

SUSTAINABILITY INDICATORS

MUC 22

BUILDING
CONNECTIONS



Value generated / GRI 201-1

IN € MILLION

Group	2022	2021	2020	2019
Revenue	1,188.00	601.3	579.7	1,568.0
+ Other income	45.3	79.2	44.5	43.2
Total revenue	1,233.30	680.5	624.2	1,611.1
+ Income from investments	-0.2	-2.6	-1.8	1.4
./. Non-personnel expenses	-494.7	-307.2	-377.4	-519.6
./. Depreciation	-266.4	-239.9	-242	-208.8
= Value generated	472.0	130.8	3.0	884.1

The value generated calculation represents the difference between the service provided by the company and the value of the advance services required.

The distribution statement shows the proportions distributed to those involved in the value creation process – employees, the public sector, and lenders. Payments provided by FMG to the public sector include taxes. The interest on the loans to shareholders is included under the «Lenders» recipient group. Income from investments includes the result from companies valued at equity. The non-personnel expenses include the cost of materials and other expenses.

Value distributed / GRI 201-1

IN € MILLION

Group	2022	2021	2020	2019
Employees	500.0	419.1	408.6	537.2
Lenders (netted)	37.4	48.0	27.8	90.0
Public sector	-6.6	-75.0	-112.0	79.0
Munich Airport Group	-58.8	-261.3	-321.4	177.8
= Value generated	472.0	130.8	3.0	884.1

Air traffic indicators / GRI A01, GRI A02, GRI A03 ✓

	2022	2021	2020	2019
Total passenger volume	31,653,579	12,502,913	11,120,224	47,959,885
Total commercial traffic ¹⁾	31,642,738	12,496,432	11,112,773	47,941,348
Of which: scheduled and charter traffic	31,618,832	12,474,794	11,094,096	47,915,966
Of which: other commercial traffic ¹⁾	23,906	21,638	18,677	25,382
Non-commercial traffic ¹⁾	10,841	6,481	7,451	18,537
Total aircraft movements	285,028	153,097	146,833	417,138
Total commercial traffic ¹⁾	276,821	146,675	140,480	407,612
Of which: scheduled and charter traffic	263,807	134,193	130,622	395,951
Of which: other commercial traffic ¹⁾	13,014	12,482	9,858	11,661
General air traffic (non-commercial traffic) ¹⁾	8,207	6,422	6,353	9,526
Seating capacity utilization (in %) Scheduled and charter traffic	77.5	65.2	59.6	77.2
Cargo handling (cargo and airmail carried in t)	266,779	173,307	150,928	350,058
Traffic units (TU) of commercial traffic	34,290,578	14,211,819	12,610,084	51,406,376

¹⁾ For term definitions see the Annual Statistics Report 2022, p. 19/20

 Air traffic indicators

Passenger indicators [commercial traffic only] / GRI A01 ✓

	2022			2021			2020			2019		
	Total	Domestic	International	Total	Domestic	International	Total	Domestic	International	Total	Domestic	International
Total commercial traffic	31,642,738	4,818,806	26,823,932	12,496,432	2,295,855	10,200,577	11,112,773	2,562,495	8,550,278	47,941,348	9,620,427	38,320,921
Of which: arrivals	15,864,243	2,393,840	13,470,403	6,231,524	1,154,455	5,077,069	5,619,856	1,279,520	4,340,336	24,039,970	4,797,621	19,242,349
Of which: departures	15,758,549	2,417,903	13,340,646	6,247,229	1,133,472	5,113,757	5,480,948	1,278,159	4,202,789	23,865,826	4,814,088	19,051,738
Of which: transit passengers ¹⁾	19,946	7,063	12,883	17,679	7,928	9,751	11,969	4,816	7,153	35,552	8,718	26,834
Number of O&D passengers ²⁾ in millions	17.9	-	-	8.0	-	-	7.3	-	-	29.3	-	-
Number of transfer passengers in millions	13.7	-	-	4.5	-	-	3.8	-	-	18.5	-	-
Proportion of transfer passengers in %³⁾	43	-	-	36	-	-	34	-	-	38⁴⁾	-	-

1) Transit passengers arrive at the airport and continue their journey on the same aircraft. They are counted only once when landing.
2) O&D passengers begin or end their journey at the airport.
3) The data collection method for the proportion of transfer passengers was changed. Since 2020, the value is now determined by a statistical analysis.
4) Errors identified during the review of the data were subsequently corrected.

Aircraft movements¹⁾ / GRI A02 ✓

	2022			2021			2020			2019		
	Total	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures
Passenger flights, scheduled/charter	259,449	129,642	129,807	129,737	64,801	64,936	126,013	63,067	62,946	392,328	196,019	196,309
Domestic	51,254	25,600	25,654	28,537	14,253	14,284	35,202	17,595	17,607	95,209	47,572	47,637
International	208,195	104,042	104,153	101,200	50,548	50,652	90,811	45,472	45,339	297,119	148,447	148,672
Cargo flights, scheduled/charter	3,882	1,935	1,947	4,038	1,962	2,076	4,398	2,185	2,213	3,441	1,716	1,725
Domestic	1,201	682	519	1,301	748	553	1,463	758	705	1,482	796	686
International	2,681	1,253	1,428	2,737	1,214	1,523	2,935	1,427	1,508	1,959	920	1,039
Airmail flights, scheduled/charter	476	243	233	418	209	209	211	106	105	182	91	91
Domestic	476	243	233	418	209	209	211	106	105	182	91	91
International	0	0	0	0	0	0	0	0	0	0	0	0
General air traffic	21,221	10,704	10,517	18,904	9,572	9,332	16,211	8,029	8,182	21,187	10,748	10,439
Domestic	8,695	4,531	4,164	7,845	3,999	3,846	7,251	3,655	3,596	8,869	4,583	4,286
International	12,526	6,173	6,353	11,059	5,573	5,486	8,960	4,374	4,586	12,318	6,165	6,153
Total	285,028	142,524	142,504	153,097	76,544	76,553	146,833	73,387	73,446	417,138	208,574	208,564

¹⁾ Military flights are not included.

[Detailed information on night-time aircraft movements can be found in the monthly immissions reports](#)

[Detailed information on the night-flight curfew](#)

Cargo tonnage [commercial handling] / GRI A03 ✓

I N T

	2022			2021			2020			2019		
	Cargo handled	Incoming cargo	Outgoing cargo	Cargo handled	Incoming cargo	Outgoing cargo	Cargo handled	Incoming cargo	Outgoing cargo	Cargo handled	Incoming cargo	Outgoing cargo
Cargo-only flights	63,300	33,484	29,816	72,194	33,282	38,912	50,253	22,813	27,440	46,024	16,750	29,274
Bellyhold cargo on passenger flights	195,557	79,969	115,588	94,519	39,255	55,264	94,860	41,471	53,389	285,590	122,900	162,690
Total comprehensive income	258,857	113,453	145,404	166,713	72,537	94,176	145,113	64,284	80,829	331,614	139,650	191,964

Dialogue management: Dealing professionally with feedback / GRI 2-29

The central dialog management team quickly responds to, categorizes, and analyzes all customer feedback on a case-by-case basis. This office deals with constructive criticism and positive feedback, in addition to complaints. In order to elaborate optimal process solutions for passengers and, if required, to develop improvements, the divisions, authorities, and system partners active all along the passenger experience chain are closely networked with one another.

Dialog management recorded a total of 2,272 complaints in 2022. This is 274% more than in 2021. This increase is due to the resumption of air traffic as travel restrictions were removed. In 2022, Munich Airport recorded a relative complaint rate of 72 complaints per million passengers handled. A large proportion of the complaints were related to airlines and baggage handling. The focus was on baggage claim and baggage tracing.

