The LFV Group
Environmental data report 2007

Contents

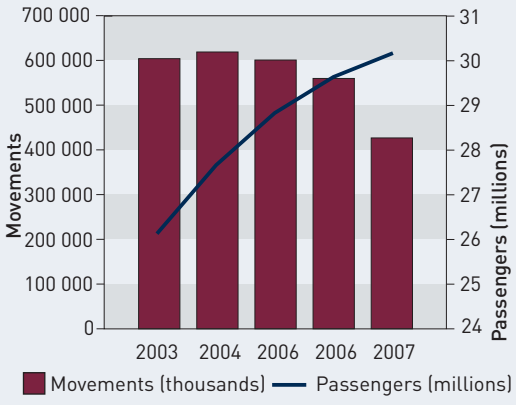
1 Introduction

The environmental activities conducted by the LFV Group and the environmental data collated by the Group for 2007 was initially presented in the Annual Report which was submitted to the Ministry of Enterprise, Energy and Communications on 1 March 2008.

This report is intended to complement the information which was presented in the Annual Report and contains a collation of the environmental data submitted by the LFV Group's airports (see diagram on the left), the Air Navigation Services as well as other internal units. The report is available on the Group's website (www.lfv.se) as well as in Swedish.

Information relating to each airport is available in the respective annual environmental report.

2 Production volumes and the most common types of aircraft at LFV Airports



The number of aircraft movements and passengers at LFV Airports during 2007 can be seen in table 1.

The number of movements is less whilst passenger numbers have increased during 2007. Compared with 2006 traffic has reduced by 3% whilst passenger numbers have increased by 2%.

Table 1 *Movement and passenger numbers*

Year	Movements [number]	Passengers [number in millions]
2003	601 100	26,1
2004	618 100	27,6
2005	596 100	28,8
2006	556 900	29,6
2007	425 300	30,1

Picture 1 Airbus A320 (SAS Group)

2.1 Types of aircraft

Table 2 shows the 10 most common types of aircraft at LFV Airports ranked according to the number of movements throughout 2007. For the 8th year in a row the Boeing 737 series is the most common. The B737-600 accounts for 45,800 movements making it the most common, followed by the B737-800 with approximately 21,400 movements. The MD 82 with 51,500 movements is the most dominant within the McDonnel Douglas MD8X series.

The British Aerospace aircraft with the highest number of movements in 2007, compared with 2006, were the 146/Avro RJ, up 7% and the Airbus A320 up 6%. Those aircraft whose movement numbers dropped in 2007 include the Dash 8, down 34.5%, Saab 340 down 25% and the Cessna 172, down 16%.

Table 2 *Movement numbers of the most common types of aircraft*

Aircraft type	2006	2007
Boeing 737-X (jet aircraft)	102 700	98 900
McDonnel Douglas MD 8X (jet aircraft)	68 000	65 200
British Aerospace 146/Avro RJ (jet aircraft)	43 000	45 800
Fokker 50 (propeller aircraft)	41 200	42 900
Airbus A320 (jet aircraft)	31 000	32 800
Piper 28 (propeller aircraft)	28 800	25 000
Saab 340 (propeller aircraft)	30 700	23 100
De Havilland Dash 8 (propeller aircraft)	25 500	16 700
Saab 2000 (propeller aircraft)	17 400	15 100
Cessna 172 (propeller aircraft)	11 900	10 000

The aircraft types and the movements mentioned in the table above account for 88% of all movements at LFV Airports. The 10 most common types of aircraft in 2007 are the same as for 2006. Their order in the table has changed slightly.

2.2 Emissions into the air - aviation activities

Emissions of carbon dioxide (CO_2), nitrogen oxide (NO_x) hydrocarbon (HC) and sulphur dioxide (SO_2) from civilian aviation at LFV Airports are summarised in Table 3. These emissions relate to LTO (Landing and Take-Off) which are within the estimated emissions for aviation activities at heights below 3,000 feet (915 metres). The Swedish Defence Research Agency (FOI) was commissioned by the LFV Group to calculate these emissions.

Foto: Lasse Modin

Aircraft fuel is no longer transported through the city of Stockholm in tankers. Aircraft fuel is now transported by train from Gävle Port to Brista Energy Heating Plant located near Märsta. The fuel is pumped out of the containers on the train into a 5.5 km pipe direct to Stockholm-Arlanda Airport.

Tabel 3 *LTO emissions from civilian aviation at LFV Airports*

Year	CO_2 [kton]	NO_x [ton]	HC [ton]	SO_2 [ton]
2003	246	845	129	78
2004	266	928	148	84
2005	259	917	144	82
2006	262	911	145	83
2007	259	924	136	82

Actual emissions of carbon dioxide into the air from air travel activities at LFV Airports is 1% less compared with 2006. When comparing with 2006 emissions from Norrköping Airport and Kalmar Airport have been taken away as both left the LFV Group during 2006. This equates to a 0.3% reduction. Emissions of CO_2, HC and SO_2 were down, however emissions of nitrogen dioxide increased. A contributing factor to this is the substantial increase in the use of Jumbo jets, mainly within the air cargo sector, at Stockholm-Arlanda Airport.

