



2008 Environment Report

applying environment-related
sustainability indicators

Hannover



The Lord Mayor

**Directorate of Economic and
Environmental Services**

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Foreword

The twentieth anniversary of the City of Hannover Directorate of Environment Services is a very special occasion and, for us, a moment both to take stock and to look confidently to the future. The state of the environment in Hannover is, compared to many other large cities, exceptionally good.

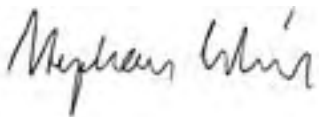
Environmental protection is an investment in the future. Environmental protection is more than complying with legal and official requirements; in the spirit of sustainability, environmental protection has, over the last twenty years especially, become a major management responsibility. It is one of the most important challenges that we must face if we are to bequeath a life worth living to the generations to come.

Global climate change is very much on people's minds today, and environmental protection becoming more of a personal priority. Especially in matters of climate protection, it is plain that the worldwide ecological and economic challenges also demand innovative measures from us as a city, such as our 'Climate Alliance Hannover 2020' programme, which is setting an example for the whole of Germany. Along with the many legal and official regulations, however, it is the personal initiative of each and every citizen and the many voluntary activities that lead to improvements in environmental quality and make practical environmental protection real to us all.


Effective protection of the essential natural conditions to sustain life has become a central concern of this and future generations. The path to sustainable urban development, however, also needs signposts. Environmental indicators are a way of making sustainable development measurable and assessable. They trace the long-term developments and help us guide the sustainable development process.

This report has been compiled from environment-related sustainability indicators, and is intended for the interested general public. It also offers an objective basis for decision making by local government administrators and politicians.

Our special thanks are due to the many people within Hannover City Administration, the Region Hannover Authority, the *Stadtwerke Hannover AG* city energy utility, *Zweckverband Abfallwirtschaft Region Hannover* waste management services and other public and private sector organisations, without whose support we could not have presented the environment report in this comprehensive form.



Stephan Weil
Lord Mayor and Chief Executive



Hans Mönninghoff
*Deputy Chief Executive,
Director of Economic and
Environmental Services*

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Introduction

Since 1992, Hannover Directorate of Economic and Environmental Services has published an environment report every three years, to present and assess the current state of the environment and to offer pointers for environmental policy aims. They provide an objective basis for political decision-making on environmental protection measures and a way of monitoring their success.



Hannover Town Hall and the Maschpark

On 15 December 2006 the Lower Saxony Environmental Information Statute came into force. This law extends public access to environmental information and regulates its dissemination, aiming to raise public environmental awareness, facilitate the free exchange of opinion and promote more effective public participation in decision-making on environmental issues. For Hannover City Council this means offering simpler and more understandable access to environmental information through a wide-ranging systematic availability and dissemination of environmental information, especially via internet. This report is also intended to serve this purpose.

Environment-related sustainability indicators

The main focus of this report is to present and evaluate the state of the local environment based on indicators from the relevant City Administration sections, with brief comments and explanations. Environment-related sustainability indicators trace the way in which environmental quality is developing in each area, and show where action is needed and also where environmental policy measures are succeeding and making a contribution to sustainable development. The indicators are assessed in relation to targets, legally defined limit values and guidelines, and also to voluntary agreements.

The essential key indicators in the **environmental barometer** offer statements on long-term trends and make assessment of sustainability possible. Sustainability requires a reliable and understandable method of

monitoring success, and the continuity of the indicators is important if we are to identify the long-term developments. We have therefore measured these indicators consistently and compiled data that for many of them go back almost 20 years.

Measures in the environmental field of activity are oriented on predetermined specialised programmes but also and especially on overall guidelines and aims such as the '**Hannover plusTen**' urban strategy papers and the **Aalborg Commitments**.

The overview of the many and varied **projects, measures, campaigns and activities** in each department of the City Administration will have to be limited to selected examples. Further, more detailed contributions on particular current issues (Hannover emission zone, the 'Gartenregion 2009' project and 'Ecological standards for building in areas within the local authority sphere of influence' exemplify Hannover City Council's Environmental policy priorities and actions that other local authorities could profitably emulate.

Environmental information

Additional information to that contained in this report is available (mostly in German with some translations) on www.hannover.de, where Hannover City Council and the Region Hannover Authority run a regional **internet portal**. This offers a comprehensive, easily accessible range of detailed information on important environmental issues, clearly and systematically organised. More



HANNOVER PLUSTEN

The strategic policy initiative, 'Hannover plusTen – working for a young and innovative city, 2005 – 2015', devised concepts for the development of the city of Hannover in the light of economic and social change. Ten work priorities, the 'Ten-Plus-Points', set practical objectives for sustainable urban development. Further information (in German) is on www.hannover-pluszehn.de.

AALBORG+10 COMMITMENTS

By signing the Aalborg Charter in 1995, the Hannover Call in 2000 and the Aalborg Commitments in 2004, Hannover City Council and many other European local authorities affirmed their obligation to pursue sustainable urban policies. The Aalborg Commitments offer ways of building on and implementing the Aalborg Charter; the particular value of these shared obligations and aims for Hannover lies in the vitalising and reinforcing initiatives, strategies and measures that support sustainable local development.

specific searches lead to selected documents, basic data, application forms, brochures and flyers, contacts for enquiries, links to non-local government institutions, and a facility to send email enquiries and orders. All this improves the City Administration's service to local people.

Many documents are also available in English on www.sustainable-hannover.de, organised according to environmental subject, to provide an international readership with convenient, user-friendly access to our environmental information.

Since the spring of 2008 the City Administration's Environment and City Greenspace Department has been conducting systematic client surveys in its various sections to gather information on the degree of public satisfaction with the department's various services and, where appropriate, to improve work processes and services. The first survey was conducted in early May 2008 in the Stadtpark, where over 1,000 visitors completed questionnaires in the space of a week. Further surveys will be taken in spring 2009 for the cemeteries customer services and the tree protection team.

Gender aspects

Findings show that environmental awareness and behaviour, consumer patterns and nutrition habits, risk assessment or perception and mobility needs vary according to gender. The data presented in this report have not been collected and evaluated on a gender-differentiated basis. Women are not affected by the measures differently from men with regard to representation, resources and participation. Where gender-specific consequences of local government decisions and measures have been noticed, this is made plain in the respective text.

Further information

Environment hotline	+49 511 168 45555
Internet	www.hannover.de www.sustainable-hannover.de



The Maschsee



Environment barometer, 2008

Environment-related sustainability indicators	1. long-term trend	2. trend compared to the 2005 environment report	overall assessment 1 & 2 on environmental criteria	presentation of indicator on page
energy and climate protection				
end energy consumption	↘	→	+/(-)	10
greenhouse gas emissions	↘	↘	+/(+)	10
use of renewable energy sources	↗	↗	+/+	11
use of combined heat and power	↗	↗	+/+	11
domestic electricity consumption	↗	↘	-/+	11
thermal energy consumption by the city administration	↘	↘	+/+	12
electricity consumption by the city administration	↗	→	-/(+)	12
mobility and traffic				
car ownership	↗	→	-/(-)	18
carsharing	↗	↗	+/+	18
public transport provision	↗	↗	+/+	19
public transport demand	↗	↗	+/+	19
access to public transport	↗	↗	+/+	19
cycleway network	↗	↗	+/+	20
air				
air pollution				
sulphur dioxide (SO ₂)	↘	→	+/+	22
nitrogen dioxide (NO ₂)	↘	↘	+/(+)	22
particulates (PM10)	↘	↘	+/(+)	22
benzene	↘	→	+/+	22
soil and land-take				
brownfield site reutilisation	↗	↗	+/+	26



The key indicators comprising the environmental barometer provide a general overview of developments in the state of the environment. Drawing on data series collected over many years, it tabulates the long-term trend of selected indicators and changes since the 2005 environment report. Assessing this development and

thus sustainable development in the single areas of action follows, taking account of politically-determined objectives, targets in specific programmes, statutory limit values and considering the aims of Agenda 21, the Aalborg Commitments and the Hannover plusTen programme.

Environment-related sustainability indicators	1. long-term trend	2. trend compared to the 2005 environment report	overall assessment 1 & 2 on environmental criteria	presentation of indicator on page
recreational space, nature conservation, agriculture and forestry				
green and open spaces	↗	↗	+/+	30
extensive agriculture	↗	↗	+/+	30
organic farmland	↗	→	+/+	30
protected countryside	↗	→	+/+	31
tree adoptions	↗	↗	+/+	31
roadside trees	↗	↗	+/+	31
water, groundwater, lakes and watercourses, wastewater				
drinking water consumption	↘	↘	+/+	36
drinking water consumption by the city administration	↘	↘	+/+	36
biological quality of watercourses	↗	→	+/+	37
water quality category of the River Leine	↗	→	+/+	37
wastewater purification	↗	↗	+/+	38
contaminant load of sewage sludge	↘	↘	+/+	38
structural quality of watercourses	↗	↗	+/+	41
waste				
amount of waste produced	↘	→	+/+	42
recyclables collected	↗	→	+/+	42
waste disposal	↘	→	+/+	42

long-term trend of the indicators and tendencies compared to the 2005 environmental report

↗ rising ↘ falling → constant

assessment on environmental criteria

+ positive (+) positive (with reservations) - negative (-) negative (with reservations)

presentation of the indicator on page ...

The long-term trend of the indicator, changes since the 2005 environmental report, and the assessment on environmental criteria, are elaborated and explained on the page indicated.

20 years of Hannover Environmental Services Directorate

Interview with Hans Mönninghoff, Director of Economic and Environmental Services



Mr Mönninghoff, on the first of August 1988 Hannover set up a separate Directorate of Environmental Services. You've headed this directorate for over 19 years now – which projects do you see as particularly worth mentioning?

That's very difficult to answer, as over the last 19 years, of course, there have been a great number of important projects. Perhaps one could highlight the work on climate protection, the 'City as Garden' projects, the decontamination of old industrial sites and the water-course renaturalisation programme, the measures to enhance our countryside and designating more landscape conservation areas, the system of environmental indicators and the environment report, the Agenda 21 work and, last but not least, the many environmental education projects.

Since the Region Hannover authority was established in November 2001, responsibility for nature conservation, water and soil protection, waste and emission protection no longer lies with your directorate. What advantages or disadvantages do you see in this?

In my view the merger has brought only advantages and no disadvantages. There were synergy effects from combining the same administrative units in the city and the former Hannover district authority. Abolishing the county authority and concentrating all governmental environmental responsibilities at regional level has also made the administrative processes leaner and faster.

What lasting effects has the EXPO 2000 World Exposition had on Hannover?

In the environmental field, we should emphasise the tremendous improvements to local public transport, the Kronsberg development as a European model project for ecological construction, and the enhancement of greenspace quality through the 'City as Garden' project. Overall, there were great benefits to Hannover's image and economic strengths.

Mr Mönninghoff, you're the only director of services in a European city responsible for both environmental and economic affairs. What particular challenges did this merger of the directorates in 2005 bring for you?

There are lots of positive interfaces between the economic and the environment directorate – a few examples: environmental protection, especially the energy sector, is an important job creation factor. When modernising municipal buildings and selling municipally-owned building land (both of these tasks are the responsibility of the Economic Affairs Directorate) we can put more emphasis on environmental aspects. In

the few cases where conflicts of interest arise between the environmental and the economic areas we've been able to resolve them well so far within the directorate. I see the advantage that, in discussions with the new directorate's staff, I can weigh up the pros and cons of a decision on a more informed basis.

Hannover has set new standards for municipal environment policy. Which aspects are you particularly proud of?

Here, too, I would mention the many projects that I listed in the answer to the first question, but I'm especially proud of our runner-up placing in the 'national nature conservation capital' award and, right now, our 'Hannover 2020 Climate Alliance' that's setting an example for the whole of Germany.

Hannover, along with Berlin and Cologne, was one of the first German cities to establish an emission zone. What conclusions can you draw after the first few months of operation?

The administrative effort was enormous and one can dispute whether, considering the good air quality in Hannover compared to other European cities, the benefits justify all the work. One indisputably positive effect is the boom in retrofitting diesel cars with particulate filters or buying low-emission cars, along with the awareness-raising aspect. We're still nowhere near a solution to the climate protection problems caused by traffic, and we need public debate, for instance at our first-ever car-free Sunday in the city centre this year.

What will be the main features of environment policies for Hannover in the next few years?

Compared to other cities, the state of the environment in Hannover is excellent, and there's not that much room for improvement – the main thrust will be to consolidate what we have already. There are still deficits in the area of environment and traffic and, connected to this, the noise issue. Also, the nature conservation conflicts in designating new building development areas have to be resolved fairly. With the contaminated sites that we still have, soil protection will be a long-term issue.

Many committed volunteers and environment institutions collaborate effectively in networks with Hannover City Council. Who would you like to thank especially today?

Hundreds of committed people are working in environmental protection, and they all deserve special thanks. Perhaps a mention ought to go to the important coordination of the various existing, and excellent, networks, whether it's the environmental communications section or the climate protection unit within the city administration, the good cooperation of the nature conservation associations with the official nature conservation bodies, the work of the climate protection agency, the environment centre or the 'Kinderwald Hannover' – just to name a few. But like I said: there are hundreds of committed people, both professionals and volunteers, working for environmental protection in Hannover and they all have my heartfelt thanks!

*Hans Mönninghoff
Deputy Chief Executive
Director of Economic and Environmental Services*

Energy and climate protection

Indicators

Energy and CO₂ audit

End energy audit and CO₂ audit from 1990 – 2005 for the entire city area by consumer group

In the city of Hannover in 1990, the inhabitants, industry and other users were 'responsible' for the production of around 5,523,000 tonnes of CO₂¹. In the 2005 CO₂ audit, compared to the reference year 1990 and despite economic growth, more living space per person and population growth, a reduction in greenhouse gas emissions from energy consumption of 9%, down to about 5,000 kilotonnes per year, had been achieved. Over the same period the energy consumption of Hannover City Council and Administration sank by 2% to around 12,200 GWh per year.

Thermal energy demand in 2005 was 8% less than in 1990. This is due to better energy efficiency, for instance through improved insulation and technology. The reduction in CO₂ emissions was even greater; this is explained by an increase in district heating provision and natural gas use instead of heating oil and coal.

Electricity consumption in 2005 was 17% above 1990 levels, but the rise in resultant CO₂ emissions was just 1%. The reason is once again improved generating efficiency from Combined Heat and Power plants. At 32%, the increase in domestic electricity consumption is highest, caused by the fact that people have more living space and many more computers and other electrical appliances.

End energy audit for the city of Hannover 1990/2005, with upstream chains for energy

	GWh 1990			GWh 2005			change compared to 1990		
	heat	electricity	total	heat	electricity	total	heat	electricity	total
industry	3124	1175	4299	2618	1312	3930	-16%	+12%	-9%
small commercial	2736	1055	3791	2648	1222	3670	-3%	+16%	+2%
domestic	3854	535	4389	3687	705	4391	-4%	+32%	0%
totals	9714	2765	12479	8953	3238	12191	-8%	+17%	-2%

CO₂ audit for the city of Hannover 1990/2005, with upstream chains for energy

	CO ₂ emissions 1990 in kilotonnes			CO ₂ emissions 2005 in kilotonnes			change compared to 1990		
	heat	electricity	total	heat	electricity	total	heat	electricity	total
industry	860	1241	2102	660	1189	1849	-23%	-4%	-12%
small commercial	683	1114	1797	540	1113	1653	-21%	0%	-8%
domestic	1059	565	1625	895	642	1537	-15%	+14%	-5%
totals	2602	2921	5523	2095	2944	5039	-19%	+1%	-9%

¹ actually CO₂ equivalents – the climate altering effects of other gases were expressed in CO₂ quantities.

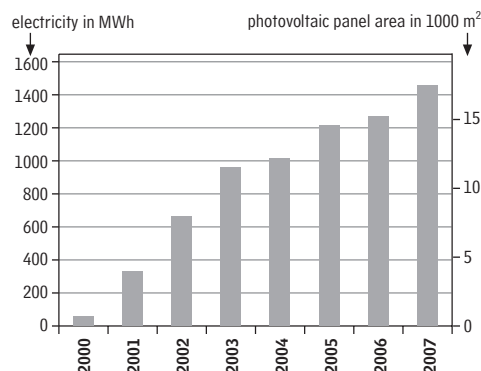
Use of renewable energy sources

Proportion of renewable energy sources in the provision of electricity, and proportion of photovoltaic installations

In Hannover, renewable energy is generated from hydroelectric, landfill, fermentation and sewage gases, biomass, wind and solar sources. The proportion of electricity from renewable sources was 0.6% in 1997, 1% in 2000, 1.3% in 2005 and 1.1% in 2007; around 60% of all renewable electricity was generated from landfill and sewage fermentation gas, and variations are due to changing volumes of sewage, landfill and fermentation.