Dialogue management / GRI 2-29 ✓

NUMBER OF ENTRIES

	2022	2021	2020	2019
Total complaints	2,272	829	932	3,137
Number of complaints on key issues				
Airline	501	116	98	177
Airport facility	368	186	171	640
Baggage collection	274	40	64	449
Parking	66	49	59	156
Passport control	71	29	59	298
Security checks	261	106	112	497
Passenger transport ¹⁾	96	96	65	
Airport Service ¹⁾	159	62	134	
Lost & Found ²⁾	230			
Other	246	145	170	920

¹⁾ first recorded in 2020
²⁾ first recorded in 2022

Donations and sponsorship¹⁾ / GRI 413-1

PROPORTION OF TOTAL BUDGET IN %

	2022	2021	2020	2019
Sport	77	60	55	46
Social welfare	4	18	21	21
Education	2	13	10	11
Culture	17	7	13	18
Environment	0	2	1	4

¹⁾ The annual sponsorship budget is linked to FMG's external sales.

Firefighting service deployments / GRI 417-1

	2022	2021	2020	2019
Total alarms	8,111	5,028	4,915	4,536
Number of deployments	3,257	1,511	1,985	2,715
Of which: technical support jobs	1,623	1,140	1,262	1,891
Of which: security monitoring jobs ¹⁾	915	296	629	561
Of which: firefighting jobs	719	75	94	263
Of which are other firefighting operations²⁾	3,609	3,006	387	676
Rescue service deployments	1,245	511	473	1,706

¹⁾ On-call service where the Airport Rescue and Firefighting service attends certain situations with particularly high risk levels in order to provide immediate support should a risk occur

²⁾ other activities and operations of the fire department («other» Alarm labels/assessments)

As part of Corporate Security, the Airport Rescue and Firefighting service on the premises of the airport in Munich is responsible for fire safety and for technical assistance in the area of fire safety in aircraft and buildings. With qualified rescue service personnel and its own rescue vehicles, it provides 24-hour emergency assistance for passengers, visitors, and employees, and performs safety

monitoring for work and events involving a fire hazard. With its two fire stations, the emergency personnel can reach any part of the flight operation areas within 180 seconds and therefore meets the prescribed rescue periods for aircraft fire protection. The extinguishing capacity for aircraft fire protection also meets the strictest

requirements (category 10) set out by the International Civil Aviation Organization (ICAO) for every runway.

 Sponsoring

Number of employees / GRI 2-7, GRI 2-8, GRI 405-1 ✓

Group	2022						2021		2020		2019	
	Women	Proportion in % ³⁾	Men	Proportion in % ³⁾	Total	Proportion in % ³⁾	Total	Proportion in % ³⁾	Total	Proportion in % ³⁾	Total	Proportion in % ³⁾
Total number of employees ¹⁾	2,759	32.04	5,851	67.96	8,610	100.00	8,693	100.00	9,338	100.00	9,806	100.00
Full- and part-time employees ¹⁾												
Full-time	1,622	18.84	5,053	58.69	6,675	77.53	6,852	78.82	7,307	78.25	7,432	75.79
Part-time	1,137	13.21	798	9.27	1,935	22.47	1,841	21.18	2,031	21.75	2,374	24.21
Employment contracts ¹⁾												
Temporary	199	2.31	298	3.46	497	5.77	184	2.12	327	3.50	916	9.34
Permanent	2,560	29.73	5,553	64.49	8,113	94.23	8,509	97.88	9,011	96.5	8,890	90.66
Other employees	164		273		437		508		476		743	
Apprentices	100		130		230		247		287		303	
Interns	1		6		7		2		9		34	
Workers in minor employment	54		109		163		136		180		311	
Temporary workers	9		28		37		123		0		95	
Total employees including other employees of FMG Group	2,923		6,124		9,047		9,201		9,814		10,549	
Employees on the airport campus ²⁾					33,330		38,090		38,090		38,090	

¹⁾ Reporting date: December 31; Figures exclude apprentices, workers in minor employment, temporary workers, and interns

²⁾ Figure does not constitute part of the independent external auditor's opinion. Includes all companies based at Munich Airport. The employee survey at Munich Airport is carried out every three years. The figures were last compiled in 2021. Further information on the survey is available [here](#).

³⁾ All percentages are based on the total number of employees as per ¹⁾.

Number of employees / GRI 2-7, GRI 2-8, GRI 405-1 ✓

FMG	2022						2021		2020		2019	
	Women	Proportion in % ²⁾	Men	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾
Total number of employees ¹⁾	1,007	25.24	2,983	74.76	3,990	100.00	4,176	100.00	4,364	100.00	4,389	100.00
Full- and part-time employees ¹⁾												
Full-time	590	14.79	2,697	67.59	3,287	82.38	3,519	84.27	3,671	84.12	3,671	83.64
Part-time	417	10.45	286	7.17	703	17.62	657	15.73	693	15.88	718	16.36
Employment contracts ¹⁾												
Temporary	8	0.20	35	0.88	43	1.08	45	2.12	45	1.03	77	1.75
Permanent	999	25.04	2,948	73.88	3,947	98.92	4,131	97.88	4,319	98.97	4,312	98.25
Other employees	37		119		156		172		208		233	
Apprentices	34		101		135		149		170		175	
Interns	1		3		4				8		26	
Workers in minor employment	2		15		17		23		30		31	
Temporary workers	0		0		0				0		1	
Total employees including other employees of FMG	1,044		3,102		4,146		4,348		4,572		4,622	

¹⁾ Reporting date: December 31. Figures exclude apprentices, workers in minor employment, temporary workers, and interns

²⁾ Figure does not constitute part of the independent external auditor's opinion. Includes all companies based at Munich Airport. The employee survey at Munich Airport is carried out every three years. The figures were last compiled in 2021. Further information on the survey is available [here](#).

³⁾ All percentages are based on the total number of employees as per ¹⁾.

Employees covered by collective bargaining agreements / GRI 2-30, GRI 202-01 ✓

	2022		2021		2020		2019	
	Group ²⁾	FMG	Group ²⁾	FMG	Group ²⁾	FMG	Group ²⁾	FMG
Total number of employees covered by collective bargaining agreements	8,211	4,048	8,565	4,336	9,270	4,554	10,152	4,601
Proportion of total employees in % ¹⁾	90.76	97.64	93.06	99.72	94.46	99.61	96.24	99.55

¹⁾ All percentages are based on the total number of employees including apprentices, workers in minor employment, temporary workers, and interns.

²⁾ without amd.sigma

Ratio of total compensation ^{1),2)} / GRI 2-21

	2022
Indicate the ratio between the total annual compensation of the highest paid person in the organization and the mean (median) level of total annual compensation of all employees (not including the highest paid individual)	12.31
Indicate the ratio of the percentage increase in total annual compensation for the highest paid individual in the organization to the mean percentage increase in total annual compensation for all employees (not including the highest paid individual)	0.01

¹⁾ All FMG employees, excluding apprentices, workers in minor employment, temporary workers, and interns. The total compensation of part-time employees shall be extrapolated to a full-time equivalent in each case. Total compensation includes: base salary, bonuses, stock and option packages.

²⁾ Key figures influenced by short-time working, which continues up to and including mid-2022. Key figure collected for the first time in 2022 and so far only for FMG.

Age structure of employees / GRI 405-1 ✓

Group	2022						2021		2020		2019	
	Women	Proportion in % ²⁾	Men	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾
Age structure of employees¹⁾												
Under 30 years	403	4.68	594	6.90	997	11.58	952	10.95	1,222	13.09	1,538	15.68
30 to 50 years	1,469	17.06	2,844	33.03	4,313	50.09	4,440	51.08	4,800	51.40	5,056	51.56
Over 50 years	887	10.30	2,413	28.03	3,300	38.33	3,301	37.97	3,316	35.51	3,212	32.76
Total	2,759	32.04	5,851	67.96	8,610	100.00	8,693	100.00	9,338	100.00	9,806	100.00

FMG	2022						2021		2020		2019	
	Women	Proportion in % ²⁾	Men	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾
Age structure of employees¹⁾												
Under 30 years	154	3.86	222	5.56	376	9.42	407	9.75	442	10.13	482	10.98
30 to 50 years	544	13.63	1,160	29.07	1,704	42.71	1,809	43.32	1,948	44.64	1,994	45.43
Over 50 years	309	7.74	1,601	40.13	1,910	47.87	1,960	46.93	1,974	45.23	1,913	43.59
Total	1,007	25.24	2,983	74.76	3,990	100.00	4,176	100.00	4,364	100.00	4,389	100.00

¹⁾ Reporting date: December 31; Figures exclude apprentices, workers in minor employment, temporary workers, and interns

²⁾ All percentages are based on the total number of employees as per ¹⁾.