During 2007 twenty seven flight routes were restructured which mean a saving of 1,400 kg carbon dioxide per flight on these routes.

3 LFV's environmental data and key performance indicators

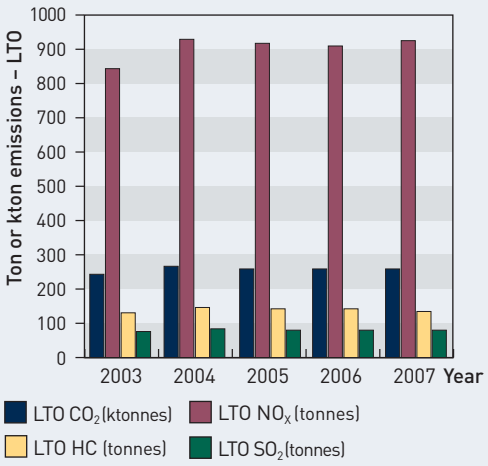
3.1 Emissions into the air

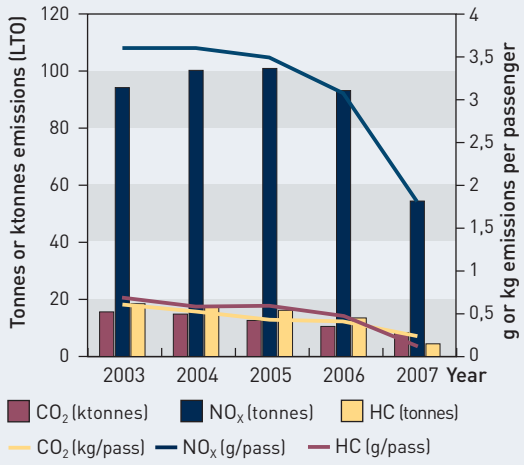
Emissions in to the air from LFV's own operations originate from vehicular traffic, heating of buildings and fire-fighting drills. These emissions are presented in Table 4. As from 2007 carbon dioxide emissions from district heating as well as electricity used at the Head Office in Norrköping are now included. Emissions relating to power reserves or the production of purchased electricity are not included in this account nor are emissions from business travel conducted by personnel.

Table 4 *Emissions from LFV operations*

Year	CO_2 [kton]	NOx [ton]	HC [ton]
2003	16	94	19
2004	15	100	17
2005	13	101	17
2006	11	93	14
2007	8,4	55	5

Carbon dioxide emissions from LFV operations were down 25% in 2007 compared with 2006. Emissions of nitrogen dioxide and hydrocarbon were down 41% and 64% respectively.





Bee hives at Malmö Airport visited by the Airports Head of Environment.

The reported hydrocarbon emissions are only approximate as emissions from fire-fighting drills are difficult to calculate. It has been calculated that 1-30% of fuel evaporates into the air without burning and that 5-10% of the fuel is not burnt instead is collected and stored in, for example, oil separators and treated as hazardous waste. Hydrocarbon emissions from fire-fighting drills account for 2.5% of LFV's total estimated hydrocarbon emissions in 2007.

Table 5 shows the annual emission levels from Table 4 recalculated to show the ratio amount per passenger.

Table 5 *Emissions from LFV operations – key performance indicator (amount/per passenger)*

Year	CO_2 [kg/pass]	NO_x [g/pass]	HC [g/pass]
2003	0,61	3,6	0,7
2004	0,54	3,6	0,6
2005	0,45	3,5	0,6
2006	0,38	3,1	0,5
2007	0,28	1,8	0,2

All key performance indicators are less than last year as the CO_2 levels have dropped for the fifth year in a row.

Bees and bee products have been used as environmental indicators. Malmö Airport has initiated a project using bees and bee products to evaluate air quality at the airport. There are two ways in which the honey bees are regarded as being good indicators of pollutants in the environment: the first is by the high number of deaths (when in contact with pesticides) and secondly through their bodies and products which contain the pollutants that can then be measured in a laboratory.

Examples of LFV actions aimed at improving environmental performance:

- The LFV Group has since 2006 been one of the first major climate neutral organisations in Sweden and is presented to the world as a good example.
- The cooperation between the Air Navigation Services and airlines through the project "Green Approaches" has continued throughout the year with a total of 1,100 green approaches being conducted. These actions are calculated to have saved 300 kg carbon dioxide per flight.
- Energy cooperation within the LFV Group has a carbon dioxide goal of achieving a 15% reduction in 2008 and to have halved the level by 2010 compared with the 2006 level.
- A decision has been made covering all impending procurements of fuel and states that renewable fuels such as ethanol will be introduced.
- The Air Navigation Services are testing a new efficiency method which will improve departures at Stockholm-Arlanda Airport. This data-based tool will assist air traffic management, the airport, airlines and ground crew with a predictable start order. In this way reduce queue times which will in turn improve the environment.
- A new web-based service has been launched by Stockholm-Arlanda Airport enabling travellers to pay for their share of the flights' climate-affecting emissions. This service will soon cover all LFV Airports.

