

# ***Abridged Environmental Statement 2009***

*for Frankfurt Airport*

*Update of the Environmental Statement 2008*



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With the abbreviated environmental statement 2009 Fraport AG updated the information from the environmental report with integrated environmental statement from 2008. We report about the development of the indicators and about the state of affairs regarding our environmental goals and measures.

**The next abridged environmental statement appears in June 2010.**

## Ten years of EMAS – ten years of audited environmental management at Frankfurt Airport



Since 1999, Fraport AG with the Frankfurt Airport site is constantly validated by governmentally accredited and inspected environmental auditors: the European regulation "Eco-Management and Audit Scheme (EMAS)" represents the basis. Since 2002, the verification is also carried out in accordance with the international standard ISO 14001.

The aviation hub Frankfurt was one of the first airports to be validated by the critical judgment of independent auditors. Since then, the process is conducted annually. The validation according to EMAS is based on the belief that an airport of this size can only compete lastingly with a sustainable environmental policy that is practically realized and documented for the public. By now, many other airports in Germany and in Europe are matched based on this system.

Basis for the validation is a detailed environmental report, published every three years by the company. It appeared at last at the end of 2008. In the intermediate years, Fraport publishes an abridged environmental statement, which includes information about the current situation of the environmental program and respectively new goals and measures next to the updated key data.

In excess of Frankfurt Airport site, the promotion of the environmental management at other locations of the Fraport Group is part of the "strategic sustainability goals of Fraport until 2020." Systematically improvement of the environmental efforts and to make this process transparent is the objective.

Dr. Peter Marx,  
Vice President Environmental Management

Dr. Patrick Neumann-Opitz,  
Environmental Management System Coordinator of Fraport AG

## General data Frankfurt Airport 2008

Airport size [km <sup>2</sup> ]	19	Coordinated/uncoordinated flights	99%/1%
Number of runways: Take-off and Landing	2	Military use	none
Take-off	1	Number of passengers	53,472,915
Declared RXY Capacity (Movements per hour)	83	Air Cargo [tons]	2,042,956
Number of airlines: Summer schedule	125	Air mail [tons]	90,346
Winter schedule	117	Traffic units (without transit)	74,350,444
Number of destinations: Summer schedule	307	Number of employees	approx. 70,000
Winter schedule	272	Number of ground handlers	
Ratio domestic/international flights	12.3%/87.7%	(in accordance with ICAO DOC 9562)	118
Number of aircraft movements	485,783	Minimal turnaround time (minutes)	45
Number of movements per day (6 a.m. until 10 p.m.)	437,260	Number of haulage companies	120
Number of movements per night (10 p.m. until 6 a.m.)	48,523	Baggage performance index	99.88%
Intermodality: Number of train stations	3	Collaborative decision management	
Number of highways	2	(airport, airlines, ATM) (yes/no)	yes
Number of sea links	-		
Community organized environmental partnerships at the airport (yes/no)	no		