Photovoltaic has seen the largest proportional increase; in 2007, 314 installations totalling around 17,500 m² of photovoltaic panels produced about 1,500 MWh. The quantity of photovoltaic electricity has risen since 2001 by around 450%, supplying 3% of all electricity from renewable sources.

Electricity from photovoltaic plants

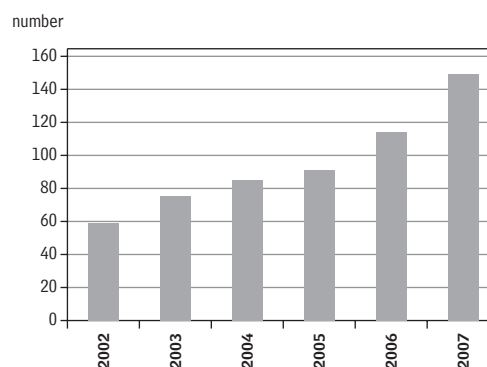


Use of Combined Heat and Power

Number of local CHP plants and their proportional contribution to electricity supply

Generating electricity and heat at the same time is called cogeneration or Combined Heat and Power (CHP). The number of small, local CHP plants rose from 61 in 2002 to 149 in 2007. There are reliable data only for electricity fed into the public grid; the proportion of electricity used directly by the plant owners cannot be calculated. In 2007 the 149 plants in the Hannover area, with a total electrical capacity of 7.2 MW, put around 26,000 MWh of electricity into the grid, 0.8% of Hannover's electricity.

Decentral CHP plants



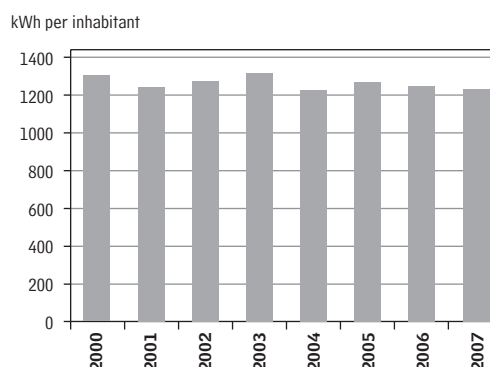
decentral CHP plants in Hannover not fuelled by renewables
sources: Stadtwerke Hannover AG and Hannover City Administrations

Domestic electricity consumption

Electricity consumption of private households in relation to population, kWh per inhabitant and year

Total domestic electricity consumption rose by 32% between 1990 and 2005. Per person, however, a positive trend is apparent since 2003; compared to 2003 levels, consumption sank by 2007 by 6% due to energy-saving habits and the purchase of energy-efficient household appliances.

Domestic electricity consumption



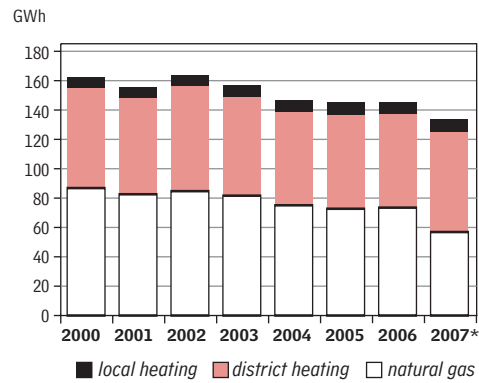
sources: Stadtwerke Hannover AG and Hannover City Administration

Thermal energy consumption by the city administration

Consumption of gas, district heating and local heating for municipal properties, overall and in kWh/m² and year

Adjusted for a comparable building stock, heating demand has decreased considerably since 2000 compared to the base year, when the average, space-related thermal index was 173 kWh/m²; in 2006 it was 155 kWh/m² and in 2007 this figure probably sank by a further 5 kWh/m². This indicates a reduction since 2000 of around 13%. A substantial contribution to this was the high proportion of district heating (over 50%).

Thermal energy consumption by the city administration



Thermal energy consumption is adjusted for weather variations and a comparable building stock.

Consumption of other heating energy (e. g. heating oil and electricity) is very low and cannot be tabulated.

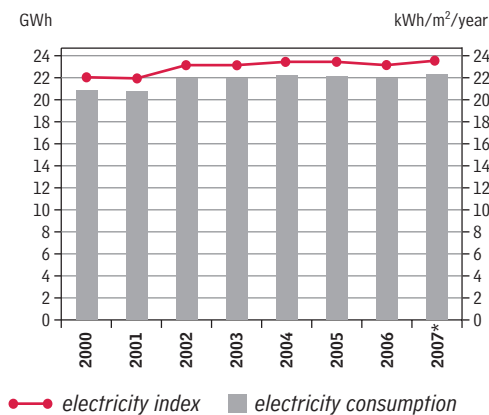
* Consumption in 2007 was projected, as not all data were available.

Electricity consumption by the city administration

Electricity consumption in municipal properties, excluding heating, in total and in kWh/m² and year

Increased electricity demand, adjusted for a comparable building stock, from more technical equipment in schools and longer hours when the buildings are used, could be compensated for almost entirely by retrofitting (light bulb exchange programmes, removal of large air conditioning plants in schools). Efforts to reduce demand since 2002 have generally only managed to keep it at roughly the same level. The average space-related electricity index in recent years has been around 23 kWh/m².

Electricity consumption by the city administration



Electricity consumption is adjusted for a comparable building stock.

* Consumption in 2007 was projected, as not all data were available.

Projects and measures

To evaluate reductions in CO₂ emissions within the city area, and thus the success of climate protection measures, it is necessary to consider the total energy consumption, including generation and supply, for all areas of life. This calculation requires a great deal of research, especially for energy not taken from supply networks. Detailed and comprehensive CO₂ audits are available for the years 1990 and 2005, and can be presented in this report (see page 10). They are complemented by selected climate protection indicators.

Based on the CO₂ audit, a climate protection action programme for the years 2008-20, 'Klima-Allianz Hannover 2020' has been devised.

Renewable thermal energy use

Unlike data on electricity generation from renewables, which can be collected from inputs to the public grid, renewable thermal energy generation from biomass or solar installations cannot be fully monitored, as the heat is used on site.

Solar thermal installations in the 'Solarliga' have seen 35% growth since 2005, with an increase in total collector area from 4,455 square metres (2005) to 6,000 square metres (2007, 621 installations).

Combined heat and power

Producing electricity and heat from the same plant is called cogeneration or combined heat and power (CHP). Whether in large CHP stations or small local CHP plants, primary energy is used more efficiently than in conventional heating plants. This has a positive effect on the CO₂ audit: 1 kWh of heat from a district heating plant releases 98 grams of CO₂, 1 kWh from a gas boiler 237 grams (without upstream components).

The proportion of electricity supplied by *Stadtwerke Hannover's* CHP plants rose from 24 percent in 1991 to 35 percent in 2005. In 2007 CHP electricity supplies fell to just 29 percent of the total due to lower district heating supply and less use of the gas-fired power station (gas and steam process). The proportion of electrical energy from local CHP plants was 0.8 percent in 2007.

The total connected capacity of district heating within the city area rose from 669 MW to 829 MW between 1991 and 2007. This change in heat generation has a positive effect on greenhouse gas emission levels.

Hannover Climate Alliance 2020

Hannover City Council and the *Stadtwerke Hannover AG* city energy utility have joined forces with around 80 private sector and institutional partners in the 'Klima-Allianz Hannover 2020' climate protection action programme for the years 2008-20. The programme is divided into specialist programmes for the city administration, the energy utility, and sectoral programmes. Chaired discussions over three months with stakeholders in four workgroups determined substantial contributions to reducing CO₂ emission levels in industry, office buildings, housing and large organisations such as churches, political parties, sports clubs and consumer protection associations. The target is a 40% reduction in CO₂ emissions by the year 2020 solely from the local efforts of all participants.

A special publication to set out the Klima-Allianz Hannover 2020 objectives and projects is planned for spring 2009; for further information (in German) see www.hannover-klimaallianz.de.

Energy consumption by the city administration

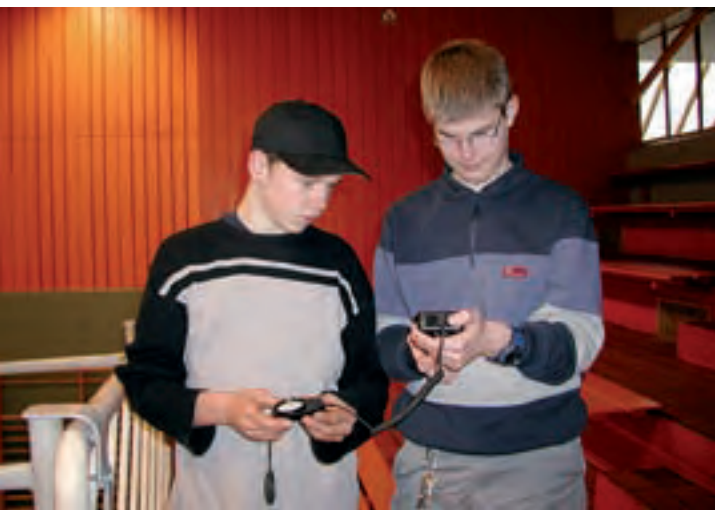
Most of Hannover City Council and Administration's energy-saving potential is in its own buildings and rented facilities (totalling around 600 properties). Currently, supplying these properties with energy costs approximately 18 million Euro per year, and to reduce consumption a package of energy-related measures has been applied for several years now. Despite buildings being used for longer each day (e. g. afternoon supervision in schools, use of school buildings by outside groups), the increase in technical equipment, changes in operational praxis and construction work in the winter months as well, since 1990 the measures package has reduced weather-adjusted thermal energy consumption by over 30 percent and electricity demand by around 9 percent.

Structural and technical modernisation So far, diverse special energy efficiency and sustainability retrofitting programmes have been successfully completed or begun: 'Boiler modernisation' and 'Hazardous materials removal/lighting exchange' from 1996, 'Modernisation for energy efficiency' (MEE), also from 1996, and 'Infrastructure renewal' (IR) from 2000. The 'Sustainable building renovation' programme (SBR) gradually superseded the MEE and IR programmes from 2001 onwards. Currently, the 2008-12 renovation programme with an investment volume of around 165 million Euro is being implemented, mainly to renovate schools and kindergartens to the City eco-standards (30 percent better than the national energy efficiency statute, new-build to Passive House standard). Renovation and modernisation measures for energy efficiency have made it possible to reduce energy consumption steadily since 2004.

Centralised energy management This includes energy husbandry, energy procurement, energy monitoring, operational optimisation and running energy-saving projects for thrifty and rational energy use.

Saving energy through environmentally aware consumer habits Considerable energy can be saved if consumers act in environmentally aware ways such as heating only as needed, airing rooms completely at regular intervals rather than leaving windows ajar, and avoiding unnecessary standby consumption. Hannover City Administration has set up three projects for specific target groups:

- 'GSE': saving energy in schools (running since 1994)
- 'KliK': climate protection in kindergartens and children's day centres (running since 1999)
- 'Tatort Büro': saving energy and water in the city administration (running since 2000)



Pupils on an energy inspection at Mühlenberg comprehensive school

Over the last 12 years, the participating schools have saved 4.4 million Euro on their energy costs and prevented the emission of 25,000 tonnes of CO₂. The influence of the many school reorganisation measures over the last few years has had a very clear influence on energy consumption; unfortunately and especially for electricity, savings have been too low.

As an incentive for consumer involvement, 30 percent of the financial savings are returned directly to the facility and 40 percent are invested in additional energy efficiency measures, for example further modernisation of lighting equipment.

Innovative projects: These include erecting new municipal buildings to Passive House standard (see page 16), increased use of renewable energy sources, biomass and CHP, and utilisation of district and local heating systems.

Athletes save energy

Between 2002 and 2007, around 30 sports clubs in Hannover modernised their clubhouses to be more ecologically responsible and economically viable. Measures implemented so far avert around 700 tonnes of CO₂ emissions every year, and continuation of the programme adds about 100 tonnes to this figure year on year.

This was made possible by advice and modernisation grants from **e.coSport – Energetische Sportstättenanierung in der Region Hannover**, a project run jointly by the Hannover City and Region authorities, sports associations in the city and region and the *energcity-Fonds proKlima* funding body.

Comprehensive, highly qualified advice including practical proposals motivated sports clubs with their own premises to choose an energy-efficient modernisation programme. Implementing holistic concepts with coordinated measures made it possible to save substantial quantities of energy.

Since the beginning of 2007 the 'e.coSport' project has been extended to offer full-service environmental counselling for sports clubs. Known as **e.coFit**, the advice programme aims to reduce operating costs by encouraging low-investment electricity- and water saving measures, improving lighting, reducing waste, nature conservation and changing consumer habits, concurrently making a contribution to climate and environmental protection. Currently, 16 clubs are being advised, of which the first five have been awarded certificates of successful participation.

'Reclaim Hannover from the car'

On 18 May 2008 the streets of Hannover city centre were liberated from cars and given over to pedestrians and cyclists. Through the energetic involvement of over 80 associations, organisations and private enterprises a wide-ranging programme of activities evolved offering games, sport, exercise to try out, rallies and guided tours, stage shows, arts, culture and live music. The 'Solarfest', an alternative automobile exhibition, and extensive information about every aspect of cycling and cycles provided ideas and inspiration for climate-friendly mobility and individual contributions to climate protection.

There were around 75,000 people at the event, who had come with the special public transport ticket or by bicycle, monocycle, 'city roller' or in-line skates to enjoy the very special atmosphere of the 'reclaimed' streets and the high environmental quality of this car-free day.

1 calculated according to GEMIS 4.14, including upstream emissions (e.g. boiler construction, fuel transport)

EU Climate protection project – ‘Concerto/act2’

Hannover City Administration is running a European climate protection project for local authorities, working with the cities of Koszalin in Poland, Malmö in Sweden, Nantes in France and Newcastle in England. The objectives in Hannover are retrofitting older buildings for energy efficiency and the use of renewable energies in the city districts of Ahlem, Hainholz, Nordstadt, Vahrenwald and Vinnhorst. Grants are available for owners of detached and multiple-occupancy houses.



Car-free Sunday, 2008 – people reclaim the streets.

The Concerto/act2 project has been approved from 2006 until the end of 2010. Five other partners are involved in Hannover: *proKlima*, *target GmbH*, the *Spar- und Bauverein eG* and *Gundlach GmbH & Co* housing associations and the *Stadtwerke Hannover AG* energy utility. A new feature of the project is the ‘Energy Pilot’, financed by *proKlima*, to advise and help property owners in retrofitting their houses and simplify the construction procedures.

Saving energy through modernisation and using renewable energies are the central concerns of Concerto/act2 in Hannover, reducing CO₂ emissions by converting from fossil fuels to renewables and thus making an active contribution to climate protection. For details see www.concerto-hannover.de.

Door-to-door advice service

Since 2000, Hannover City Administration’s Climate Protection Unit, in cooperation with Hannover Region Climate Protection Agency, *proKlima – Der energycity-Fonds* and the Chamber of Craft Trades, has run door-to-door advice campaigns on energy-efficient retrofitting. After taking the ‘Gut beraten starten’ (Start well advised) campaign to the Ahlem, Vahrenwald and Vinnhorst districts in the last two years, the next two will concentrate on the Nordstadt and Hainholz districts. Additionally, the campaign will be extended to owners of multiple-occupancy houses with a wide-ranging concept.

On campaign days, energy advisers go from door to door in selected streets, offering homeowners free, neutral and individual advice on possible energy saving measures and financing models. To make local companies aware of the market potential and business opportunities, the District Mayor invites craft businesses and service providers to an information event along with residents of the district.