- Stockholm-Arlanda Airport has also carried out a number of energy saving activities during 2007 which include changing the street lights, heat recovery in the terminal as well as carbon dioxide regulated ventilation in Sky City. The total cost for this project amounted to SEK 20 M which resulted in a reduction of carbon dioxide emissions by 1,200 tons.
- Since 2006 Stockholm-Arlanda Airport has a separate queue system for ecotaxis outside the terminals. The number of registered ecotaxis in the system amount to 35% and discussions are in progress to reduce the number of passenger-free taxi journeys from the airport.
- There are 6 biogas buses in operation at Stockholm-Arlanda Airport internal bus service.
- Arlanda Parking is working with an environmental index which involves a 30% increase in passengers choosing to travel to and from the airport using a means other than their own car. To achieve this index parking charges which were already high were subject to a further increase in 2007.
- Göteborg-Landvetter Airport has, within the framework of existing environmental rulings, presented a plan of action aimed at achieving considerable reductions in carbon dioxide emissions within the coming five years.
- During the year a wood pellets boiler has been brought into service at Göteborg-Landvetter Airport.
- Malmö Airport has replaced its oil burning boiler with a wood pellets boiler.
- Malmö Airport has invested in solar energy panels which will be in operation during 2008. These panels will be used to heat water at the airport during the period April-October.

3.2 Electricity and heating

Electricity consumption necessary to maintain LFV establishments and building as well as purchased district heating is compiled below. Included in the consumption figures in Table 6 is also electricity used for heating.

Note: the amount of heat obtained using bore-hole heat exchangers at Ronneby Airport is not included in the reported figures. Electricity consumed in obtaining heat from bore-hole heat exchangers is included in LFV's energy consumption.

Total energy consumption

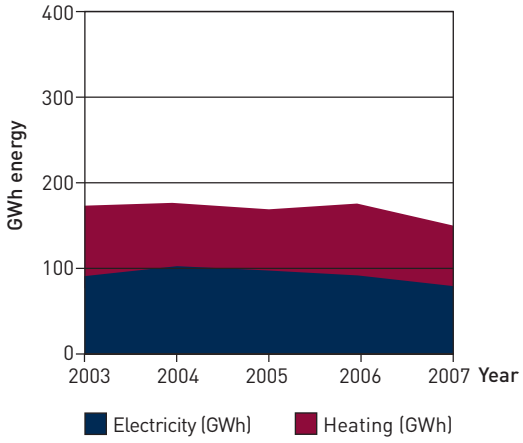


Table 6 *Electricity and heating energy consumption*

Year	Energy tot [GWh]	Electricity [GWh]	Heating [GWh]
2003	264	173	91
2004	282	178	104
2005	270	169	100
2006	269	176	93
2007	231	151	80

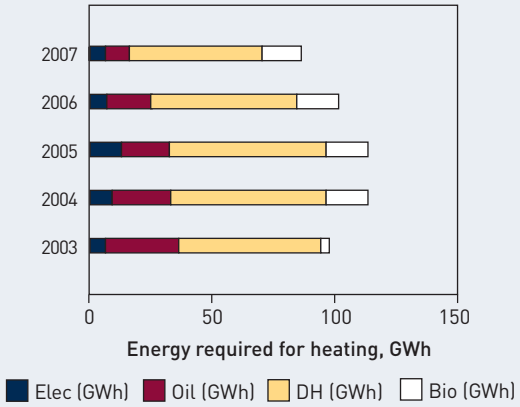


Table 7 shows the amount of different energy sources required to heat the buildings. The use of oil continues to drop for the sixth consecutive year.

Table 7 *Amount of energy per energy source*

Year	Electricity [GWh]	Oil [GWh]	District heating [GWh]	Biofuels [GWh]
2003	7	30	58	3
2004	10	24	63	17
2005	11	19	63	17
2006	8	18	59	17
2007	7	10	54	16

Since 2006 the LFV Group has reduced its total energy consumption by 14%. Note that a portion of the district heating is produced using bio fuels.

Table 8 shows the calculated consumption, shown as a key ratio, for electricity and heating energy. The table indicates the total consumption of electricity and heating energy per passenger as well as the amount of the total heating energy produced by the LFV Group using fossil sources (oil).

Table 8 *Ratio of electricity and heating energy per passenger and also the percentage of oil used as a heating source.*

Year	Energy Total [kWh/pass]	Oil share [%]
2003	10	31
2004	10	21
2005	9	17
2006	9	18
2007	8	11

The ratio of the total amount of energy consumed has reduced compared with 2006. The percentage of oil has also dropped by 7 percentage unit.