## Environmental indicators at Frankfurt Airport site (1)

Environmental indicators	2007	2008	Δ 07/08	Remarks
<b>Aircraft noise</b>				
Percentage of western operations (from the parallel runway system with take-off toward the west, approach from the east)				
	76	69	- 7%-points	
Percentage of eastern operations (from the parallel runway system with take-off toward the east, approach from the west)				
	24	31	+ 7%-points	
<b>Energy equivalent continuous sound level [Leq(3) in dB(A)]</b>				
based on the German Aircraft Noise Act in conformity with DIN 45643				
<b>Approach:</b>				
Monitoring station 01 Offenbach Lauterborn Day <sup>1</sup>	60	60		Leq(3) is calculated during the six busiest months from May until October based on the German Aircraft Noise Act, segmented in day and night.
Monitoring station 01 Offenbach Lauterborn Night <sup>2</sup>	55	54		
Monitoring station 06 Raunheim Day <sup>1</sup>	61	62		
Monitoring station 06 Raunheim Night <sup>2</sup>	55	57		
<b>Take-off:</b>				
Monitoring station 12 Bad Weilbach Day <sup>1</sup>	60	60		Leq(4) is not calculated anymore since the introduction of the new German Aircraft Noise Act.
Monitoring station 12 Bad Weilbach Night <sup>2</sup>	49	48		
Monitoring station 51 Worfelden Day <sup>1</sup>	57	57		Changes to the monitoring stations on the approach and take-off routes of the parallel runway system are mainly based on the fluctuations in the distribution of operations (east/west) from year to year caused by different weather conditions or wind directions.
Monitoring station 51 Worfelden Night <sup>2</sup>	54	53		
Frequency of the exceedance of the maximum level of 72 dB(A) per night for the six busiest months				
Monitoring station 01 Offenbach Lauterborn	11.0	8.4		The website <a href="http://www.fraport.de">www.fraport.de</a> provides detailed information
Monitoring station 06 Raunheim Tag	13.7	18.8		
Monitoring station 12 Bad Weilbach	3.2	2.4		
Monitoring station 51 Worfelden	6.2	5.2		

<sup>1</sup> 6 a.m. until 10 p.m., <sup>2</sup> 10 p.m. until 6 a.m.

## Environmental indicators at Frankfurt Airport site (2)

Environmental indicators	2007	2008	Δ 07/08	Remarks
<b>Emissions acting locally from air traffic**</b>				
<i>Air traffic: Aircraft emissions measured per calendar year up to a height of 300 meters (taxiing, take-off, climb-out, descent incl. roll-out, engine ignitions, APU) [in tons]</i>				
NOx	2,355	2,381	+ 1.1%	
HC	643	623	- 3.1%	
PM10	11.43	11.40	- 0.3%	
<i>Air traffic: Aircraft emissions measured per calendar year up to a height of 300 meters (taxiing, take-off, climb-out, descent incl. roll-out, engine ignitions, APU) [in grams/traffic unit*]</i>				
NOx	30.95	31.84	+ 2.9%	
HC	8.46	8.32	- 1.7%	
PM10	0.150	0.152	+ 1.3%	
Specific increase due to the decrease of traffic units by 1.6% from 2007 to 2008.				Specific increase due to the decrease of traffic units by 1.6% from 2007 to 2008.

<b>Traffic</b>				
Percentage of passengers using public transport [%]	34.4	36.0	+ 1.4%-points	
Percentage of passengers using high-speed trains [%]	17	19	+ 2%-points	
Percentage of employees at the airport using public transport [%]	37.8	- <sup>2</sup>		<sup>2</sup> The survey at the site will be completed at the end of July.

<b>Energy consumption</b>				
Energy consumption (electricity, heating, cooling) [mil kWh]	1,034.6	1,069.4	+ 3.4%	
Energy consumption (electricity, heating, cooling) [kWh/traffic unit*]	13.7	14.4	+ 5.1%	
Electricity [mil kWh]	566	577	+ 1.9%	
Heating energy [mil kWh]	358	376	+ 5.0%	District heating and quantity of thermal heating developed on site from local heating, gas, and heating oil. Increase due to C/D link (Fraport), transition building (building 196, Fraport), enlargement pier C (building 199, Fraport), cargo handling hall FCS in CCS, rented to JAL (building 533). The winter months in the year 2008 were colder than the ones in 2007 (annual degree days plus 9%).
Cooling energy [mil kWh]	110	116	+ 5.5%	Cooling exclusively from external district cooling supply. Increase is mainly due to the connection of additional buildings to the district cooling network. The summer 2008 was warmer than the one in 2007.

\*A "traffic unit" is equivalent to one passenger with baggage or 100 kilogram cargo or mail.

\*\*Since the creation of the annual emissions inventory at Frankfurt Airport the procedure for the calculation of aircraft emissions was revised according to the current findings and vastly automated.

An essential modification in the evaluation for 2008 affect the system classification. Until now, a 100 m emissions height was set for the wake lowering in general (as for example 300 m + 100 m). Since this is a pure expansion effect, which is not regarded in the emissions evaluation, it was taken out of the calculation. This procedural method correlates with the common standard for emission inventory.

