022 and an annual emission inventory be drawn up.

Fraport charges emission-dependent takeoff and landing fees
The emission-related charge is levied for each kilogram of nitrogen oxide equivalent (= emission value) emitted by an aircraft in the standardized Landing and Take-Off Cycle, LTO up to an altitude of 3,000 feet (914 meters) above ground level in accordance with the regulation ICAO Annex 16, Volume II). Airlines are charged for each landing and takeoff. The necessary details of aircraft and engine type are determined on the basis of an accredited fleet database.

Ultrafine particles
Unlike for conventional, threshold-limited air pollutants, airports have emerged as a key source of ultrafine particles (UFPs). As yet, there are no robust disclosures on the potential health impacts. Fraport has provided intensive support for investigations into ultrafine particles (UFPs) for some time now. These have been carried out through measures by HLNUG at Frankfurt Airport and also through participation in the working group of the UNH (Environmental and Neighborhood House). In August 2019, the working group on UFPs organized an expert hearing in order to obtain precise information about the current level of knowledge on the topic of ultrafine dust and to examine which evidence-based scientific findings can be obtained from this and what further concrete research is needed. At the moment, the working group is developing a study design for a UFP impact study, which will provide further in-depth knowledge and is intended to incorporate the latest measurement values from the HLNUG. The results of this impact study will then form the basis for an impact study on the potential health effects of UFPs planned at a later date.

Other management initiative
The issue "deployment of alternative drives" is described in the section on climate gases because it also affects the reduction of CO_2 emissions.


Lufthansa

Environmental aspect: Impacts on biodiversity

Type of environmental aspect	*Direct*	
Assessment of the environmental aspect	*Materiality:*	*High*
	Controllability:	*Good*
Responsible process owner(s)	*Fraport parent company*	
Indicator(s)	*Frankfurt Airport: Surfaced areas [km²]*	

Trend(s)

The total owned land of Frankfurt Airport amounted to 22.87 km² at the close of 2019. 11.04 km² of this area was surfaced.

Management initiative

Environmental measures for airport expansion have been almost entirely implemented
Following the resolution passed by the Hesse Ministry of Economics, Transport and Regional Development (HMWVL) on December 18, 2007, ecological measures for the expansion of the airport were defined in the Zoning Plan to compensate for the loss of the area and for human interventions in the natural environment and landscape in the form of mitigation, coherence and species support measures.

The loss of an area of 282 hectares of woodland required for the expansion measures was mitigated by planting a new of area of woodland measuring 288 hectares. This mitigation under forest legislation was divided into 13 reforestation areas in the same natural environment with a focus on the Rhine-Main Region. The reforestation programs have now been largely completed and already approved by the relevant government agencies.

To compensate for interventions made in areas protected by the NATURA 2000 European network of nature reserves, a wide range of coherence and species protection measures are also being carried out on more than 2,000 hectares of woodland close to the airport (including state-owned forest, Kelsterbach Forest, Fraport's own woodlands). These forest improvement measures will continue to help to safeguard this coherent (= integrated) network of conservation areas. This is being done by active regeneration of woodlands that are far removed from their natural state, e.g. coniferous forests, and converting them to areas that resemble natural woodlands. As well as removing plants that are not indigenous, commercial exploitation will no longer take place in future.

One of the mitigation measures implemented was the restoration of a former ammunition depot at Mörfelden-Walldorf covering some 100 hectares to its natural habitat. This measure means that this area is increasingly providing the local population with a recreation amenity. The former bunkers were dismantled and various measures have been implemented under species-protection legislation, such as the reinstatement of amphibian ponds and the conversion of two bunkers to winter quarters for bat populations. A particularly rewarding outcome is provided by bats already populating the newly established habitat in the first year.

On the airport site itself, the spaces between the newly built taxiways and the new runway are being developed to create nutrient-poor grasslands (approx. 85 hectares) and dwarf shrub heathlands (approx. 132 hectares). Indigenous seeds for this planting program were gathered on the airport site itself and in the surrounding area before being distributed on the areas being sown. The additional conversion of the sandy grassland and sand heaths from the former Kelsterbach transformer substation to open spaces in the Kelsterbach Forest (approx. 2 hectares) was successfully completed. Protected species such as maiden pinks and buckthorn thrived on these open spaces.

Success of ecological measures in the course of airport expansion is reviewed and documented
The implementation of the ecological measures described here and all other similar measures associated with the expansion of the airport are documented in an annual environmental-monitoring report with a focus on construction projects. In particular, the functional effectiveness of the measures is reviewed at regular intervals and the success of the measures verified in the environmental monitoring report as established in the zoning decision.

Environmental monitoring is also carried out to verify the effectiveness of the avoidance and minimization measures implemented under statutory legislation in advance of construction

work to protect species such as stag beetles, bats, sand lizards, natterjack toads and other protected species. The success of the measures is demonstrated by the species becoming established in the substitute habitats and the emergence and verification of new generations (reproduction).

The monitoring program established the following results in 2016:
- The Kelsterbach Forest continues to be a habitat for the middle spotted woodpecker and the black woodpecker. There have been no changes in the breeding behavior of the observed species. The nest boxes set up in the surrounding woodland areas (approx. 320 boxes) are being populated by the birds.
- 13 species of bat (e.g. Bechstein's bat, greater mouse-eared bat, Natterer's bat) have been identified. Since 2012, the number of previously known bat colonies has increased to eight. The artificially drilled tree hollows (350 hollows), the hanging flat bat boxes and the overwintering boxes (685 boxes) are being increasingly populated by the bats and used as roosting sites.
- Large numbers of amphibian species such as natterjack toads and agile frogs are increasingly being identified in new stretches of open water. A high rate of reproduction has also been verified for sand lizards in the settlement areas.

Ecological structural diversity at the airport site is improved
The areas between the takeoff and landing runways constitute approximately 600 hectares of unused green space. Most of this is only mulched once a year in late summer and therefore forms an important sanctuary for a large number of living organisms. In plant-sociology terms, the green spaces for the airport are essentially comprised of elements of annual colonies of ruderal species, sand grassland, sandy xeric grasslands, and mat grasslands and heathland. The skylark serves as a bioindicator species. The present population density between the takeoff and landing runways is currently 6 to 7 skylark plots per 10 hectares and is therefore significantly above the average for Germany as a whole.

Ensuring the sustainable use of woodlands
A large proportion of Fraport's own woodlands are not exploited as compensation for the negative impacts resulting from expansion of the airport. Other woodland areas are primarily used for climate protection and as recreational amenities. There is virtually no timber production.

Bees are used for biomonitoring
The Fraport parent company finances a project involving the use of bees for environmental monitoring at the airport and at two reference sites in the Hintertaunus mountain areas and along the A5 freeway. Samples of honey, pollen and mosses are analyzed for relevant environmentally toxic metals and polycyclic aromatic hydrocarbons. The samples analyzed to date indicate that verified concentrations at the airport complex are similar to residues at comparable sites. All values are well within the safe limits defined for human consumption. The development of bee populations and the honey yields are very good and similar at all three locations.

Fraport Environmental Fund sponsors ecological projects in the Frankfurt/Rhine-Main region
Since 1997, the Fraport parent company has been using its voluntary Environmental Fund to support nature and environmental conservation projects, ecological research projects, and environmental education programs in the Frankfurt/Rhine-Main region. Since the environmental fund was established, more than 1,150 projects have been funded to the tune of nearly 39 million euros in the period between 1997 and the end of 2019 – these projects range from purely conservation measures, such as maintaining orchard meadows or creating new stepping stones, through environmental education campaigns (e.g. exhibitions, field trips and advanced training programs), to the awareness campaign about the biowaste bin in German households.

The Rhine-Main Regional Park makes a major contribution to the appeal of the region and is by far the biggest project sponsored by the Environmental Fund. Alongside this project, the funding focus of the fund for some years has been on preserving and promoting biodiversity in the region as well as climate protection.

Minimizing the risk of bird strike with biotope management
Collisions between aircraft and individual birds and particularly with flocks of birds are a source of hazard. Since about 70 percent of all bird strikes occur at airports and in their immediate vicinity, Fraport as an airport operator is committed to keeping this risk to a minimum. Contrary to the approach at many international airports, Frankfurt focuses on a special system of biotope management. This involves taking action to minimize or avoid opportunities for breeding, resting and feeding. The bird-strike rate was 4.5 cases per 10,000 aircraft movements in 2019.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Environmental aspect: Water consumption

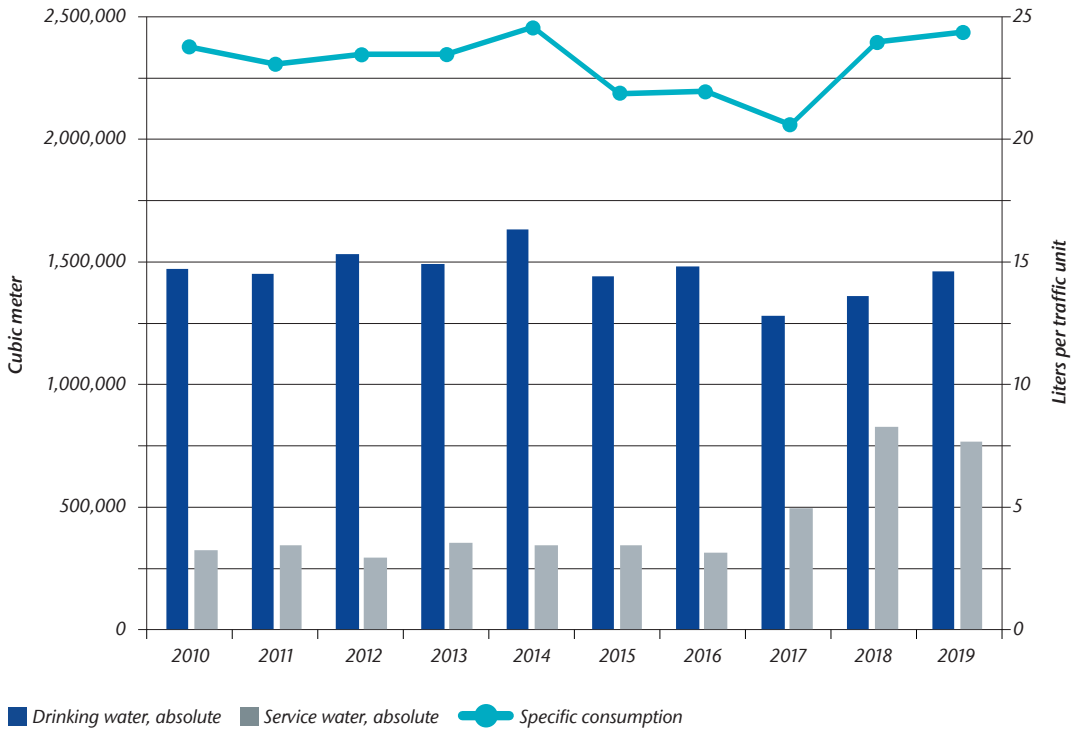
Type of environmental aspect		*Direct*	*Indirect*
Assessment of the environmental aspect	*Materiality:*	*Moderate*	*Moderate*
	Controllability:	*Medium*	*Medium*
Responsible process owner(s)	*Fraport parent company: network operators, consumers.* *Third parties at the airport: consumers.*		
Indicator(s)	*Frankfurt Airport: volume of drinking and service water (absolute, volume per traffic unit) [m^3, l/traffic unit].* *Fraport parent company: volume of drinking and service water (absolute, volume per traffic unit) [m^3, l/traffic unit].*		

Trend(s)

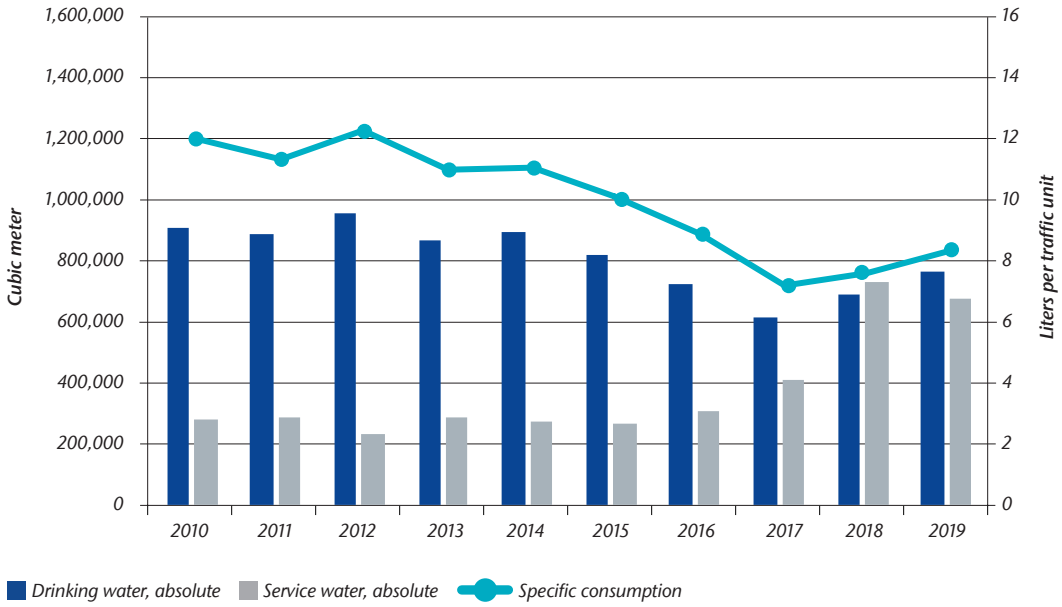
Water consumption at the airport
In 2019, a total of 2.209 million m³ water was consumed at Frankfurt Airport. The volumes of drinking water or service water included here amounted to 1.448 million m³ or 0.760 million m³ respectively in 2019. The volume of service water has risen sharply in the last three years due to the construction measures to the Terminal 3. The percentage of service water consumed by comparison with total water consumption amounted to 34.4 percent in 2019. The consumption of drinking water per traffic unit amounted to 24.15 liters in 2019.

Water consumption by the Fraport parent company
The total water consumed by the Fraport parent company amounted to 1.436 million m3 in 2019. The drinking water or service water consumption included here amounted to 0.760 million m³ or 0.675 m³ respectively in 2019. The proportion of service water consumed was 47.0% in 2019. The effect of the increase in service water consumption as a result of construction measures at Terminal 3 is particularly evident here. The drinking water consumption could be reduced by 21% in the period between 2007 and 2019. The drinking water consumption per traffic unit amounted to 8.31 liters in 2019.