Examples of LFV actions aimed at improving environmental performance:

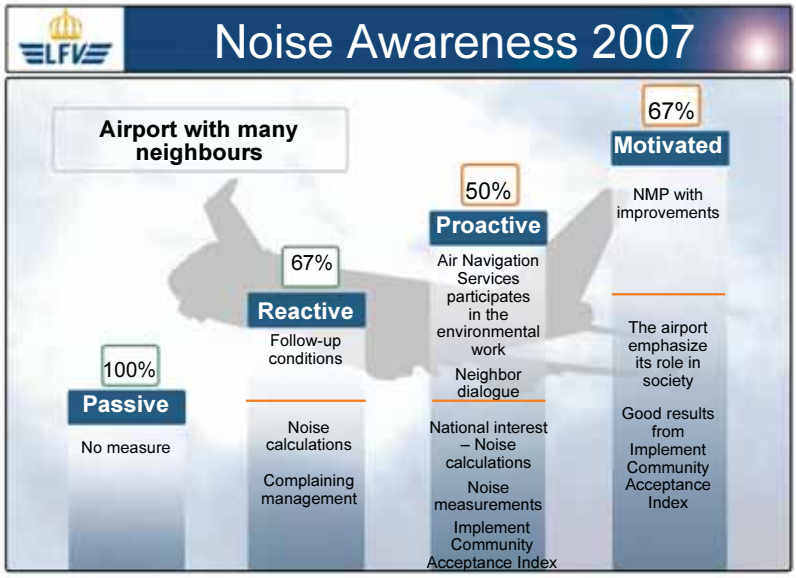
- Since 2005 the LFV Group only uses green electricity.
- The LFV Group has invested in renewable energy and through an agreement with the company Arise five percent of LFV's total purchase of electricity will come from wind energy in 2009. By 2010 this percentage will have increased to just over 20%.
- Energy cooperation within LFV was initiated during autumn 2007 whereby Arlanda Energy was given overall responsibility. The aim of this project is, amongst other things; through active energy cooperation develop a professional and responsible attitude to how energy is used within the operations. Also through development and effective energy usage this will lend support to the Group's overall goals.
- Energy saving projects within LFV has high expectations aiming at reducing electricity consumption by 30% by year 2010 compared with

2006. Energy consumption levels will be reduced by 35% and carbon dioxide emissions by 50%.

- During the year Stockholm-Arlanda Airport has introduced energy saving methods which include replacing street lamps, heat recovery in the terminal as well as carbon dioxide regulated ventilation in Sky City. This project will result in a saving of 2,582 MWh per year.
- Ängelholm Airport has introduced ventilation regulation when opening doors.

3.3 Noise

During 2007 noise awareness has been categorised at LFV Airports. The aim is to raise awareness of the activities, carried out at airports, relating to noise and thus improve the type of work they do which will limit noise. A number of airports do not have clear noise conditions and could not therefore be classified. Classification comprises of four stages: passive, reactive, proactive and motivated. All classified airports have at least achieved stage reactive with many having already fulfilled several of the criteria relating to stage motivated.



Example of noise classification at an airport with many neighbours.

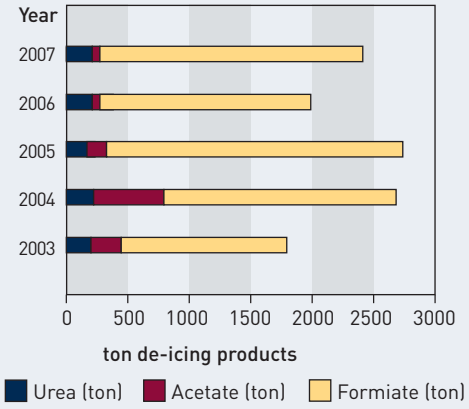
During the year LFV Aviation Acoustics has mapped the number of people affected by aircraft noise which exceeds the national level for indoor noise which has been prescribed by the Riksdag (the Swedish Parliament). It should be noted that Göteborg Landvetter Airport it is possible for one and the same person to be exposed to both types of noise levels.

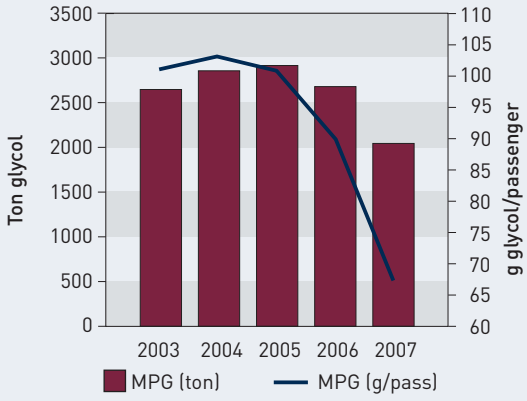
Table 9 *Numbers of people exposed to aviation noise levels exceeding approved indoor national levels.*