Low Energy House and Passive House advice services

The long-term energy consumption and thus the CO₂ emission level of a new house are determined right from the foundations, and so Hannover City Administration advises purchasers of municipally owned building land on the obligation included in the contract of sale to erect a ‘Low Energy Plus House’; this means that heat loss through the building envelope must be 30% less than the statutory requirement. The advice service covers better thermal protection and the maximum permitted emissions from the heating system. Additional information about current subsidies and incentives, the energy pilots and the advantages of Passive Houses also encourage house-builders to do more than just meet their contractual obligations.

In 2006 advice was given to 53 purchasers and in 2007 a further 50 advice sessions were carried out. Since the end of 2007, in general all potential purchasers of municipally-owned building land are advised before the contract is signed, i.e., also those house builders who may not succeed in their bid for a plot. In this way, many more house-builders are introduced to the issues of building for energy efficiency, so that they can apply it competently to their planned building project.

Passive Houses in Hannover

Much of the thermal energy demand of a building can be saved by building for energy efficiency. The Passive House standard is a very high and well-developed method of combining energy saving and higher comfort standards. Compared to a house built to the current statutory energy efficiency standards, it uses around 80 percent less energy, thus causing 80 percent less CO₂ emissions.

To promote this sustainable building method, development plans in the city of Hannover are optimised for Passive Houses (south-facing orientation, defining building heights and spacing for solar gain, at least two full storeys for compact building forms). Potential purchasers of municipally owned building land also receive free advice on energy-saving construction from the City Administration (see 'Low Energy and Passive House advice'). If the house builder chooses to build to Passive House standard s/he will be favoured in the selection procedure.

In cooperation with *proKlima* and the Region Hannover Climate Protection Agency, experience with Passive House construction is networked among the building trades, planners and property developers with funding and advice institutions. *proKlima* also awards grants towards the construction costs of Passive Houses.

At 'Kronsberg Nord' and 'In der Rehre', housing developments have begun or are in planning exclusively for Passive Houses taking extra ecological aspects into consideration.

Funding

To initiate and support the implementation of climate protection projects has been the task of the *energycity-Fonds proKlima* since its foundation in June 1998. The subsidy volume of around five million Euro each year is provided by *Stadtwerke Hannover AG* and the municipalities of Hannover, Laatzen, Langenhagen, Seelze, Hemmingen and Ronnenberg. Its main funding focus is on saving thermal energy in old and new buildings, erecting solar thermal plants and expanding combined heat and power provision.

The best example of building for energy efficiency is a Passive House. Today there are 67 new-build Passive House standard apartments in Hannover and a further 30 are being planned or built. In retrofitting older housing, too, the use of Passive House components is increasingly significant; around half of the 2.1 million Euro subsidies in the older buildings programme were granted for high-efficiency insulation, Passive House windows and ventilation with heat recovery systems. Additionally, nowadays there are many exemplary energy

retrofitting projects working entirely with Passive House components: twelve houses containing 87 apartments in total have already been modernised, while work is in progress (May 2008) at another 20 houses with a total of 91 apartments (*proKlima* database).

The Passive House standard is also gaining ground in non-residential building. In Hannover, children's day centres, old people's homes, a business complex and a community centre have been built to Passive House standard and numerous projects are at the planning stage.

The subsidy programme for combined heat and power plants introduced in 2007 has helped establish 40 local CHP plants with a total thermal capacity of 2.4 megawatts. 48 new district heating connections have added another 5.6 megawatts thermal capacity. For details (in German) see www.proklima-hannover.de or www.passivhaus-plattform.de.

New municipal buildings to Passive House standard

The policy of building municipal facilities to Passive House standard has already been applied for a fire station and two children's day centres. The children's day centre at Große Pranke 5 in Marienwerder was rebuilt in the vicinity of the old one on a shady, wooded site. The single-storey building was given a green roof, espaliers of thermal timber cladding on the east, west and north façades, glazed skylights and extensions to the group room entrances and a corrugated metal and triple glazing southern façade facing the grounds in the group room area. The building meets the Passive House standard, and is heated from solar and interior heat gain while minimizing heat loss through a combination of superinsulated building envelope, controlled mechanical airing and ventilation and highly efficient (at least 87 percent) heat recovery. The remaining thermal demand (warm air from a re-heater) and hot water are supplied from a gas-fired condensing boiler.

South-facing aspect – children's day centre to Passive House standard



The thermal energy consumption of the 513 m² of heated space is around 15 kWh/m² p.a., primary energy demand is around 86 kWh/m² p.a.

Use of renewable energy sources and biomass in municipal properties

In 2007 solar thermal pool water heating was installed at Lister Bad outdoor pool.

During the outdoor swimming season (May – September) the water in the several pools is kept at a constant 22°C – with solar backup since 2007. Use of fossil fuel (natural gas) is reduced by around 34 percent depending on hours of sunshine, and CO₂ emissions decrease by about 95 tonnes a year. The solar absorber is a many-branched system of black rubber pipes laid on the flat roofs of the swimming pool buildings, through which some of the swimming pool water flows and is heated directly by the sun's rays. A gas-fuelled backup boiler ensures constant water temperatures in the event of long periods of cool weather. Technically, it would be possible to save all the gas consumption and 280 tonnes of CO₂ emissions a year if the backup heating was not used. In bad weather, however, water temperatures would sink to a level below the expectations of many swimmers.

In 2007 Hannover City Administration commissioned modern, environmentally friendly and fully automatic wood burning heating systems for the first time, installed in two schools, a young people's holiday camp and a depot (rated output in brackets): at Vahrenheide-Sahlkamp comprehensive school (360 kW), Fridjof-Nansen primary school (220 kW), Burgweg depot (240 kW) and Kirchheim holiday village (200 kW). Two more facilities will be converted in 2008/09: the School Biology Centre in Burg (200 kW) and Ahlem cemetery (40 kW).

These environmentally friendly plants, running economically on local fuels, reduce CO₂ emissions by 70 percent on average.



Fermentation gasholder at Herrenhausen sewage works

Environmentally friendly energy production by Hannover Wastewater Treatment Services

Hannover Wastewater Treatment Services first began using sewage fermentation gas back in 1935, and has improved and extended this ever since. Each year, around 13,300,000 kWh of electricity is generated from sewage gas, at present meeting about 60 percent of the plants' everyday energy needs. Despite technical optimisation the substantial electricity needs of the two main Hannover sewage treatment plants, at Gümmerwald and Herrenhausen, which require advanced wastewater treatment processes, cannot be completely met from internal sources.

The relatively warm wastewater also offers an abundant energy source; the plant is already heated from heat pumps. In future, environmentally friendly electricity from such sources as photovoltaic, heat pumps, hydroelectric, fuel cells and a local CHP plant should supplement the plants' own electricity generation, replacing electricity from fossil fuel power stations.

Solar thermal plant at Lister Bad open-air pool



Mobility and traffic

Indicators

Car ownership

Number of private cars compared to population, in cars per 1,000 residents

While the trend to private motorised mobility was still clear in the early 1990s, figures have levelled out in recent years and, in 2005 and 2006, there were around 411 cars per 1,000 residents.

Modal split (choice of transport)

Proportion of journeys undertaken within the city of Hannover on foot, by bicycle, by motorised private transport, by local public transport, in percent

41% of all journeys were made by private motor vehicle; the national average is around 58%. While the national average proportion of journeys by public transport is just 8%, in the city of Hannover it is 17% and in the Hannover region 13%.

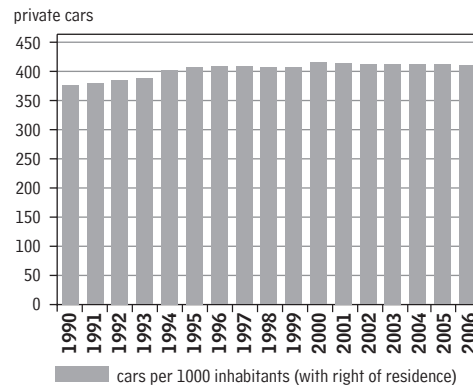
Carsharing

Number of drivers in carsharing associations, number of carshare contracts, number of vehicles operated by teilAuto and Stadtmobil Hannover GmbH

Ökostadt e.V. founded carsharing in Hannover in 1992, and Stadtmobil Hannover GmbH, established in 2005, took over the association's carsharing operations on 1 January 2006. Carsharing is a professionalized system of joint car use, based on the principle that each carsharing vehicle makes up to ten privately-owned cars superfluous. Joint car use without owning a vehicle therefore reduces the number of cars in Hannover by around a thousand, reduces the need for parking and garage space, and is economical with resources.

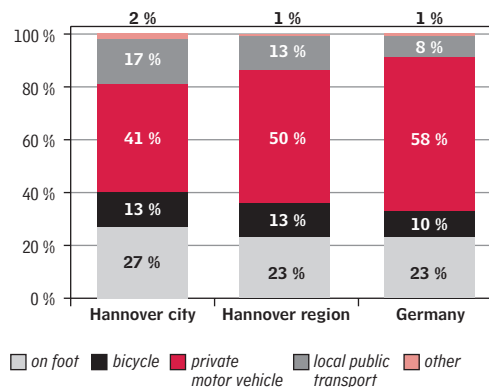
After a consolidation phase until 2005, carsharing has grown by 2 – 6% year on year to become an important element of Hannover's transport constellation. The City Administration used five Stadtmobil vehicles in 2007.

Car ownership



source: quarterly statistical report

Choice of transport in parts of the Hannover Region



source: 'Mobilität in Deutschland 2002', for the Region Hannover

Carsharing

year	vehicles	member-ships	persons entitled to drive
2000	95	1807	2063
2001	119	2281	2594
2002	115	2101	2356
2003	101	1990	2525
2004	101	2130	2659
2005	89	2052	2691
2006	91	2110	2675
2007	97	2242	2720

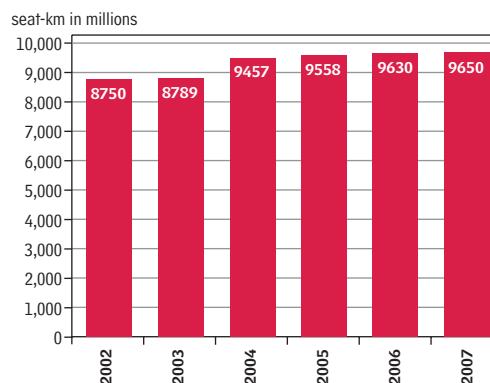
source: Ökostadt e.V., Projekt teilAuto (until 2005), Stadtmobil Hannover GmbH

Public transport service

Sum of carrying capacities (total distance travelled by PT vehicles times average number of seats per vehicle) on all routes in the Greater Hannover public transport area (GVH) in seat-km per year

After a period of local public transport infrastructure measures, in recent years the emphasis has been on improving service efficiency. One important step was introducing a year-round timetable in 2002 – 2004. The tram/subway 7.5-minute departure interval was changed to 10 minutes, which now applies throughout the year. For buses, the tram frequency change means that they run at 20- rather than 15-minute intervals.

Local public transport services



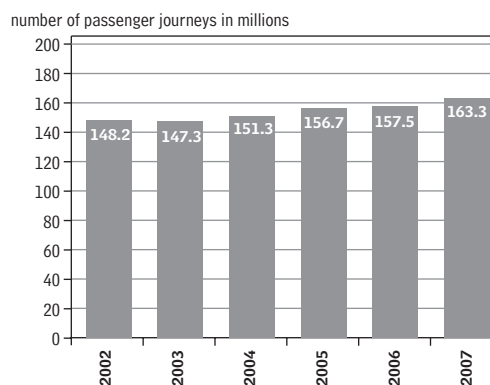
source: Region Hannover

Demand for local public transport

Number of passenger journeys on local public transport within the Greater Hannover area per year

The joint efforts of the Region Hannover authority and the operators to improve public transport services have resulted in increased demand. External factors, such as constantly rising fuel prices, also play a role here.

Demand for local public services



source: Region Hannover

Access to local public transport

Percentage of the City of Hannover population living within 300 m of a bus stop and/or 500 m (in a straight line) of a tram or local rail stop

The attractiveness and quality of local public transport is also clearly apparent in its accessibility. The special evaluation conducted by the Region Hannover included those stops at which there was at least one service every half-hour at peak and normal periods and once an hour during low-demand periods. The evaluation for the city of Hannover showed that 79% of the population live within a 500-metre radius of a tram or local rail stop, and 99% are also within 300 metres (in a straight line) of a bus stop.

Projects and measures

Mobility is a central indicator of our quality of life, and the environmentally friendly delivery of all mobility services is an important aim of Hannover's transport policy, along with action for the long-term reduction of emissions from traffic.

In personal transport, then, the strategy is to promote the 'environmental alliance' of local public transport, cycling and walking. This can only be successful if three types of measures are applied concertedly:

- Discouraging private motor vehicle use with the appropriate planning measures, and creating the necessary framework conditions
- Transferring journeys by private motor vehicle to the 'environmental alliance', making it more attractive
- Minimising the burdens of unavoidable private motor vehicle use.

Transport development plan

The transport development plan is a municipal instrument setting the strategic guidelines for the city's entire transport scenario over a period of 10 – 15 years. The framework conditions, problems and objectives have, in some areas at least, altered significantly since the City Administration's internal transport development plan of 1990 – 95 was devised. Important new issues

are demographic change, stagnating traffic figures and the need for close correspondence with environmental planning on air purity and reducing noise.

The next phase of the Hannover transport development plan is currently being prepared; this will take between two and three years.

Cycling

The cycling infrastructure throughout Hannover has been markedly improved in recent years, especially in the course of preparations for the EXPO 2000 World Exposition. To promote cycling as a means of urban transport, this infrastructure is continually upgraded by the City Highways and Environment and City Green-space departments within the bounds of financial feasibility, prioritising safety and comfort.

Currently, the cycleway network amounts to 530 kilometres, of which some 230 kilometres are cycle paths on both sides of roads, 135 kilometres of cycle paths on one side of roads, around 95 kilometres through greenspace and 70 kilometres of separate cycleways in woodland. Related to the total length of transport ways, then, cyclists are already well provided for. Important components of the cycleway network are stretches along traffic-calmed streets, through residential areas and in 30-kph zones and parts of pedestrian precincts. To this can be added around 80 kilometres of multi-purpose roads across farmland and through woods on the city margins that can also be used by cyclists.

Hannover offers a wide range of services to cyclists such as the possibility to take one's bike on the tram or bus, or the cycle station beside Hannover Central railway station with indoor parking for 350 cycles. The 'Hannover erfahren' (German wordplay on 'ride' and 'experience') series of leaflets offers interesting routes for environmentally friendly explorations of Hannover by bicycle.

Within the existing network, another cycle route of around 25 kilometres has recently been devised and signposted: the 'Julius-Trip-Ring' which leads cycle tourists right around the city (see page 33).

'Hannover erfahren' – cycling around the Maschsee lake



The 'cycle-friendliness' of German cities is regularly assessed, and Hannover is always placed high in the rankings of the top 28. This was confirmed by an ADAC (German motoring association) expert test on 'Cycling in Cities' in 2003 and the ADFC (German cyclists association) 'Cycling Climate' test in 2005 (a user survey), both of which ranked Hannover fourth in Germany. In the Lower Saxony state competition in 2006 for the 'most cycling-friendly local authority' Hannover was runner-up.

The City Administration is drawing up a vision statement for cycling to promote this environmentally friendly means of transport even more strongly.

Local public transport

Hannover has a well-functioning and extensive public transport system. The four operators within the Greater Hannover Public Transport (GVH) area, *üsttra*, *RegioBus Hannover*, *DB Regio* and *Metronom*, work together to offer passengers the best possible service.

The Region Hannover authority aims to raise the proportion of tram stops and subway stations with barrier-free access from 62 to 70 percent within the period covered by the new local transport plan by the end of 2012. Conversion of existing tram stops to high-level platforms is the Region Hannover's main focus of barrier-free improvements to the tram network. At present, of the 195 tram stops, 72 have no platform.

Along with constructing more high-level platforms and station lifts along the tram/subway routes, the largest single measure in recent years has been extending the tram network to the suburb of Altwarmbüchen in 2006.

Another extension will be the 'A-Nord' line from Lahe in the north of Hannover to Schierholzstraße in Misburg-Nord, to be completed by the end of 2009.

Hannover Region local transport plan, 2008

Public transport in the Hannover Region is based on the 'Nahverkehrsplan', which presents an overview of the current state, development, objectives, measures and financing of local public transport and rail passenger services in the Hannover Region. It is drawn up as a framework plan covering five years, on whose basis subsidies are distributed and agreements concluded with the several public transport operators. The client – the Region Hannover authority – thereby commits itself to aims, targets and measures.