This effect results in slightly fewer CO<sub>2</sub>- und NOx emissions compared with analysis that were conducted in the past. In order to allow comparability within the time series, the emissions for the year 2007 were recalculated with the new method.

## Environmental indicators at Frankfurt Airport site (3)

Environmental indicators	2007	2008	Δ 07/08	Remarks
<b>Drinking water and service water</b>				
Drinking water [mil m <sup>3</sup> ]	1.687	1.581	– 6.3%	
Drinking water [liter/traffic unit *]	22.3	21.5	– 3.6%	
Service water [mil m <sup>3</sup> ]	0.152	0.191	+ 25.7%	The restroom facilities in terminal 1 are gradually connected to the non-potable water supply (recycled Main water) since May 2008. Thereby, approximately 60,000 m <sup>3</sup> service water was used there in 2008. Moreover, terminal 2 and the buildings of CargoCity South are connected to the non-potable water supply.
Share of service water in total water consumption [%]	8.3	10.8	+ 2.5%-points	
<b>Waste water</b>				
Sewage [mil m <sup>3</sup> ]	1.605	1.548	– 3.6%	
Sewage [liter/traffic unit *]	21.2	20.8	– 1.9%	
<b>Ground water</b>				
Nitrate content at measuring station 45 [mg/l]	84	69.7	– 17%	The intensive process of nitrate removal is having a significant impact on the decrease of concentration.

\* A "traffic unit" is equivalent to one passenger with baggage or 100 kilogram cargo or mail.

## Environmental indicators Fraport AG at Frankfurt Airport site

Environmental indicators	2007	2008	Δ 07/08	Remarks
Greenhouse gases Fraport AG				
Direct CO <sub>2</sub> emissions (Scope 1 GHG Protocol: fuels, heating oil for combustion, natural gas, propane gas) [tons]				
	33,300	34,100	+ 2.4%	
thereof fuel consumption [tons]	31,400	28,545	- 9.1%	Under-consumption due to the change of the Ground Power Units (GPU) from diesel to heating oil operation.
thereof heating oil for ground power units [t]	-	3,500		
Indirect CO <sub>2</sub> emissions (Scope 2 GHG Protocol, here purchase of electricity, heating, cooling including technical losses in the network at Frankfurt Airport site [tons]				<sup>1</sup> Without the technical losses in the network 202,813 tons in the year 2007. Calculation with a conventional emission factor for electricity. The conventional emission factors were reduced in 2008 compared to 2008.
	216,000 <sup>1</sup>	189,100	- 12.5%	
		48,700	- 77.5%	Calculation under consideration of RECS certificates (Renewable Energy Certificate System).
Traffic				
Percentage of employees using public transport [%]				
	33.2	42.9	+ 9.7%-points	
Energy				
Energy consumption (electricity, heating, cooling) [mil kWh]				
	566.9	569.1	+ 0.4%	
Electricity consumption [mil kWh]	285.6	296.0	+ 3.6%	
Drinking water and service water				
Drinking water [mil m <sup>3</sup> ]				
	0.967	0.988	+ 2.2%	
Service water [mil m <sup>3</sup> ]	0.117	0.157	+ 34.2%	See comment on service water Frankfurt Airport site
Hazardous materials				
Hazardous materials that were supplied as dangerous goods and consumed (excluding fuel) [tons]				
	223	412	+ 84.7%	Value includes propane gas consumption for operation of firefighting exercise. Strong fluctuations on account of varying consumption of deicing agents from year to year. Value for 2008 includes the propane gas consumption of the heater in building 694 (firehouse 1) with 60 tons and ground deicing agents with 179 tons, increased practice of Fraports firefighters causes 21 additional tons of propane gas in 2008 compared to 2007.
Waste				
Recycling per year (without soil and construction debris) [tons]				
	20,422	20,023	- 2.0%	
Disposal per year (without soil and construction debris) [tons]				
	4,280	4,089	- 4.5%	
Recycling rate [%]	83	83	0%-points	