Airport	Number exposed to noise levels exceeding *LAeq24h* 30dB(A), indoors	Number exposed to noise levels exceeding *LAmax, 3 times per night* 45dB(A), indoors
Stockholm-Arlanda Airport	0	1000
Göteborg-Landvetter Airport	50	200
Malmö Airport	0	50
Umeå Airport	0	0
Sundsvall-Härnösand Airport	0	0
Jönköping Airport	0	0
Stockholm-Bromma Airport	465	0
	• 515	• 1250

Examples of LFV actions aimed at improving environmental performance:

- Those structural, noise limiting, actions in accordance with the infrastructure proposition (prop. 1996/97:53) stage 1 including applicable environmental conditions continue at Arlanda, Bromma and Umeå Airports. During the year a total of 197 properties have been dealt with. Investment costs have so far reached SEK 82.8 M with a depreciation period of 10 years.
- One method used by the LFV Group to steer towards lower noise levels is to employ differentiated noise charges for aircraft taking off. The biggest difference in take off charges between the quietest aircraft and the noisiest is SEK 570 (Arlanda).
- The number of altered approach and take-off routes during the year amounts to five. To avoid noise over, for example, Linköping City the speed of aircraft in a holding position has been limited which results in less space being used for approaches.
- According to directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise and according to the Swedish regulations relating to neighbourhood noise (2004:675) at airports with more than 50,000 movements must map their noises levels. LFV has mapped noise levels for Stockholm Arlanda and Göteborg Landvetter and presented its finding to Swedish Civil Aviation Authority. These reports can be read by clicking on to their website.
- Continuous Descent Approach has been introduced at Stockholm Arlanda Airport. This means that the aircraft receives a more continuous descent approach which influences noise levels during the landing process.
- Göteborg Landvetter Airport has drawn up a plan of action which includes the Airports affect on the environment. A new proposal is a completely new flight route system based on modern navigational techniques which make it possible to make use of environmentally-adapted approaches using less thrust and therefore resulting in less noise.
- LFV register and administer all environmental related complaints. The number of complaints at LFV Airports for 2007 was about 942 with about 772 people complaining. Almost all complaints were noise related.





3.4 De-icing products

The usage of various de-icing products during take off and landing is shown in Table 10. The amount specified relates to those Airports where LFV is the official authorised operator, therefore does not include those products used by the Swedish Armed Forces at Ronneby and Luleå Airports.

The reported quantities of acetate based products comprise, in the main, of potassium acetate (CH_3COOK).

The formiate based products which, during 2007, were used at seven airports comprises of potassium formiate (HCOOK).

Table 10 *Runway de-icing agents*

Year	Urea [ton]	Acetate [ton]	Formiate [ton]	Sand [ton]
2003	204	252	1 350	6 133
2004	237	565	1 895	6 243
2005	176	165	2 418	6 053
2006	222	52	1 724	7 659
2007	203	42	2 184	6 280

The usage of formiate increased by 27%. The breaking down process of formiate in the recipient requires less oxygen than acetate and urea and is therefore regarded as being a better alternative, seen from an environmental view point, than other chemical-based de-icing products. Use of urea and acetate has reduced by 8% and 19% respectively during 2007 in comparison with the previous year.

The need for de-icing is totally dependent upon weather conditions and the result should be seen in that light.

Examples of LFV actions aimed at improving environmental performance:

- Kiruna Airport uses warm sand for de-icing instead of chemicals.
- Malmö Airport has an equalisation warehouse for sedimentation and oil accumulator. The delay allows also for the breaking down of nitrogen pollutants as well as organic pollutants.
- At Örnsköldsvik Airport a new sand dispersing aggregate has been purchased and will be in use during the year. This machine warms the sand allowing it to grip the runway better.
- At Karlstad Airport only sand is used for de-icing.

3.5 De-icing

The amount of de-icing products used on aircraft at LFV Airports is shown in Table 11. The amounts given refer to pure mono propylene glycol (MPG) without the addition of water as a diluting agent.

The Table also shows the ratio of the amount of MPG used per passenger. The ratio gives an indication of the amount used in relation to production.

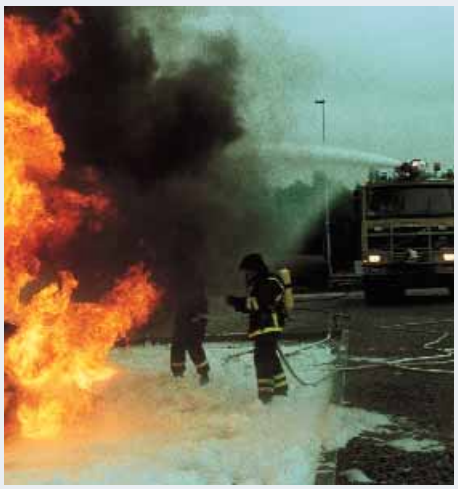
Table 11 *Usage of mono propylene glycol in de-icing aircraft.*

Year	MPG [ton]	MPG [g/pass]
2003	2 633	101
2004	2 843	103
2005	2 907	101
2006	2 603	88
2007	2 035	68