The current 'Nahverkehrsplan' was drawn up in 2003. Based on the findings of the participative and consultative process towards a draft for the 2008 plan, it was approved by the Hannover Region authority on 1 July 2008.

Kronsberg tram stop



Air

Indicators

Traffic-related air pollution

Annual average air pollution: roadside levels of particulates (PM₁₀), nitrogen dioxide (NO₂), benzene, soot and carbon monoxide (Göttfingger Straße roadside station)

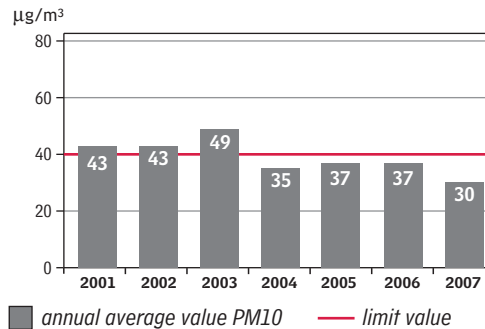
The annual average limit value for particulates (PM₁₀), 40 µg/m³, has not been exceeded at the Göttfingger Straße roadside metering station since 2004. Readings markedly below the limit value in 2007 were caused by favourable weather conditions (a mild winter, rainy summer and strong winds).

The annual average values of nitrogen dioxide (NO₂) have been high for several years and are far above the permitted limit value of 40 µg/m³.

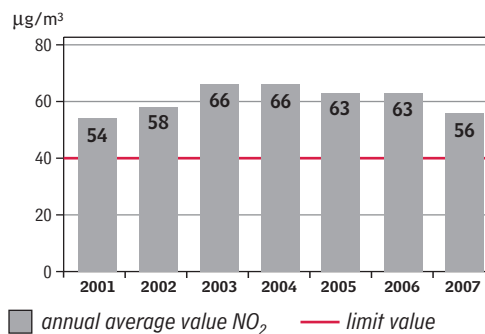
Ambient air pollution

Annual average air pollution: sulphur dioxide, particulates (PM₁₀), nitrogen dioxide, carbon monoxide and ozone, and the corresponding risk assessment values

Traffic related air pollution – PM₁₀



Traffic related air pollution – NO₂



source: Niedersächsisches Landesamt für Ökologie; since 2005: Gewerbeaufsichtsamt Hildesheim, zentrale Unterstützungsstelle Luftreinhaltung und Gefahrstoffe

Ambient and traffic-related air pollution

components	annual average values						emission-/limit-/target values		
	1990	1995	2000	2005	2006	2007	TA Luft	22. VO	33. VO
HRSW – Göttfingger Straße rooftop station									
sulphur dioxide	17	11	6	3	< 3	3	50	80-120 ⁴⁾	
particulates (PM ₁₀) ¹⁾	35 ²⁾	38 ²⁾	31	26	28	23	40	40	
nitrogen dioxide	35	28	25	27	24	21	40	40	
carbon monoxide	0.7	0.6	0.4	0.4	0.5	0.3		10 ³⁾	
ozone	35	43	38	44	50	46			120 ³⁾
HRSV – Göttfingger Straße roadside station									
particulates (PM ₁₀)	(122) ^{2),5)}	(81) ^{2),5)}	— ²⁾	37	37	30	40	40	
nitrogen dioxide	77	62	51	63	63	56	40	40	
benzene	18	9	4	2	2	2		5	
soot	—	—	10	5	6	5			
carbon monoxide	2.9	1.7	1.1	0.6	0.5	0.5		10 ³⁾	

quantities in µg/m³ (carbon monoxide in mg/m³)

TA Luft emission limit value set by the national technical manual on air purity

22. VO limit value set by the 22nd amendment to the national emission protection regulations

33. VO target value set by the 33rd amendment to the national emission protection regulations

¹⁾PM₁₀: particulates less than 10 µm diameter

²⁾Prior to 1999, dust was measured as all dust, after 1999 as PM₁₀. From 1988-2000 neither PM₁₀ nor general dust was metered at the traffic station.

³⁾8-hour average

⁴⁾depending on the level of suspended particulates in the air

⁵⁾(Staub/Kfg) = dust from a fine filter appliance

Projects and measures

Air quality in Hannover

The EU Air Quality Directive (EG-RL 96/62) and its supplementary directives that were incorporated into German law in 2002 set air quality targets to prevent or reduce harmful effects on human health and the environment in all member states of the European Union.

Pollution levels in the federal state of Lower Saxony are monitored by the 'Lufthygienische Überwachungssystem Niedersachsen' (LÜN) with 22 automated metering stations and five roadside metering stations in heavily polluted inner city areas. In Hannover there are two metering stations: that on Lindener Berg (transferred to this hill in southwest Hannover from a rooftop on Göttinger Straße on 17 July 2007) monitors the ambient pollution in the city, while the roadside station on Göttinger Straße also monitors traffic-related emissions on a north-south traffic 'canyon'.

In 2002 the metered levels of nitrogen dioxide (NO₂) and PM10 particulates exceeded the limit values (trigger reading + tolerance); this obliged the City Administration to draw up an air purity plan. Since the PM10 limit value came into force on 1 January 2005 the annual average limit (40 µg/m³) has not been exceeded, but the daily average limit of 50 µg/m³ was exceeded more than the permitted 35 times in the year. The annual average limit value for nitrogen dioxide, to come into force in 2010, has been seriously exceeded in recent years.

Comparing the emission figures at the ambient station and the roadside station shows that road traffic causes between 30 and 40 percent of particulate pollution: 20 percent of this is from exhaust gases, 80 percent from material stirred up by traffic movement. Motor vehicle exhausts contribute a markedly higher proportion of total NO₂ emissions, somewhere around 60 percent.

An air purity action plan for Hannover

Setting up an air purity plan is generally the task of the federal state (*Bundesland*) or county government (*Bezirksregierung*). In the autumn of 2005 the Lower Saxony Environment Ministry began devising an air purity plan in collaboration with Hannover City Administration. The first draft was published in June 2006 for public consultation. A state government decree of 27 March 2007 transferred responsibility for setting up air purity plans to local authorities as of 1 April 2007. The reason given was that nitrogen dioxide pollution in towns and cities was too high, that more than 60 percent of it was caused



by road traffic, and that these peak pollution levels could only be reduced by local measures, especially applied to traffic.

Hannover City Administration then reworked the draft air purity plan completely and presented the new version to the City Council in April 2007 for debate and approval. With amendments, the Hannover air purity plan was approved by City Council resolution and came into force on 12 July 2008. The plan foresaw, along with other measures, the introduction of an emission zone on 1 January 2008 (see special issues, page 52).

Air purity action plan Clean air measures

- ban on through freight traffic heavier than 12 tonnes (lorries avoiding motorway tolls)
- HGV routing concept
- improving traffic flow and reducing traffic speeds, while retaining priority signalling for public transport
- 40-kph speed limits on selected streets
- laying low-emission surfaces when renewing carriageways
- optical narrowing to reduce traffic speeds when planning new roads and renewing existing ones
- planting roadside trees, and climbing plants for façades
- procurement of low-emission vehicles, machines and appliances
- public relations measures to change mobility habits
- climate protection measures other than traffic-related action e.g. Passive House standard for new buildings, energy efficiency optimisation when renovating older buildings
- Establishing an emission zone

Noise

Indicators

Noise exposure

Total area of noise-exposed districts, number of noise-exposed homes, schools and hospitals, and the number of people exposed to noise (taking the road network as an example)

Number of noise-exposed residents living in noise contour areas¹⁾ with defined noise levels – road network

noise index	range in dB(A)	numbers exposed
$L_{den}^{2)}$	Over 55 – 60	76,500
	Over 60 – 65	49,500
	Over 65 – 70	28,400
	Over 70 – 75	8,400
	Over 75	1,000
$L_{night}^{3)}$	Over 50 – 55	57,500
	Over 55 – 60	33,500
	Over 60 – 65	11,700
	Over 65 – 70	900
	Over 70	400

Total area of noise-exposed districts – road network

L_{den}	area [km ²]
total	204.2
>55 dB(A)	126.0
>65 dB(A)	40.3
>75 dB(A)	7.5

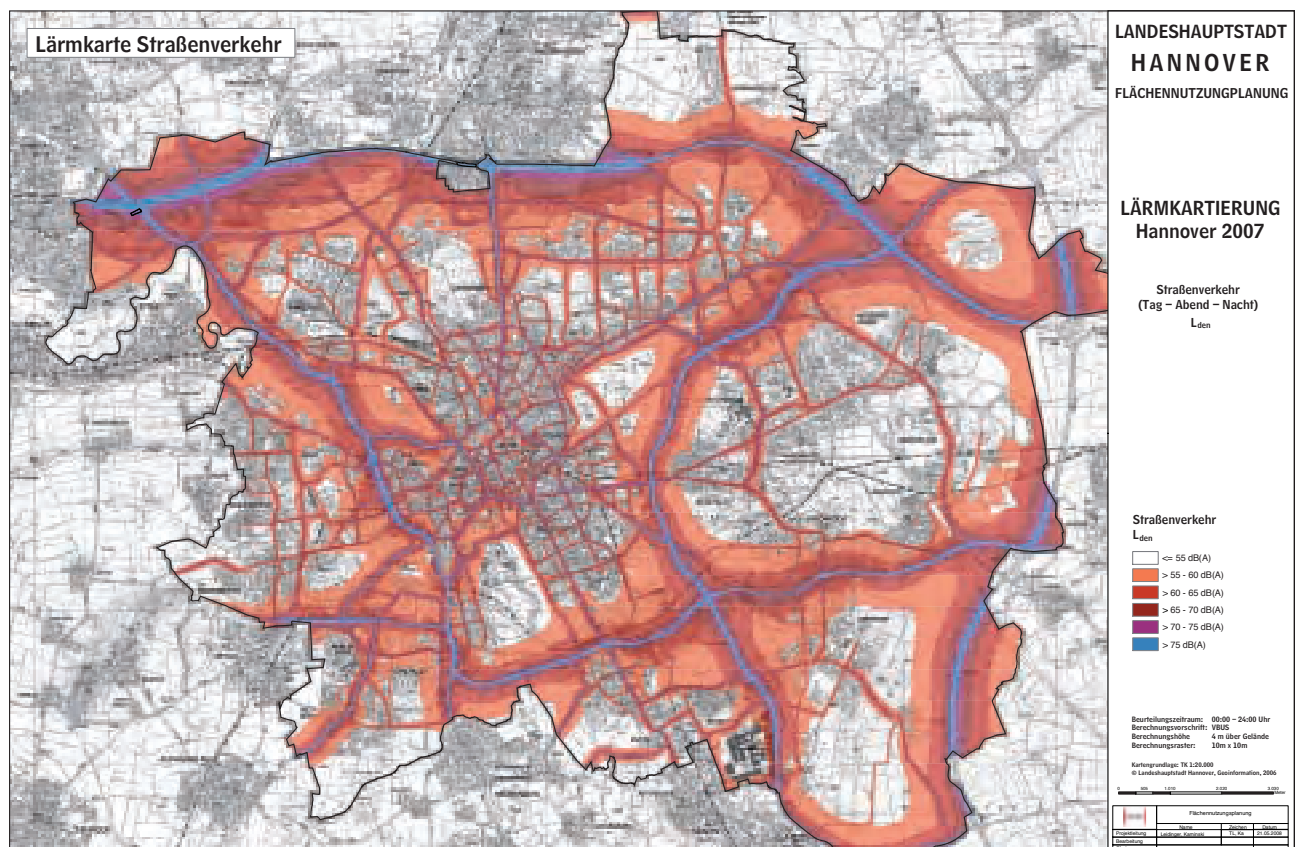
Number of noise-exposed homes, schools and hospitals – road network

road noise	dB(A) L_{den}		
	>55	>65	>75
homes	91,900	21,200	600
schools	66	5	0
hospitals	8	3	0

1) Noise contour = line joining points with the same noise level

2) L_{den} = average noise level over a 24-hour-period (den – day, evening, night)

3) L_{night} = night-time noise index



Projects and measures

Noise reduction, and thus (among other things) the harmonious coexistence of unavoidable traffic with sensitive land-uses, has been an important aim of Hannover City Council and Administration for many years and is thus the subject of a wide range of existing planned measures. These include full incorporation of the noise issue into urban land-use planning (i. e. noise prevention) by way of anticipatory conflict avoidance, and the consistent promotion of environmentally friendly modes of transport (such as walking, cycling and public transport).

EU Environmental Noise Directive

Through the EU Environmental Noise Directive 2002/49/EG and the Act incorporating it into German law, the EC Directive on the assessment and management of environmental noise (24 June 2005), regulations have been enacted on systematic surveying of noise exposure and exploring potential for noise reduction.

Under the Lower Saxony state government's ordinance regulating allocation of responsibilities, adopted on 23 March 2007, Hannover City Administration is responsible for mapping road traffic noise and light-rail noise from trams, as well as noise from relevant industrial sites. The EU's Environmental Noise Directive requires noise mapping to be followed by the preparation of plans containing measures to reduce noise problems, to be prepared with public involvement. Sole responsibility for these plans – for all types of noise – lies with the municipal authority.

Hannover City Administration has commissioned the preparation of noise maps and statistics on numbers of residents exposed. These distinguish between two time periods, designated 'night' and 'den' (a 24-hour period, with the average noise level determined for day, evening and night). Noise maps identify three main noise sources – road traffic, rail traffic (light-rail noise from trams only) and relevant industrial sites, by area, within the city limits (see www.hannover.de). Statistics provide details on noise exposure broken down for these different sources (see page 24).

Findings of noise mapping and analysis of number of residents exposed

The chief sources of road traffic noise are, as expected, the federal motorways (A2, A7 and A37), the important trunk roads (B3, B6 and B65 expressways) and the main arterial roads within the city with closely adjoining development. Within built-up areas, buildings have a screening effect in many cases, so that considerable noise reduction is evident even within blocks or just a short distance from the road. Taking nationally applicable significance thresholds as a basis for noise remediation on

major federal roads and rail routes (70 dB(A) during the day and 60 dB(A) at night) – as defined by guidelines on traffic noise control (*VLärmSchRL97*) – then some 9,400 people within the city limits are exposed to road traffic-related noise above a level (L_{den}) of 70 dB(A).

Exposure to light-rail noise from trams is restricted to the surface routes of the individual tramlines. Around 2,400 inhabitants are affected by light-rail noise levels above 70 dB(A) L_{den} . However, overlaps may occur here with population exposed to road traffic noise, as surface tramlines frequently run along main roads.

Now that data on noise from road traffic, light-rail and industrial sources for the Hannover metropolitan area have been forwarded by Lower Saxony's Environment Ministry to the European Union, the first stage required by the Environmental Noise Directive – i. e. noise mapping – has been completed for the City of Hannover.

Noise emissions plan for 2007

On the basis of noise mapping in compliance with the EU Directive, the noise maps produced for the 'Hannover Noise Emission Plan 2000' have been updated to 2007 for both road and light-rail traffic. These revised maps are based on approved calculation procedures, enabling the findings to be compared with nationally stipulated threshold and target values (for example, in accordance with the traffic noise control regulations (*16. BImSchV*), DIN 18005 – noise control in urban built-up areas, or the technical directive governing construction noise (*TA Lärm*). The recently-obtained noise maps drawn up for the 2007 noise emissions plan can, in future, also be used for noise-related assessment of urban land-use planning projects, and will in addition form the basis for the prospective noise reduction measures to be developed.

Noise reduction planning

Under § 47d of Germany's Federal Act on Emissions Control (*BImSchG*), Hannover City Administration as the relevant public authority is required, upon completion of noise mapping, to draw up plans for noise reduction. The aim is to protect the local population from high levels of noise emissions and to prevent noise increasing. The course of action adopted in a given case is, under § 47d of the *BImSchG*, essentially at the discretion of the relevant public authorities and, in each individual case, requires a thorough analysis of the relevant situation.

The existing plans – which will, ultimately, apply to the entire municipal area – will form a component of the proposals on noise reduction now to be drawn up. In this connection, the noise-reducing impact of measures carried out under existing approaches (such as the Clean Air Plan) also requires consideration.