## Environmental indicators Fraport Cargo Services GmbH (FCS) at Frankfurt Airport site

Environmental indicators	2007	2008	Δ 07/08	Remarks
<b>Traffic</b>				
Cargo [tons]	340,881	358,358	+ 5.1%	
<b>Energy</b>				
Diesel fuel consumption [litres]	164,477	147,944	- 10.1%	Variation in the composition of cargo declines operational rides (increase in "Complete Units" at the expense of loose cargo).
Gasoline fuel consumption [litres]	2,800	3,058	+ 9.2%	Purchase of additional company cars.
Electricity consumption, general [kWh]	2,919,606	3,359,553	+ 15.1%	Increased energy consumption for materials handling equipment due to increased handling of cargo, rebuilding and expansion of existing infrastructure (amongst others lighting of ramps; container compactor); increased number of employees.
Energy air conditioning [kWh]	6,318,456	6,089,450	- 3.6%	
<b>Water</b>				
Drinking water [m <sup>3</sup> ]	7,196	6,939	- 3.6%	A lavatory for employees of the cargo hall was redeveloped and renewed.
<b>Waste</b>				
Recycling per year (without soil and construction debris) [tons]	802.48	766.29	- 4.5%	Variation in the composition of cargo (increase in "Complete Units" at the expense of loose cargo) leads to a decline in the amount of additional packaging. With regard to the implementation of the FCS-waste concept, suppliers are encouraged to pick up their disposable pallet.
Disposal per year (without soil and construction debris) [tons]	2.28	0.163	- 92.9%	Amount from 2007 derives predominantly from a damaged cargo shipment with paint (2 tons).



## Current Status Environmental Program 2008, supplemented 2009 (1)

Sphere of activity	Goal	Measure	Deadline	Goal achievement	Status of measures (May 2009)
<b>Air pollutants and CO<sub>2</sub></b>	Improve air quality and reduce greenhouse gases at FRA site and the region per traffic unit	Replacement of the current stock of mobile ground support equipment by purchasing up-to-date models that comply with directive 2004/26/EC	Ongoing	Still valid	The inventory of mobile work machines equaled 923 units in the beginning of 2009. 159 mobile work machines were purchased in 2008 in accordance with the up-to-date exhaust standards. This is a transfer rate of approx. 17% based on the inventory of the fiscal year change. The acquisition of 13 mobile work machines for the year 2009 is already started/implemented. This is a transfer rate of approx. 1.5%. The further replacement purchase depends on the current economical situation.
		Optimization of ground handling processes to avoid empty runs by developing and implementing new software tools (Plandis project), in this case baggage transport	Starting in the 1st quarter, 2009	Still valid	The launch of the new disposition system for the baggage transport is planned for the 4th quarter, 2009. A prototype of the baggage transportation was already delivered and is currently tested.
		Testing deployment of fuel cell vehicles at Fraport within the framework of the European Union's project "Zero Regio"	By 4th quarter, 2009	Still valid	Three cell vehicles are currently in use at the airport. The fourth one was given to the company Infraser Höchst. All the vehicles are used on a regular basis. The filling station was revised in 2009, so that we expect a better availability and function for the year 2009. The project will be in process until November 14th, 2009. The experiences made so far with the vehicles are very good. The vehicles are well adopted and feature a high availability.
		Development of a monitoring system for the CO <sub>2</sub> emissions from the arrival and departure of passengers and employees	By 2nd quarter, 2011	Still valid	An basic calculation system is developed and will be improved gradually in the following years. First agreements were made for this with other Fraport departments.
	Reduce aircraft emissions in the LTO cycle by approximately two to four percent depending on pollutant	Reduction of aircraft taxiing and waiting times before take-off by planning of the pre departure sequenz (co-ordination of the start up release on the planned runway slots) in connection with implemented A-CDM (Airport Collaborative Decision Making)	Starting 2011	Still valid	The measure had to be adjusted to the current planning situation. The date for the introduction was changed to 2011 due to the inclusion of the airport expansion plan.
	Reduce CO <sub>2</sub> -emissions at Fraport AG resulting from electricity production by 100%	Acquisition of electricity by Fraport AG from renewable energy sources	2008 until 2013	Still valid	In the years 2008/2009, Fraport AG will exclusively purchase energy from renewable sources (hydropower), which will be confirmed by RECS certificates (Renewable Energy Certificate System).
	Inclusion of third parties (external companies at the FRA location) to reduce CO <sub>2</sub> -emissions	Acquisition of CO <sub>2</sub> -neutral energy from renewable sources.	2010 until 2013	New goal	–
	Usage of renewable energy	Use of geothermal energy at Airport Frankfurt: – feasibility study  – preliminary investigation program	3rd quarter, 2008  2nd quarter, 2010	Still valid  Still valid	The feasibility study is finished and it features a potential for the employment of geothermal energy. Fraport has indulged in a so called field Fraport nord for the pre-exploration program. This so called exploration field ranges over the districts Offenbach and Groß-Gerau as well as over Frankfurt and the region Wetterau.