Managers / GRI 405-1 ✓

Group	2022		2021		2020		2019	
		Proportion in %		Proportion in %		Proportion in %		Proportion in %
Total managers¹⁾	683	7.93	703	8.09	688	7.37	690	7.01
Women	173	25.33 ²⁾	168	23.90 ²⁾	151	1.62 ²⁾	156	1.58 ²⁾
Men	510	74.67 ²⁾	535	76.10 ²⁾	537	5.76 ²⁾	534	5.43 ²⁾
Age structure of managers²⁾								
Under 30 years	17	2.49	9	1.28	14	2.03	15	2.17
30 to 50 years	370	54.17	364	51.78	357	51.89	364	52.75
Over 50 years	296	43.34	330	46.94	317	46.08	311	45.07

FMG	2022		2021		2020		2019	
		Proportion in %		Proportion in %		Proportion in %		Proportion in %
Total managers¹⁾	382	9.57	401	9.6	421	9.65	420	9.57
Women	65	17.02 ²⁾	62	15.46 ²⁾	64	1.47 ²⁾	66	1.50 ²⁾
Men	317	82.98 ²⁾	339	84.54 ²⁾	357	8.18 ²⁾	354	8.07 ²⁾
Age structure of managers²⁾								
Under 30 years	5	1.31	4	1	7	1.66	7	1.67
30 to 50 years	157	41.10	153	38.15	169	40.14	175	41.67
Over 50 years	220	57.59	244	60.85	245	58.19	238	56.67

¹⁾ Reporting date December 31: Proportion of managers relative to the total number of employees

²⁾ proportion of managers relative to the total number of managers in %

Parental leave taken¹⁾/ GRI 401-2, GRI 401-3 ✓

Group	2022			2021	2020	2019
	Women	Men	Total	Total	Total	Total
Parental leave taken	141	156	297	276	297	332
Part-time parental leave taken	8	2	10	7	12	15

FMG	2022			2021	2020	2019
	Women	Men	Total	Total	Total	Total
Parental leave taken	69	80	149	136	144	151
Part-time parental leave taken	3	1	4	2	8	7

¹⁾ Number of employees who have taken parental leave in the year under review. Figures exclude apprentices, workers in minor employment, temporary workers, and interns.

Due to the significant expense of evaluating the various parental leave models manually (duration of parental leave, split of parental leave), the number of individuals returning from parental leave, along with the number of resignations following parental leave, have not been recorded.

Employee turnover: Starters and leavers¹⁾ / GRI 401-1 ✓

Group	2022				2021		2020		2019	
	Starters	Proportion in % ²⁾	Leavers	Proportion in % ²⁾	Starters	Leavers	Starters	Leavers	Starters	Leavers
Starters and leavers by age group										
Under 30 years	518	44.24	332	28.74	120	261	271	345	707	458
30 to 50 years	499	42.61	476	41.21	82	378	221	403	626	491
Over 50 years	154	13.15	347	30.04	29	377	62	234	149	250
Total	1,171	100.00	1,155	100.00	231	1,016	554	982	1,482	1,199
Starters and leavers by gender										
Male	716	61.14	704	60.95	142	690	350	571	982	723
Female	455	38.86	451	39.05	89	326	204	411	500	476

FMG	2022				2021		2020		2019	
	Starters	Proportion in % ²⁾	Leavers	Proportion in % ²⁾	Starters	Leavers	Starters	Leavers	Starters	Leavers
Starters and leavers by age group										
Under 30 years	83	55.33	64	20.98	51	60	94	40	147	52
30 to 50 years	52	34.67	86	28.20	22	87	68	40	117	38
Over 50 years	15	10.00	155	50.82	10	204	15	81	22	83
Total	150	100.00	305	100.00	83	351	177	161	286	173
Starters and leavers by gender										
Male	115	76.67	214	70.16	56	275	122	111	191	127
Female	35	23.33	91	29.84	27	76	55	50	95	46

¹⁾ including apprentices, excluding workers in minor employment, temporary workers, and interns
²⁾ All percentages are based on the total number of starters/leavers among the employees as per ¹⁾.

Turnover rate¹⁾ / GRI 401-1 ✓

	2022		2021		2020		2019	
	Group	FMG	Group	FMG	Group	FMG	Group	FMG
Turnover rate	13.00	7.35	11.00	7.94	9.93	3.55	11.93	3.86

¹⁾ The turnover rate reflects the ratio of leavers to the number of employees (as an annual average including apprentices and excluding workers in minor employment, temporary workers, and interns).

Average hours of training¹⁾ / GRI 404-1 ✓

	2022		2021		2020		2019	
	Group ⁶⁾	FMG	Group ²⁾	FMG	Group ³⁾	FMG	Group ⁴⁾	FMG
Average hours of training per employee	13.8	6.2	7.6	3.5	11.9	5.2	20.3	10.1
Per male employee	14.2	7.1	8.2	3.9	12.9	5.8	20.8	10.7
Per female employee	13	3.6	6.4	2.2	9.8	3.3	19.2	8.2
Per manager ⁵⁾	6.1	3.9	5.4	3	6.6	4.8	16.2	10.5
Per employee (without managerial responsibilities)	14.5	6.4	7.8	3.5	12.3	5.2	20.6	10.1

¹⁾ Average number of hours spent on professional development, training, and seminars that are recorded in a time management system (excluding aviation security courses) per employee (excluding apprentices, employees in minor employment, temporary workers, and interns) as of the reporting date, December 31.

²⁾ without MUCReal, LabCampus, amd.sigma, Munich Airport NJ LLC, Infogate

³⁾ without MUCReal, LabCampus, amd.sigma, Munich Airport NJ LLC

⁴⁾ without MAI US, MAI, Munich Airport NJ LLC, MUCReal, LabCampus and Infogate

⁵⁾ first- to fourth-tier managers excluding the Executive Board of FMG

⁶⁾ without AE Berlin, amd.sigma, Munich Airport NJ LLC, MAI US Holding, MUCReal, LabCampus and Infogate

Occupational health and safety / GRI 403-9 ✓

Group ^{1), 2)}	2022 ^{1), 2)}	2021 ^{1), 2)}	2020 ^{1), 2)}	2019
	Total	Total	Total	Total
Accident statistics³⁾				
Reportable occupational accidents	225	107	94	236
Number of resulting days of absence ⁴⁾	4,646	2,264	2,508	6,539
Fatal occupational accidents	0	0	0	0
Rate per 1,000 workers ⁵⁾	32.74	13.38	10.85	27

FMG ¹⁾	2022	2021	2020	2019
	Total ⁷⁾	Total ⁷⁾	Total ⁷⁾	Total ⁷⁾
Accident statistics³⁾				
Reportable occupational accidents	51	20	16	62
Number of resulting days of absence ⁴⁾	1,497	446	298	1,732
Fatal occupational accidents	0	0	0	0
Rate per 1,000 workers ⁵⁾	17.53	6.44	5	15.36

¹⁾ including apprentices, excluding workers in minor employment, temporary workers, and interns

²⁾ without amd.sigma

³⁾ Injuries requiring first aid are recorded when employees attend Munich Airport's medical center.

⁴⁾ These are calendar days and are counted from the day following the work accident. Only days of absence that are in the same calendar year as the accident event are reported.

⁵⁾ reportable occupational accidents × 1,000 / annual average actual employee capacity (EC)

⁶⁾ Ground handling employees working for FMG, employees and temporary workers employed by AeroGround

⁷⁾ Figures exclude «workers of ground handling services with staff membership of FMG». Those workers are reported as «employees of Munich ground handling».