Soil and land-take

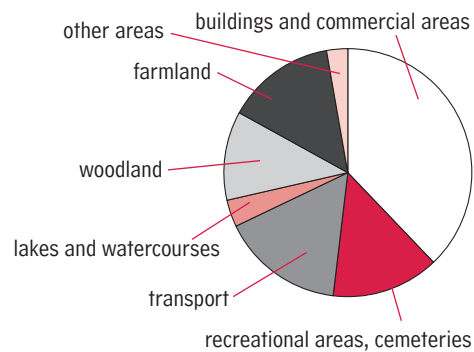
Indicators

Land-take

Areas according to use type as proportion of the total city area, in percent and hectares

Settlement and transport uses include buildings and commercial areas, recreational areas and cemeteries, roads and railways. In 2007 these covered 13,861 hectares in Hannover, around 68% of the city's total area.

Types of land use, as proportion of the total city area (2007)



Areas by use type, in hectares

	1992	1995	2000	2004	2006	2007
total city area	20408	20408	20407	20401	20414	20414
buildings and commercial areas	7303	7410	7646	7724	7738	7729
recreational areas, cemeteries	2816	2806	2884	2905	2920	2864
transport	3070	3112	3216	3267	3258	3267
lakes and watercourses	669	673	697	706	715	719
woodland	2274	2305	2294	2279	2286	2369
farmland	3624	3466	3097	2964	2932	2902
other areas	652	636	574	555	564	563

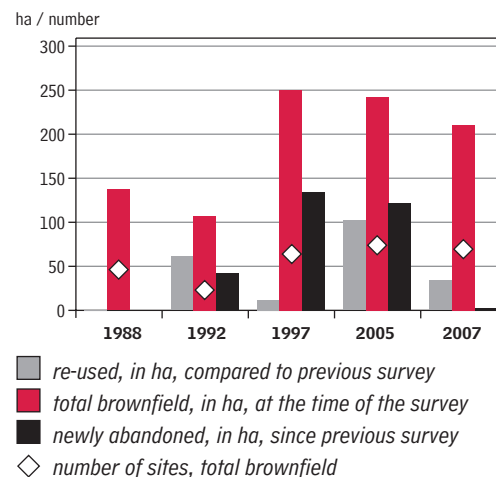
database up to 2006: Hannover City Administration land use audit, since 2006 ALK (automated property mapping)

Reutilisation of brownfield sites

Quantity and size of re-used brownfield sites (in settlement areas) in relation to the total area of all brownfield sites, in hectares

Reutilising brownfield (derelict) land makes a substantial contribution to low land-take settlement development. A positive trend to reutilisation of brownfield sites has been especially apparent since 1997. The dramatic increase in brownfield sites between 1992 and 1997 may be explained by the abandonment of military barracks and extensive railway facilities.

Reutilisation of brownfield areas and total brownfield areas



Projects and measures

Across Germany, new land-take for human settlement and transport is running at 113 hectares a day – more than ten square metres a second. Some of this is bound to be valuable farmland and natural countryside, lost for ever. The German federal government therefore, in its sustainability strategy, resolved to limit such land-take to 30 hectares per day through to the year 2020. This ambitious target can only be met with the support of all local authorities. Hannover City Administration is active at several levels.

Reutilisation of brownfield sites

As an alternative to building on greenfield sites, the reactivation of disused commercial and industrial sites, railway land and military areas is a central aspect of sustainable urban development. There are currently around 210 hectares of land at 62 locations available for this. For most of these areas building permission has already been granted, so that fast reutilisation for commercial purposes is basically feasible. Only if a change of use is planned must a land-use planning procedure be initiated; this applies to more than half of the brownfield sites in Hannover. Experience in recent years has shown that it is perfectly possible to market disused industrial areas for higher-grade uses such as housing and service enterprises.



Industrial wasteland by Lindener Hafen canal harbour

Inconveniently located brownfield sites, especially if they are contaminated or have other marketing-relevant disadvantages such as complicated multiple ownership, can only be reactivated with great difficulty. In such cases, extraordinary planning strategies and financial instruments are needed, in whose development Hannover City Administration is currently involved as a model authority.

Sustainable land management in Hannover

The 'Nachhaltiges Flächenmanagement Hannover' (NFM-H) research project has been initiated to reactivate brownfield sites through an innovative financial strategy. Taking the city of Hannover as an example, a fund model is being developed and evaluated as to whether professional project, finance and risk management can succeed in renovating and marketing industrial wasteland. Along with the financing model, within the research project the existing brownfield register is being upgraded to a brownfield information system; the more is known about land reserves for internal urban development, the better and more appropriately can settlement development be managed. The project is running over three years (2006 – 2009) under the REFINA¹ funding initiative. Research partners are Hannover City Administration, Leuphana University in Lunenburg and the *ECOLOG-Institut für sozial-ökologische Forschung und Bildung gGmbH*. For more information on the NFM-H project (German only) see www.flaechen-fonds.de



Disused railway land at Möhringsberg has been reactivated as attractive housing and a neighbourhood park for the dense late-19th-century 'Nordstadt' district.

¹ The Federal Ministry of Education and Research's funding priority, 'Research for the Reduction of Land Consumption and for Sustainable Land Management (REFINA)' is part of the federal government's national sustainability strategy (see www.refina-info.de/en).



Brownfield site recycling at the former Continental AG works

‘Conti-Limmer’ and ‘Wissenschaftspark’ as examples of brownfield site recycling

One specific issue when recycling brownfield sites is how to deal with contamination in the soil and groundwater. Two major challenges with regard to their complexity and potential contamination hazards are the ‘Conti Limmer’ and ‘Wissenschaftspark’ projects. Reactivating the former works and grounds of **Continental AG in Hannover-Limmer** will win land for housing. Decades of industrial use have contaminated large areas of the almost-20-hectare site with various substances and to varying degrees. To assess the state of contamination, diverse soil and groundwater investigations have been carried out over the last few years and a soil decontamination plan has recently been presented. The renovation concept foresees removing contaminant hotspots followed by landscaping the site, along with covering the landscaped surface with several layers of soil. Once these extensive renovation measures are completed the site will, on the one hand, fulfil environmental criteria and, on the other, be a healthy place to live and work and thus realise the original housing and commercial use concept without restrictions.

The **Wissenschaftspark** project will reactivate a derelict site of around 45 hectares for commercial use, with scientific and research enterprises. The land was an industrial site for the production of accumulator batteries and is contaminated by heavy metals, concentrated along a stream that, as part of the reactivation project, will be returned to a semi-natural state. For this project, too, a renovation plan has been prepared foreseeing external disposal of highly contaminated soil. As these areas will be used as recreational greenspace, other criteria may be applied than would be set for future residential use.

Precautionary soil protection in urban planning projects

Despite all the efforts to reutilise brownfield areas, it will still be necessary to build on greenfield sites. In striking a balance between environmental concerns and urban planning projects the soil is just as important an environmental medium as air and water. Particular attention is therefore paid to soil worthy of protection and retaining its natural functions. For urban planning projects, a precautionary soil protection procedure is being devised specially for local conditions, which will be introduced in both paper and digital form in the near future.



Podsol – soil of the year 2007

Ecological soil management

Construction projects often produce vast quantities of excavated soil that cannot be re-used on site. Frequently, this excavated material is sent to landfill for disposal, meaning that valuable soil material is put to no sensible use and scarce disposal facilities are wasted.

The aim of a soil management programme is to re-use this resource, excavated soil, ecologically and as close as possible to its place of origin. Short trucking distances also contribute to reducing fuel consumption and thus CO₂ emissions. Excavated soil is a raw material and, if of suitable quality, can be used for recultivation measures or landscaping (e.g. in noise buffer embankments).

The City Administration's ecological soil management programme was set up during the planning procedure for the EXPO 2000 World Exposition in Hannover, and has since been offered as a service for the whole city.

Based on experience with ecological soil management, the municipal share company **GENAMO mbH** (Misburg-Ost recreational area development association) was founded in 2000. Its task is to create the economic preconditions for redeveloping a recreational and nature conservation area in the Misburg district of Hannover by recycling soil in the former excavations of the local cement works. GENAMO mbH is a typical public-private partnership project, in which the public sector (Hannover City Administration) and industry (*Teutonia Zementwerk AG*) bring together their various interests to pursue a common aim.

Income from the re-use of excavated soil has financed several local recreation and nature conservation projects.



Using excavated soil to build noise buffer embankments

The 'Measures at old waste dumps financed from waste collection charges' programme

There are known to be around 230 old waste dumps in Hannover; since the late 1980s they have been systematically catalogued, investigated and, where necessary, made safe and monitored. According to the Lower Saxony waste statute, such measures can be financed from waste collection charges under very specific conditions in the spirit of an 'inter-generational contract'. The programme's objective is to carry out the required investigations and hazard prevention measures, and reduce environmental risks from contaminants in the soil and groundwater. From 1997 till 1999, 4.6 million Euro was spent on investigating numerous playgrounds and allotment gardens for possible old waste dumps, clearing old waste and securing the old rubbish dump in Bemerode with a top seal and gas drainage.

Based on a City Council resolution of 16 December 1999, since 2000 the City Administration, joined by the Hannover Region in 2004, has continued to finance this programme with around 6 million Euro so far. Within the city area, 55 old dumps have been made safe after investigation: in five cases the soil had to be decontaminated. Groundwater monitoring will be necessary at three more sites for the foreseeable future. On Lindener Berg, a hill in southwest Hannover, a detailed investigation of groundwater hazards has been running since the autumn of 2007. The programme considers all municipally owned land known to contain old waste deposits. Expenditure so far on old waste tips in the city amounts to 3.3 million Euro.

Recreational space, nature conservation, agriculture and forestry

Indicators

Green- and open spaces

Extent of green- and open spaces in hectares, percentage of the city area and related to population in m²/resident

Hannover is known in Germany and throughout the world as the 'City of Gardens'. Per resident there are 29.4 m² of greenspace, 1.8 m² of playgrounds, 45.7 m² of woodland and 20.1 m² of allotment gardens. The City Council and Administration aims to retain and enhance the open space quality in the city districts; to this end, greenspace in residential areas will be improved with a range of programmes.

Green- and open spaces

	extent in ha	in % of the city area	m ² /resident
public parks and gardens	168.5	0.83	3.25
Herrenhausen Gardens	116.0	0.57	2.24
other public greenspace (green corridors, green links, local recreation areas, woodland, farmland (municipally owned))	1017.0	4.98	19.63
playgrounds, playing fields	94.4	0.46	1.82
roadside greenspace	220.5	1.08	4.25
open spaces around public buildings	149.0	0.73	2.88
cemeteries	282.8	1.39	5.46
botanical and zoological gardens, special gardens (e. g. Hannover Zoo, Berggarten, School Biological Centre)	41.0	0.20	0.79
woodland (municipal, state-owned and private)	2369	11.60	45.72
Farmland	2902	14.22	56.01
<i>of which, arable land</i>	2083	10.21	40.21
<i>of which, meadow, grazing</i>	645	3.16	12.45
moor	138	0.68	2.67
water	719	3.52	13.88
allotment gardens	1044	5.11	20.15
sport grounds and playing fields	294	1.44	5.68

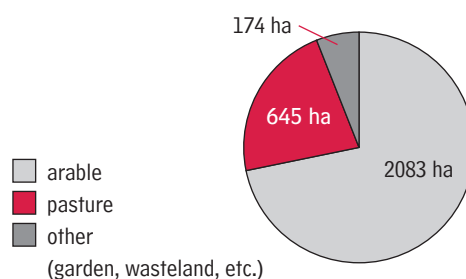
As of 2007, reference figures: city area 20,414 ha; official population (registered in Hannover as main residence): 518,154 (on 30 Nov. 2007)

Farmland

Area used for farming, in hectares and percent

Agricultural land makes up 14.2 percent of the Hannover area, whereby there has been a shift from arable farming to pasture. Extensive pasture has benefited particularly, expanding (according to a survey by the City Environment and Urban Greenspace Department) from 342 ha to a total 645 ha. Furthermore, around 120 hectares of the total agricultural area are farmed on organic principles.

Farmland (2007)

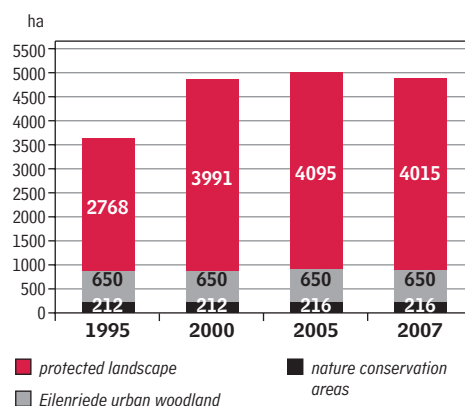


Protected countryside

Extent and proportion of land covered by landscape protection orders and nature conservation areas, in hectares and percentages

Designation of landscape protection areas is intended to secure precious and biologically rich landscapes for human recreation and the conservation of indigenous fauna and flora. Today some 4,015 hectares, around 20% of the Hannover area, are under landscape protection orders, 216 hectares are nature conservation areas and about 500 valuable biotopes are protected. The slight decrease in the area of protected landscape came about through a redefinition of the border of one of the 17 areas. The 1956 'Eilenriede statute' protects 650 ha of one of the most precious urban woodlands in Germany from encroachment and inappropriate uses.

Protected countryside

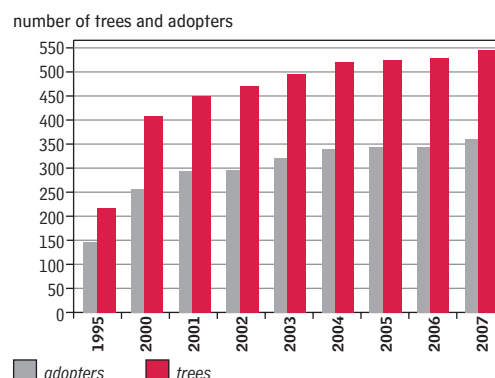


'Adopt a tree' programme

Number of citizens who adopt trees, and number of trees adopted

Since 1981 it has been possible to 'adopt' a tree in Hannover, and thereby make an important contribution to caring for and preserving the city's valuable stock of trees. In some cases, where possible, adopters have planted up the tree grate – the metal grid at the base, set into the pavement – around 'their' tree. In 2007 there were 360 tree adopters looking after 545 trees. 308 tree grates were planted with summer flowers, herbaceous perennials or roses.

Tree adoptions



Roadside trees

Number of roadside trees

Since 1990 the number of roadside trees has risen to 44,185 (2007 figure). Around 9% of the trees are more than 75 years old while 39.8% are less than 25 years old. Between 1990 and 2007 6,150 trees were felled as a danger to traffic or passing pedestrians, or removed

from the register as not meeting the criteria for inclusion. In the same period, however, 13,905 roadside trees were newly planted, a net increase of 7,755. 238 species are represented; the most common are lime (26.9%), oak (20.7%) and maple (13.3%).

Roadside trees in Hannover

	1990	1995	2000	2005	2006	2007
existing trees ¹⁾	32320	34650	38312	42870	43463	44185
new plantings	882	336	1553	405	736	482
felled	275	240	133	487	515	356
net increase	607	96	1420	-82	221	126

¹⁾ The stock of trees includes all those included in the tree register. Year-on-year changes in this figure are derived from new planting and felling. Newly planted trees are often not transferred to City responsibility and added to the register until 1 – 2 years after planting. Therefore these figures are updated and do not tally with those in earlier publications. Different, but more accurate, figures on new plantings will thus be calculated.

Projects and measures

Undeveloped areas and diverse landscape elements such as arable land, meadows and woods, natural bathing lakes, moorland and scrubland, but also public gardens and parks, playgrounds and sports fields, allotment gardens and cemeteries, are all close-to-home recreational spaces with an important sustainable urban development function. In Hannover, these constitute almost 50 percent of the city area. Securing this open space quality, caring for and improving the landscape and working this land in an environmentally responsible way are important sustainability objectives of the 'Hannover plusTen' programme.

Hannover, runner-up Nature Conservation Capital

Of 115 German towns and cities, Hannover took second place behind Heidelberg in the 'Bundeshauptstadt im Naturschutz' competition. Director of Economic and Environmental Service Hans Mönninghoff accepted the award in Berlin in October 2007. The jury – including representatives of the German Nature Conservation Association and the Association of German Cities – gave Hannover an exceptionally good report.