Absolute consumption of drinking and service water and total water consumption per traffic unit at Frankfurt Airport



Absolute consumption of drinking and service water and drinking water consumption per traffic unit at the Fraport parent company



Management initiative

Consistent expansion of the use of service water
Fraport operates several rainwater treatment plants located on the site of CargoCity South and in Terminals 1 and 2. The new Pier A-Plus has also been equipped with a rainwater treatment plant. The service water is sourced from rainwater and groundwater (well water). When rainfall is low, purified water from the River Main is used. The service water is sourced through separate supply networks and supplied for sprinkler systems, toilet flushing and for watering landscaped areas. There is a complete service-water supply system in CargoCity South. In the north of the airport, Terminals 1 and 2 are supplied with service water.

Water-saving technology established as standard
A significant contribution to saving water has already been made in the past by converting from disinfection with chlorine to electrochemical disinfection of the tanks used in vehicles supplying water to aircraft and the introduction of circuit systems in vehicle washing equipment.

Environmental aspect: Wastewater

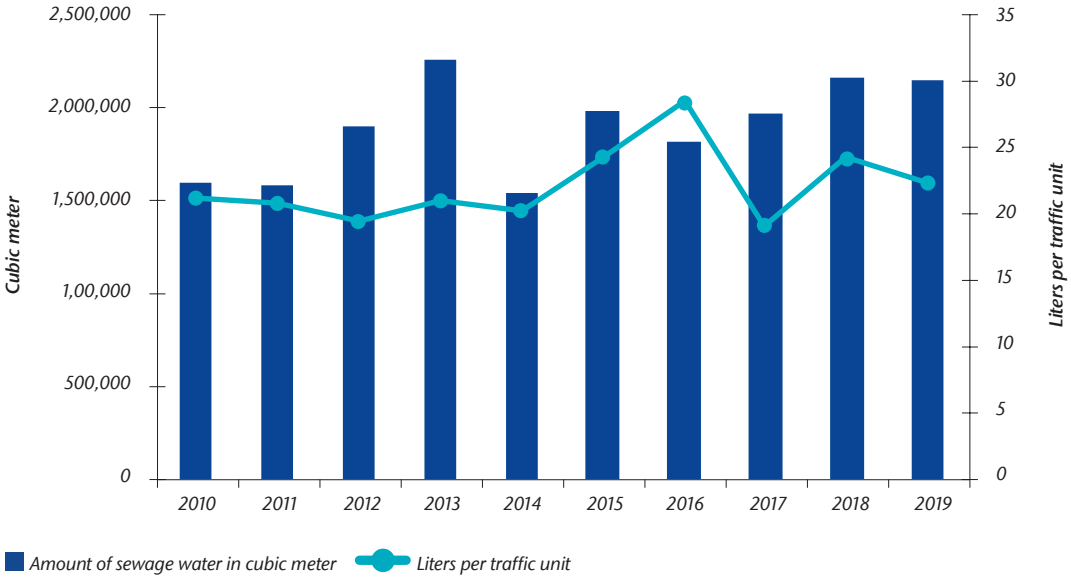
Type of environmental aspect		*Direct*	*Indirect*
Assessment of the environmental aspect	*Materiality:*	*High*	*High*
	Controllability:	*Medium*	*Medium*
Responsible process owner(s)	*Fraport parent company: Operation and use of the drainage networks and other wastewater systems. Third parties at the airport: Use of wastewater drainage networks and other wastewater systems.*		
Indicator(s)	*Frankfurt Airport: volume of sewage water (absolute, relative to the traffic unit) [l, l/traffic unit]).*		

Trend(s)

The volume of sewage water at Frankfurt Airport in 2019 amounted to 2.14 million m^3. The trend over recent years has been for sewage water to rise. While the absolute volume of sewage water has been increasing as a result of the increase in passenger volume over recent years, the volumes of sewage water relative to traffic units have remained the same within the usual range of variation.

Another reason for the absolute increase in sewage water volumes has been the requirement to treat surface water containing deicing agents and/or to discharge it into the sewage water drainage system. An important factor in this connection is the necessary expansion of the qualified dewatering of Runway 18 West, leading to additional surfaces being connected to the sewage water system.

Volume of sewage water at Frankfurt Airport



The volume of surface water drained is naturally subject to large fluctuations from one year to the next, depending on the annual volumes of precipitation.

Management initiative

Separation of sewage water and precipitation water relieves the pressure on sewage treatment plants
Fraport operates two separate drainage systems for sewage water and precipitation water. This offers the advantage that the capacity of the sewage systems is utilized at a more consistent rate and is not put under pressure by large volumes of rainwater. The risk of overloading sewage water drainage pipes is also avoided during storms with heavy levels of rainfall.

The sewage water system has pipework measuring some 100 km in length. The system accepts all the discharges from sanitary facilities, canteens, restaurants, tunnel washers, aircraft restrooms, and aircraft washing equipment.

The precipitation water drainage system has a length of approximately 200 km and drains the rainwater from aprons, aircraft positions, deicing areas, roads, parking lots and roofs.

As part of new-builds, precipitation water is increasingly being removed from unpolluted roof surfaces via rain drains with the aim of exerting a positive impact in the replenishment of groundwater.

Wastewater is pretreated
Grease and oil separators, and demulsification plants are positioned where wastewater is generated, for example in canteens and restaurants, and workshops and tunnel washers before the water is discharged into the drainage system. These installations limit the entry of polluting substances into the drainage channels and treatment plants.

Requirements for compliant operation of fat separators are being included in new contracts for concessionaires of food and beverage units. This is intended to protect the fat separators and more extensive cleaning systems against overloads or impact loads of sewage water containing fat or disinfection agents.

The sewage water drains into the public drainage system at two points and is pumped to the municipal treatment plants in Sindlingen and Niederrad. Fraport operates its own sewage treatment plant in the southern section of the airport with a capacity of 100,000 population equivalents. The plant treats approx. 1.4 million m³ of sewage water each year. The sewage water from the entire southern section is treated here together with the wastewater containing deicing agent from aircraft movement areas.

After flowing through the sludge removal tanks, rainwater from the apron and operational areas is conducted through oil separators in order to remove potential contaminants from risk areas (fuelling, maintenance, etc.). The permissible run-off volumes from the areas defined above are guaranteed by rainwater retention basins. The water is only then channeled into the River Main, the Creek Gundbach or conducted into infiltration plants when purification is completed. Systematic checks are performed to establish compliance with the specified tolerance limits.

Water management also includes the drainage systems installed at the Runway Northwest. Contrary to the drainage in the old runway system, the precipitation water from the runway for aircraft landings only and its taxiways flows along slot channels configured along the sides of traffic surfaces, where it is conducted through a network of drains 23 kilometers in length. The water is then pumped from there into two underground reservoirs, each with a capacity of 12,500 cubic meters. Subsequently, the water passes through filters with a total area of 20,000 square meters and deicing agents are removed during the winter months.

Extinguishing water (for firefighting)
The aspects of extinguishing water retention, treatment and discharge are included in all new planning approvals for buildings. This affects systems for treating substances harmful to water that are included under the scope of application of the Extinguishing Water Retention Directive (LöRüRL) and the Plant Regulations.

When the new airfreight warehousel, Building 544, was built, the dewatering system and the low courtyard area for retention were laid out. The system boundary is limited by a ball valve that can be operated automatically and manually. As a result, the scope of the plant is restricted to the actual building complex and it is designed to be continuously reviewed.

Sustainable management of the dewatering system
In order to ensure sustainable management of the dewatering system in an area where dewatering pipes may be coated with fuel, positive-locking sleeve-fitted HDPE pipes are used in all new-builds, e.g. at remote aircraft stands. Welded pipe connections are permanently seal-tight. The water consumption for drainage cleaning and flushes can thus be reduced owing to smoother surfaces.

Volume of deicing agent reduced by Advanced Deicing System
The Fraport subsidiary NICE Aircraft Services & Support GmbH (NICE), responsible for deicing of aircraft, uses a mixture of polypropylene glycol and different proportions of water.

Since winter 2012/13, NICE has been using the NICE Advanced Deicing System (NAD) to reduce

the quantity of deicing agent in all deicing vehicles. Using separate tanks for water and deicing agent combined with a modern mixing system means that the deicing mixture used for deicing and anti-icing can be matched to the prevailing weather conditions. This method uses a higher proportion of water which leads overall to a 20 percent reduction in the amount of deicing agent required. NICE developed the procedure for converting the deicing vehicles in cooperation with the corresponding vehicle manufacturers. There is currently a fleet of 80 deicing vehicles. All new vehicles purchased are fitted with the new technology.

Deicing of flight operation areas
We use potassium formate for deicing aircraft-movement areas at Frankfurt Airport in concentrations to match the weather conditions. Both deicing agents are easily biologically degradable within a short space of time and meet stringent environmental requirements. Precipitation water containing deicing agent from drained surfaces is retained and treated in the water treatment facilities.

Quality assurance for wastewater with systematic checks
Systematic checks are used to monitor the quality and volumes of wastewater, in order to ensure compliance with the specified limits and exclude any risk of polluting waterways. Fraport regularly conducts measurements of chemical and physical parameters in the wastewater at the confluence points and the wastewater units in order to guarantee that no pollution occurs. The precipitation water is continuously monitored at the discharge points in the River Main and the central seepage installations.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Environmental aspect: Contamination of soil and groundwater

Type of environmental aspect		*Direct*	*Indirect*
Assessment of the environmental aspect	*Materiality:*	*Moderate*	*High*
	Controllability:	*Good*	*Good*
Responsible process owner(s)	*Fraport parent company: real estate owner.* *Third parties at the airport: former and current users of the airport.*		
Indicator(s)	*Frankfurt Airport: Nitrate content of the groundwater at a reference sampling point. (sampling point 45 to 2007, extraction well FB5 from 2008 on) [mg/l].*		

Trend(s)

Some parts of the soil and the groundwater at Frankfurt Airport have been polluted by various uses of the site over a period of more than 80 years. Following identification of contaminated areas, a professional clean-up operator did this work, and this process is still ongoing.

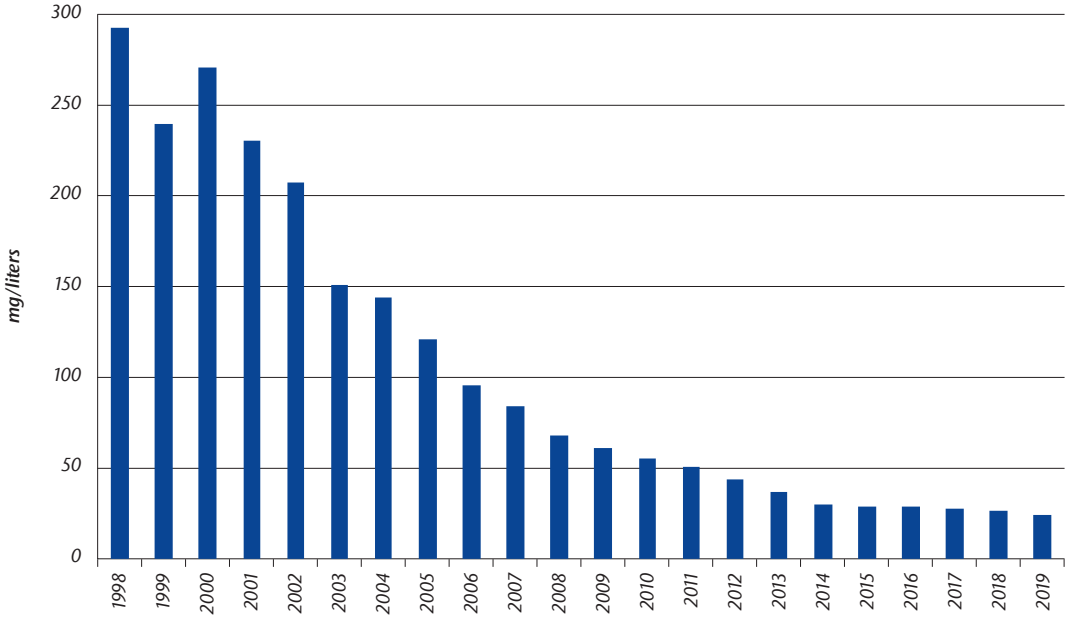
During the 1970s, pollution occurred at the Lufthansa base as a result of the volatile chlorohydrocarbons used in aircraft maintenance. The clean-up operation by Lufthansa Technik AG is currently ongoing.

The site of the former US Air Base is one of the areas where the soil and groundwater have been compromised by contamination with pollutants, and this area therefore also needs to be reinstated. This site was handed back to Fraport AG in late 2005.

Owing to the previous military use of this area and the suspected application of fire-extinguishing foams for exercise purposes, a large proportion of the soil excavated for the construction of the new Terminal 3 is contaminated with poly and perfluorinated compounds (PFC). When it comes to dealing contaminated land on construction sites, PFC is a relatively new pollutant. There are therefore no national statutory regulations and licenses for handling the materials that are applicable throughout Germany. An additional problem is that the capacities of suitable disposal sites are very limited. Fraport was working to remove the excavated soil by the end of 2020, take it to suitable disposal sites and establish adequate disposal pathways. Appropriate contracts were concluded with disposal companies for this purpose. 400,000 cubic meters currently have to be disposed of. Out of this, 100,000 cubic meters have already been disposed of. Fraport has applied to the responsible government licensing agency to set up an intermediate storage site at FRA's CargoCity South on the area currently used for Holiday Parking. This step was taken as a precautionary measure in case the framework conditions for the disposal of the excavated soil should change to become less favorable and thus possibly leading to delays in the future.

The use of deicing agents containing nitrogen in the 1990s along with other operating materials resulted in contamination of the groundwater with nitrates and other pollutants. In 1999, a water treatment plant became operational and removed these pollutants.

Nitrate concentration at the intake for the water treatment plant since 1998



Management initiative

Use of winter deicing agents reduced by scatter data management
Since 1990, Fraport has only been using nitrate-free deicing agents (potassium acetate, potassium formate) to avoid polluting the groundwater with nitrates. Optimum management of scatter data based on ground sensors and GPS supported sprinkle management allows the deicing agent to be precisely dispensed. This means that the use of winter deicing agents can be reduced and duplication of deicing is avoided.