Occupational health and safety / GRI 403-9 ✓

	2022	2021	2020	2019
	Total	Total	Total	Total
Workers in ground handling Munich⁶⁾				
Accident statistics³⁾				
Reportable occupational accidents	61	24	33	111
Number of resulting days of absence ⁴⁾	1,030	583	816	1,734
Fatal occupational accidents	0	0	0	0
Rate per 1,000 workers ⁵⁾	57.01	12.02	15.3	68.27

	2022	2021	2020	2019
	Total	Total	Total	Total
Workers in ground handling Berlin				
Accident statistics³⁾				
Reportable occupational accidents	44	34	21	23
Number of resulting days of absence ⁴⁾	555	493	838	1,679
Fatal occupational accidents	0	0	0	0
Rate per 1,000 workers ⁵⁾	108.93	88.31	48.24	52.16

³⁾ including apprentices, excluding workers in minor employment, temporary workers, and interns

²⁾ without amd.sigma

³⁾ Injuries requiring first aid are recorded when employees attend Munich Airport's medical center.

⁴⁾ These are calendar days and are counted from the day following the work accident. Only days of absence that are in the same calendar year as the accident event are reported.

⁵⁾ reportable occupational accidents × 1,000 / annual average actual employee capacity (EC)

⁶⁾ Ground handling employees working for FMG, employees and temporary workers employed by AeroGround

⁷⁾ Figures exclude «workers of ground handling services with staff membership of FMG». Those workers are reported as «employees of Munich ground handling».

Aircraft handling on the ground is a critical area for occupational health and safety measures at Munich Airport. This is why FMG publishes additional accident statistics for employees who work in aircraft handling.

Lost-time incident frequency¹⁾ / GRI 403-9 ✓

	2022	2021	2020	2019
Total (FMG + AeroGround)²⁾	19.93	11.09	11.45	21.96
FMG	8.15	7.10	4.60	8.03
AeroGround ²⁾	42.03	22.62	30.54	43.41

¹⁾ occupational accidents (with lost time ≥ 1 day) × 1,000,000 / hours worked

²⁾ including ground handling employees at the Munich site working for FMG, employees and temporary workers employed by AeroGround

Sick leave¹⁾ / GRI 403-10 ✓

Group	2022			2021	2020	2019
	Women	Men	Total ⁵⁾	Total ³⁾	Total ³⁾	Total ⁴⁾
Sickness rate²⁾	8.35	10.82	10.21	5.98	6.00	8.91
FMG						
Sickness rate²⁾	6.71	9.79	9.10	5.67	6.39	8.59

¹⁾ including apprentices, excluding workers in minor employment, temporary workers, and interns

²⁾ Sick hours in relation to the target hours to be worked, including rehabilitation, sanatorium, curative procedures, etc.; related to the number of total employees as per ¹⁾

³⁾ without Eurotrade, amd.sigma, MucReal, LabCampus, MAI US Holding, Munich Airport NJ LLC, InfoGate

⁴⁾ without Infogate, LabCampus, and MUCReal

⁵⁾ without Eurotrade, amd.sigma, Munich Airport NJ LLC, MAI US Holding, MucReal, LabCampus, InfoGate

Occupational illnesses¹⁾ / GRI 403-10 ✓

IN %

	2022		2021		2020		2019	
	Group	FMG	Group ²⁾	FMG	Group ²⁾	FMG	Group	FMG
Reported occupational illnesses	6	4	6	1	3	3	7	7

¹⁾ including apprentices, excluding workers in minor employment, temporary workers, and interns
²⁾ without amd.sigma

Employment of staff with disabilities / GRI 405-1 ✓

Group	2022	2021	2020	2019
	Total	Total	Total	Total
Number of employees with limiting disabilities ¹⁾	653	737	711	698
Employees with severe disabilities in % ^{2), 3)}	7.33 ⁴⁾	7.67	7.06	6.82

FMG	2022	2021	2020	2019
	Total	Total	Total	Total
Number of employees with limiting disabilities ¹⁾	451	496	485	477
Employees with severe disabilities in % ^{2), 3)}	10.81	11.15	11.60	10.56

¹⁾ degree of disability of at least 30 within the meaning of equality under Book IX of the Social Security Code
²⁾ proportion of employees with disabilities as per ¹⁾ based on the average total employees, including apprentices and workers in minor employment and excluding temporary workers and interns
³⁾ until 2019 exclusive MAI, InfoGate, LabCampus and MUCreal
⁴⁾ without Munich Airport NJ LLC

Nationalities ¹⁾ / GRI 405-1 ✓

Group	2022				2021		2020		2019	
	Women	Men	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾
Employee nationalities, overall picture	2,859	5,981	8,840		8,940		9,625		10,109	
German nationals	2,220	4,370	6,590	74.55	6,879	76.95	7,306	75.91	7,595	75.13
Foreign nationals	639	1,611	2,250	25.45	2,061	23.05	2,319	24.09	2,514	24.87
Most represented groups of foreign nationals										
Turkey	64	437	501	5.67	486	5.44	525	5.45	541	5.35
Croatia	35	174	209	2.36	201	2.25	251	2.61	255	2.52
Romania	62	80	142	1.61	130	1.45	170	1.77	190	1.88
Hungary	14	115	129	1.46	141	1.58	156	1.62	186	1.84
Italy	27	96	123	1.39	119	1.33	129	1.34	144	1.42

FMG	2022				2021		2020		2019	
	Women	Men	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾	Total	Proportion in % ²⁾
Employee nationalities, overall picture	1,041	3,084	4,125		4,325		4,534		4,564	
German nationals	992	2,730	3,722	90.23	3,936	91.01	4,103	90.49	4,129	90.47
Foreign nationals	49	354	403	9.77	389	8.99	431	9.51	435	9.53
Most represented groups of foreign nationals										
Turkey	1	223	224	5.43	221	5.11	243	5.36	245	5.37
Austria	9	19	28	0.68	28	0.65	31	0.68	34	0.74
Italy	5	15	20	0.48	20	0.46	24	0.53	23	0.50
Kosovo	1	20	21	0.51	22	0.51	22	0.49	18	0.39
Greece	3	14	17	0.41	18	0.42	19	0.42	19	0.42

¹⁾ Reporting date: December 31; Total employees including apprentices, excluding workers in minor employment, temporary workers and interns

²⁾ All percentages are based on the total number of employees as per ¹⁾.

Residence of employees¹⁾ / GRI 2-7, GRI 401-1 ✓

	2022				2021		2020		2019	
	Group	Proportion in % ²⁾	FMG	Proportion in % ²⁾	Group	FMG	Group	FMG	Group	FMG
Administrative districts										
Freising	2,223	25.15	835	20.24	2,197	854	2,395	906	2,598	918
Erding	1,639	18.54	977	23.68	1,740	1,030	1,874	1,076	1,915	1,076
Munich	1,631	18.45	705	17.09	1,669	759	1,796	802	1,939	820
Landshut	1,199	13.56	658	15.95	1,246	692	1,315	720	1,349	722
Pfaffenhofen	159	1.80	91	2.21	154	91	146	95	170	96
Ebersberg	149	1.69	92	2.23	159	97	184	113	193	114
Other districts ³⁾	1,840	20.81	767	18.59	1,775	802	1,915	822	1,945	818
Total	8,840	100.00	4,125	100.00	8,940	4,325	9,625	4,534	10,109	4,564

¹⁾ Number of total employees, including apprentices, excluding workers in minor employment, temporary workers and interns who resided in the respective county on the reporting date of December 31.

²⁾ All percentages are based on the total number of employees as per ¹⁾.

³⁾ The item «Berlin and surrounding area», which was reported separately in the prior year, has been included in «Other districts» as of this reporting year.