The Eilenriede was praised as the most important urban woodland close to a city centre in Europe and, with 14 parks or gardens in the city area and another eight close by, Hannover has the highest concentration of parks and gardens of all German cities.

Hannover set exemplary standards in municipal green-space, conservation areas, agriculture and forestry, public relations work and environmental education, attracting particular praise for the 'Kinderwald' project, the 'Grüner Ring' orbital foot- and cyclepath, the

model agricultural project at Kronsberg, courtyard and neighbourhood improvement competitions, Eilenriede woodland study centre and the Breite and Nasse Wiese landscape enhancement projects in Misburg/Anderten, as well as for long-term sustainability programmes and constructive collaboration between nature conservation and recreation in municipal greenspace.

Of the 115 participants in the competition held for the first time in 2007 (patron: Federal Environment Minister Sigmar Gabriel), 32 had over 100,000 inhabitants. It was set up by the *Deutsche Umwelthilfe* association and supported by numerous nature conservation organisations and leading local government associations.

Special programme for the ecological enhancement of playgrounds and schoolyards

The 'Sonderprogramm zur ökologischen Aufwertung von Schulhöfen und Spielplätzen' policy initiative has created a very effective instrument for improving the environmental quality of existing play spaces and making them more attractive to children and young people, who are actively involved in the design process. The programme was approved by the City Council in 1998 and was originally planned to run for two years. The results in 1998 and '99 were so encouraging that the special programme was extended year by year.

The close collaboration between all stakeholders, such as children, parents and schools, associations and campaigns, politicians and local government officers is a clear indication of how this project form is both suited to the times and sets an example for others. In designing play spaces, the wishes of the children, but also the ecological safety of the soil and building materials, durability of apparatus, low maintenance costs and recyclability of materials are all important.

The financial framework is based on a rate of 50 cents per resident and year plus planning and participation costs. City District Councils have given financial support so far, and many contacts are made with local housing associations and companies who could be persuaded to support the projects or make a financial contribution. In this way, since 1998 around 158 playgrounds and schoolyards have been partially or completely renewed.



Prof. Dr. Harald Kächele (Deutsche Umwelthilfe) presents the award to Director of Economic and Environmental Services Hans Mönninghoff



Große Barlinge
children's playground

Playgrounds

Volunteer playground 'adopters' are local contact people for playground users, and pass information about damage to equipment and plants or misuse to the City's Environment and Urban Greenspace Department. Since the scheme was revived in 2001 many new adopters have been recruited; from just 30 volunteers in 2001 the number has risen steadily year by year, although in recent years there has only been a slight increase, as the original adopters retire when their children grow out of the playground age. It is pleasing to see that some of these people recruit new adopters to take over their voluntary work. In 2007 there were 66 adopters keeping an eye on 50 playgrounds. At their annual meeting they exchange and compare experiences and information.

HPV recreation – cycling on the 'Green Ring' and 'Julius-Trip-Ring'

The 'Grüner Ring' is a 160-km path for cyclists and walkers linking the open countryside spaces on the margins of Hannover. The 80-km main ring and the loops to Garbsen, Sehnde & Laatzen and Ronnenberg & Gehrden are closely integrated with the existing leisure pathway network, making them easy to reach from residential areas. In 2008 the Green Ring's tenth anniversary was marked with a special celebration.

Since April 2008 Hannover's cycleway network has been enhanced with the addition of the 25-km 'Julius-Trip-Ring' circular route, designed to be particularly attractive to families with children of all ages who like cycling and would like to take a recreational excursion close to the city. Marked by small signs, the cycleway leads right round the city, linking the Maschsee lake and the banks of the Rivers Leine and Ihme with Herrenhausen Gardens, striking out through allotment gardens across the north of town to the Eilenriede city woodland and back to the lido on the southern Maschsee. A free cycling map with the route and notes on leisure amenities along the way completes the picture.

Julius Trip (1857 – 1907) was Hannover's first Gardens Director from 1890 till 1907 and founder of the independent gardens administration that has continued to the present day. During his period in office, Trip created numerous new gardens of the most diverse types (city squares, parks such as Maschpark and Vordere Eilenriede, cemeteries, playgrounds and sports fields) and worked untiringly for the care and development of the entire city greenspace. If Hannover can be justifiably proud to call itself a 'city of gardens' today, this is not least due to the shaping influence of Julius Trip. The new cycleway around Hannover city centre is intended to commemorate his work and to awaken public awareness of the diverse greenspace qualities of Hannover that have taken shape since his time.

Roadside narcissi and the geophyte programme

Begun in 1991 with 'Let a thousand bulbs bloom' and continued in the years that followed as 'Hannover in Bloom', every autumn tens of thousands of bulbs are planted alongside the city's roads, in parks and green corridors. So far around 600,000 spring bulbs, mostly large-cupped narcissi but also anemones or scilla, have been planted. Hardy narcissus varieties are used on roadside verges.

The Julius-Trip Ring links the different local recreational areas around Hannover city.



Since 2006, these planting programmes have been extended with the geophyte programme of around 115,000 bulbs of easy-care self-propagating species and varieties. The programme focuses on enhancing specific locations, using a considered choice of flowers to give them their own unique character. A start was made in 2006 in Hinüberscher Garten, Wiehbergpark and Von-Alten-Garten, at the Maschseequelle and the Deisterkreisel roundabout, followed in 2007 by the Maschsee west bank, Vierthaler Teich, Beuermannstraße, Hermann-Löns-Park and historic cemeteries open to the public. Plantings in 2008 were around Hannover Congress Centre and the adjacent Stadtpark, and smaller projects in the city districts. The programme concentrates on species that will spread on their own: narcissus, crocus, grape hyacinth, scilla, small anemone, dogtooth violet and snowdrop.

A flyer is in preparation for publication in February 2009, to attract sponsoring and motivate people to plant bulbs themselves, with details of possible locations, cultivation tips and recommended species.

Biodiversity programme

In its strategy document, 'Hannover plusTen; working for a young, innovative city 2005 – 2015', Hannover City Council and Administration's objective, 'Retaining the quality of the countryside and securing biodiversity', takes up the issue of promoting biodiversity as an important development aim. The Administration has devised a practical concept to further this objective.

The 'biodiversity programme' presents direct measures to improve biodiversity within the city area, along with environmental education and public relations work to bring people closer to the local fauna and flora. 'Biodiversity' is taken to mean the whole variety of life forms on our planet, from genetic diversity through to the variety of ecosystems.

The proposed activities range from specific conservation measures and support programmes for single animal and plant species, through the retention of genetic diversity (such as regional seeds), to the retention and enhancement of habitat diversity through comprehensive management and development concepts for the city's green spaces. These objectives have already been pursued for several years through, among other activities, FSC certification of city woodland, countryside enhancement programmes and agricultural programmes. 'Sustainable uses' and 'Daring to let the land run wild' are also the central themes of future measures and projects, whether they maintain inner-city green spaces or care for and enhance landscape spaces.



Biodiversity in the city

The project aims to promote further networking and cooperation between the already very active professional and volunteer individuals, associations, initiatives and others, and to motivate more people and organisations to get involved. For this, too, there are good examples (Kinderwald Hannover, Eilenriede woodland study centre etc.) that could be adopted at many places in the immediate neighbourhood for children and families in the city districts.

Farming in the city

In large conurbations, especially, surviving agricultural areas and farms fulfil many social and ecological functions. The City Council and Administration has an interest in retaining them, and Hannover's agriculture programme shows the significance of these relatively large agricultural areas in the city for open space retention, recreation and nature conservation. The programme also describes the objectives and practical approaches through which the City wishes to secure these areas, and persuade local farms to adopt environmentally compatible methods wherever possible and support them in this. This happens with measures to support especially environmentally friendly farming, and diverse nature conservation measures on normally-farmed areas such as extensive grazing or protection for wild plants on field margins.

In 1997, Kronsberghof Farm was established in anticipation of the EXPO 2000 – the first and so far only fully organic farm within Hannover's borders. As a 'Demeter' farm it worked around 120 hectares of arable and grazing land with boarding facilities for horses. Close to Hannover there are several more ecological farms that, among other activities, lease municipally owned land for extensive pasture with nature conservation conditions attached.

Promotion of regional marketing for farm produce is an important practical approach to environmental and climate protection and supporting agriculture in and around the city. This includes seven farmers' markets in the city and more in neighbouring towns. The farmers' market stalls are run exclusively by farms from the Hannover Region, i. e., within 100 km of the city centre, and offer mainly regional and seasonal produce.

The 'Partnerschaftsnetzwerk Region Hannover', an association of regional farming, craft and trading businesses co-initiated by the Hannover City and Region authorities, also contributes to promoting produce 'from the region for the region'. The association has adopted the slogan, 'Natürlich...Region Hannover' to emphasise the special quality of regional produce.

FSC certification for Hannover's urban woodland

Hannover's urban woodland is one of the few woods in Germany that, along with PEFC certification (Programme for the Endorsement of Forest Certification Schemes) has also been certified by the FSC (Forest Stewardship Council), the only internationally valid and recognised quality seal for environmentally responsible forestry. Although the FSC makes certification contingent on placing at least 5 percent of the forestry area under full protection in order to make woodland development without human influence possible (process protection), the Council also obliges the woodland's owner to adhere strictly to the annual felling quota, to aim for commercial viability of the forestry enterprise and to sell all suitable timber products through intensive and profitable marketing.

Above and beyond this the FSC, which is favoured by German nature conservation associations and trades unions because of its democratic organisational structure and particular emphasis on both ecological and social aspects, imposes considerable conditions with regard to forestry management, use of pesticides, technological intervention, social standards, groundwater protection, conservation of especially valuable biotopes and selection of tree species in natural woodland societies. The proportion of woodland with FSC certification within the city limits is 53 percent of 2,369 hectares – exactly the area of woodland owned by the City (1,234 hectares).

Both certification procedures are designed to promote both naturally and socially responsible and economically viable forestry based on principles of sustainability, and secure a stable and high market price for wood as an environmentally friendly raw material. Currently, less than 5 percent of the world's forests are FSC certified.

Inter-municipal countryside enhancement: Hannover-Fuhrbleek-Isernhagen-Wiesenbachtal

Most landscape spaces extend beyond the city limits to form larger coherent habitats for flora and fauna, and use profiles such as nature conservation and agriculture seldom follow local authority borders. Against this background, the idea arose of creating an inter-municipal landscape development concept for a particularly suitable exemplary area between Hannover and Isernhagen to the northeast of the city, securing and enhancing a valuable, multi-functional open space. The project will be carried out in collaboration with the neighbouring local authority of Isernhagen and the Region Hannover as the responsible nature conservation authority.



Countryside on the edge of town

The natural features of the countryside were taken as the basis for enhancement aims devised by Hannover City Administration's Forestry, Landscape and Nature Conservation divisions:

- **Nature conservation:** preserving and enhancing the area with its characteristic wetland biotopes; securing and extending the habitats of rare and endangered flora and fauna.
- **Local recreation:** retaining and enhancing the area's attractiveness by opening new path connections and linking the 'Green Ring' with nature conservation and farming themes.
- **Farming and forestry:** increasing the proportion of pastures, with extensive grazing; increasing the proportion of woodland by afforestation of specific areas; developing regional marketing channels for farm produce along the Green Ring.

Water, groundwater, lakes and watercourses, wastewater

Indicators

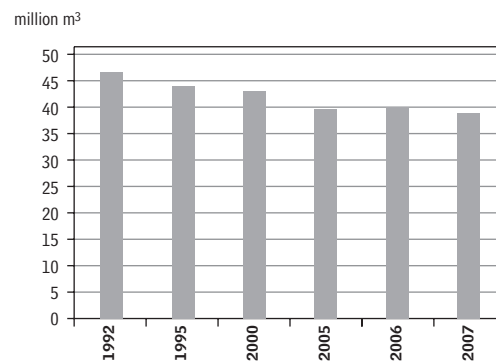
Drinking water consumption

Consumption by household and special-contract customers (e.g., individual industrial customers) of drinking water supplied by Stadtwerke Hannover AG, the city's public utility company; total in m³, and in litres/head of population

Quantities of water supplied by *Stadtwerke Hannover AG* (serving Hannover, Laatzen and parts of Langenhagen, Hemmingen, Pattensen, Ronnenberg and Seelze), have declined steadily in recent years. Consumption fell by 17% between 1992 (46.6 million m³) and 2007 (38.8 million m³).

Figures for daily per capita consumption of water supplied by *Stadtwerke Hannover AG* show a marked reduction between 1990 (156 litres per day) and 2007 (144 litres).

Quantities of drinking water supplied by Stadtwerke Hannover AG



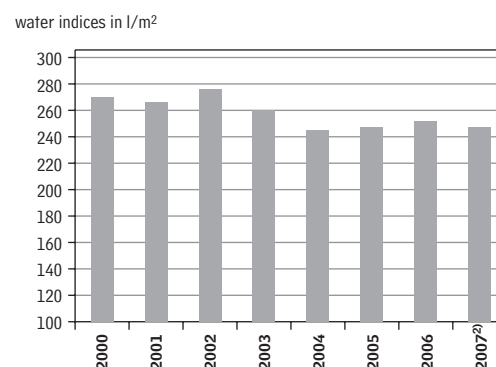
source: Stadtwerke Hannover AG

Drinking water consumption by the city administration

Drinking water consumption in municipal buildings in l/m² per year for comparable building stock

Since the 1995 launch of an initiative aimed at cutting down on water use, around 170 efficiency measures have been implemented which have made it possible to reduce water consumption since 1990 (for a comparable building stock) by 35%. The area-related average consumption for drinking water in comparable facilities run by the Buildings Management division was 270 l/m² in 2000, and fell by 8% to 247 l/m² in 2007. The increase in consumption in 2002 was caused by several burst-pipe incidents.

Drinking water consumption in municipal properties¹⁾



1) These figures relate to consumption of drinking water at properties administered by the Building Management Division.

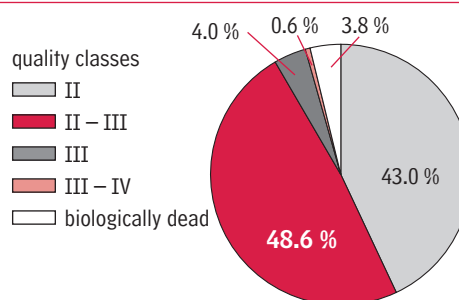
2) Projected figures; data are not yet available on all water consumed.

Biological quality of watercourses

Proportion of stretches of watercourse in quality class II (as a proportion of total length of all watercourses)

Forty-three percent of the watercourses investigated fell into quality class II. Only 4% are strongly polluted; 0.6% are very strongly polluted, with 3.8% effectively biologically dead owing to salt discharge from potassium mining (see page 37). Forty-eight percent of watercourses are critically polluted (quality classes II-III).

Biological quality of watercourses (2007)



source: Arbeitsgemeinschaft Limnologie und Gewässerschutz

Water quality of the River Leine

Water quality class (as defined by the German Saprobic Index), ammonium, BOD₅ and total phosphate where the River Leine enters the municipal area (as compared with the situation when it leaves the city)

Today, the quality status of the Leine where it leaves the city is the same (i.e. quality class II) as at the point where the river enters the municipal area. In 1998, by contrast, quality data revealed deterioration (caused by the discharge of wastewater within the municipal area) that reduced the quality by one class and caused what is termed 'critical pollution' of the Leine (quality class II-III). Since 2004, levels of ammonium and phosphate downstream from the city have been only slightly higher than they are upstream, with the quality class remaining unchanged.

Water quality parameters for the river Leine – annual average figures

	Upstream from Hannover			
	1998	2001	2004	2007
German saprobic index/ quality class	2.24 II (moderately polluted)	2.26 II (moderately polluted)	2.17 II (moderately polluted)	— ²⁾
ammonium (mg/l NH ₄)	0.18	0.15	0.08	0.08
orthophosphat (mg/l PO ₄)	0.27	0.45	0.38	0.38
BOD ₅ (mg/l O ₂) – individual value	1.3	2.0	3.0	2.5
	Downstream from Hannover			
German saprobic index/ quality class	2.36 II – III (critically polluted)	— ¹⁾	2.09 II (moderately polluted)	— ²⁾
ammonium (mg/l NH ₄)	0.45	0.29	0.15	0.10
orthophosphat (mg/l PO ₄)	0.46	0.46	0.48	0.43
BOD ₅ (mg/l O ₂) – individual value	4.0	1.2	4.5	4.4

1) No reliable analysis possible

2) The current water quality map for the City of Hannover is based on data for 2004 to 2007. Each body of water is sampled only once during this period. The data for the Leine were obtained in 2004, which explains why no data on the German saprobic index are available for 2007. In contrast to water quality mapping, however, both ammonium and orthophosphate content are determined annually and at monthly intervals.