## Current Status Environmental Program 2008, supplemented 2009 (2)

Sphere of activity	Goal	Measure	Deadline	Goal achievement	Status of measures (May 2009)
<b>Air pollutants and CO<sub>2</sub></b>	Analysis and development of operational and political courses of activity regarding climate change	Research project "Chamäleon": Adaptation to the climate change in public supply businesses	From 4th quarter, 2009	New goal	Start of the project from 4th quarter, 2009. In cooperation with Carl von Ossietzky University of Oldenburg and the Institute for ecological Economic Research (IÖW) GmbH.
<b>Transportation</b>	Displacement of truck traffic to rails	Introduction of a regular rail link between FRA and Leipzig for transporting of freight	Starting in 3rd quarter, 2008	Still valid	Predicted reduction potential of approx. 1.500 tons.  Due to unsettled questions in the operator concept, the start of operations for the AirCargo Express had to be postponed. In the 4th quarter of this year, a testing phase took place in the CargoCity South, which was finished successfully by the involved Fraport departments. The concept of a cargo train connection between FRA and Leipzig is further pursued by Fraport under environmental aspects.
	Reduce the number of employees using private transport to go to work at Frankfurt Airport	Trialing CARRIVA Carpool concept for employees at Frankfurt Airport	Starting in 4th quarter, 2008	Still valid	The project is supported by Fraport and Lufthansa, as well as by the federal ministry for traffic, construction, and city development. – Registered users: 1013, – Carpooling offers: approx. 350 per day on weekdays, approx. 35 per day on Saturdays and Sundays – Internet placements: 25 – 40 per day on weekdays – Total placements since June 2008: approx. 6000, equals approx. 150,000 vehicle kilometers, about 27 tons CO <sub>2</sub> were saved.
<b>Energy</b>	Reduce energy consumption and corresponding CO <sub>2</sub> -emissions	Upgrading of the central ventilation center 04	2007 until 2010	Still valid	Savings of approx. 1,800 MWh per year (equivalent to approx. 400 tons CO <sub>2</sub> per year). Project is currently being implemented.
		Upgrading of the central ventilation center 18/30	2008 until 2011	Still valid	Savings of approx. 6,600 MWh per year (equivalent to 2,000 tons CO <sub>2</sub> per year). Project is currently implemented.
		Upgrading of the central ventilation center 22/32, 24, 43, 44	2009 until 2012	New goal	Quantification occurs with completion of the concept planning. Project is in design.
		Replacement of defect lighting with energy saving lamps	Up to 4th quarter, 2010	Still valid	Reduction of approx. 8,700 MWh per year (equivalent to approx. 5,000 tons CO <sub>2</sub> ). Realization is approaching.
		Exchange of CRT-screens through TFT-flat screens  Overnight shutdown of all computers and screens	By 4th quarter, 2011	New goal	Savings of approx. 600 MWh (equivalent to more than 300 tons CO <sub>2</sub> ) through "Green IT". Exchange is conducted gradually.