Energy consumption and emissions¹⁾ / GRI 301-1, GRI 302-1, GRI 302-2, GRI 302-4, GRI 302-5, GRI 305-1, GRI 305-2, GRI 305-3, GRI 305-5 ✓

	2022			2021			2020			2019		
	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]
Scope 1: Direct energy consumption/emissions												
Natural gas gas/diesel generating sets CHPP	0	0	0	0	0	0	0	0	0	0	0	0
Natural gas gas/gasoline generating sets CHPP	1,230,410	341,781	68,829	1,125,086	312,524	62,375	1,151,294	319,804	63,863	1,303,941	362,206	72,330
Natural gas boiler plant	12,534	3,482	701	40,619	11,283	2,252	23,494	6,526	1,303	20,531	5,703	1,139
Fuel oil gas/diesel gensets	31,177	8,660	2,310	28,393	7,887	2,104	29,488	8,191	2,185	24,514	6,810	1,817
Fuel oil boiler plant	10,551	2,931	782	32	9	2	89	25	7	509	141	38
LPG	0	0	0	1,084	301	70	374	104	24	115	32	7
Fuel oil emergency gensets	2,242	623	166	2,257	627	167	1,382	384	102	1,998	555	148
Natural gas consumption EFM ²⁾	6,956	1,932	389	5,612	1,559	311	3,758	1,044	208	11,214	3,115	622
Diesel and gasoline	113,863	31,629	8,436	78,325	21,757	5,794	77,220	21,450	5,715	173,016	48,060	12,775
Total Scope 1	1,407,733	391,037	81,613	1,281,409	355,947	73,075	1,287,100	357,528	73,407	1,535,839	426,622	88,876
Scope 2: Indirect energy consumption/emissions³⁾												
External electricity purchase ⁴⁾	133,834	37,176	16,172	110,668	30,741	11,682	119,084	33,079	14,125	177,932	49,426	25,602
Purchased district heat ⁵⁾	101,459	28,183	1,501	123,768	34,380	1,465	99,162	27,545	1,173	108,050	30,014	3,516
Purchased natural gas ⁶⁾	55,412	15,392	3,100	17,147	4,763	951	23,742	6,595	1,317	67,453	18,737	3,742

¹⁾ FMG establishes its carbon footprint based on the WRI/WBCSD Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. For Scope 3, FMG reports on - for its business model - relevant sub-sectors. In addition, the principle of operational control is applied. To the extent that they are subject to emissions trading, conversion parameters, such as heat values and emission factors in particular, are determined according to the provisions of the German Emissions Trading Authority (DEHSt). Other conversion parameters are based on the latest publications from the German Federal Environment Agency (UBA).

²⁾ EFM: Gesellschaft für Enteisung und Flugzeugschleppen am Flughafen München [company responsible for de-icing and towing aircraft at Munich Airport]; associated company

³⁾ Disclosure of Scope 2 emissions taking into account GHG Protocol Scope 2 Guidance [2015] using the «Location based» method based on BRD domestic consumption, electricity mix, and district heating mix emission factors. Net Scope 2 emissions with specific emission factors are 0.435 kg/kWh for electricity and 0.213 kg/kWh for district heat from fossil fuels [Source: UBA]. The total district heating supply consists of fossil district heating and district heating from biomass with the specific emission factor of kg/kWh.

⁴⁾ 57% Electricity from renewable energies [status 2021 according to section 42 of the German Energy Act [EnWG]].

⁵⁾ Estimated value based on previous years: 75% of district heat is purchased from biomass directly from the biomass thermal power plant in Zolling.

⁶⁾ solely natural gas purchased [baseline year 2022], no renewable energy sources

⁷⁾ including the quantity transmitted to outside companies

⁸⁾ Total power transmitted to outside companies and subsidiaries. The specific emission factor used for purchased power was also used here.

⁹⁾ For physical reasons it is not practical to add heat, cooling energy, and electricity in energy units. The sum can only be used to draw very limited conclusions.

¹⁰⁾ No information, since values cannot be reported for all items.

¹¹⁾ sum of Scope 1, Scope 2, and the subtotal Scope 3a

¹²⁾ emission calculation with the LASPORT model for the classification of flight operations according to the LTO cycle

¹³⁾ Scope 2 emissions taking into account GHG Protocol Scope 2 Guidance [2015] according to the «Market based» method result in 752 t CO₂. The basis is the emission factor of 0.248 kg/kWhel for the network at Munich Airport. The other emission factors from ³⁾ remain unchanged.

¹⁴⁾ Calculated from aircraft movements using the LASPORT model, subsequently taking into account the APU emissions prevented by using PCA systems.

¹⁵⁾ Feeder traffic includes road traffic caused by air travelers, visitors, and employees in the airport area calculated according to ACA.

¹⁶⁾ Since 2021, an enlarged radius has been taken into account in the calculation: CO₂ emissions from the arrival and departure of employees, passengers, and people traveling at the airport. In the case of employees, only the route to the workplace at the Munich Airport campus is considered.

¹⁷⁾ Errors identified during the review of the data were subsequently corrected.

Energy consumption and emissions¹⁾ / GRI 301-1, GRI 302-1, GRI 302-2, GRI 302-4, GRI 302-5, GRI 305-1, GRI 305-2, GRI 305-3, GRI 305-5 ✓

	2022			2021			2020			2019		
	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]
Power supplied to outside companies ⁷⁾	-170,622	-47,395	-20,617	-143,266	-39,796	-15,123	-155,203	-43,112	-18,409	-203,856	-56,627	-29,333
Heat supplied to outside companies	-77,427	-21,508	-1,501	-80,147	-22,263	-3,773	-74,833	-20,787	-3,640	-86,863	-24,129	-4,621
Electricity for cooling supplied to outside companies	-696	-193	-84	-397 ¹⁷⁾	-110 ¹⁷⁾	-42	-348 ¹⁷⁾	-97 ¹⁷⁾	-41	-693 ¹⁷⁾	-193 ¹⁷⁾	-100
Natural gas supplied to outside companies	-55,412	-15,392	-3,100	-17,147	-4,763	-951	-23,742	-6,595	-1,317	-67,453	-18,737	-3,742
Purchased power transmitted ⁸⁾	109,808	30,502	13,269	104,742	29,095	11,056	116,824	32,451	13,857	122,110	33,920	17,570
Total Scope 2¹³⁾	9)	9)	8,739	9)	9)	5,265	9)	9)	7,065	9)	9)	12,635
Scope 3: Other indirect energy consumption/ emissions (by third parties)	10)	10)					10)	10)		10)	10)	
Electrical energy purchases of outside companies	-	-	20,617	-	-	15,123	-	-	18,409	-	-	29,333
Heat purchases of outside companies	-	-	1,501	-	-	3,773	-	-	3,640	-	-	4,621
Electricity for cooling purchases of outside companies	-	-	84	-	-	42	-	-	41	-	-	100
Natural gas purchases of outside companies	-	-	3,100	-	-	951	-	-	1,317	-	-	3,742
Fuel for outside companies	-	-	6,446	-	-	4,261	-	-	4,080	-	-	8,482
Subtotal	9)	9)	31,747	9)	9)	24,149	9)	9)	27,487	9)	9)	46,277

¹⁾ FMG establishes its carbon footprint based on the WRI/WBCSD Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. For Scope 3, FMG reports on - for its business model - relevant sub-sectors. In addition, the principle of operational control is applied. To the extent that they are subject to emissions trading, conversion parameters, such as heat values and emission factors in particular, are determined according to the provisions of the German Emissions Trading Authority [DEHS]. Other conversion parameters are based on the latest publications from the German Federal Environment Agency [UBA].

²⁾ EFM: Gesellschaft für Enteisung und Flugzeugschleppen am Flughafen München [company responsible for de-icing and towing aircraft at Munich Airport]; associated company

³⁾ Disclosure of Scope 2 emissions taking into account GHG Protocol Scope 2 Guidance [2015] using the «Location based» method based on BRD domestic consumption, electricity mix, and district heating mix emission factors. Net Scope 2 emissions with specific emission factors are 0.435 kg/kWh for electricity and 0.213 kg/kWh for district heat from fossil fuels [Source: UBA]. The total district heating supply consists of fossil district heating and district heating from biomass with the specific emission factor of 0 kg/kWh.

⁴⁾ 57% Electricity from renewable energies [status 2021 according to section 42 of the German Energy Act [EnWG]].

⁵⁾ Estimated value based on previous years: 75% of district heat is purchased from biomass directly from the biomass thermal power plant in Zolling.

⁶⁾ solely natural gas purchased (baseline year 2022), no renewable energy sources

⁷⁾ including the quantity transmitted to outside companies

⁸⁾ Total power transmitted to outside companies and subsidiaries. The specific emission factor used for purchased power was also used here.