Water treatment plant cleans up groundwater
Groundwater containing nitrates has been treated in a custom-built water treatment plant since 1999. The average nitrate pollution at the intake for the water treatment plant is currently still approximately 45 mg/l at all the measuring stations. The target discharge value to be achieved for the parameter nitrate is 37.5 mg/l. The target purification value of 50 mg/l is not met in the intake to the plant.

The existing water treatment plant was a biological purification plant with a throughput capacity of approximately 320 m^3/h. The purified groundwater is reinfiltrated in order to improve the groundwater balance. Drinking-water springs for supplying the Frankfurt conurbation are situated in the direction of flow of the groundwater.
As a consequence of the falling nitrate burden, nitrite was formed in the biological treatment plant in concentrations above the threshold defined by the Drinking Water Regulations (TVO). This exerted a negative impact on the leaching and the necessary replenishment of the groundwater.

The concept for advance ending of biological nitrate purification was agreed by the relevant Darmstadt district governing body. The ongoing purification of perfluorinated organic surfactants and nitrosamines is intended to guarantee compliance with the threshold value for nitrate. In addition, a more far-reaching monitoring program was included in the associated amendment assessment.

Technical monitoring of the drainage systems and run-off surfaces
Fraport performs a process of regular monitoring by expert auditors to establish the structural integrity of the drainage systems and surfaced areas where water-polluting substances are used in order to protect the soil and groundwater against pollutants. Any defects identified are remedied.

Monitoring groundwater quality at 550 measuring stations
The chemical composition of the groundwater is monitored by 280 groundwater monitoring stations located at Frankfurt Airport and a further 270 groundwater monitoring stations located in the immediate vicinity. The groundwater quality and groundwater level are determined at monitoring stations defined by the regulatory authorities. The data is processed in a groundwater database.

As the airport has expanded, Terminal 3, aprons and other buildings have been created on the site of the former Rhine-Main US Air Base in the southern section of the airport. Contamination of the soil is known to have occurred in this area. The pollution is monitored at a network of groundwater monitoring stations in close cooperation with the responsible regulatory authorities. Any measures necessary are introduced on the basis of the results.

Waterways alarm plan is activated in a pollution incident
In the case of pollution events entailing the risk of ground contamination or pollution of surface waters, the surface-water protection alarm plan ensures that such incidents are immediately reported and remedied. The alarm plan is a constituent element of the Emergency Response Manual of Fraport AG for Frankfurt Airport (FRA Not). Immediate measures are instituted and implemented by the Airport Fire Department of Fraport AG.


4
Unbefugten Zutritt verboten
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Environmental aspect: Dangerous goods and hazardous materials

Influence of the Fraport parent company		*Direct*	*Indirect*
Assessment of the environmental aspect	*Materiality:*	*Moderate*	*Moderate*
	Controllability:	*Medium*	*Medium*
Responsible process owner(s)	*Fraport parent company and GCS and FraGround: Use of hazardous substances, handling of dangerous goods.* *FCS: Handling dangerous goods.* *NICE: Aircraft deicing .* *Third parties: e.g. airline companies, freight forwarders, ground handlers.*		
Indicator(s)	*Frankfurt Airport: Handling dangerous goods at FCS [t], discrepancies and damage to packaging during the handling of dangerous goods [number].*		

Trend(s)

Dangerous goods

The cargo volume of Frankfurt Cargo Services GmbH (FCS), a subsidiary of Fraport AG, amounted to 633,599 tonnes in 2019. The proportion of dangerous goods in this volume amounted to 15,285 tonnes not including class 7 (radioactive). The volume of class 7 amounted to 2,686 packages.

In 2019, there were 15 irregularities at FCS, i.e. nonconformities with the regulations for handling dangerous goods. These included damaged packaging and missing documentation or declarations.

The ground handling services at Fraport AG experienced 66 irregularities in 2019 when handling dangerous goods.

Hazardous substances in the operations of the Fraport parent company

The majority of hazardous substances are used by property and facility management in the vehicle workshops, the paint shop, and the printing facility. The range of products includes antifreeze, engine oil, coolants, gearbox and hydraulic oils, varnishes, paints, through to soap cartridges. Fuels are handled at the company filling stations. The volume in 2019 amounted to 11.3 million liters and this was by far the largest proportion of hazardous substances.

Management initiative

Dangerous goods

Precautions for emergencies are planned and trained at all levels
Emergency procedures for the transport of dangerous goods are documented in Fraport's EMERGENCY PLAN (BA NOT). Emergency plans are drawn up on the basis of this manual and emergency exercises are carried out on a regular basis. Regular training, promotion of enhanced awareness among employees to potential risks, and continuous exchange of information between cargo handling companies complete the precautionary measures. The Dangerous Goods Committee holds a meeting every two months. The members of the committee include employees of the Fraport parent company, representatives of the airlines, the appropriate authorities, freight forwarders, and cargo handling companies dealing with the transport of dangerous goods. Information is exchanged at these meetings, and the planning and implementation of suitable measures is coordinated.

As soon as even minor external damage is detected in containers for dangerous goods, the Fraport Safety and Security Control Center and the Airport Fire Department are alerted. They possess the necessary training and special equipment to respond appropriately.

Fraport trains employees who are involved in the transport and storage of dangerous goods and employees who use hazardous materials at their workplace. Precise compliance with national legislation and international regulations is the top priority. Basic practical training and regular career training for more than 5,000 employees form the platform for professional implementation of statutory legislation and regulations.

FCS minimizes the risks of hazardous goods by safe storage and documentation
A dangerous goods warehouse facility is operated by FCS in CargoCity South for all classes of hazardous goods, including radioactive materials, in conformity with the Federal Impacts Control Act (BImschG). Employees at this facility check the physical properties and the documentation of each dangerous goods consignment in conformity with the regulations of ICAO T.I. (International Civil Aviation Organization – Technical Instructions) and IATA DGR (International Air Transport Association - Dangerous Goods Regulations) and ADR ("Accord européen relatif au transport international des marchandises Dangereuses par Route", in English "European Agreement concerning the International Carriage of Dangerous Goods by Road"). There are central storage facilities for radioactive materials.

Dangerous goods and radiation protection officers monitor the handling of dangerous goods
The dangerous goods and radiation protection officers at the Fraport parent company are responsible for monitoring compliance with rules and regulations governing the transportation, acceptance, delivery, temporary storage, packing, unpacking, loading, and unloading of dangerous goods. The same applies to the FCS which is assisted by the "Medical Airport Services".

Hazardous materials

Chemical products are checked before procurement
Since 1990, Fraport has implemented a product evaluation procedure that reviews all chemical products before they are purchased. This process involves the responsible employees from the relevant areas and the users. An assessment is conducted to assess whether chemical products can be replaced by a more environmentally friendly product, or the relevant operational process can be discontinued or modified. This product evaluation is also done by the Fraport parent company for other companies at Frankfurt Airport. The focus here is on cleaning companies. Incorporating outside companies within this process is intended to ensure that no "inadmissible" hazardous materials are used at Frankfurt Airport.


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Environmental aspect: Waste

Type of environmental aspect		*Direct*	*Indirect*
Assessment of the environmental aspect	*Materiality:*	*High*	*High*
	Controllability:	*Medium*	*Medium*
Responsible process owner(s)	*Fraport parent company: waste generators and waste owners.* *Third parties at the airport: waste generators and delivery of waste to the Fraport parent company.* *Disposal companies: sorting, recycling, recovery, disposal.*		
Indicator(s)	*Fraport parent company:* *– Total quantity of waste (not including excavated soil and building rubble) [t].* *– Quantity of hazardous waste [t] (see accounting principles for the environmental situation).* *– Quantity of non-hazardous waste [t] (see accounting principles for the environmental situation).* *– Total recovery of waste [recoverability rate in %].*		

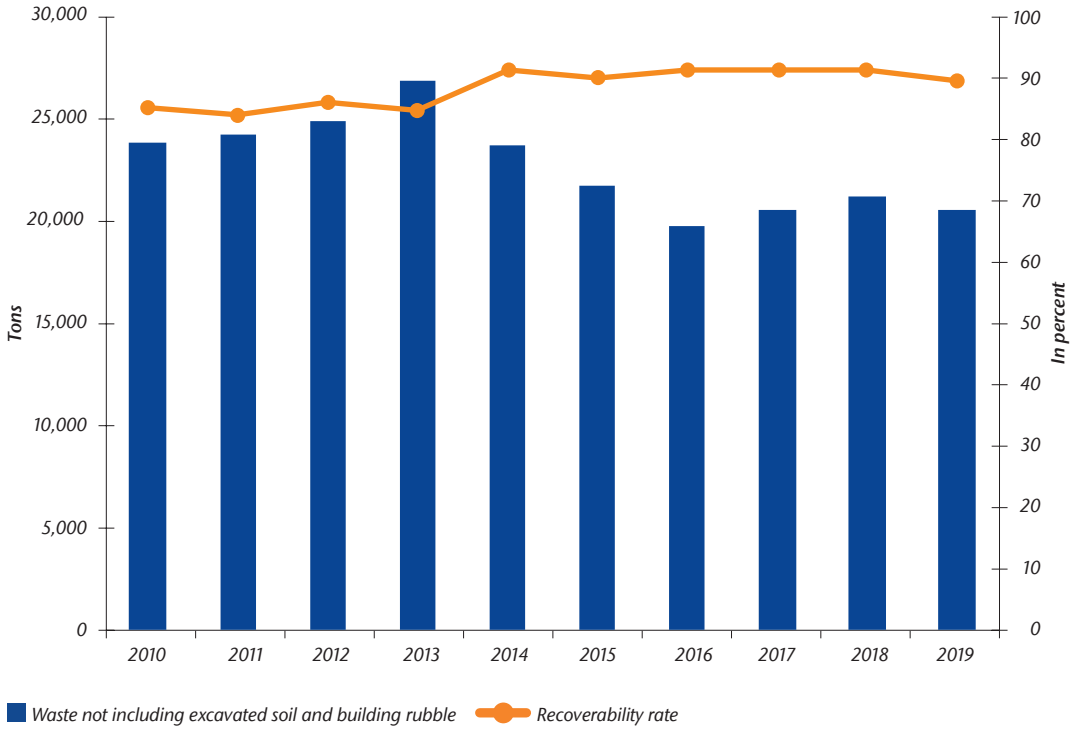
Trend(s)

The total volume of waste disposed of (not including soil and building rubble) by the Fraport parent company has declined between 2013 and 2016 and amounted to 20,310 tonnes in 2019. The development of the total annual volume of waste is firstly correlated with development of the number of traffic units and secondly depends on a series of other effects. These include:

– Start-up / shutdown / acquisition of equipment (e.g. nitrate removal system, rainwater reservoir, sewage treatment plant)
– Maintenance cycles for wastewater systems (changes in occurrence of residues from year to year)
– Change in processes (e.g. disposal of "bio-sludge" into the wastewater treatment plant of Fraport AG)

The recoverability rate remained at a high level of approx. 88.8% in 2019.

Total amount of waste and recoverability rate (not including excavated soil and building rubble)



Management initiative

Process optimized for paper collection on the apron, including its disposal
Since October 2015, the cabin cleaners on aircraft have collected separated paper and taken it to special returnable containers on the apron. The containers are then transported directly to a paper recovery company which recycles the paper completely.

Consistent separation of waste permits high recoverability rate
The guiding principle of Fraport waste management is to recycle unavoidable waste as much as possible. Fraport separates waste including paper, glass, packaging waste (DSD green-dot waste) and residual waste to assist in recycling. This collected waste is either taken to sorting facilities where any unusable materials still present are sorted out and the reusable materials obtained are then forwarded to recycling or sent to a regional waste incinerator plant. The energy generated in this process is used to power district heating and electricity supply in an environmentally friendly co-generation process.

Hazardous waste is recovered or disposed of in an environmentally compatible way
The hazardous waste created at Fraport is also collected separately and channeled away for recovery as far as possible. If there are no options for recovery, this waste is disposed of professionally in a suitable incineration plant or may be disposed of by chemical and physical means in a treatment plant.

Fraport waste management guarantees professional disposal
Waste Management at the Fraport parent company ensures professional disposal for approximately 60 different types of waste generated at Fraport. In this connection, Fraport maintains close contacts with authorities, disposal companies, other companies and universities. New know-how is incorporated into routine procedures as a result of benchmark activities with other waste generators.

Monitoring and advice provided by the operational officer for waste
The Fraport parent company has appointed a Waste Officer. On 1 December 2019, an external Waste Officer was also appointed for all soil and construction waste. The functions of these officers include the provision of advisory services, promotion of low-waste procedures, internal and external monitoring and raising awareness and training for employees.