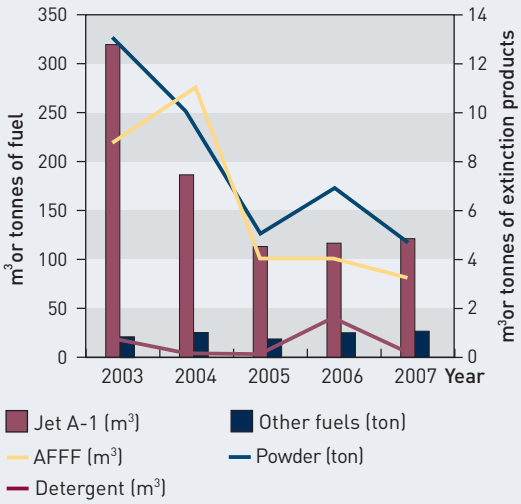
During the year the use of glycol as a de-icing agent dropped by 23%. The need to de-ice aircraft is totally governed by weather conditions and the result should be seen in that light.

Examples of LFV actions aimed at improving environmental performance:

- Some airports have increased the number of water samples that are included in their control programmes. Also, more airports are looking into their routines
- Group Airports Division has completed a central negotiation which will involve the analyses of surface water.
- Malmö Airport has completed construction of its equalisation ponds.
- Göteborg Landvetter Airport has, in its trial period report, presented a proposal covering management of surface water and how to reduce the affect on the surface water recipients.
- Umeå Airport reclaims the glycol used at the airport and transports it to the recycling station in Luleå.
- A new recovery vehicle used to remove glycol and water mixtures from the runway has been purchased at Sundsvall-Härnösand Airport and will be delivered during the autumn. The aim is to further improve the level of glycol recovery at the airport.
- Stockholm-Arlanda Airport has carried out an extensive rebuilding of the water purification plant.



Fuel and extinction products used during fire drills



3.6 Fire drill operations

In connection with fire drills both fuel and fire extinction products are used. The dominating products are aviation kerosene (Jet A-1) and bottled gas. In Table 12 the amounts of fuel used during fire drills held at LFV Airports is shown. Bottled gas is included in "other fuels" as diesel oil and petrol.

Table 12 *Fuel quantities used in fire drills at the LFV Groups Airports.*

Year	Jet A-1 [m³]	Other fuels [ton]
2003	318	24
2004	187	28
2005	113	19
2006	118	27
2007	122	16

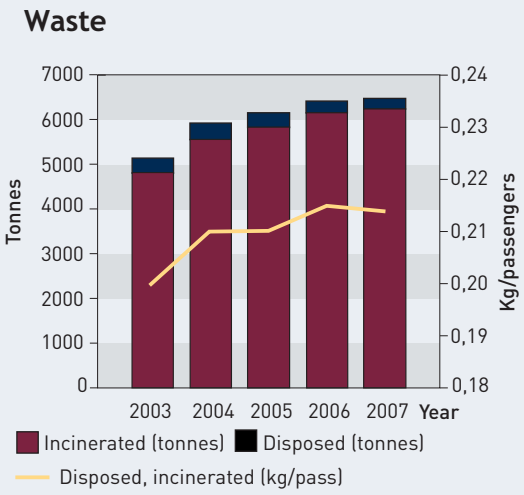
The use of Jet A-1 increased during 2007 whilst other fuels used in fire drills decreased.

Table 13 shows the consumption of the different chemical extinction products, detergents, AFFF (film-producing foam) and powder used during fire drills.

Table 13 *Consumption of extinction products*

Year	Detergent [m³]	AFFF [m³]	Powder [ton]
2003	16	9	13
2004	5	11	10
2005	5	4	5
2006	4	4	7
2007	4	3	5

In fire drills, water has to a greater extent replaced chemical extinction products.



3.7 Waste

Over a period of time, the LFV Group has successfully reduced the amount of waste products transported to official tips. However, to reduce the quantities of waste products transported to dumpsite is, to a great extent, dependent upon the municipality's technical systems and the amount of building and construction activities carried out during a given year.

Table 14 gives a presentation of the amount of waste products generated at LFV Airports which are transported to official dumpsite or incinerated (with or without energy extraction). The Table also shows the ratio of the amount of waste products per passenger. These details are, in the main, related to household, construction and demolition waste.

Table 14 *Incinerated and disposed waste*

Year	Incinerated [ton]	Disposed [ton]	Sorted reclaimed [ton]	Disposed, incinerated [kg/pass]
2003	4 800	320	2 700	0,20
2004	5 500	367	2 300	0,21
2005	5 800	297	3 800	0,21
2006	6 100	261	3 700	0,21
2007	6 200	247	3 200	0,21

The total amount of waste at LFV Airports amounted to 9,600 tonnes in 2007. The amount of re-usable sorted waste reduced by 3% compared with the 2006.