Wastewater purification

Combined purification capacity of all sewage works operated by Hannover Wastewater Treatment Services

Hannover Wastewater Treatment Services are required by law to carry out further elimination of carbon, phosphorus

and nitrogen. Thanks to modern and efficient wastewater treatment, highly qualified operational staff and provision of a comprehensive advice service to the general public and the business sector, concentration limits have been continuously complied with. Since 2001, the quality achieved at both large-scale sewage treatment plants has been even better than required by compliance limits.

Combined purification capacity of sewage works operated by Hannover Wastewater Treatment Services

CONSTITUENT	CONSENT LEVEL ¹⁾ (MONITORING STANDARD)	GÜMMERWALD SEWAGE WORKS	HERRENHAUSEN SEWAGE WORKS
COD mg/l	60 ²⁾	33	36
TOC mg/l	15	8.9	10,3
NH ₄ -N mg/l	10 ³⁾	0.3	0.4
Total N (inorg. N) mg/l	13 ⁴⁾	5.5	5.7
	10 ^{2) 4)}		
Total N (TNb) mg/l	10	7.1	7.4
Total P mg/l	1.0	0.5	0.4
AOX µg/l	100	50	40
Lead (Pb) µg/l	50	< 20	< 20
Cadmium (Cd) µg/l	5	< 1	< 1
Chrome (Cr) µg/l	50	< 10	< 10
Copper (Cu) µg/l	100	< 20	< 20
Nickel (Ni) µg/l	50	< 10	< 10
Mercury (Hg) µg/l	1	< 0.3	< 0.3

1) Discharge average for 2007

2) For these parameters, lower limits (standard values) were voluntarily set in compliance with the German Waste Water Charges Act (AbWAG)

3) At temperatures > 12° C 4) between 1 May and 31 Oct. 2007

Contaminant levels in sewage sludge

Heavy metal content of sewage sludge (lead, cadmium, chrome, copper, nickel, mercury, zinc, AOX, PCB in mg/kg (dry weight) and dioxins (ng/kg/dried matter) – compared with threshold levels on a percentage basis)

Determined contaminant levels in sewage sludge from Hannover's sewage works

average the year	Changes in pollutant levels over time in mg/kg died matter (dry weight)									
	Pb	Cd	Cr	Cu	Ni	Hg	Zn	AOX	PCB	Dioxins ²⁾
1985	117	n. t.	99	220	62	n. t.	1368	n. t.	n. t.	n. t.
1997	76	1.8	32	201	25	1.7	876	293	0.02	11
2000	54	1.4	26	257	20	1.2	928	288	0.03	11
2005	50	1.1	29	332	24	0.9	898	250	0.02	9
2006	45	1.1	33	294	27	0.9	856	248	0.02	11
2007	64	1.1	30	305	25	0.8	880	239	0.02	8.1
limit value as defined by AbfKlärV ¹⁾	900	10	900	800	200	8	2500	500	0.20	100
lim. val. as def. by QLA	200	2,5	200	550	80	2	1400	400	0,05	30
Amount by which achieved lev. is below QLA concentr. limits	68%	56%	85%	45%	69%	60%	37%	40%	60%	73%

Pb = lead

Cd = cadmium

Cr = chrome

Cu = copper

Ni = nickel

Hg = mercury

Zn = zinc

AOX = adsorbable organically bound halogen

PCB = polychlorinated biphenyls

QLA = quality certificate for 'outstanding agricultural utilisation'

n. t. = not tested

1) German Sewage Sludge Ordinance of 1992

2) in ng/kg/dried matter

Projects and measures

Water is a vital component of the natural environment, a habitat for animals and plants and an essential life-giving element for humans. If it is to be used sustainably then its efficient supply – and wastewater disposal – needs to be secured in the long term, and both groundwater and surface water resources must be protected on a lasting basis.

Drinking water consumption in municipal properties – water-saving potential

It has, in recent years, proved possible to continually reduce drinking water consumption in municipal properties thanks to a comprehensive programme of drinking water efficiency measures implemented by several of the City Administration's divisions (Buildings Management, Urban Planning and Construction, and Environment and City greenspace) and Hannover's Wastewater Treatment Services (*Stadtentwässerung Hannover*).

These measures include converting toilet cisterns to dual flush, as well as flow restrictions and the promotion of private water supplies such as the well system in the Bothfeld tree nursery (which involves subterranean water treatment) and the municipal cemetery in the district of Stöcken.

Groundwater monitoring in Hannover

Hannover City Administration runs an extensive groundwater monitoring programme consisting of separate hydraulic and quality monitoring networks that enable both the level and quality of groundwater to be kept track of over the entire area. In this way, changes can be detected in good time and countermeasures taken as necessary. Monitoring also provides useful information for planners and those wishing to build their own homes.

HYDRAULIC MONITORING NETWORK

The hydraulic groundwater monitoring network emerged in the early years of the 20th century when Hannover's public utilities provider began extracting drinking water from the Ricklinger Masch riverside plain. The impact of removing groundwater for use as drinking water was documented at a number of groundwater monitoring wells within Hannover's city limits. In the early 1950s, the then planning and land surveying office assumed responsibility for systematically documenting groundwater levels in this area. The network of groundwater monitoring wells was continually expanded; while the

underground rail system was being built, numerous wells of this kind were sunk and incorporated in the hydraulic groundwater monitoring network. Hannover City Administration's groundwater database is now run by the Environment and Urban Greenspace division and includes information from 3,034 different monitoring sites. The number of wells from which readings are regularly taken reached its peak in the spring of 2005, when there were about 1,350. Statistical analysis and the incorporation of geological data has enabled this number to be more than halved to the current total of 610, while still maintaining overall accuracy to 90 per cent of the spring 2005 level. Manually read data are augmented by 56 groundwater data loggers at which readings of groundwater levels are continually taken. Monitoring groundwater levels reveals the impact of intervention that affects the groundwater resources, as well as the interrelationships between precipitation and groundwater levels. In general, the information provided by this monitoring network is also available to interested members of the public. These data are chiefly used for planning civil engineering works, as accurate knowledge of groundwater levels is of great importance for project planning.

QUALITY MONITORING NETWORK

In monitoring groundwater quality, a distinction can be made between what are (in German parlance) known as 'basic' and 'special' monitoring networks. The former is designed to determine 'background contamination', i.e. the groundwater quality that is influenced by the properties of a given aquifer and non-point source pollution (from traffic, atmospheric deposits or greenspace for example). Groundwater that is completely unaltered by human influence can no longer be found in urban areas such as Hannover.



Taking a water sample

The **special monitoring network** is designed to monitor groundwater quality in contaminated areas, such as where it is affected by outflow from landfill or industrial sites. It has, for financial reasons, not yet proved possible to establish these very extensive special monitoring networks.

The basic monitoring network extends over the entire city area at a density of around one monitoring well to just under three square kilometres and has, since 2003, conducted analyses on a regular basis for a wide range of chemicals and groups of substances.

The resulting data are managed using a database linked to a geographical information system, which enables findings to be depicted spatially and assessments to be carried out. Results confirm the differences in chemical composition between the individual geological structures and highlight the various use-related influences. An online brochure available at www.hannover.de provides a detailed explanation of the monitoring approach and summarises the findings for 2003 – 2006.

Hannover watercourse quality survey

Species-rich, undisturbed aquatic landscapes provide habitats for many plant communities and animal species.

Water quality class II (moderately polluted) constitutes the natural water quality of Hannover's rivers and streams; in other words, even without human influence these watercourses would be moderately polluted owing to natural nutrient input (e. g. from falling leaves) and the fact that the flow rate tends to be relatively slow for lowland streams and rivers in any case.

The proportion of watercourses meeting quality class II is an important indicator of whether our lakes and rivers are being used sustainably.

Watercourses in Hannover's municipal area are monitored for quality by the Association for Limnology and Water Protection (*Arbeitsgemeinschaft Limnologie und Gewässerschutz (ALG) e.V.*). Water quality regulations draw on biological studies of microfauna (worms, insects, crustaceans, snails and the like). Numerous chemical analyses and physical testing are also carried out. Data on up to 16 chemical and physical parameters are obtained at each monitoring site.

The latest quality map for the City of Hannover was published in May 2007, showing the water quality of 35 bodies of water, sampled at a total of 90 sites.

Forty-three percent of the watercourses investigated fall into quality class II. Only 4 percent are strongly

polluted; 0.6 percent are very strongly polluted, with 3.8 percent effectively biologically dead owing to salt discharge from potassium mining (see page 37). Forty-eight percent of watercourses are critically polluted (quality classes I-III) but have the potential – through intervention such as pre-purification of surface water resources or measures to restore them to a near-natural state and enhance their self-purification potential – to achieve quality class II in the near future. The proportion of critically polluted watercourses has increased by 2.3 percent since 2005; however, the proportion of more strongly polluted river and stream sections has fallen accordingly.

Renaturalisation of streams and rivers in Hannover

Hannover's large and comprehensive drainage system includes many small ditches and streams with a total length of around 130 kilometres. They extend over the entire municipal area and serve to drain run-off from sealed surfaces. The water quality in these channels is often affected by contaminants from road surfaces, roofs and other sealed surfaces. These deposits enter rivers and streams, where they threaten aquatic flora and fauna. It is the job of Hannover Wastewater Treatment Services to ensure that these substances do not end up in these watercourses in the first place or, if this is unavoidable, to look after and develop streams and rivers through maintenance and natural rehabilitation so that the negative impact on animal and plant species living in and adjacent to local bodies of water is kept to a minimum.

More than ten years ago now, the municipal wastewater treatment service began intensive operations to restore its streams and rivers to their natural state as part of a flood prevention programme.

Returning water channels to as near their original condition as possible has a positive impact on factors affecting water supply management such as flood protection, drainage from residential estates and water quality, as well as on ecological factors such as the intrinsic dynamics of ecosystems – the extent to which they are passable by fish, and the presence of flora and fauna.



The River Ihme in Hannover shortly after renaturalisation in 1996



The Ihme three years later

Moreover, bodies of water restored to a near-natural state enhance the quality of life in urban areas with regard to public enjoyment and appreciation, and their diverse potential in terms of function and form (including scope for leisure use).

Elements of this natural restoration include:

- creating structurally rich watercourse profiles to enhance self-purification capacity
- planting trees and shrubs
- removing revetments from banks and embankments
- creating and planting vegetative filter strips
- preparing watercourse maintenance plans for maintaining and developing streams and rivers, ensuring that proper flow is maintained and that scientific monitoring of water quality takes place
- continual scientific monitoring of water quality.

The proportion of watercourses whose structure is no more than moderately or markedly different from their natural state is less than 50 percent of the total length of Hannover's watercourses.

A good example of the successful natural restoration of a watercourse in Hannover is the River Ihme.

Flood protection

Since the dramatic floods of recent years, flood protection has acquired high priority in the public arena. These events also prompted new legislation enacted on 10 May 2005, aimed at improving preventive flood control, with binding national regulations intended to avert flood damage.

In order to satisfy the more stringent requirements for effective anti-flooding precautionary measures, Hannover City Administration has reviewed existing flood prevention arrangements and developed options for improvement. A resolution (No. 1242/2006 in the City Council records) was passed, officially adopting the planning goals and priorities drawn up by the authority.

It is the Administration's aim to be able to provide a technical infrastructure that affords the population protection from a 'once-in-a-hundred-years flood' (designated an 'HQ100 flood event') and to implement the measures necessary for this.

The action priorities are to develop the River Ihme between the Leinert and Legion bridges by rebuilding Benno-Ohnesorg bridge and reconstructing the dyke in southern Ricklingen (total funding: 25 million Euro). Implementation of the first sub-measure, rebuilding of Benno-Ohnesorg bridge, has already begun. These projects are scheduled for completion in 2012.

Hannover's sewage sludge achieves award-winning quality

Hannover's Wastewater Treatment Services have improved the quality of sewage sludge, and Hannover was the first city in Lower Saxony since the start of 2006 to receive the QLA quality mark for 'outstanding agricultural utilisation' (i.e. as fertiliser) of organic waste. By awarding the QLA the quality assurance division of the Association of German Agricultural Testing and Research Institute (VDLUFA), in conjunction with the German Association for Water, Wastewater and Waste (DWA), confirms that a quality assurance system has been successfully used for sewage sludge.

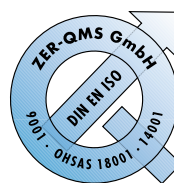


Certificate of sewage sludge quality (QLA = Qualitätssicherung Landwirtschaftliche Abfallverwertung; quality assurance scheme for waste utilised in agriculture)

This demonstrated that Hannover's sewage sludge has matched the quality of sludge from a rural municipality without industrial enterprises and, as organic waste, is as good as high-quality green-waste compost. Hannover's sewage sludge already complies with threshold limits that do not come into force until 2025.

Recertification of Hannover Wastewater Treatment Services

Stadtentwässerung Hannover has been a certified enterprise since October 2004. At the end of 2007, recertification took place involving reappraisal of the entire management system. External auditors reviewed whether successful quality, environmental and health and safety management has been demonstrably achieved over the last three years.



Hannover Wastewater Treatment Service's certification log for quality management, health, safety and environmental protection

In the course of environmental management, the environmental impact of an organisation's activities, products and services are monitored, assessed and optimised. The environmental track record of Wastewater Treatment Services has considerably improved in recent years, and successful recertification recognises these achievements.

In the coming years, the Services will be seeking to continue rigorous and systematic optimisation of operational processes and to make ongoing improvements in environmental protection.

Waste

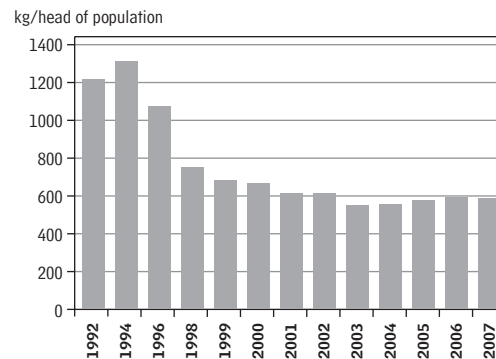
Indicators

Waste volume

Quantities of waste produced in the City of Hannover and Hannover Region, in kg per capita per annum

The quantity of waste produced fell in the 1990s owing to changes in the statutory framework and an increasing trend towards separate collection of recyclables; it has since remained virtually unaltered, as the potential for separately collecting recyclable materials has largely been exhausted. The fact that quantities in 2005 and 2006 were slightly higher than in 2004 is attributable to a change in the law that took effect on 1 June 2005, as the demands made on waste disposal services increased.

Total waste produced in the City of Hannover and Hannover Region¹⁾



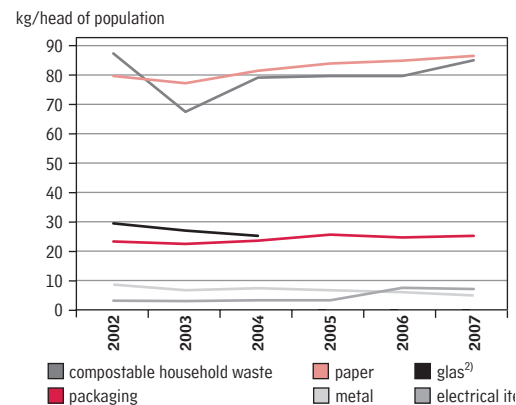
¹⁾ from 2002, data provided are for the Hannover region
source: Zweckverband Abfallwirtschaft Region Hannover (aha)

Quantity of recyclables collected

Recyclables collected, given both as a total and broken down by type (in kg per capita per annum)

The quantity of recyclable waste collected has been relatively constant in recent years. Changes made in 2003 to the system of charges for organic and green waste have led to a slight decline in compostable household refuse. New regulations governing disposal of electrical and electronic equipment were introduced March 2006. That these items are now accepted for recycling at no extra charge has led to an increase in recycling.