⁹⁾ For physical reasons it is not practical to add heat, cooling energy, and electricity in energy units. The sum can only be used to draw very limited conclusions.

¹⁰⁾ No information, since values cannot be reported for all items.

¹¹⁾ sum of Scope 1, Scope 2, and the subtotal Scope 3a

¹²⁾ emission calculation with the LASPORT model for the classification of flight operations according to the LTO cycle

¹³⁾ Scope 2 emissions taking into account GHG Protocol Scope 2 Guidance [2015] according to the «Market based» method result in 752 t CO₂. The basis is the emission factor of 0.248 kg/kWh for the network at Munich Airport. The other emission factors from³⁾ remain unchanged.

¹⁴⁾ Calculated from aircraft movements using the LASPORT model, subsequently taking into account the APU emissions prevented by using PCA systems.

¹⁵⁾ Feeder traffic includes road traffic caused by air travelers, visitors, and employees in the airport area calculated according to ACA.

¹⁶⁾ Since 2021, an enlarged radius has been taken into account in the calculation: CO₂ emissions from the arrival and departure of employees, passengers, and people traveling at the airport. In the case of employees, only the route to the workplace at the Munich Airport campus is considered.

¹⁷⁾ Errors identified during the review of the data were subsequently corrected.

Energy consumption and emissions¹⁾ / GRI 301-1, GRI 302-1, GRI 302-2, GRI 302-4, GRI 302-5, GRI 305-1, GRI 305-2, GRI 305-3, GRI 305-5 ✓

	2022			2021			2020			2019		
	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]	GJ	MWh	CO ₂ [t]
Total CO2 emissions that can be influenced annually¹¹⁾			122,099						107,959			147,788
Air traffic (LTO cycle) ¹²⁾	-	-		-	-		-	-		-	-	
Take-off	-	-	37,296	-	-	17,720	-	-	18,279	-	-	58,338
Climb out	-	-	63,596	-	-	30,950	-	-	31,747	-	-	101,045
Idle [taxiing on the apron]	-	-	105,454	-	-	52,622	-	-	49,752	-	-	172,769
Approach	-	-	77,417	-	-	37,713	-	-	38,009	-	-	119,124
APU (PCA taken into account) ¹⁴⁾	-	-	9,947	-	-	8,033	-	-	8,928	-	-	24,274
Engine test runs	-	-	349	-	-	430	-	-	502	-	-	728
Feeder traffic ¹⁵⁾	-	-	55,783 ¹⁶⁾	-	-	27,389 ¹⁶⁾	-	-	9,300	-	-	32,053
Total Scope 3			381,589			199,006			184,004			554,608

¹⁾ FMG establishes its carbon footprint based on the WRI/WBCSD Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. For Scope 3, FMG reports on - for its business model - relevant sub-sectors. In addition, the principle of operational control is applied. To the extent that they are subject to emissions trading, conversion parameters, such as heat values and emission factors in particular, are determined according to the provisions of the German Emissions Trading Authority [DEHST]. Other conversion parameters are based on the latest publications from the German Federal Environment Agency [UBA].

²⁾ EFM: Gesellschaft für Enteisung und Flugzeugschleppen am Flughafen München [company responsible for de-icing and towing aircraft at Munich Airport]; associated company

³⁾ Disclosure of Scope 2 emissions taking into account GHG Protocol Scope 2 Guidance (2015) using the «Location based» method based on BRD domestic consumption, electricity mix, and district heating mix emission factors. Net Scope 2 emissions with specific emission factors are 0.435 kg/kWh for electricity and 0.213 kg/kWh for district heat from fossil fuels [Source: UBA]. The total district heating supply consists of fossil district heating and district heating from biomass with the specific emission factor of 0 kg/kWh.

⁴⁾ 57% Electricity from renewable energies [status 2021 according to section 42 of the German Energy Act [EnWG]].

⁵⁾ Estimated value based on previous years: 75% of district heat is purchased from biomass directly from the biomass thermal power plant in Zolling.

⁶⁾ solely natural gas purchased [baseline year 2022], no renewable energy sources

⁷⁾ including the quantity transmitted to outside companies

⁸⁾ Total power transmitted to outside companies and subsidiaries. The specific emission factor used for purchased power was also used here.

⁹⁾ For physical reasons it is not practical to add heat, cooling energy, and electricity in energy units. The sum can only be used to draw very limited conclusions.

¹⁰⁾ No information, since values cannot be reported for all items.

¹¹⁾ sum of Scope 1, Scope 2, and the subtotal Scope 3a

¹²⁾ emission calculation with the LASPORT model for the classification of flight operations according to the LTO cycle

¹³⁾ Scope 2 emissions taking into account GHG Protocol Scope 2 Guidance (2015) according to the «Market based» method result in 752 t CO₂. The basis is the emission factor of 0.248 kg/kWh for the network at Munich Airport. The other emission factors from ⁹⁾ remain unchanged.

¹⁴⁾ Calculated from aircraft movements using the LASPORT model, subsequently taking into account the APU emissions prevented by using PCA systems.

¹⁵⁾ Feeder traffic includes road traffic caused by air travelers, visitors, and employees in the airport area calculated according to ACA.

¹⁶⁾ Since 2021, an enlarged radius has been taken into account in the calculation: CO₂ emissions from the arrival and departure of employees, passengers, and people traveling at the airport. In the case of employees, only the route to the workplace at the Munich Airport campus is considered.

¹⁷⁾ Errors identified during the review of the data were subsequently corrected.

Generated and purchased power / GRI 305-1, GRI 305-2, GRI 305-5

With its own block heat and power plant, which is operated using combined heat and power technology, Munich Airport generates around 80% of its total electricity needs as an energy supplier. The missing portion of approximately 20% is purchased and supplied to affiliated companies and third-party customers on campus. The cogeneration plant converts used natural gas into electrical energy and usable heat at the same time. Around 80% of the waste heat generated during power generation covers the heating requirements of the airport campus. The airport procures the remaining required heating from the Freising district heating supply. Since the beginning of 2011, around half of the district heating purchased has come from renewable biomass.

Energy intensity coefficient¹⁾ / GRI 302-3 ✓

IN KWH / PASSENGER	2022	2021	2020	2019
Power consumption	6.52	14.89 ²⁾	17.23 ²⁾	4.88

¹⁾ Electricity consumption is responsible for more than 2/3 of the total CO₂ emissions caused by energy-induced processes at the airport (excluding airline emissions). Furthermore, it is only very slightly linked to weather conditions. For this reason, the power consumption per passenger is the most meaningful indicator for energy consumption at Munich Airport.

²⁾ The calculation of the energy intensity coefficient is related to the number of passengers. Due to the sharp drop in passenger numbers from 2020 onwards, the figure differs significantly from the pre-pandemic values.

The power consumption is made up of total power consumption of all buildings and installations on the campus, including hosted electricity. This includes power consumption by FMG and its subsidiaries, consumption by external companies, and all losses at the low-voltage level.

Greenhouse gas emissions intensity¹⁾ / GRI 305-4 ✓

IN KG / PASSENGER	2022	2021 ²⁾	2020 ^{2), 3)}	2019
CO ₂ emissions [Scope 1, 2, 3a]	-	8.20	9.71	3.08
CO ₂ emissions [Scope 1, 2]	2.85	-	-	-

¹⁾ The measure of «CO₂ emissions per passenger» enables the physically meaningful addition of the different forms of primary and secondary energy used at the airport in relation to passenger numbers. Up to and including 2021, the calculation of the key figure is made up of CO₂ emissions from Scope 1, 2 and 3a (including the consumption of electricity, heating, cooling, natural gas and fuels from external companies). Starting in 2022 – according to the current CO₂ strategy – the CO₂ emissions of Scope 1 and 2 will be added together without Scope 3a.

²⁾ The calculation of the intensity of greenhouse gas emissions is related to the number of passengers. Due to the sharp drop in passenger numbers from 2020 onwards, the value differs greatly from pre-pandemic figures.

³⁾ Errors identified during the review of the data were subsequently corrected.