Over the last few years a Waste Group has been established at LFV and during 2007 this Group was given clear working instructions. The main tasks of the Waste Group includes acting as a forum for the exchange of knowledge between the various LFV Group units, to carry out situational analyses as well as present proposals, when needed, which cover the LFV Group's official views or attitude regarding important issues. This can involve, for example, the contact the LFV Group has with various authorities, travellers and customers. The Waste Group is also tasked with being the motor behind the LFV Group's activities and goals within waste management.

During 2007 the guidelines for managing so-called, third party waste have been established as a common definition regarding material re-cycling.

Table 15 shows CO_2 gained as a result from the amount of material recycled from LFV operations.

Table 15 *Carbon dioxide savings resulting from recycled material from LFV operations*

Waste recycled 2007	Amount of recycled products [ton]	Emissions factor [ton/ton][1]	Saved CO_2 [ton]
Aluminium	0,80	10	8
Coloured glass	132,51	0,6	80
Clear glass	36,54	0,6	22
Paper/office paper	1378,00	1,5	2067
Hard plastic containers	55,66	2	111
Other plastic containers	23,88	2	48
Total savings [ton]			**2336**

Examples of LFV actions aimed at improving environmental performance:

- Two recycling rooms at Göteborg Landvetter Airport have been introduced, one located airside and the other landside. It is hoped these rooms will lead to increases in recycling of waste products.
- Åre Östersund Airport has reviewed its handling of waste products and introduced improvements.
- A new sorting at source station has been opened at Terminal 4 at Stockholm Arlanda Airport. Also the Airport is carrying out a study of waste logistics at the gate.

3.8 Inventory and investigation of pollutants in the soil, sediment and water

During the last few years LFV operations have caused contamination of soil. In the majority of cases this has been caused by leakage of petroleum-based products. During the year the work to assess the contaminated areas at LFV Airports was concluded. Contaminated soil has been found at a number of places including the area used to carry out fire drills at Stockholm Arlanda Airport. The total cost to deal with contaminated areas at all the LFV Airports is in the region of SEK M 25-40.

Examples of LFV actions aimed at improving environmental performance:

- Investigations will be conducted to assess the extent of the contamination.
- Some airports have already begun sanitising contaminated areas.
- Improved fire drill locations will prevent further contamination.

3.9 Near-accidents, incidents and accidents

All near-accidents, incidents and accidents which have or could have harmed the environment must be recorded in the Airports' deviation management system. These occurrences usually take the form of minor fuel leakages which are dealt with immediately.

[1] Emissions factors have been taken from the Recycling industry 13-04-2008.

3.10 Other activities to achieve better environmental performances

During 2007 the management decided to adopt a common environmental management system (EMS). Some units within the operations are still in the transitional mode. The aim of an EMS is to improve efficiency and simplify the work carried out by the LFV organisation. Four airports, the Air Navigation Services, LFV Teknik as well as LFV Tryck are all certified according to ISO 14 001. The entire printing organisation at LFV Tryck has also been awarded the Swan eco-label and the headquarters of LFV in Norrköping is an approved Green Office according to the criteria of Agenda 21. The Air Navigation Services at LFV are the first of its kind within Europe to be environmentally certified.

In 2005 the LFV Chemical Group was created and comprises of people who are knowledgeable in environmental issues and the working environment. During the year overall Group routines have been introduced to reduce the amount of chemicals in use within the operations which are harmful to the environment as well as to peoples' health. In total every fourth product in use within the LFV operations contains substances which are listed on the Chemical Inspectors PRIO list. The chemical products in use within the organisation are subjected to continual inventory and since September 2006 the amount of these products in use within the organisation have reduced by a third and are now approximately 3000. The new chemical handling system introduced into the LFV organisation during 2006 was revised in 2007 to include a function which continually updates product information and now makes it possible to identify products which contain substances listed on the PRIO list.

The new LFV environmental data reporting system was introduced during the fourth quarter and has since generated reports covering the whole of 2007. Certain adjustments and complementary actions will be carried out during 2008 to bring the system into a satisfactory mode.

LFV has begun work to design the criteria for "Green Airports". The difference between holding a certificate and being a green airport is that certification implies order to problems and situations whilst green airport is more associated with how well environmental work is carried out.

4 Environmental goals and target fulfilment

The following is an account of the LFV Group's overall environmental targets for 2007 as well as comments relating to target fulfilment.

LFV shall reduce its emissions of carbon dioxide into the air from its own operations.

LFV has achieved this goal. Carbon dioxide emissions from LFV's own operations have dropped by 25% compared with 2006. This has been achieved through a number of actions including the reduction as well as the transition from oil to bio fuels and also the reduction of fuels used in vehicles. One example of this is the replacement at Malmö Airport of oil with wood pellets to heat the Airports' premises. The extent of the reduction can also be associated with the mild winter.

LFV shall improve follow ups on the number of people disturbed by noise and try to reduce the number exposed through noise mapping, improved flight routes and procedures, use of environmentally related take off charges as well as through noise insulation.