Status of the Environmental Program 2016 to 2019, supplemented and modified in 2017 and 2018

Key for status:

Measure fulfilled > 90% to 100% or established as a continuous process

Measure continues to apply in the Environmental Program 2020 and/or measure partly fulfilled

Measure could not be implemented

The environmental program of the Fraport parent company is shown in abbreviated form in the sustainability program.w

Noise abatement

Target	*Measure*	*Date*		*Status at the end of 2019*
*We want to keep the area impacted by aircraft noise during the day below the value defined for the upper noise limit (so-called LOG noise area: defined as an area of ≤ 22,193 hectares impacted by Leq 55 dB(A) a day.)** *The goal will be continued in the new environmental program.*	*Further development of noise-dependent airport charges with incentives to use low-noise aircraft types at Frankfurt Airport.*	*2020*		*The proportion of noise-related takeoff and landing fees as a share of the total volume of airport fees has continued to rise.*
	Continuation of the dialog with stakeholders from the region in the "Airport and Region Forum" on development of further measures.	*indefinite*		*A new program of measures for active noise abatement was published by the "Airport and Region Forum" in January 2018. It addresses 17 measures distributed across three pillars. Pillar I comprises seven measures to be implemented over the short-term and medium-term; pillar II describes six long-term measures that require more detailed research; and pillar III has four measures that are directed toward improving the political and legal framework conditions for proactively improving noise abatement. Additional information: https://www.forum-flughafen-region.de/presse/neues-massnahmenprogramm-aktiver-schallschutz/*

** In November 2017, the Hessian State Government, together with Fraport, the airlines, DFS German Air Navigation Services and the Airport and Region Forum, agreed on a voluntary noise cap at Frankfurt Airport. The corresponding area-based target replaces the previous population-based target (see Environmental Statement 2017, p. 56).*

Climate protection

Target	Measure	Date		Status at the end of 2019
Reduction of absolute CO_2 emissions by 65 percent to 80,000 tonnes by 2030 (Fraport parent company, Scopes 1 and 2 GHG Protocol, baseline year 1990). *Reduction of specific CO_2 emissions by 84 percent, to 0.9 kg/traffic unit by 2030 (Fraport parent company, Scopes 1 and 2 GHG Protocol, baseline year 1990).* *The goal will be continued in the new environmental program.*	*Energy optimization of existing buildings of the Fraport parent company* *– In the terminals.* *– In office and service buildings.* *– Parking.*	*2030*		*Measures carried out at the terminal: upgrading ventilation control centers, optimizing air throughputs, switching off pumps and lighting controls. Potential achieved at the end of 2019: 24,800 t CO_2/year.* *Measures carried out in service and administrative buildings: optimization of hydraulics and controls for controlling circuits, optimization of air-conditioning systems, regulation of air-control system based on weather forecasts, lighting retrofitted to LED. Potential achieved at the end of 2018: 4,300 t CO_2/year.*
	Implementation of measures to achieve energy savings in the operational and apron areas.	*2020*		*Conversion of the operational and apron areas to LED. Realized potential in 2019: 1,000 t CO_2.*
	Planning and construction-integrated implementation of an energy-optimized new terminal (T3).	*During the construction*		*Measures in phase of implementation: planned technical systems have been optimized by complex building simulations and will provide sustainable operation of the new terminal building by means of a building envelope with a high level of thermal insulation, needs based sun protection, optimized daylight use, free cooling, highly efficient heat recovery, efficient energy distribution, comprehensive use of LEDs, utilization of the building's own dissipated heat, etc.*
	Implementation of measures to achieve energy savings in the baggage conveyor system.	*2020*		*Implemented measures: reduction of drive power in "early baggage" stores, distributors, feeders, modification of the controls for improved shutdown of the baggage conveyor system during off-peak periods, and reduction of gliding friction by replacing belts at heighteners. Potential achieved: 1,700 t CO_2/year.*
	Conversion of the vehicle fleet to alternative drive technologies (focus on ground handling services).	*2020*		*A total of 19 new electric vehicles were being used in ground handling services at the end of 2019. These vehicles primarily include electric ground handling vehicles. The realized potential for the electric fleet at the end of 2019: 680 t CO_2.* *Total number of electric vehicles in the Fraport fleet on 31 March 2020: 521.* *A funding project for two electric buses was launched in 2018. The buses went into operation in March 2020. The defined measures for climate protection are being continued in the new environmental program.*
Reduction of energy consumption ***(NICE)***	*Launch of a standby mode for dedicated onboard planning IT relating to aircraft deicing vehicles so that the engine can be switched off during waiting times.*	*2018*		*Measure has been implemented.*
	Strategic instruction for users of the NICE administrative building to encourage effective handling and use of electrically powered equipment.	*2020*		*Measure has been implemented.*
	Optimization of energy consumption at the deicing agent tank facilities.	*2020*		*Measure has been implemented.*

Climate protection (continuation)

Target	Measure	Date		Status at the end of 2019
Reduction of air pollutant emissions and CO_2 emissions in the vehicle fleet. ***(FCS)***	*Conversion of up to three forklift trucks to gas-operated forklifts.*	*2020*		*The project was put on ice for reasons of restructuring (central procurement of industrial trucks through the pool of the WFS company). Gradual conversion of forklift fleet to lithiumion batteries. (2020 – 2023 expiry of leases for existing vehicles) test phase since June/2020. Thanks to this measure, lower electricity consumption expected.*
	Analysis of the opportunities for using alternative drives (electric, gas, fuel-cell technology) also in other types of vehicle.	*2020*		*See above.*
Reduction of electricity consumption at head-quarters by 14,000 kWh per year. ***(FraGround)***	*Replacing old client PCs with a new generation of client PCs.*	*2018*		*The implementation of the PC Swap measure was concluded in April 2020, an overall calculated reduction of electricity consumption amounting to approximately 20,000 kWh was posted at the end of 2020.*
Reduction of direct CO_2 emissions of 152,946 kg of CO_2 in the year 2017, by 7,647 t CO_2 (5%) to 145,298 kg CO_2 in 2019. ***(GCS)***	*Training sessions for resource-saving driving styles and the targeted substitution of discontinued vehicles with a better CO_2 footprint.*	*2019*		*The planned driver training could not yet be carried out. When procuring replacement vehicles,however, the strategic conversion to vehicles with improved CO_2 value led to the achievement of an even higher-than-planned reduction, amounting to 131,948 kg of CO_2 in 2019. The measures are being followed up in a modified form in the new environmental program.*
Reduction of indirect CO_2 emissions (arising from electricity consumption). ***(GCS)***	*Procurement of regenerative electricity (green electricity).*	*2018*		*Adjustment to green electricity implemented in January 2018.*
** TU: one passenger or 100 kg of freight*				

Traffic

Target	Measure	Date		Status at the end of 2019
Improvement in intermodal services for passengers.	*"Control Center" project with HOLM, TU Dresden, German Rail (Deutsche Bahn), the RMV public transportation network (Rhein-Main-Verkehrsverbund) and Fraport.*	*2018*		*A prototype is available for a central information platform for the simulation and forecast of the operational development in public transport with consideration of the flight schedule in Frankfurt. Project will be continued in a modified form without the participation of Fraport (integration of weather and delay data as a part of an intelligent traffic system, for example).*
	Partnership in the EU sponsored project "DORA" (door to door passenger information).	*2018*		*Project completed. The results of the cooperation with VMZ (Berlin) are incorporated into the ConnectFRA project. This is an app development by Fraport AG.*
	Establishment of information boards with passenger information on public passenger transport connections in Terminal 1 and 2.	*2022*		*Measure partly implemented in the terminals; implementation at the bus station planned with completion of the people-mover station at Terminal 1. Measure is continued in the new environmental program.*
Improvement in the conditions for cycling in the area of the airport.	*Improving signage for cycle paths, establishing bicycle pools for employees and setting up modern cycle parking facilities.*	*2020*		*The improvement of the signage for cycle paths has been completed. The establishment of bicycle pools for employees has been carried out at two sites. Setting up pedelec stations at two locations has been realized. Setting up a prototype for a mobile and modular mobility station for bicycle commuters has been realized.*

Air quality

Target	Measure	Date		Status at the end of 2019
Reduction of emissions and air pollutants from the operation of the airport.	*Introduction of electric ground-handling vehicles (see also under climate protection: use of alternative-drive technologies).*	*2020*		*See under climate protection: use of alternative drive technologies. The goal is being continued in the new environmental program.*

Nature conservation and resource protection

Target	Measure	Date		Status at the end of 2019
Reduction of the consumption of drinking water by increasing the use of service water in the southern zone to 50%.*	*Connecting new buildings to the service water network.*	*2020*		*The share of service water in total water consumption in the buildings of CargoCity South is currently 45%. Measure in phase of completion, with 90% of the goal achieved.*
Reduction in the use of deicing fluid. ***(NICE)***	*Expanding simulator training for aircraft deicing personnel.*	*2018*		*Measure is implemented – Simulation training is an integral part of the training.*
Reduction in the volume of copy paper used by 5% – 10% compared with 2016 (5065 kg). ***(FraGround)***	*Introduction of web-based monthly accounting.*	*2017*		*The introduction of web-based service plans and monthly accounts was replaced by an app-based solution in 2020. Paper consumption increased because more documents had to be produced in paper form owing to the rise in the volume of personnel and the introduction of additional training programs. The measure is being continued in modified form in the new environmental program.*
Reduction of the consumption of paper by 7% to 1.3 kg/K€ cost of materials for raw materials, consumables and office supplies (baseline year 2016). ***(GCS)***	*Removing desktop printers from offices and setting up a central printing station.* *Reduction of forms and paper documentation by digitalization of processes in the operational area.*	*2018*		*The installation of a central printing station has not yet taken place for technical reasons. The measure for removing desktop printers from offices still has to be implemented.* *The target for 2018 could be reached with reduction of forms and paper documentation by digitalization. In 2019, consumption was even further reduced to 1.2 kg/K€.*
Reduction of the consumption of cleaning agents by 10% to 10.7 kg per 100,000 m² cleaned (baseline year 2016). ***(GCS)***	*Substitution of hazardous cleaning materials with the use of vacuum pumps and coils to deal with blockages.* *Use of dosing caps.* *Systematically raising the awareness of employees.* *Provision of training documents on the cleaning cart.*	*2017*		*The target was reached in 2017. GCS was able to reduce consumption to 6.5 kg/100,000 cleaned sqm.* *The target was achieved, among other things, thanks to the commitment of executives, training sessions on handling resources and the right measuring levels with dosing caps, and an illustrated training document with fundamentals for environmentally-friendly handling of resources, which is provided to each employee for their work.* *As a result of additional projects for improving the cleaning carts, GCS is expecting an improvement in resource usage over the coming years.*

** This refers to the area at the south of Runway 07R/25L. CargoCity South, the Development Area South for projects including the future Terminal 3, and maintenance facilities, for example Lufthansa, are located here.*

Environmental Program 2020 to 2023

The Environmental Program for 2020 describes the most important goals and measures that the Fraport parent company and the NICE, FCS, FraGround, GCS and Energy Air subsidiaries have defined for Frankfurt Airport up until 2020 and beyond for the issues of noise abatement, climate protection, intermodality, air quality, nature conservation and protection of resources.

The measures of the Fraport parent company are not particularly marked.

The measures of Fraport Cargo Services GmbH are marked with FCS, those of NICE Aircraft Services & Support GmbH are marked with NICE, those of Energy Air GmbH are marked with Energy Air, those of FraGround Fraport Ground Services GmbH are marked with FraGround und those of GCS Gesellschaft für Cleaning Service mbH & Co. Airport Frankfurt/Main KG are marked with GCS.

The environmental program of the Fraport parent company is shown in abbreviated form in the sustainability program.

Sound insulation

Target	*Measure*	*Date*
*We want to keep the area impacted by aircraft noise during the day below the value defined for the upper noise limit (so-called LOG noise area:defined as an area of ≤ 22,193 hectares impacted by Leq 55 dB(A) a day.**	*Measures for active noise abatement such as:* *– Promotion of fleet exchange to lower noise aircraft by means of airport charges* *– Raising the approach glide angle to 3.2 degrees at the Runway Northwest* *– GBAS**-based noise-reduction approach procedure, in particular raising the approach glide angle at the South and Center Runway to 3.2 degrees* *– Incentivization of GBAS** as a component of the charge application*	*indefinite*
	Continuation of the dialog with stakeholders from the region in the "Airport and Region Forum" on development of further measures.	*indefinite*

* *In November 2017, the Hessian State Government came to an agreement with Fraport, the airlines, the German Air Navigation Services (DFS) and the Airport and Region Forum for a voluntary upper noise limit at Frankfurt Airport.*

** *"Ground Based Augmentation System"*

Climate protection

Target	*Measure*	*Date*
Reduction of absolute CO_2 emissions by 65 percent to 80,000 tonnes by 2030 (Fraport parent company, Scopes 1 and 2 GHG Protocol, baseline year 1990). *Reduction of specific CO2 emissions by 84 percent, to 0.9 kg/traffic unit by 2030 (Fraport parent company, Scopes 1 and 2 GHG Protocol, baseline year 1990).*	*Energy optimization of existing buildings of the Fraport parent company* *– In the terminals* *– In office and service buildings* *– Parking*	*2030*
	Conversion to LED lighting on aprons and roads.	*2023*
	Planning and construction-integrated implementation of an energy-optimized new terminal (T3).	*During the construction*
	Implementation of measures to achieve energy savings in the baggage conveyor system.	*2023*
	Conversion of the fleet to alternative drive technologies (focus on ground handling services).	*2030*
Reduction of energy consumption. ***(NICE)***	*Introduction of an electric hybrid test vehicle in the fleet.*	*2022*
	Optimization of the energy requirement for lighting by 5% at the deicing- agent tank installations by changing to electricity-saving light sources.	*2022*
	Reduction of the energy consumption (electricity/district heating) by 5% for the provision of hot water at the tank installations.	*2022*
Optimization of waste processes, optimized waste separation with positive effect on revenue, reduction/avoidance of container transports. ***(FCS)***	*Formation of a project group with the mission to analyze and optimize the processes, and to sound out the market for partners.*	*2021*
	Setting up a central container storage facility.	*2020*

Climate protection (continuation)

Target	Measure	Date
Reduction of direct CO_2 emissions of 131,948 kg CO_2 by a further 10%. **(GCS)**	*Training sessions for resource-saving driving styles.*	*2025*
	Continued procurement of replacement vehicles with lower CO_2 emissions.	
	Identification of vehicles that can be procured with alternative drive technologies.	
** Traffic unit: one passenger or 100 kg of cargo*		

Traffic

Target	Measure	Date
Improvement in intermodal services for passengers.	*Establishment of information boards with passenger information on public passenger transport connections in Terminals 1 and 2.*	*2023*
	Optimized link from Terminal 3 to the north area of the airport and the long-distance train station through an automated, electric, rail-based people-mover system and by means of shuttle buses for passengers and employees.	*2024*
Improvement in the conditions for cycling in the area of the airport.	*New construction and modernization of bicycle parking facilities close to buildings when new-builds are constructed or buildings undergo fundamental refurbishment as an alternative to establishing more space-intensive parking areas for cars.*	*2023*
	Establishment of a central parking-space register for cycle parking facilities at the airport in order to be compliant with the verification obligation of the City of Frankfurt and in order to optimize the locations of the parking spaces and thereby enhance the appeal for cycle commuters.	*2020*

Air quality

Target	Measure	Date
Recording the air pollutant emissions of all relevant emitters from the operation of the airport (see sustainability program).	*– Quality assurance for the inventory and operational data (reallocation of SAP data to calendar years, plausibility audits).* *– Optimization of methodology for use of operational data for the emission model (engaging external support, initial agreements on the way forward).* *– Specialist advice for further development of the model LASPORT (emission and dissemination model for determining airport-related emissions), testing and start-up of the LASPORT version 2.3.10.* *– Cooperation with HNLUG and UNH on research into ultrafine particles (UFPs).*	*2023*
Reduction of emissions and air pollutants from the operation of the airport.	*Introduction of electric ground-handling vehicles (see also under climate protection: use of alternative-drive technologies).*	*2030*

Nature and resource protection

Target	Measure	Date
Limiting paper consumption per employee to 1.51 kilos a year. ***(FraGround)***	*Introduction of an information app for employees.*	*2020*
Avoidance of plastic waste, improved recycling. **(GCS)**	*Recording and analysis: Recovery of plastic bottles, recycling by the manufacturer or refilling.* *Establishment of a system for direct recovery.Evaluation, consultation and testing with operational employees for introduction of this system.*	*2021*

Environmental Figures

**Frankfurt Airport, Fraport parent company,
FCS, NICE, GCS, FraGround**

Aspects in accordance with the Global Reporting Initiative (GRI) performance indicators "Environment (EN)" and "Airport Operators Sector Supplement (AOSS)", subset "environment".