Other greenhouse gas emissions / GRI 305-3, GRI 305-5, GRI 305-6 ✓

CH ₄ , N ₂ O AND FLUORINATED GREENHOUSE GASES IN CO ₂ EQUIVALENT ¹⁾ [T]	2022	2021	2020	2019
LTO cycle	2,862	1,402	1,389	4,551
Feeder traffic ²⁾	417	317	277	427
APU ³⁾	242	127	127	375
Engine test run ⁴⁾	4	4	5	7
Small appliances in buildings and central cooling plants	715	173	346	112
Mobile systems (vehicles)	119	113	140	146

¹⁾ conversion of emissions into CO₂ equivalents in accordance with the IPCC Fourth Assessment Report

²⁾ Feeder traffic includes the traffic caused by passengers, visitors, and commuters in the area around the airport.

³⁾ calculated from aircraft movements using the LASPORT model, taking into account the remaining APU period when using PCA

⁴⁾ estimates

De-icers used¹⁾ / GRI 301-1, GRI 301-2, GRI 301-3, GRI A06 ✓

	2021/2022	2020/2021	2019/2020	2018/2019
Apron de-icer in t ²⁾	2,558	1,829	1,287	4,424
Aircraft de-icer (Safewing Type I) in m³	2,563	1,283	1,859	5,531
Aircraft de-icer (Safewing Type IV) in m³	455	187	241	1,015
Recycling rate of Type I de-icer used in %	68	68	55	63
Number of days of winter operations	56	67	52	62

¹⁾ The values refer to the period from October 1, 2021 to September 30, 2022. The data basis is seasonal conditional. Year-on-year fluctuations are associated with the weather conditions in winter.
²⁾ liquid potassium formate and sodium formate granules

The company responsible for de-icing operations at Munich Airport, Gesellschaft für Enteisen und Flugzeugschleppen am Flughafen München mbH (EFM), uses glycol-based de-icer that is sprayed onto aircraft by de-icing vehicles. The low-viscosity Type I de-icer is mixed with water in the ratio 55:45, heated, and applied to the aircraft at a temperature of 85 degrees Celsius. Type IV de-icer contains thickeners, making it viscous. It is sprayed on cold and undiluted.



Measured pollutant concentrations¹⁾ / GRI 305-7, GRI A05 ✓

IN $\mu\text{g}/\text{m}^3$

	Current legal annual limit value	2022	2021	2020	2019
NO ₂ concentration [nitrogen dioxide]	40	14	12	14	18
SO ₂ concentration [sulfur dioxide] ²⁾	20	2	2	2	2
PM ₁₀ concentration [particulate matter]	40	11	10	11	12
PM _{2.5} concentration	25	8	8	8	8

¹⁾ During the course of publishing the integrated report NO₂, SO₂ and PM₁₀ as well as PM_{2.5} are recorded. Other pollutant concentrations can be found in the [current web reports](#) on the air quality measurements.

²⁾ Statutory threshold to protect vegetation, only strictly applicable away from urban centers and transport facilities, but complied with here as well as the immission value specified by the administrative regulation TA Luft for protecting human health (50 $\mu\text{g}/\text{m}^3$).

Air pollutant emissions / GRI 305-7, GRI A05 ✓

IN T

	2022	2021	2020	2019
NO _x -air traffic [LTO cycle]	1,085.6	455.1	466.9	1,739.0
NO _x -feeder traffic ¹⁾	51.6	41.4	39.9	88.0
SO _x -air traffic [LTO cycle]	72.0	35.2	34.9	114.0
SO _x -feeder traffic ¹⁾	0.2	0.1	0.1	0.2
PM ₁₀ -air traffic [LTO cycle]	8.9	4.4	4.1	13.5
PM ₁₀ -feeder traffic ¹⁾	0.6	0.5	0.5	1.0

¹⁾ Feeder traffic includes the traffic caused by passengers, visitors, and commuters in the area around the airport.

Total drinking water consumption¹⁾ / GRI 303-3, GRI 303-5

1 m³ corresponds to 0.001 mega liters

	2022	2021	2020	2019
Water purchased from utility in m ³	811,648	562,510	563,789	1,032,239
Water consumption per 1,000 traffic units in m ³	23.7	39.6	44.7	20.1

¹⁾ Includes all companies on the campus.

²⁾ derivation of values: Water metering in m³ measured at the drinking water feed points (transfer points water metering shafts 1 to 4) from the Moosrain water utility company to Munich Airport

moosrain.de/verband/daten-fakten

Total process water extraction for cooling in the power centers, west and east / GRI 303-1, GRI 303-3, GRI 303-5

1 m³ corresponds to 0.001 mega liters

	2022	2021	2020	2019
Quantity of the quaternary groundwater extracted in m ³	218,527	200,064	198,729	256,326

Total wastewater discharged^{1), 2)} / GRI 303-2, GRI 306-1, GRI 303-4

1 m³ corresponds to 0.001 mega liters

	2022	2021	2020	2019
Total wastewater discharged from Munich Airport to the sewage plant of the Erdinger Moos wastewater utility company in m ³	2,051,259	1,955,165	1,610,406	2,494,388
Wastewater consumption per 1,000 traffic units in m ³	59.8	137.6	127.7	48.5

¹⁾ Includes all companies on the campus.

²⁾ The wastewater discharged to the sewage treatment plant of the Abwasserzweckverband Erdinger Moos is composed of domestic wastewater, de-icing water, and rainwater.

azv-em.de

Water sources / GRI 303-1, GRI 303-3

Munich Airport sources its drinking water from the Moosrain water utility company, which extracts it from the tertiary strata via seven water wells at depths of between 94 and 160 meters. The water wells are located in water protection areas at «Obere Point» [surface area 33 ha] and «Oberdingermoos» [surface area 36 ha] in the Oberding municipality.

Water samples / GRI 303-1, GRI 303-2, GRI A04

Under the provisions of the planning approval notice, Munich Airport is required to test the water surrounding the airport. Securing evidence regarding the quantity [water level] and quality [water quality] of groundwater is particularly important. FMG measures the water levels of more than 300 groundwater and 17 surface water measurement points on an ongoing basis. Water quality is determined at 18 groundwater and eleven surface water measurement points. All implemented measures are summarized in a report, evaluated, and presented to the water authorities.

Waste¹⁾ / GRI 306-2, GRI 306-3, GRI 306-4, GRI 306-5

I N T					
	2022	2021	2020	2019	Point of disposal and recycling
Recycling					
Paper, cardboard, and cartons from buildings	683	380	516	1,441	
Mixed reclaimed materials/waste for recycling from buildings	1,670	944	1,122	3,154	
Top soil (humus-rich excavation material) ²⁾	175	0	31	2,650	
Mixed glass	300	133	107	228	
Wood	471	435	369	457	Sorting facilities, recycling firms in Eitting, Schwaig, Moosburg, and Munich
Bulk waste	364	302	417	920	
Scrap metal containing electronic waste	322	260	378	568	
Other recyclables ³⁾	213	98	113	248	
Total recycling	4,198	2,552	3,053	9,666	
Recycling					
Material recycling	2,338	2,115	2,277	3,529	
Building site waste (waste from dismantling, conversion, renovation, and maintenance measures)	1,017	1,167	1,784	2,346	Recycling/disposal firms (material recycling/pit filling)
Hazardous waste without ADR ⁴⁾ (only FMG portion, without mineral wool and without hazardous goods)	268	48	45	59	Recycling/disposal firms (material recycling) or hazardous waste specialists in Munich and Ebenhausen (secondary fuels)
ADR (=hazardous goods) ⁴⁾	324	134	191	196	
Other waste ⁵⁾	729	765	257	928	
Energy recycling	2,184	1,181	1,133	2,254	
Food waste ⁶⁾	800	440	518	1,394	Biogas plant (energy recovery)
Waste for disposal/prohibited liquids (terminal areas)	66	40	39	198	
Waste for disposal/Commercial municipal waste from buildings	1,318	700	576	662	
Total recycling	4,522	3,296	3,410	5,783	

¹⁾ All quantities refer exclusively to the disposal processes organized by FMG waste management. This refers to the total figure shown (2021: 5,964 t).