LFV assesses it has passed the halfway mark. Stockholm Division has during the year completed its Noise Management Plan (NMP) and the Air Navigation Services has carried out 27 new/altered flight routes during the year as well as changes to five approach and take off routes. The goals have not been fully achieved as the Group Airports Division has not completed the description of national areas of influence.

LFV shall reduce the effects flight operations have on surface water recipients.

LFV assesses it has passed the half way mark. The Stockholm Division has achieved its goals through, amongst other things, the 51% collection of glycol which Stockholm-Bromma Airport has achieved. The Group Airports Division has reduced the use of glycol but has not yet calculated the affect on the containers as the choice of calculations system has not yet been decided.

5 Environmental authorisation and conditions

This is a summary of the authorisations and conditions applicable to the operations at LFV Airports.

The summary in Table 16 does not cover all the particular conditions which are specified in the authorisation only those conditions which can be associated as being typical for airports.

The table can contain information material that is no longer current due to new rulings. For information relating to current authorisations contact the respective Airport.

Tabell 16

Airports	Number of Movements	Noise cap FBN	Noise insulation requirement			Conditions Air	Conditions de-icing/water	
	Year 2007/Authorisation	Reference level	Daytime noise	Night time noise	FBN	Emissions ceiling	De-icing agents	Management of de-icing glycol
Göteborg-Landvetter[1]	66 754/80 000	55-level year 1987. Condition no longer applies. Probationary investigation in progress.	Yes	80 dBA 3 times/ nightly 150 nights/year	60 dBA	No cap. Probationary investigation in progress	Acetat or formiate, urea as an exeption	Probationary investigation in progress, provisionally 70% of used quantity
Jönköping	18 590/36 800	-	-	80 dBA 3 times/ nightly	-	-	Max 20 ton urea/year as average over a 3 year period	80% of spill
Karlstad	15 828/33 000	FBN-level in application	70 dBA 3 times/ 24 hr period	70 dBA 3 times/ nightly	-	-	Max 100 t/year de-icing agent, of whitch 15 ton urea	80% of used quantity
Kiruna	6 558/15 790	-	-	-	-	-	-	80% of spill
Luleå F21[2]	18 168/39 000[3]	-	100 dBA (military flights)	80 dBA 22.00-06.00[4]	-	Investigation (NO_x mm) submitted	Investigation submitted	De-icing in specified area
Malmö	41 846/77 000	-	80 dBA several times/ 24 hr period	-	-		Acetat, urea as an exception	80% of spill
Ronneby F17	11 572/22 000	-	90 dBA (military flights)	80 dBA 19.00-06.00	-	Investigation (NO_x mm) submitted	Investigation submitted	-
Skellefteå	8 908/19 600	-	90 dBA 3 times/ 24 hr period	80 dBA 3 times/ nightly	-	-	Sand och acetate, urea as an exception	80% of spill
Stockholm-Arlanda	245 360/372 100	FBN-level 55 dBA (limited also under Athorisation from Management of Natural Resources)	-	80 dBA 3 times/ nightly 70 dBA 3 times/ nightly 2007, 150 nights/ year	>60dBA	CO_2 and NO_x from aviation and road transports, VOC ≤12 t/year and dust emission <1g/kg fuel. Runway clearance max 2 t/ year organic solutions in workshops. Heating fuel requirements	Acetate or formiate, urea as an exception. Seald lining under runway 3. Management and cleaning of surface water from runway and taxi runways	No more than 10% of used quantity to reach container. Max 10 tonnes COD/24 hr period to spill water net
Stockholm-Bromma	52 176/voluntary undertaking[5]	FBN-level in application	New application max 90 dBA	-	-	-	Reduce use of urea	Minimise use of glycol
Sundsvall-Härnösand	14 600/48 000	-	-	-	-	-	Sand and acetate, urea as an exception	80% of spill
Umeå	22 204/34 000	-	(80 dBA 3 times/ 24 hr period[6])	70 dBA 3 times/ 24 hr period	60dBA	-	Sand and acetate, urea as an exception	Probationary investigation in progress
Visby	24 126/43 000	-	90 dBA	80 dBA 3 times/ nightly	60 dBA	-	Treated, effect 50%	80% of spill
Ängelholm-Helsingborg	11 792/27 500	-	100 dBA (military flights)	90 dBA 19.00-06.00	-	Investigation (NO_x mm) submitted	Investigation submitted	-
Örnsköldsvik	3 920/12 200	-	90 dBA	80 dBA 3 times/ nightly	-	-	Sand, max 15 tonnes urea/year as an average over a 3 year period	80% of spill
Östersund	8 654/15 000	-	100 dBA (military flights)	80 dBA 22.00-06.00	-	Investigation (NO_x mm) submitted	Investigation submitted	85% of spill

[1] New environmental application to be submitted in 2007
[2] Conditions under ruling
[3] Number of civilian aircraft movements. Verdict announced 12 January 2007, appealed by LFV
[4] Conditions under appeal
[5] Contract with Stockholm City
[6] Conditions investigation submitted January 2007