Values partially rounded; minor deviations may occur.

Employees	*Unit*	*Comment*	*2016*	*2017*	*2018*	*2019*
Fraport parent company	*Number*	*1*	*11,164*	*10,747*	*10,595*	***10,480***
FCS	*Number*	*1*	*449*	*503*	*515*	*535*
NICE	*Number*	*1*	*40*	*43*	*44*	*45*
FraGround	*Number*	*1*	*3,025*	*3,331*	*3,744*	*3,963*
GCS	*Number*	*1*	*657*	*689*	*729*	*714*

[1] Employees = Permanent employees + temporary staff (school children, students, interns, marginally employed and trainees) + apprentices, exempted employees, status December of every year.

A01 – Passagiere						
Traffic volume	*Unit*	*Comment*	*2016*	*2017*	*2018*	*2019*
Passengers (total)	*Persons in Mio.*		*60,792,308*	*64,505,151*	*69,510,269*	*70,556,072*

Traffic volume	*Unit*	*Comment*	*2016*	*2017*	*2018*	*2019*
Traffic volume	*Unit*	*Comment*	*2016*	*2017*	*2018*	*2019*
Frankfurt Airport (FRA)						
Traffic unit (without transit)	*TU*	*1, 2*	*81,827,352*	*86,354,959*	*91,179,071*	*91,372,384*
Aircraft movements (landing + take-off)	*Number of movements*		*462,885*	*475,537*	*512,115*	*513,912*
Therein at night	*Number of movements*	*3*	*31,290*	*34,192*	*37,284*	*35,814*

[1] TU = A traffic unit is equivalent to one passenger with baggage or 100 kg of airfreight or airmail.

[2] Commercial and non-commercial traffic.

[3] Nighttime: 10 p.m. to 6 a.m..

A03 – Cargo volume						
Traffic volume	*Unit*	*Comment*	*2016*	*2017*	*2018*	*2019*
Airfreight	*T*		*2,067,257*	*2,143,622*	*2,176,387*	*2,041,775*
Airmail	*T*		*85,220*	*85,348*	*89,795*	*86,701*
darin FCS						
Cargo weight						
Airfreight	*T*		*637,670*	*735,524*	*678,094*	*633,599*
Traffic Unit	*VE*	*1*	*6,376,700*	*7,355,240*	*6,780,940*	*6,335,990*

[1] TU = A traffic unit is equivalent to one passenger with baggage or 100 kg of airfreight or airmail.

GRI 302: Energy						
GRI 302-1	**Unit**	**Note**	**2016**	**2017**	**2018**	**2019**
Direct energy use						
Frankfurt Airport		1, 2, 3				
Purchased direct non-renewable energy sources	TJ		842.31	826.76	816.02	812.85
Natural gas	TJ		97.61	95.07	81.09	85.75
Natural gas	million kWh	3	27.120	26.410	22.525	23.820
Liquefied petroleum gas (LPG)	TJ		7.05	8.44	7.17	8.75
Liquefied petroleum gas (LPG)	m^3	3	296	355	301	368
Heating oil	TJ		115.2	98.9	93.7	96.1
Heating oil	millions liters	3	3.190	2.738	2.595	2.662
Diesel	TJ		564.1	562.6	569.6	558.9
Diesel	millions liters		15.850	15.804	16.001	15.701
Gasoline	TJ		54.2	57.1	59.4	60.1
Gasoline	millions liters		1.67	1.76	1.83	1.85
Kerosene (Jet A1)	TJ	6	4.12	4.65	5.07	3.23
Kerosene (Jet A1)	millions liters	6	0.118	0.134	0.146	0.093
Therein Fraport parent company						
Purchased direct non-renewable energy sources	TJ	2	495.90	494.96	505.62	504.59
Natural gas	TJ		5.5	5.6	4.5	4.7
Natural gas	million kWh		1.524	1.554	1.255	1.305
Liquefied petroleum gas (LPG)	TJ		7.0	8.4	7.2	8.8
Liquefied petroleum gas (LPG)	m^3		296	355	301	368
Heating oil	TJ		110.3	93.3	87.7	90.9
Heating oil	millions liters		3.056	2.585	2.430	2.518
Diesel	TJ		335.1	345.2	361.6	356.9
Diesel	millions liters	4	9.410	9.696	10.157	10.026
Gasoline	TJ		36.0	40.1	42.1	41.8
Gasoline	millions liters	4	1.112	1.239	1.299	1.292
Kerosene (Jet A1)	TJ	6	1.9	2.3	2.5	1.4
Kerosene (Jet A1)	millions liters	6	0.054	0.066	0.072	0.041
Total energy consumption						
Renewable energy sources	%		<1	<1	<1	<1
Non-renewable energy sources	%		100	100	100	100
Therein FCS						
Purchased direct non-renewable energy sources	TJ		6.39	6.52	5.00	4.95
Diesel	TJ		5.93	6.07	4.60	4.59
Diesel	millions liters		0.167	0.170	0.129	0.129
Gasoline	TJ		0.46	0.45	0.40	0.37
Gasoline	millions liters		0.014	0.014	0.012	0.011
Total energy consumption						
Renewable energy sources	%		0	0	0	0
Non-renewable energy sources	%		100	100	100	100
Therein NICE						
Purchased direct non-renewable energy sources	TJ		13.93	16.35	13.82	14.47
Diesel	TJ		13.88	16.30	13.74	14.39
Diesel	millions liters	5	0.390	0.458	0.386	0.404
Gasoline	TJ		0.05	0.05	0.07	0.08
Gasoline	millions liters		0.002	0.002	0.002	0.001
Total energy consumption						
Renewable energy sources	%		0	0	0	0
Non-renewable energy sources	%		100	100	100	100
Therein FraGround						
Purchased direct non-renewable energy sources	TJ		0.35	0.40	0.37	0.36
Diesel	TJ		0.25	0.27	0.22	0.23
Diesel	millions liters	4	0.007	0.008	0.006	0.006
Gasoline	TJ		0.08	0.12	0.14	0.13
Gasoline	millions liters	4	0.003	0.004	0.004	0.004
Total energy consumption						
Renewable energy sources	%		0	0	0	0
Non-renewable energy sources	%		100	100	100	100

GRI 302: Energy						
GRI 302-1	**Unit**	**Note**	**2016**	**2017**	**2018**	**2019**
Direct energy use						
Therein GCS						
Purchased direct non-renewable energy sources	TJ		1.32	2.08	2.05	1.79
Diesel	TJ		1.30	1.62	1.52	1.28
Diesel	millions liters	4, 7	0.058	0.046	0.043	0.036
Gasoline	TJ		0.06	0.46	0.53	0.51
Gasoline	millions liters	4, 7	0.006	0.014	0.016	0.016
Total energy consumption						
Renewable energy sources	%		0	0	0	0
Non-renewable energy sources	%		100	100	100	100

[1] All companies on the composite owned land of Frankfurt Airport (Fraport parent company, subsidiaries of Fraport AG, more than 500 third parties) to the extent data are available.

[2] All data including technical losses, as far as known.

[3] Consumption of natural gas by third parties based on information that cannot be verified.

[4] The fuel consumption for private use of company cars is not taken into account.

[5] The level of consumption depends on the number of deicing operations (see indicator "Number of deiced aircraft" in the category traffic volume).

[6] Kerosene consumption of air start units

[7] The reduction in consumption during 2014 is mainly due to the very mild winter 2013/14.

TJ = Terajoule

GRI 302: Energy						
GRI 302-1	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Indirect energy consumption						
Frankfurt Airport		1. 2				
Purchased energy	TJ		4,154.3	4,072.1	3,954.7	3,749.3
Electricity	TJ		2,162.4	2,106.9	2,083.0	2026.8
Electricity	million kWh		600.658	585.256	578.603	563.003
District heating	TJ		1,488.4	1,464.6	1,329.7	1246.8
District heating	million kWh		413.450	406.834	369.358	346.345
District cooling	TJ		503.5	500.6	542.0	475.6
District cooling	million kWh		139.854	139.060	150.565	132.123
Indirect energy consumption						
Renewable energy sources	%		38.9	47.4	47.9	55.4
Non-renewable energy sources	%		61.1	52.6	52.1	44.6
Therein Fraport-Muttergesellschaft						
Purchased energy	TJ		2,279.9	2,236.6	2,180.8	2,128.0
Electricity	TJ		1,171.6	1,151.7	1,129.3	1,106.8
Electricity	million kWh		325.441	319.923	313.695	307.438
District heating	TJ		691.5	670.2	596.2	608.2
District heating	million kWh		192.087	186.155	165.604	168.945
District cooling	TJ		416.8	414.8	455.3	413.0
District cooling	million kWh		115.769	115.209	126.465	114.716
Indirect energy consumption						
Renewable energy sources	%		37.7	45.7	45.9	55.2
Non-renewable energy sources	%		62.3	54.3	54.1	44.8
Therein FCS						
Purchased energy	TJ		37.53	36.09	40.81	30.98
Electricity	TJ		16.05	18.87	19.93	17.62
Electricity	million kWh		4.458	5.242	5.535	4.895
District heating	TJ		21.48	17.22	20.89	13.36
District heating	million kWh		5.967	4.783	5.802	3.711
Indirect energy consumption						
Renewable energy sources	%		37.7	45.7	45.9	55.2
Non-renewable energy sources	%		62.3	54.3	54.1	44.8

GRI 302: Energy						
GRI 302-1	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Indirect energy consumption						
Therein NICE						
Purchased energy	TJ		3.25	4.23	4.52	4.51
Electricity	TJ		2.93	3.81	3.72	3.54
Electricity	million kWh		0.813	1.057	1.032	0.984
District heating	TJ		0.32	0.43	0.80	0.97
District heating	million kWh		0.089	0.118	0.222	0.268
Indirect energy consumption						
Renewable energy sources	%		37.7	45.7	45.9	55.2
Non-renewable energy sources	%		62.3	54.3	54.1	44.8
Therein FraGround						
Purchased energy	TJ		2.43	2.16	2.07	2.69
Electricity	TJ	3	1.45	1.35	1.24	1.54
Electricity	million kWh	3	0.403	0.376	0.346	0.428
District heating	TJ		0.93	0.77	0.78	1.05
District heating	million kWh		0.258	0.213	0.217	0.293
District cooling	TJ	3	0.04	0.04	0.05	0.10
District cooling	million kWh	3	0.012	0.010	0.013	0.026
Indirect energy consumption						
Renewable energy sources	%		37.7	45.7	100	100
Non-renewable energy sources	%		62.3	54.3	0	0
Therein GCS						
Purchased energy	TJ		1.97	2.20	2.19	1.08
Electricity	TJ		1.89	2.10	2.09	0.93
Electricity	million kWh		0.526	0.582	0.581	0.259
District heating	TJ		0.08	0.11	0.10	0.15
District heating	million kWh		0.021	0.030	0.027	0.041
Indirect energy consumption						
Renewable energy sources	%		37.7	45.7	100	100
Non-renewable energy sources	%		62.3	54.3	0	0

[1] All companies on the composite owned land of Frankfurt Airport (Fraport parent company, subsidiaries of Fraport AG, more than 500 third parties) to the extent data are available.

[2] All data including technical losses, as far as known.

[3] Consumption of natural gas by third parties based on information that cannot be verified.

TJ = Terajoule

GRI 302: Energy						
GRI 302-3	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Energy intensity						
Frankfurt Airport						
Total specific consumption	TJ per million TU		61.10	56.73	52.32	49.93
Purchased direct non-renewable energy sources	TJ per million TU	4	10.30	9.57	8.95	8.90
Purchased energy	TJ per million TU	4	50.80	47.16	43.37	41.03
darin Fraport-Muttergesellschaft						
Total specific consumption	TJ per million TU		33.96	31.63	29.46	28.81
Purchased direct non-renewable energy sources	TJ per million TU	4	6.06	5.73	5.55	5.52
Purchased energy	TJ per million TU	4	27.90	25.90	23.92	23.29

[1] All companies on the composite owned land of Frankfurt Airport (Fraport parent company, subsidiaries of Fraport AG, more than 500 third parties) to the extent data are available.

[2] All data including technical losses, as far as known.

[3] Consumption of natural gas by third parties based on information that cannot be verified.

[4] TU = A traffic unit is equivalent to one passenger with baggage or 100 kg of airfreight or airmail.

TJ = Terajoule

GRI 302: Energy						
GRI 302-4	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Reduction of energy consumption						
Reduction of energy consumption						
Reduction of energy consumption	million kWh	1, 2, 3	42.35	69.91	94.92	111.45

[1] The baseline year is 2008, cumulative effects from 2008, insofar as effective in subsequent years.

[2] Assessment of energy that could be saved for reasons of improved procedures, replacement and upgrade of systems and equipment, and change in employee behavior.

[3] Computational savings calculated from projects that have been concluded.

GRI 303: Water						
GRI 303-1	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Water consumption						
Frankfurt Airport		1				
Total water consumption	million m^3		1.757	1.764	2.164	2.209
Total water consumption	liters per TU	2	21.47	20.43	23.73	24.17
Drinking water	Mio. m^3	4	1.373	1.274	1.346	1.448
Service water	Mio. m^3	3, 5	0.384	0.490	0.818	0.760
Therein Fraport parent company						
Total water consumption	million m^3	7, 9	1.031	1.023	1.416	1.436
Total water consumption	liters per TU	2, 9	12.6	11.8	15.5	15.7
Drinking water	million m^3	4	0.723	0.615	0.689	0.760
Service water	million m^3	5, 8	0.308	0.408	0.727	0.675
Therein FCS						
Total water consumption	million m^3		0.009	0.009	0.008	0.007
Drinking water	million m^3	4	0.009	0.009	0.008	0.007
Service water	m^3		–	–	–	–
Therein NICE						
Total water consumption	million m^3	6	0.009	0.010	0.011	0.010
Drinking water	million m^3	4, 6	0.006	0.007	0.008	0.009
Service water	million m^3	5	0.003	0.003	0.003	0.002
Therein GCS						
Total water consumption	million m^3		0.005	0.005	0.005	0.005
Drinking water	million m^3	4, 8	0.005	0.005	0.005	0.005
Service water	m^3		–	–	–	–

[1] All companies on the composite owned land of Frankfurt Airport: Fraport parent company, subsidiaries of Fraport AG, more than 500 third parties.