²⁾ The topsoil comes from various construction activities.

³⁾ foil, lightweight packaging, for example

⁴⁾ ADR (Accord européen relatif au transport international des marchandises dangereuses par route): European Agreement concerning the International Carriage of Hazardous Goods by Road

⁵⁾ for example runway wear, refuse, old tires, rubber waste

⁶⁾ food waste disposal from the Allresto catering area only in Terminal 2

⁷⁾ Insulators that are collected by a disposal specialist contracted on behalf of the district of Freising and sent away for proper disposal (landfill).

Waste¹⁾ / GRI 306-2, GRI 306-3, GRI 306-4, GRI 306-5

	2022	2021	2020	2019	Point of disposal and recycling
Landfill waste					
Insulators (mineral wool) ⁷⁾	309	116	163	236	
Total landfill	309	116	163	236	GSB hazardous waste landfill Schweinfurt
Total amount	9029	5,964	6,626	15,685	

¹⁾ All quantities refer exclusively to the disposal processes organized by FMG waste management. This refers to the total figure shown (2021: 5,964 t).

²⁾ The topsoil comes from various construction activities.

³⁾ foil, lightweight packaging, for example

⁴⁾ ADR (Accord européen relatif au transport international des marchandises dangereuses par route): European Agreement concerning the International Carriage of Hazardous Goods by Road

⁵⁾ for example runway wear, refuse, old tires, rubber waste

⁶⁾ food waste disposal from the Allresto catering area only in Terminal 2

⁷⁾ Insulators that are collected by a disposal specialist contracted on behalf of the district of Freising and sent away for proper disposal (landfill).

Hazardous goods: checks and training courses / GRI 306-2, GRI 306-4

Operations at Munich Airport involve a number of substances that are harmful to the environment and water; these must be declared as hazardous goods and transported off site. The vehicles used for transporting hazardous goods were inspected to verify that they are in proper condition and are roadworthy and safe to operate. Employee training on the handling of hazardous goods is held at regular intervals in accordance with legal regulations. In the year under review, 2022, a total of 324 tonnes of waste (previous year: 134 tonnes) declared as hazardous goods were transported away for disposal.

Waste management / GRI 306-1, GRI 306-2

Flughafen München GmbH is authorized to conduct waste management independently on its site in accordance with the German Waste Management and Product Recycling Act. Avoidance of waste is an absolute priority. However, waste and scrap products are generated from the operation of the airport – across the board – and these are then collected where they occur in various separating systems, handed over to certified specialist businesses close to the airport, prepared in sorting plants, and then recycled. The small proportion of residual waste that cannot be recycled is converted by the Munich North power plant into district heat and power.

The majority of waste and scrap material is generated by affiliated companies as well as the companies and airlines based at the airport. The prerequisite for successful resource conservation is therefore a disposal concept tailored to the individual waste producer – from waste generation to recycling and disposal. FMG therefore provides regular information on current waste topics, gives tips on environmentally friendly conduct, and is on hand to offer advice.

Waste from aircraft / GRI 306-2

The waste quantities (Category 1) material) from aircraft cabin interior cleaning and catering waste are disposed of in accordance with EC Regulation 1069/2009 (Regulation on animal by-products) by a specialist waste management company at the Munich North waste incineration plant/power plant or recycled for energy.

The disposal service is not the responsibility of FMG and is conducted by a specialist contractor working on behalf of the Erding animal carcass disposal association.

Measured noise¹⁾ / GRI A07 ✓

IN DB (A)

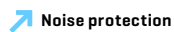
Measurement point (nearest municipality)	2022		2021		2020		2019	
	Night ²⁾	Day	Night ²⁾	Day	Night ²⁾	Day	Night ²⁾	Day
Brandstadi (municipality of Hallbergmoos)	48	57	42	55	44	55	51	59
Pallhausen (town of Freising)	44	53	40	49	42	50	49	55
Reisen (municipality of Eitting)	46	54	42	52	41	49	47	55
Viehlaßmoos (municipality of Berglern)	45	52	40	49	40	49	47	55

¹⁾ continuous sound level Leq3 of the six busiest months at four aircraft noise measuring points, each located at the main departure directions, in dB(A)

²⁾ Time period: 10 PM to 6 AM

Noise protection regulations

The main regulations for the aviation industry are defined on an international level. Under the umbrella organization that is the United Nations, the ICAO (International Civil Aviation Organization) deals with the issue of reducing aircraft noise. The EU is pursuing similar goals: With the «Flightpath 2050», it aims to reduce noise emissions by 65 % by 2050, starting from 2000. But the airport operator can also help to regulate this area. Loud aircraft without certificates to ICAO Annex 16 are not allowed to take off from or land at Munich Airport. At night, the regulations are even stricter: The night-flight curfew at Munich Airport includes a noise quota, which is based on aircraft types and sizes, and the number of aircraft movements. In 2022, the utilization rate of the noise quota was 39%. The permissible continuous sound level of 50 dB(A) was not exceeded at any intersection of the flight corridors with the boundary line of the designated day/night protected area.



Distribution of operations directions between west and east

	2022				2021				2020				2019			
	Westward		Eastward		Westward		Eastward		Westward		Eastward		Westward		Eastward	
Total aircraft movements ¹⁾ , absolute	172,227		109,752		96,748		53,577		103,782		40,399		258,886		155,256	
Total aircraft movements ¹⁾ , in %	61		39		64		36		72		28		63		37	
	Take-offs	Landings	Take-offs	Landings	Take-offs	Landings	Take-offs	Landings	Take-offs	Landings	Take-offs	Landings	Take-offs	Landings	Take-offs	Landings
North runway	37,205	48,440	27,233	24,028	21,806	24,452	12,894	11,304	18,451	31,846	15,693	6,432	58,566	72,811	38,395	39,763
South runway	48,953	37,629	27,582	30,909	26,582	23,908	13,887	15,492	33,489	19,996	4,486	13,788	70,778	56,731	39,326	37,772

¹⁾ excluding helicopters

Source: WebReporting January to December 2022

The assignment of the operating direction, in other words the decision as to whether the aircraft take off and land to the east or west, depends on the wind. This is because take-offs and landings usually take place against the prevailing wind direction. In addition, when using the runway system, FMG makes sure that the north and south runways are utilized as equally as possible.

Noise complaints¹⁾ / GRI 2-26 ✓

	2022 ¹⁾	2021	2020	2019
Noise complaints received via telephone	77	58	51	206
Complainants	58	47	28	99
Complaints received in writing	364	78	33	87
Complainants	43	42	27	52

¹⁾ It is assumed that the decreased and in 2022 again increased aircraft movements had an impact on the number of noise complaints. However, direct causality is not demonstrable.

Population growth in neighboring communities¹⁾ / GRI A07 ✓

Number of residents	2021	2020	2019
Freising (District of Freising)	48,582	48,872	49,126
Marzling (District of Freising)	3,237	3,250	3,224
Oberding (District of Erding)	6,472	6,455	6,392
Hallbergmoos (District of Freising)	11,337	11,148	11,094

¹⁾ The reporting date is December 31 in each case.

Source: Bayerisches Landesamt für Statistik und Datenverarbeitung (Bavarian State Office for Statistics and Data Processing) - Statistikatlas Bayern (statistical atlas of Bavaria). Figures for 2022 were not available at the time of going to press.

Airport «Green spaces»¹⁾ outside the airport fence / GRI 304-3 ✓

IN HA

Number of residents	2022	2021	2020	2019
«Green spaces» in total	875	872	864	844
Compensatory mitigation areas, zone III ²⁾	522	519	499	470
Airport periphery, zone II	250	250	250	250
Ecological land reserve for future expansion measures	103	103	115	124

¹⁾ Zone II and III green spaces that are developed or maintained by Flughafen München GmbH in accordance with nature conservation requirements (as opposed to leased agricultural land or other real estate).

²⁾ From 2021 to 2022, FMG was required to provide approx. 3.6 additional hectares of compensatory and replacement land. Work has begun on the development of approx. 3.5 hectares of compensation and replacement land. The remaining approximately 0.1 hectares were deducted from the eco-account.