## Current Status Environmental Program 2008, supplemented 2009 (3)

<i>Sphere of activity</i>	<i>Goal</i>	<i>Measure</i>	<i>Deadline</i>	<i>Goal achievement</i>	<i>Status of measures (May 2009)</i>
<b>Noise</b>	Establish greater transparency for aircraft noise	Upgrading the noise monitoring system with monitoring stations that collect data from new or changed flight routes	Projected in 2010	Still valid	An implementation of new measurement stations takes place after consultation in the Noise Abatement Commission and in agreement with the different community locations until 2010.
		Annual calculation of aircraft noise contours in conformity with the regulations defined in the new Aircraft Noise Act (to be implemented) together with presentation of the relevant figures for people affected	Ongoing, projected to start in 2009	Still valid	The first regulation for the execution of the Aircraft Noise Act (regulation about the data collection and the calculation procedure for the determination of noise protection scopes – 1. FlugLSV) was passed in 2008 and published in the Federal Bulletin (BAnz. No. 195a of 23rd of December, 2008). The implementation of the aircraft noise calculation according to the so called AzB 2008 in the commercially used calculation program CadnA that is used by Fraport was quality assured in May 2009 by the German Federal Environment Agency.
	Participate in the ongoing development of active noise abatement measures	Assessment of the proposed active noise abatement measures based on technical feasibility, and capacity and security issues  Evaluation of the realistically achievable potential options for individual measures to achieve noise reduction and verification that they can be combined with other measures	Starting in 2008	Still valid	The brain trust “Active Noise Abatement” of the airport and region panel under participation of Fraport AG has started the broad inspection processes concerning the practicability, the capacity and safety relevant aspects as well as the achievable noise mitigation potential in December 2008.
	Mitigation of the ground noise	Installation of a noise impact reduction facility for the execution of engine run ups on the apron of the A 380 hangar	Launch in 4th quarter, 2010	New goal	Announcement procedure for the measure is in progress (planning-and construction activities).
<b>Water</b>	Further reduce of drinking water consumption in Terminal 1	Creation of a service water concept and further expansion of service water use in Terminal 1	2nd quarter, 2011	Still valid	Concept is developed. 114 out of 337 restroom facilities are supplied with service water. The service water access on the already prepared process water piping network in the restroom facilities is available for additional 32 restroom facilities until August 2010. The service water supply of the buildings 205 and 206 will be finished by August 2009. The buildings 208 and 200 A and B-West are to be connected to the process water network by 31st of December, 2010. The supply of the wall hydrants in Terminal 1 result by means of service water.
<b>Environmental communication</b>	Inclusion of the stakeholders in the climate protection activities at the Frankfurt Airport site	Foundation of a climate protection workgroup FRA with stakeholders to reduce greenhouse gas emissions.	3rd quarter, 2009	New goal	Foundation is in prearrangement.

## Validation Statement

The Environmental Management System of Fraport AG comprising environmental policies, environmental objectives and programs, the procedures defined in the Eco-Management and Audit Scheme (EMAS) and the Environmental Statement – for the location Frankfurt Airport – are in conformity with (EEC) No. 761/2001 (this refers to the German publication).

The facts and figures presented in the Environmental Statement give a fair and accurate picture of the environmental relevance of all on-site activities.

Frankfurt, June 26, 2009

The official German version of the Abridged Environmental Statement 2009 has been validated by:  
Dr. Burkhard Kühnemann  
Certified Environmental Expert D-V-0103

### *Environmental auditor*

The authorized independent environmental auditor is from the environmental organization Institute für Umwelttechnik Dr. Kühnemann and Partner.  
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### *Schedule*

The next abridged environmental statement will be validated and published in June 2010.  
The next comprehensive environmental statement, scheduled for June 2011, will be subject to validation by an environmental expert before being released for publication.

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