[2] TU = A traffic unit is equivalent to one passenger with baggage or 100 kg of airfreight or airmail.

[3] Less share of drinking water at service water treatment in Terminal 2.

[4] From the local authority water supply.

[5] The service water is treated from surface water, rainwater and ground water. Contains subsets, which are estimated.

[6] Water is used to dilute the aircraft deicing agent. When winters are cold and there is a lot of snow, larger quantities of de-icing agent are required. Water consumption therefore increases as a result.

[7] Total consumption for the airport minus consumption by third parties at the Frankfurt Airport site.

[8] Laundry operation of GCS since July 2015.

[9] Temporary increase in consumption due to construction of Terminal 3.

GRI 303: Water						
A04	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Quality of precipitation water						
Frankfurt Airport						
Hydrocarbons	mg/l	1	0.08	<0.1	<0.1	0.2
Materials capable of being deposited	ml/l	1	0.28	0.23	<0.1	<0.1

[1] A 2 h mixed sample is collected each month from the precipitation water channel at a sampling test station located shortly before the discharge point into the River Main. The value for hydrocarbons was calculated from twelve individual samples, the value for "substances capable of being deposited" from eleven individual samples.

GRI 304: Biodiversity						
GRI 304-1 Land consumption	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Frankfurt Airport						
Owned land by Fraport AG	ha	1	2,283.54	2,284.00	2,284.84	2,287.19
of which paved area	ha		1,091.00	1,092.00	1,103.90	1,103.60

[1] Continuous owned land,

GRI 305: Emissions						
GRI 305-1 Direct (Scope 1) and GRI 305-2 indirect (Scope 2) Greenhouse gas emissions	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Fraport parent company						
CO_2-emissions	1000 t CO_2	1	209.3	190.1	188.6	170.3
Direct CO_2 emissions	1000 t CO_2	1	36.5	36.4	37.2	37.1
Indirect CO_2 emissions	1000 t CO_2	2	172.8	153.7	151.4	133.2
Compensated CO_2 emissions (certificates)	1000 t CO_2		0	0	0	0
Other relevant greenhouse gas emissions	1000 t CO_2-equivalent	3	1.176	1.923	1.61	1.437
FCS						
CO_2-emissions	1000 t CO_2	1	3.30	3.15	3.37	2.54
Direct CO_2 emissions	1000 t CO_2	1	0.50	0.48	0.37	0.37
Indirect CO_2 emissions	1000 t CO_2	2	2.80	2.67	3.00	2.18
NICE						
CO_2-emissions	1000 t CO_2	1	1.30	1.60	1.43	1.43
Direct CO_2 emissions	1000 t CO_2	1	1.00	1.21	1.02	1.07
Indirect CO_2 emissions	1000 t CO_2	2	0.30	0.39	0.41	0.35
FraGround						
CO_2-emissions	1000 t CO_2	1	0.23	0.20	0.07	0.08
Direct CO_2 emissions	1000 t CO_2	1	0.02	0.03	0.03	0.03
Indirect CO_2 emissions	1000 t CO_2	2	0.21	0.17	0.04	0.05
GCS						
CO_2-emissions	1000 t CO_2	1	0.39	0.36	0.16	0.14
Direct CO_2 emissions	1000 t CO_2	1	0.17	0.15	0.15	0.13
Indirect CO_2 emissions	1000 t CO_2	2	0.22	0.21	0.00	0.01

[1] Direct emission in conformity with Scope 1 GHG Protocol Standard: fuels, fuels for combustion plants, here heating oil, natural gas, propane gas.

[2] Indirect emissions in conformity with Scope 2 GHG Protocol Standard: purchasing of electricity (Fraport Group), district heating, district cooling (Fraport at the Frankfurt site).

[3] Only negligible amounts of additional greenhouse gases (such as CH_4, N_2O) are under the influence of Fraport parent company.

GRI 305: Emissions						
GRI 305-3 Greenhouse gas emissions Scope 3 according to GHG	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Fraport parent company						
Air traffic	1000 t CO_2	1	936.2	937.8	1009.7	1007.5
Employee traffic at Fraport parent company and third parties at Frankfurt Airport	1000 t CO_2	2	115.0	112.0	106.6	127.8
Passenger traffic (passengers originated here)	1000 t CO_2	3, 7	173.2	185.0	198.9	273.9
Business trips of employees at Fraport parent company	1000 t CO_2	4	0.81	0.90	0.80	0.75
Energy consumption of third parties (infrastructure and vehicles)	1000 t CO_2	5, 8	202.3	189.7	183.5	164.7
Other relevant greenhouse gas emissions	t CO_2-equivalent	6	<2	<2	<2	<2

[1] Air traffic up to 914 m (LTO cycle) of all aircraft landing and taking off at Frankfurt Airport, use of APU.

[2] Travel by employees to and from the workplace.

[3] Travel to and from the airport by passengers, travel in private vehicles and public transport.

[4] Includes car, rail, and air travel.

[5] Electricity, heat, cooling, fuels.

[6] According to investigations carried out in 2005, the emissions of other greenhouse gases at the airport were negligible.

[7] 2018 Increase in aircraft movements and passengers.

[8] Third-party electricity consumption retroactively assessed with national emission factor from 2016.

GRI 305: Emissions						
GRI 305-4 GHG emissions intensity	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Fraport parent company						
Climate gas intensity of transport performance	kg CO_2 per TU	3	2.56	2.20	2.07	1.86
Direct CO_2 emissions	kg CO_2 per TU	1, 3	0.45	0.42	0.41	0.41
Indirect CO_2 emissions	kg CO_2 per TU	2, 3	2.11	1.78	1.66	1.46

[1] Direct emissions in accordance with Scope 1 of the GHG Protocol Standard: fuels, combustion fuels of the fossil-fired facilities, here heating oil, natural gas, propane gas.

[2] Indirect emissions in accordance with Scope 2 of the GHG Protocol Standard: sourcing of electricity, district heating, district cooling.

[3] TU = A traffic unit is equivalent to one passenger with baggage or 100 kg of airfreight or airmail.

GRI 305: Emissions						
EN21 NOx, SOx and other air pollution emissions	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Air traffic at Frankfurt Airport		1				
NOx	t	2	2,510	2,517	2,711	
NOx	t	2, 5	2,505	2,537	2,733	2,694
HC	t	2	387	389	417	
HC	t	2, 5	395	393	421	415
PM10	t	2	23	23	25	
PM10	t	2, 5	24	24	26	25
SO_2	t	2	165	164	177	
SO_2	t	2, 5	164	166	180	177
NOx	g per TU	2, 3, 6	30.61	29.38	29.97	29.49
HC	g per TU	2, 3, 6	4.83	4.55	4.61	4.54
PM10	g per TU	2, 3, 6	0.29	0.28	0.29	0.27
SO_2	g per TU	2, 3, 6	2.00	1.92	1.97	1.94
Fraport parent company		1				
NOx	t	4	–	–	–	–
Benzene	t	4	–	–	–	–
PM10 (Fine dust <10 µm)	t	4	–	–	–	–

[1] Caused by 110 to 114 different airlines depending on timetable (summer, winter), only indirectly influenced by Fraport.

[2] Air traffic: emissions in tonnes per calendar year up to an altitude of 300 meter (taxiing, starting, climb, descent incl. rollout, engine ignition, APU). Up to an altitude of 300 meters the emissions have a regional effect.

[3] TU = A traffic unit is equivalent to a passenger with baggage or 100 kg of airfreight or airmail.

[4] Each year, the Fraport parent company emits approximately 264 t NOx, 0.4 t benzene and 9.3 t PM10. These data are derived from the Zoning Plan documents. An annual update is not yet possible, because determining the data is very complex and resource-intensive. In future, the data are to be calculated on a rolling basis, the necessary processes are currently in preparation.

[5] New movement logs were drawn up using current aircraft information so that individual engine information was available for significantly more aircraft. The calculation method for the APU emissions was fundamentally revised and now takes account of each individual aircraft instead of adopting a flat-rate approach as has been the case up to now.

[6] Analysis per traffic unit only in relation to the recalculation (for old analysis see abridged Environmental Statement 2019).

GRI 306: Wastewater and Waste						
GRI 306-1 Water discharge	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Fraport parent company						
Sewage water	million m^3	1, 2	1.820	1.966	2.156	2.142
Sewage water	Liters per TU	3	22.2	22.8	23.6	23.4

[1] Wastewater from Fraport parent company and more than 500 other companies at Frankfurt Airport. The disposal of sewage water from Frankfurt Airport is carried out by Fraport AG, allocation to individual companies is not possible.

[2] Wastewater is treated in the fully biological water-treatment plant at the Fraport parent company, as well as at fully biological water-treatment plants in Frankfurt Niederrad and Frankfurt Sindlingen. Since 2013, the separation of the precipitation water contaminated with deicing agents has brought about an increased dependence of the amount of sewage water on the nature of the weather conditions in the relevant winter. The mild winter 2013/14 led to a significant decline in the volume of sewage water.

[3] TU = A traffic unit is equivalent to one passenger with baggage or 100 kg of airfreight or airmail.

GRI 306: Wastewater and Waste						
GRI 306-2	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Waste by type and disposal method						
Fraport parent company						
Amount of waste	1000 t	1, 2	19.52	20.36	20.94	20.31
Amount of waste	kg per TU	3	0.24	0.24	0.23	0.22
Hazardous waste	1000 t	1, 2	1.51	2.19	1.77	1.80
Non-hazardous waste	1000 t	1, 2	18.00	18.17	19.17	18.51
Total recoverability	1000 t	1, 2	17.65	18.39	18.94	18.04
Total disposal	1000 t	1, 2	1.87	1.97	2.00	2.28
Total recoverability rate	%	1, 2	90.4	90.3	90.5	88.8
Waste from international flights	1000 t		4.51	4.62	4.65	4.81
FCS						
Amount of waste	1000 t	1	1.303	1.668	1.667	1.525
Hazardous waste	t	1	0	0	0	0
Non-hazardous waste	1000 t	1	1.30	1.67	1.67	1.53
Total recoverability	1000 t	1	1.26	1.61	1.61	1.53
Total disposal	t	1	47.6	58.0	58.0	0.0
Total recoverability rate	%	1	96.3	96.5	96.5	100.0
NICE						
Amount of waste	1000 t	1, 5	0.10	0.13	0.10	0.11
Hazardous waste	1000 t	1	0	0	0	0
Non-hazardous waste	1000 t	1, 5	0.10	0.13	0.10	0.11
Total recoverability	1000 t	1, 4	0.10	0.13	0.10	0.11
Total disposal	1000 t	1	0	0	0	0
Total recoverability rate	%	1	100	100	100	100
FraGround						
Amount of waste	1000 t	7	5.60	4.84		
Hazardous waste	1000 t	7	0	0		
Non-hazardous waste	1000 t	7	5.60	4.84		
Total recoverability	1000 t	7	5.60	4.84		
Total disposal	1000 t	7	0	0		
Total recoverability rate	%	7	100	100		
GCS						
Amount of waste	1000 t	6				
Hazardous waste	1000 t	6				
Non-hazardous waste	1000 t	6				
Total recoverability	1000 t	6				
Total disposal	1000 t	6				
Total recoverability rate	%	6				

[1] *Without soil and building rubble.*

[2] *Including waste from third parties, primarily residual waste out of aircraft (no catering waste) and without soil and building rubble.*

[3] *TU = A traffic unit is equivalent to a passenger with baggage or 100 kg of airfreight or airmail.*

[4] *Aircraft deicing agents.*

[5] *Total volume is a mixture of water Type I and Type IV fluid.*

[6] *Waste is disposed of through Fraport and accounted for there.*

[7] *Since 2018, waste is disposed of through Fraport and accounted for there.*

GRI 306: Wastewater and waste						
GRI 306-3	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Significant spills						
Fraport parent company		1				
Total number and volume of significant spills						
Number of spills	Number		779	762	532	430
Volume of spills	m^3		8.22	10.37	9.00	5.04
Frequency of spills	Number per 1,000 aircraft movements		1.68	1.60	1.04	0.84
Effects		2	none	none	none	none

[1] *Spills primarily by third parties.*

[2] *No environmental hazard because releases are generally on surfaced areas with comprehensive safety installations implemented downstream. Spills on not surfaced areas are very rare exceptions, and are cleared up immediately.*

GRI 306: Wastewater and waste						
Groundwater improvement	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Frankfurt Airport						
Nitrate content at reference measuring station well FB5	mg/l	1	29	28	27	24

[1] Yearly average value.

A05 – Air quality						
	Unit	**Comment**	**2016**	**2017**	**2018**	**2019**
at Frankfurt Airport		1, 2				
NO_2	$\mu g/m^3$	3	45	42	43	40
SO_2	$\mu g/m^3$	4	2	2	2	1
PM10 (dust < 10 µm)	$\mu g/m^3$	5	17	17	18	16
Benzene	$\mu g/m^3$	6	0.7	0.5	0.6	0.7

[1] Annual average of the measured values at the station SOMMI1. These values are the total result of all emissions from different source groups, in other words, alongside the contribution of the airport to pollutants also from third parties (road traffic, trade and industry, house fire, large-scale background pollution). The proportion of the airport depends on the location and is between approximately 10% and 30% here depending on the model calculations for individual components.

[2] Yearly average limit values (not applicable to the airport, because no human exposure throughout the year).

[3] NO_2 assessment value in accordance with EU Directive 2008/50/EC, 39th BImSchV: 40 $\mu g/m^3$.

[4] SO_2 assessment value in accordance with Technical Instructions on Air Pollution (TA Luft) 2002 (otherwise no yearly average defined): 50 $\mu g/m^3$.

[5] Fine dust assessment value, PM10 in accordance with EU Directive 2008/50/EC, 39th BImSchV: 40 $\mu g/m^3$.

[6] Benzene assessment value in accordance with EUR Directive 2008/50/EC, 39th BImSchV: 5 mg/m^3.

A06 – Airfield surfaces and aircraft deicing agents						
	Unit	**Comment**	**2016**	**2017**	**2018**	**2019**
Fraport parent company						
Airfield surfaces deicing agent: potassium format (fluid – approx. 50% agent), applied on the aircraft movement areas	m^3		766	2.394	1.324	1.500
Airfield surfaces deicing agent: sodium formate (granulate – approx. 100% agent)	m^3		121	457	250	182
Road salt (NaCl)	m^3		286	988	1,291	464
NICE						
Number of de-iced aircraft	Number	1	4,982	6,480	5,517	6,348
Aircraft deicing agent: propylene glycol (NICE)	m^3 active ingredient		1,108	1,835	1,318	1,473
Aircraft deicing agents: propylene glycol; per de-iced aircraft (NICE)	m^3 substance per aircraft		0.222	0.283	0.239	0.232

[1] Yearly values are weather dependent

Intermodality						
	Unit	**Comment**	**2016**	**2017**	**2018**	**2019**
Fraport parent company						
Employee traffic						
Travel to and from work by public transport	Share of employees in %	1	30.2	31.2	30.3	28.6
Travel to and from work by carpooling	Share of employees in %	1	14.8	13.6	12.8	13.2
Passenger traffic at Frankfurt Airport (FRA)						
Travel of originating passengers to and from the airport by public transport	Share of employees in %	1	33.8	34.1	34.5	33.5
therein arrival/departure by ICE (Intercity Express)	Share of employees in %	1	11.3	11.6	12.1	11.0

[1] The values are based on a survey.

A07 – Aircraft noise						
AO7 Number and percentage of people* residing in areas affected by noise	**Unit**	**Comment**	**2016**	**2017**	**2018**	**2019**
Frankfurt Airport						
Number of people residing in the contour Leq, day = 60 dB(A) (criterion provided for in the Act for Protection against Aircraft Noise)	Number	1, 2	2,781	2,929		
Relative change compared with the previous year	Percent		–7	5		
Number of people residing in the contour Leq, day = 60 dB(A) (criterion provided for in the Act for Protection against Aircraft Noise)**	Number	1, 2		1,601	1,989	2,379
Relative change compared with the previous year	Percent			–42	24	20
Number of people residing in the contour Leq, day = 55 dB(A) (Criterion similar Act for Protection against Aircraft Noise)	Number	1, 3, 4	99,117	96,774		
Relative change compared with the previous year	Percent		–4	–2		
Number of people residing in the contour Leq, day = 55 dB(A) (Criterion similar Act for Protection against Aircraft Noise)**	Number	1 ,3, 4		73,377	82,374	81,435
Relative change compared with the previous year	Percent			–26	12	–1
Number of people residing in the contour of the envelope from NAT, night = 6 x 68 dB(A) and Leq, night = 50 dB(A) (Criterion similar Act for Protection against Aircraft Noise)**	Number	1, 5	68,571	78,819		
Relative change compared with the previous year	Percent		–5	15		
Number of people residing in the contour of the envelope from NAT, night = 6 x 68 dB(A) and Leq, night = 50 dB(A) (Criterion similar Act for Protection against Aircraft Noise)**	Number	1, 5		73,901	75,036	64,860
Relative change compared with the previous year	Percent			8	2	–14

* *Population database provided by DDS Digital Data Services. Survey status of these data for all evaluations in 2010. The update of the population database to the status of 2010 leads to minimally changed resident figures in the relevant contours in the years up to 2014 compared with earlier disclosures.*

** *The values were calculated using the model of the reduction approaches described under 1 for aircraft noise calculation.*

[1] *The aircraft noise contours were calculated on the basis of two regulations introduced in Germany: the "Instruction on how to calculate noise abatement areas (in short: AzB)" and the "Instruction on data recording on aircraft movements (in short: AzD, 2008)". In all scenarios, the distribution of operations was standardized in accordance with the average operational direction distribution over many years for the ten years between 2000 and 2009. The sigma surcharge developed for the tentative abatement-zone calculation pursuant to the Act for Protection Against Aircraft Noise and described in AzB and AzD was not applied. From 2017, the aircraft noise calculation took into account that new aircraft models – particularly on takeoff – have significantly lower noise emissions than comparable older models with the same capacity. The first of the new type of aircraft model was the Airbus A380, followed by the Boeing B787, A320neo, A350 and others. From 2017, these new, quieter aircraft models were removed from the relevant AzB aircraft groups in the data recording system and provided with modified models for noise emission on takeoff and landing in accordance with their traffic volume compared with the "classic" AzB aircraft groups. These changes correspond to those which were agreed in the context of consultations on the "upper noise limit" among the players involved for the relevant aircraft model. Starting with the A380 in 2010, the new aircraft models are being increasingly used in Frankfurt. This means that the air noise contours calculated between 2010 and 2016 and the numbers of residents determined respectively in this connection were increasingly overestimated.*

[2] *The criterion Leq, day = 60 dB(A) is based on the definition of day protection zone 1 in accordance with the Aircraft Noise Abatement Act.*

[3] *The criterion Leq, day = 55 dB(A) is based on the definition of day protection zone 2 in accordance with the Aircraft Noise Abatement Act.*

[4] *The data on Leq, day = 55 dB(A) is the total number within this contour, the number specified under Leq, day = 60 dB(A) is therefore a sub-quantity.*

[5] *The criterion envelope from NAT, night = 6 x 68 dB(A) and Leq, night = 50 dB(A) is based on the definition of night protection zone according to the Aircraft Noise Abatement Act.*

A07 – Aircraft noise						
	Unit	Comment	2016	2017	2018	2019
Surrounding area of Frankfurt Airport						
Approach		1				
Monitoring station 01 Offenbach Lauterborn, day	Leq(3) in dB(A)	2, 3	57	58	56	
Monitoring station 01 Offenbach Lauterborn, day*	Leq(3) in dB(A)	2, 3		56.0	53.9	55.7
Monitoring station 01 Offenbach Lauterborn, night	Leq(3) in dB(A)	2, 4	52	52	51	
Monitoring station 01 Offenbach Lauterborn, night*	Leq(3) in dB(A)	2, 4		51.2	49.1	50.3
Monitoring station 06 Raunheim, day	Leq(3) in dB(A)	2, 3	61	59	62	
Monitoring station 06 Raunheim, day*	Leq(3) in dB(A)	2, 3		58.8	61.6	60.3
Monitoring station 06 Raunheim, night	Leq(3) in dB(A)	2, 4	54	53	54	
Monitoring station 06 Raunheim, night*	Leq(3) in dB(A)	2, 4		52.7	54.2	53.6
Monitoring station 14 Hochheim, day	Leq(3) in dB(A)	2, 3	56	54	57	
Monitoring station 14 Hochheim, day*	Leq(3) in dB(A)	2, 3		53.9	56.9	55.4
Monitoring station 14 Hochheim, night	Leq(3) in dB(A)	2, 4	47	46	50	
Monitoring station 14 Hochheim, night*	Leq(3) in dB(A)	2, 4		45.6	49.5	48.1
Monitoring station 44 F-Lerchesberg, day	Leq(3) in dB(A)	2, 3	58	58	58	
Monitoring station 44 F-Lerchesberg, day*	Leq(3) in dB(A)	2, 3		57.5	56.6	57.3
Monitoring station 44 F-Lerchesberg, night	Leq(3) in dB(A)	2, 4	50	50	51	
Monitoring station 44 F-Lerchesberg, night*	Leq(3) in dB(A)	2, 4		48.8	49.6	48.8
Take off		1				
Monitoring station 12 Bad Weilbach, day	Leq(3) in dB(A)	2, 3	55	56	53	
Monitoring station 12 Bad Weilbach, day*	Leq(3) in dB(A)	2, 3		55.1	52.2	54.1
Monitoring station 12 Bad Weilbach, night	Leq(3) in dB(A)	2, 4	48	48	47	
Monitoring station 12 Bad Weilbach, night*	Leq(3) in dB(A)	2, 4		47.1	46.1	46.6
Monitoring station 32 Nauheim, day	Leq(3) in dB(A)	2, 3	56	56	54	
Monitoring station 32 Nauheim, day*	Leq(3) in dB(A)	2, 3		54.9	52.7	53.9
Monitoring station 32 Nauheim, night	Leq(3) in dB(A)	2, 4	46	46	43	
Monitoring station 32 Nauheim, night*	Leq(3) in dB(A)	2, 4		45.5	42.7	43.9
Monitoring station 41 F-Süd, day	Leq(3) in dB(A)	2, 3	57	56	58	
Monitoring station 41 F-Süd, day*	Leq(3) in dB(A)	2, 3		54.4	56.1	55.3
Monitoring station 41 F-Süd, night	Leq(3) in dB(A)	2, 4	52	52	52	
Monitoring station 41 F-Süd, night	Leq(3) in dB(A)	2, 4		50.6	51.5	50.0
Monitoring station 51 Worfelden, day	Leq(3) in dB(A)	2, 3	57	57	58	
Monitoring station 51 Worfelden, day*	Leq(3) in dB(A)	2, 3		56.3	56.6	56.0
Monitoring station 51 Worfelden, night	Leq(3) in dB(A)	2, 4	53	53	52	
Monitoring station 51 Worfelden, night*	Leq(3) in dB(A)	2, 4		52.2	52.0	52.4
Monitoring station 71 Forsthaus, day	Leq(3) in dB(A)	2, 3	57	58	56	
Monitoring station 71 Forsthaus, day*	Leq(3) in dB(A)	2, 3		57.0	55.6	56.5
Monitoring station 71 Forsthaus, night	Leq(3) in dB(A)	2, 4	52	52	50	
Monitoring station 71 Forsthaus, night*	Leq(3) in dB(A)	2, 4		51.7	49.9	50.7

A07 – Aircraft noise						
	Unit	Comment	2016	2017	2018	2019
Frequency of the exceedance of the maximum level of 68 dB(A) per night		1, 4				
Monitoring station 01 Offenbach Lauterborn	Number of exceedance cases	5	16.3	17.4	11.2	13.8
Monitoring station 06 Raunheim	Number of exceedance cases	5	8.5	8.3	15.4	10.5
Monitoring station 14 Hochheim	Number of exceedance cases	5	4.8	4.6	12.0	7.8
Monitoring station 44 F-Lerchesberg	Number of exceedance cases	5	7.3	7.4	10.0	7.5
Monitoring station 12 Bad Weilbach	Number of exceedance cases	5	8.5	8.3	15.4	10.5
Monitoring station 32 Nauheim	Number of exceedance cases	5	2.5	2.4	1.3	1.8
Monitoring station 41 F-Süd	Number of exceedance cases	5	16.7	14.6	16.9	11.2
Monitoring station 51 Worfelden	Number of exceedance cases	5	5.3	5.2	4.2	5.7
Monitoring station 71 Forsthaus	Number of exceedance cases	5	13.6	16.6	13.5	14.6
Share of western operations day	Share in %	3, 6, 7	66.9	78.7	49.7	68.8
Share of western operations night	Share in %	4, 6, 7	68.4	76.2	50.0	66.3

** new conformity with DIN 45643:2011*

1 Selected representative noise-monitoring station from a monitoring network with 28 static stations.

2 Energy equivalent continuous sound level [Leq(3) in dB(A)] based on the German Aircraft Noise Act in conformity with DIN 45643. Leq(3) is calculated during the six busiest months from May until October in the years 2009, 2010 und 2012 based on the German Aircraft Noise Act, segmented in day and night. Exception was the year 2011, with the six busiest months of March, May, July and October. Changes to the monitoring stations on the approach and takeoff routes of the parallel runway system are mainly based on the fluctuations in the distribution of operations (easterly/westerly) from year to year caused by different weather conditions or wind directions. The website www.fraport.de provides detailed information.

3 Daytime: 6 a.m. until 10 p.m.

4 Nighttime 10 p.m. until 6 a.m.

5 During the six busiest months (2013, 2014, 2015, 2016: May until October).

6 From the parallel runway system with takeoff toward the west, approach from the east.

7 Share of easterly operations: difference from share of westerly operations in % to 100%.

Customer health and safety						
A09 Number of wildlife accidents per 10,000 aircraft movements	Unit	Comment	2016	2017	2018	2019
Frankfurt Airport (birdstrike)	Number per 10,000 Aircraft movements	1, 2	4.86			
Frankfurt Airport (wildlife strike rate)	Number per 10,000 Aircraft movements			5.59	5.34	4.46

[1] In order to comply with the reporting system that came into force with the introduction of EU Directive No. 376/2014, the area of statistics in the German Committee for Prevention of Birdstrikes in Air Traffic (DAVVL) 2017 was restructured and the content adjusted. From 2016, the birdstrike rates are therefore no longer comparable with the birdstrike rates from previous years.

[2] The significant increase in birdstrike numbers corresponds to the trend throughout Germany. It is reasonable to assume that the number of birdstrikes has not increased as such but rather the number of reported sightings. This is because pursuant to EU Directive 376/2014 and DVO (EU) 2015/1080 Annex IV since November 2015 all airport operators, the Federal Bureau for Air Traffic Control, ground handling services and pilots have a uniform obligation to report events relevant for safety (in this case birdstrikes).

Compliance with statutory regulations
There are no violations of legal provisions that have been punished by the authorities with fines or non-monetary penalties, nor are any proceedings pending in this regard.

Glossary

ACI Airports Council International – International association of airports based in Geneva, Switzerland. The organization attempts to boost cooperation between airports, and represents their interests in international forums or in negotiations with governments. It has more than 1,530 member airports located in almost all countries worldwide, 400 airports are within ACI Europe. *www.aci-europe.org*

ADV Arbeitsgemeinschaft Deutscher Verkehrsflughäfen – German Airports Association. An association for civil aviation in Germany, founded in Stuttgart in 1947. This association today represents airports in Germany, Austria, and Switzerland. *www.adv.aero*

Airport charges – Regulate the airport, infrastructure and ground-service charges that the airlines pay to the airport. Fraport airport charges have a component dependent on noise and emissions.

Aircraft movement – A takeoff or a landing operation

Aircraft noise monitoring system/Aircraft noise measurement system of Fraport AG at Frankfurt Airport – The measuring and monitoring system was launched in 1964 and has been continuously improved since then. Apart from recording the aircraft noise situation at each monitoring station, the system is also used for acoustic monitoring of specified flight routes and flight procedures.

APU Auxiliary Power Unit – The power supply unit on board an aircraft that is used to provide electricity for the power supply and air-conditioning on the ground.

Biodiversity – The variety of all life on earth. Science distinguishes four aspects of diversity: genetic diversity, species diversity, diversity of ecosystems (e.g. the variation in habitats), and functional biodiversity (i.e. the variation in biological interactions).

CDP Carbon Disclosure Project – Initiative that wants to introduce more transparency for the CO_2 emissions generated by major companies. This is the world's biggest initiative ever undertaken by the finance industry. It assesses the effects of global climate change on companies and analyzes their strategies. Fraport has been participating since 2006.

Dangerous goods – Materials, compounds and objects which contain substances that present specific hazards during transportation for safety or order of the community, in particular for the general public, important common assets, life and health of humans and animals, and other items on account of their characteristics, their physical or chemical properties, or their status, and which should be classified as dangerous goods on the basis of legal regulations.

Decibel (A); dB(A) – Named after Alexander Graham Bell, the inventor of the telephone, the decibel defines sound pressure levels logarithmically. The sound pressure level characterizes the pressure ratio of a sound event to the human auditory threshold. dB(A) means that the frequency dependence of the human sense of hearing is taken account of during measurement by applying a filter. The sound pressure level defined as A has proved effective and has now been standardized internationally. An increase of ten dB corresponds to a tenfold increase in sound intensity. A difference of 10 dB is equivalent to halving or doubling the perceived volume.

DFS Deutsche Flugsicherung GmbH – German Air Navigation Services (DFS). Its functions are regulated in accordance with the German Air Traffic Control Act (Luftverkehrsgesetz). They mainly comprise air-traffic control and acceptance, processing, and forwarding of flight plans. The DFS is also responsible for the technical facilities and radio navigation systems for aircraft. The DFS has joined forces with airports, airline companies and the aircraft noise commission to establish air-safety procedures and measures to reduce aircraft noise. *www.dfs.de*

EMAS: European Eco-Management and Audit Scheme – A voluntary environmental instrument for companies and organizations with the goal of continuously reducing environmental impacts. EMAS organizations verifiably comply with the legal regulations relevant to the environment, maintain a management and auditing system which allows them to continuously reduce environmental impacts, and periodically draw up an Environmental Statement which places achievements in environmental protection in the public domain. The Environmental Statement presents the environmental footprint for the organization. It is therefore audited by an environmental auditor and confirmed if it fulfills EMAS requirements. EMAS, therefore, represents performance, credibility and transparency.

Emissions – All (solid, gaseous, or odorous) substances, wave radiation or particle radiation emitted from systems and plants, vehicles, products, materials, or other sources (for example aircraft) which exert an impact on the surrounding environment.

Energy equivalent continuous sound level Leq(3) – The sound level which a steady continuous noise would need to have in order to supply the same sound energy as the different individual noises actually occurring during a defined time period. The Leq(3) is a standard international noise measurement with the halving parameter q = 3. The halving parameter q = 3 effectively means that if the aircraft mix remains identical and the number of planes flying past a monitoring station doubles, the continuous sound level increases by 3 dB. If the number of aircraft movements halves, the continuous sound level comes down by 3 dB. Pursuant to the German Aircraft Noise Act (Fluglärmgesetz) ratified in 2007, the continuous sound levels Leq(3) should be calculated separately for day and night in the six months of a year with the highest traffic volumes.

Environmental auditor – natural or legal person who is granted the right under the German Environmental Audit Law (Unweltauditgesetz) to confirm that organizations (industrial companies, service companies, or other institutions) are in conformity with the requirements of the European Eco-Management and Audit Scheme (EMAS). Environmental auditors/organizations are subject to a special authorization procedure.

Environmental performance – the quantifiable results derived from the management of the environmental aspects of an organization by this organization.

Environmental Statement – According to EMAS, an Environmental Statement must be drawn up regularly and placed in the public domain. This statement describes the organization together with its activities, products and services. The in-house Environmental Policy, the key environmental effects, and the Environmental Program are presented together with the concrete goals for improving operational environmental protection. Data on environmental performance is also provided with an assessment. Each Environmental Statement must be verified by an independent, nationally accredited environmental auditor. If it meets the requirements of the EMAS Directive, the environmental auditor declares that the Environmental Statement is valid (validation). The Environmental Statement is made available to the public as a printed document or in electronic form.

EUROCONTROL – Established in 1960 with the goal of providing air traffic control for all international flights in the airspace of the member states. The organization also levies the charges for air traffic control and makes an important contribution to training and research into air traffic control. Eurocontrol currently has 39 member states and the European Union.

FCS Fraport Cargo Services GmbH – The company is the biggest neutral cargo handler at Frankfurt Airport and offers comprehensive full-service packages for cargo handling and complete handling of special freight: dangerous goods, express freight, perishables, animals, valuable freight, etc.

FRA – International three-letter code for Frankfurt Airport.

FraGround – The company FraGround Fraport Ground Services GmbH provides services at Frankfurt Airport particularly in the area of ground handling.

GCS – The company GCS Gesellschaft für Cleaning Service mbH & Co. Airport Frankfurt/Main KG provides services for cleaning, logistics, and engineering at Frankfurt Airport.

GHG – Greenhouse Gas Protocol Initiative (GHG Protocol) develops internationally recognized reporting standards for greenhouse gas emissions generated by companies. The emissions are classified into three so-called “Scopes” on the basis of their origin. Scope 1: Emissions that are generated and controlled directly as part of the business activity of the company (e.g. by the combustion of fuel in company vehicles). Scope 2: Emissions that are generated indirectly by third parties for the company (e.g. electricity generated by utility companies). Scope 3: Indirect emissions that are outside the direct control of the company but are generated because they play an important role in the business activities of the company (e.g. travel by passengers to and from the airport).

GRI – Global Reporting Initiative, engages in a participative procedure to develop guidelines for drawing up sustainability reports by major companies, small and mid-sized companies, governments and non-government organizations.

Hazardous materials – Operating materials that possess hazardous characteristics or may release hazardous substances, for example at the workplace.

IATA – International Air Transport Association. *www.iataonline.com*

ICAO International Civil Aviation Organization – A special body of the United Nations. It is charged with establishing uniform standards for international aviation safety, security, continuity and efficiency, and developing them on an ongoing basis. *www.icao.int*

ICAO International Civil Aviation Organization, Annex 16 – The ICAO has been issuing a standard for limiting the sound emitted by civil aircraft since 1971: Annex 16 to the Agreement on International Civil Aviation. When aircraft are newly licensed, proof must be provided that they are in conformity with the latest requirements defined in the Annex.

Impacts – Effects of noises (sound or noise emissions), airborne pollutants (air emissions), vibrations (vibration emissions) and heat (heat emissions) on the environment.

Indirect dischargers – Wastewater dischargers who do not discharge their wastewater directly into the waterways, but through public drains and sewage plants.

Intermodality – Combined goods transportation, combination of individual and public passenger carriers (park-and-ride, park-and-rail, bike-and-ride) or the use of public transportation, particularly high-speed rail transport as a feeder shuttle for air transport.

ISO – International Organization for Standardization.

ISO 14001 – This international environmental management standard defines globally recognized standards for environmental management. It allows companies to establish environmental protection systematically within their internal structures. *www.iso.org*

Long-distance train station – opened in 1999. This provides the direct link between Frankfurt Airport and the high-speed European rail network. It represents a key factor for the ongoing development of the airport's intermodality, i.e. networking different transportation systems. Frankfurt Airport has a second station under Terminal 1 – the regional station – for the rapid-transit railway (S-Bahn) and regional trains.

NICE Aircraft Services & Support GmbH – The joint subsidiary company of Fraport AG (52% share) and Swissport (48% share) is a specialist for aircraft deicing. Headquartered at Frankfurt Airport, the company has developed innovative procedures exerting minimum impact on the environment. It also provides training for technical personnel at other airports.

Operational direction – The operational direction of an airport depends on the prevailing direction of the wind: aircraft only take off and land against the wind. Frankfurt Airport has the operational directions 25 (this corresponds to 250 degrees on the compass card, i.e. west wind) and 07 (east wind). Because winds in a westerly direction occur 75 percent of the time, the operational direction 25 is flown correspondingly more frequently.

PCA – Pre-Conditioned Air System is an air-conditioning system for aircraft in the parked position achieved by supply of air-conditioning air.

Population equivalent – Unit for comparing trade or industry sewage water with domestic sewage water. A population equivalent is the biological oxygen consumption (measured as the Biological Oxygen Requirement, 60 g BSB5/Ed) or the water consumption (200 l/Ed) that each resident requires on average per day.

Site – According to EMAS "a specific geographical location which is under the control of an organization and where activities are conducted, products manufactured and services are provided, including the entire infrastructure, all equipment and all materials. A site is the smallest unit that can be considered for registration."

Stakeholder – Groups or individuals who are affected by the activities of a company and can exert influence on attainment of their aims. Accordingly, the stakeholders of a company are the employees, shareholders and lenders, customers, suppliers, neighbors, non-government organizations, government agencies, and politicians.

Sustainability – The concept of sustainability has been applied as a model for the sustainable development of humanity. Sustainable development meets the needs of the people living on the planet at the moment without endangering the opportunities of future generations in turn to satisfy their needs.

TU Traffic Unit – Equivalent to a passenger with baggage (excluding transit passengers, according to ADV and ACI) or 100 kg cargo or mail. Transit passengers are people who do not leave the aircraft (< one percent of all passengers).
ADV = German Airports Association,
ACI = Airports Council International.

CERTIFICATE

The Institut für Umwelttechnik Dr. Kühnemann und Partner GmbH – Umweltgutachter –
hereby certifies, that the following companies

Fraport AG
Frankfurt Airport Services Worldwide
60547 Frankfurt am Main

FCS GmbH
Frankfurt Cargo Services GmbH
60547 Frankfurt am Main

FraGround Fraport Ground Services GmbH
CargoCity Nord, Gebäude 458
60549 Frankfurt am Main - Flughafen

GCS Gesellschaft für Cleaning
Service mbH & Co. Airport Frankfurt / Main
60549 Frankfurt am Main – Flughafen

NICE Aircraft Services & Support GmbH
Cargo City Süd, Gebäude 640
60549 Frankfurt am Mian

for the scopes

- **Provision of infrastructure, buildings and related services for air traffic**
- **Cargo handling**
- **Ground handling services**
- **Maintenance and cleaning activities**
- **Deicing / Anti-icing of Aircrafts on Ground and**
- **related Services**

has introduced, applied and further developed an environmental management system for the above mentioned scopes.
The re-validation audit between August 24th and 28th in 2020 proved, that the requirements of DIN EN ISO 14001:2015 are met.

This certificate is valid until: 09.09.2023
Certificate register number: 20 – 10616 – 05 - 01

Hannover, 10.09.2020

Dr. Burkhard Kühnemann
Environmental verifier, DE-V-0103

Dr. Kühnemann und Partner Institut für Umwelttechnik

Institut für Umwelttechnik Dr. Kühnemann und Partner
Prinzenstr. 10 A D-30159 Ha

Validation for

Fraport AG
60547 Frankfurt am Main

FCS GmbH Frankfurt Cargo Services GmbH
60547 Frankfurt am Main

FraGround Fraport Ground Services GmbH
60549 Frankfurt am Main

GCS Gesellschaft für Cleaning Service mbH &
Co. Airport Frankfurt/Main KG
60549 Frankfurt am Main

NICE Aircraft Services & Support GmbH
60549 Frankfurt am Mian

EMAS
VERIFIED
ENVIRONMENTAL
MANAGEMENT
DE-125-00032

These organisations maintains an environmental management system according to the actual regulation (EC) 1221/2009 including amending regulations.

The public is informed about the operational environmental protection of this location in accordance with the communtly system for the environmental management system and the environmental audit.

The inital validation took place on June 5th, 1999 and was carried out at the Frankfurt am Main Chamber of Commerce and Industry under the register number D-125-00032.

Hannover, 10th September 2020

Dr. Burkhard Kühnemann
Environmental verifier, DE-V-0103

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Dr. Kühnemann und Partner Institut für Umwelttechnik

CERTIFICATE

Fraport AG
Frankfurt Airport Services Worldwide
Service delivery for the transport sector
Registration-No.: DE-125-00032

Site
Fraport AG
FCS Frankfurt Cargo Services GmbH
NICE Aircraft Services Support GmbH
GCS Gesellschaft für Cleaning Service mbH
& Co. Airport Frankfurt/Main KG
FraGround Fraport Ground Services GmbH
Flughafen Frankfurt
60547 Frankfurt am Main

Date of Revalidation: 28th September 2020
This certificate is valid until: 06th July 2023

EMAS
VERIFIED
ENVIRONMENTAL
MANAGEMENT

This organisation has established an environmental management system according to Regulation (EC) No 1221/2009 and EN ISO 14001:2015 (sections 4 to 10) to promote the continual improvement of environmental performance, regularly publishes an environmental statement, has let the environmental management system be verified and the environmental statement be validated by an independent and accredited verifier, is registered under EMAS (www.emas-register.de) and therefore entitled to use the EMAS-Logo.

IHK Industrie- und Handelskammer Frankfurt am Main

Frankfurt am Main, 25th January 2021

Ulrich Caspar
President

Matthias Gröbe
Director General

Environmental Auditor's Declaration on Verification and Validation Activities

The Institut für Umwelttechnik Dr. Kühnemann und Partner GmbH
with registration number DE-V-0133,

represented by Dr. Burckhard Kühnemann with registration number DE-V-0103
and Ulrich Schmidt with registration number DE-V-0366,

accredited or licensed for the scope . . . . . NACE 52.23,

declares to have verified whether the site or the whole organization
as indicated in the updated environmental statement of the organization . . . . . Fraport AG

with registration number DE-125-00032

meets all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS).

By signing this declaration, I declare that:

– the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,

– the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,

– the data and information of the updated environmental statement of the organization reflect a reliable, credible and correct image of all the site's activities, within the scope mentioned in the environmental statement.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication.

Frankfurt, den

Dr. Kühnemann und Partner Institut für Umwelt

Business address: Prinzenstraße 10a, 30159 Hannover, Germany
Registration number: DE-V-0133

Dates
The next abridged Environmental Statement will be validated by an independent environmental expert in July 2021 and then published.

Imprint

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All data as of August 2020

* *20 cents per call from a German landline, regardless of the duration of the call, no more than 60 cents from mobile network.*

** *to the issues of aircraft noise and airport expansion, in Germany exempt from charges.*

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Frankfurt Airport Services Worldwide
Corporate Development, Environment and Sustainability
60547 Frankfurt am Main

www.fraport.com