Recyclables collected¹⁾



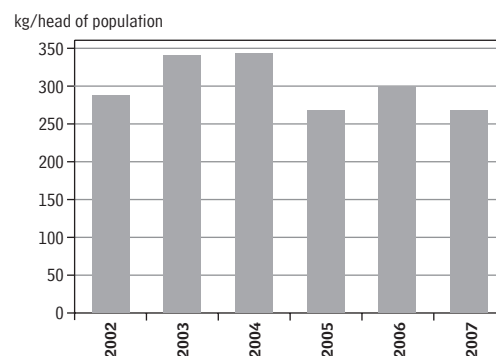
source: Zweckverband Abfallwirtschaft Region Hannover (aha)
¹⁾ From 2002, data given are for the Hannover region
²⁾ As of 1 Jan. 2005 glass is no longer collected for recycling by aha, so no data are available.

Waste disposal

Quantities of disposed waste from the City of Hannover and Hannover Region¹⁾ in kg per capita per annum

As the scope for separate collection of recyclables has largely been exhausted, the volume disposed of by being sent to landfill and thermally treated has levelled off at an almost constant amount.

Quantities of waste disposed from the City of Hannover and Hannover Region¹⁾



¹⁾ From 2002, data given are for the Hannover region
source: Zweckverband Abfallwirtschaft Region Hannover (aha)

Projects and measures

Throughout the Hannover region *aha* (*Zweckverband Abfallwirtschaft Region Hannover*) is the public provider of waste disposal services. Chiefly, this involves organising and carrying out the collection of waste, recyclable materials and harmful substances as well as treating and disposing of waste including marketing raw materials and recyclables obtained in the process such as green-waste compost. As a reliable waste industry player that rigorously complies with relevant legislation, *aha* lays a crucial foundation for the quality of everyday life.

The service is additionally responsible for cleaning streets, pedestrian crossings, cycle paths and roadside verges in the municipal area. It also helps keep roads safe in winter by providing gritting and snow clearance services.

The main objectives of the Region Hannover authority's waste management concept are waste prevention (the top priority), utilisation of both waste materials and energy from them, and environmentally sound disposal of residual waste. In what follows, various projects illustrate what is being done to achieve these goals; these initiatives aim to avoid waste and improve the separate collection of recyclables in collaboration with partners involved in the region's integrated waste advisory service.

Internet swap shop

An online swap forum has been set up as a collaborative venture between *aha* and Hannover City Administration, Region Hannover and the Local Agenda 21 initiative. Its appeal has grown considerably since the *aha* website was overhauled, with the number of visits rising from 12,000 in April 2007 to 15,000 in December 2007, peaking at 19,000 in January 2008 (the 'post-Christmas rush!'). In both February and March 2008, 17,000 visits were logged. The swap shop for used products increases the life cycle of these items; keeping them in circulation saves resources and enhances awareness of waste avoidance.

'Composting days' at Hannover allotment associations

In 2007, five 'composting days' were held at various allotment associations in Hannover's municipal area, aiming to encourage allotment holders to compost garden refuse and reuse garden waste themselves instead of disposing of it at recycling centres. The idea is to offer comprehensive guidance to help dispel prejudices such as "compost attracts vermin" or "compost stinks". On these days, allotment holders can have their garden refuse material reduced to chippings by a powerful shredder, and the end product is ideal mulch. Allotment holders receive high-quality compost from *aha*, and advice and information is also available at these events by way of support.



Advising sports clubs on waste

aha has provided waste management guidance to five Hannover-based sports clubs, the aim being to ensure that recyclables are properly separated at the club's premises and catering facilities. This service was offered under the 'eco.fit' programme and in close collaboration with Region Hannover's climate protection agency (see page 14).

Advising households

To encourage better waste separation in residential areas with plenty of room for improvement in this regard, *aha* has advised some 1,140 households (in some cases, in the Russian, Ukrainian and Turkish languages). In Hannover, residents of the Mühlenberg and Obericklingen districts received consultations. Between 60 and 70 percent of households (depending on location) were reached on an individual basis.

Awareness-raising with groups in child daycare centres and schools

Action-oriented education addresses the topic of waste in a way that is appealing for children in daycare centres and schools; through practical projects, it offers them hands-on understanding and helps them become more aware of energy and materials cycles and the 'process dynamics' involved. In 2007, *aha* held a total of 70 'waste workshops' in these facilities and helped bring about lasting change in the way people handle refuse.

Swap meets – a jumble paradise

To counter the still-prevalent throwaway mentality, two 'swap meet days' were initiated under the banner *Stöberwelten* ('jumble worlds'). Many still-functional items and pieces of furniture are perfectly suitable for further use. A total of 860 objects changed hands and thus escaped the fate that befalls many household articles – ending up in the rubbish.

Sustainable development in practice – some examples

Shaping sustainable development means implementing environmental, social and economic aims simultaneously and equally, and integrating them in other policy areas. A few examples:

10 years on Kronsberg – planning, concepts, retrospective

Hannover's Kronsberg development has, since 1998, seen around 3,100 housing units constructed for some 6,800 residents, along with the necessary infrastructure such as schools and nursery schools, a commercial centre, a church, a health centre and an arts and community centre – all to a high ecological standard. At the same time, about 3,000 jobs have been created in the directly adjacent industrial park.

Supported by a quality assurance programme and skills-upgrading scheme, an energy-efficient district was built, with Low Energy House standards applied across the whole area and energy supplied via a district heating system from two gas-fuelled cogeneration plants. As well as two large wind turbine generators, solar thermal collectors and photovoltaic plants are present as demonstration projects.

The planning aims were twofold: to ensure that homes did not consume more than 55 kWh/m² of energy per year for heating, and that CO₂ emissions were reduced by up to 80 percent compared with conventional new housing estates created at the same time. An independent study in 2001 revealed that, just three years after



Border avenue and Passive Houses

this housing was first occupied, CO₂ emissions were reduced by almost 75 percent, and that actual energy consumption for heating was only 56 kWh/m² per year (equivalent to an energy saving of around 40 percent).

An exemplary **waste concept** was applied and proved successful; it involved using environmentally sound building materials, reducing waste on building sites and lessening quantities of domestic and commercial waste. Waste separation enabled the volume of domestic refuse to be cut down by 30 percent.

The aim of the **rainwater concept** was *in situ* retention of precipitation on roads and other impervious surfaces, and a slow-release groundwater recharging system that restores the groundwater balance to its natural, pre-development state. This was achieved by having fewer impermeable surfaces, planting vegetation on flat roofs, and retention and partial seepage on built-up and paved areas. The rainwater along the surface roads infiltrates decentrally by means of a specially developed, 11-kilometre-long soakaway system ('Mulden-Rigolen-System').

Kronsberg rainwater concept – a hillside avenue



Ecological soil management (see page 29) was established, with the entire volume of excavated soil being used in the landscape planning concept to create two artificial viewpoint hills, noise buffer embankments, and also for landscaping in the development of a recreational area in nearby Misburg Ost. This made over 100,000 truck journeys out of Kronsberg unnecessary and averted the emission of around 1,200 tonnes of CO₂.

A further planning focus was on **greenspace design** in the district. Over a thousand trees were planted alongside the roads and on the border avenue, while landscaped inner courtyards for the apartment blocks and two neighbourhood parks provide secluded spaces for socialising and recreation.

'KroKus' arts and community centre has become very popular with all sectors of the local population, and 'Kronsbergers' identify strongly with their district; the proportion of people doing voluntary work is above average, there is next to no vandalism or graffiti, and although the proportion of people from ethnic minorities has risen from 23 percent in 2001 to 40 percent today and around 30 percent of residents claim welfare benefits, the general atmosphere on Kronsberg is one of positive coexistence.

Taking stock ten years after the first residents arrived, the Kronsberg development is, in sustainability terms, a successful urban development project that has proven its ecological, economic and social resilience.

Hannover eco audit

The 'Hannoversche Öko-Audit' is an environmental management system tailor-made for the City Administration, based on EU Regulation No. 761/2001 (Eco-audit, EMAS) and the international ISO 14001 standard. Following a City Council order, it has been established and run decentrally by the City Administration. The purpose of the system is ongoing improvement of operational environmental protection and consistent long-term savings on environmental costs. Apart from three cases, the Hannover environmental management system is not externally certified for reasons of cost.

The City departments and other operational units run a total of 33 distinct environmental management systems. Several systems are employed if the sections within a department have marked structural differences e. g., the 'major eco audit' in old people's homes and facilities compared to the 'minor eco audit' for the remainder of the senior citizens department.

Three organisational units within the City Administration running a major eco audit have externally certified systems:

- City Harbours (integrated management system) to ISO 14001 + ISO 9001
- Hannover Wastewater Treatment Services (PIMS – process-integrated management system) to ISO 14001 + ISO 9001 + OHSAS
- Environmental Protection Division to ISO 14001 + EMAS

Additionally, there are diverse approaches to quality management in the City Administration; the Fire Service, for instance, is certified to ISO 900.

Setting up an environmental management system needs intense preparation if operational environmental protection is to be further optimised long-term within the normal running of the organisation (continual improvement process). Some City Administration units have had to defer these preparations due to internal reorganisation. On the other hand, several units use the City's ECO-PROFIT business development programme (see page 46) or 'Tatort Büro' project (see page 14) for advice on the essential phases of setting up their system. The other units call on the City Environmental Protection Division for support.

Improvements in operational environmental protection often go hand in hand with financial benefits from saving electricity, heating energy and water, while more savings can be made by improving waste management and optimising consumption of fuel and other consumables. In many areas, the eco audit was also seized upon as an opportunity to improve health and safety at work and fire protection, and to ensure better compliance with statutory regulations.

Know-how about the eco audit system can only be acquired in specialist training courses. An internal two-and-a-half-day programme was devised specially for the Hannover system. 161 employees were trained through to 2007, and personnel changes have made training of a further 22 necessary in 2008.

It is only by consistently developing and extending programmes and measures that these economic and ecological improvements can be maintained, leading to lower liability risks, better health for local government employees and citizens, less need for renovation and repairs in the future and above all to economical and sustainable use of resources.

ECOPROFIT Hannover

The ECOPROFIT (German: ÖKOPROFIT®) advice initiative was launched in 2000 as a joint Local Agenda 21 and business development project. It involves bringing together a group of between 10 and 18 companies for a year at a time, who work on enhancing their environmental performance, learn collectively and pool their experience.



All enterprises make a two-fold contribution: financial input and their own keen commitment. Nine workshops are held, each addressing a different topic such as energy efficiency, waste management, hazardous substances legislation, water consumption and wastewater generation, employee participation and improvement processes. Practical measures specific to each company are then planned and implemented on-site at the earliest opportunity under the guidance of ECOPROFIT consultants. The businesses benefit from improvements in their internal and external environmental performance and – above all – in terms of cost savings. Successful firms receive an award at the end of the project and can, for a three-year period, advertise themselves as 'ÖKOPROFIT® Hannover' businesses.

Participating enterprises can follow this up by joining the 'ECOPROFIT Club' business network, a framework within which they can continue making improvements and comparing notes; although less time-intensive than the full project year, this is no less earnest in its intentions. Hannover's ECOPROFIT Club is, with 32 member companies, probably the largest in Germany at present. Six workshops are offered, with the firms involved taking turns to host them, to continue sharing their experience and collectively updating their knowledge. These include not only small and medium-sized businesses, but also some of the largest and best-known companies in the Hannover region (such as VW Commercial Vehicles, TUI AG travel group and electronics giant Sennheiser). This year, three of the club's member businesses are drawing on their ECOPROFIT experience to develop a certified environmental management system to ISO 14001 or EMAS standards.

The high level of interest has led to six workshops (instead of the usual four) being held in 2008. The issues to be addressed are largely chosen by the members them-

selves around the central theme of climate protection, with sub-topics such as measuring and offsetting carbon footprints, on-site compensatory measures, green electricity, and integration within the climate protection initiatives run by the City Administration and the Hannover Region authority. Other aspects covered include profitability analyses, corporate legal compliance, environmental awareness and employee motivation, as well as 'green IT', the central theme of the 2008 CeBIT trade fair.

A review of what has been achieved is undertaken at the end of an ECOPROFIT year. In 2007 the 38 participating businesses saved a combined total of around 20m kWh of electricity, 550 million kWh of heat and 6,700 tons of waste. An additional benefit for the environment is that CO₂ emissions amounting to 20,000 tones were avoided. And, on the financial front, these firms saved over five million Euro altogether. The programme is to be continued and expanded to include as many companies as possible.

'Green Goal' – the environmental concept for the 2006 Football World Cup

The 2006 FIFA World Cup was the first major sporting event ever planned to be climate-neutral. To this end, environmental aims - with quantifiable CO₂ reduction targets – were incorporated into the tournament for the first time. The 'green goal' project included four key areas: water (with measures developed to reduce drinking water consumption), waste (reducing the amount generated), energy (reducing consumption and using renewable sources) and transport/mobility (increasing the proportion of journeys by local public transport by at least 50 percent).



Hannover went all-out to achieve its 'green goals' and, in some core areas, was among the best-performing venues. Individual measures within the four main categories included the following:



'Fan fest' during the 2006 World Cup in Hannover

Water: To protect drinking water resources, the stadium's playing surface and other green spaces were watered from the Rivers Leine and Ihme. In the stadium's public toilet facilities some of the urinals were dry, while the other installations had state-of-the-art flushing technology (integrated water-saving devices).

Waste: Both in the stadium itself and at the 'Fan Fest' events elsewhere, a system with returnable bottles etc. was used. There was a waste collection point near the stadium in which rubbish was separated directly on site. Hannover Region's waste management service, *aha*, ran awareness-raising campaigns to promote a more responsible attitude to waste (with football symbols stuck on litter bins for example).

Energy: Heat was supplied to the stadium via a district heating system (including under-soil heating for the pitch). The roof of the stadium below the lower stands was fitted with PVC-free ETFE sheeting that lets UV rays through to the playing surface. This means that long-term, the turf does not have to be replaced as frequently as before.

Transport and mobility: A new local rail station was built near the stadium. (Hannover already has an excellent traffic system, staging major trade shows every year as it does and having played host to the EXPO 2000). Visitor parking facilities were available at the Exhibition Centre, from where a tram service ran at frequent intervals. All tickets for the games entitled holders to use public transport as well.



'Kick the littering habit' – for a cleaner city

Environmental Communications

The United Nations have declared the years 2005 – 2014 a global Decade of Education for Sustainable Development. As the aim is to raise awareness of and enhance people's identification with their own living space, this is about more than just 'knowledge transfer'; action-oriented learning for the future is also involved. Hannover City Administration makes a point of incorporating this central concept into environmental education for children and young people. Among the relevant projects are those described below, which were launched by Hannover's Environment and Urban Green Spaces division and are run in collaboration with other municipal departments, institutions, trade and professional associations, schools and those in the arts and cultural sector, as well as environmental educators and volunteers.

Sustainable young enterprise

'Nachhaltige Schülerfirmen' (sustainable pupil-run enterprises) are school projects organised just like real companies. Pupils create and sell products, or provide services, while taking into account ecological and social issues. This gives them with an opportunity to implement a business idea of their own, familiarise themselves with all aspects of setting up and running a business, and score success with their product or service 'on the market'. As youngsters learn essential skills such as interpersonal capability, willingness to take on responsibility, initiative, the ability to work on a team and how to deal with conflicts, these 'young enterprise' projects are ideal preparation for starting out on a career.

Twenty-two schools of different types – and with a total of 26 pupil-run companies – are taking part in the City of Hannover's 'Nachhaltige Schülerfirmen' project, with business ideas ranging from selling healthy break-time snacks or environmentally friendly school materials to repairing bicycles and making wooden bookshelves or even honey. Pupils and supervising teachers receive personalised guidance from the City Administration on organisational, financial and legal aspects of forming and managing these enterprises, as well as information resources and training on topics such as presentation, press and public relations work and teamwork. A guide (German title: *'Alles was Recht ist!'*) sets out the legal basis for setting up and running these businesses in Hannover. This gives young entrepreneurs a lot more confidence with regard to aspects such as insurance cover, tax liability or what to do with the profits. These sustainable pupil-run companies are a collaborative project involving several municipal divisions: Environment and Urban Greenspace, Libraries and Schools, and Economic Affairs. The scheme is operated in cooperation with Germany's joint federal and regional commission for educational planning and research promotion (BLP), whose aim is to help school education gear itself to the concept of sustainability.



Signposts in Kinderwald

Bike repair shop at the Paul Dohrmann school



A wood for children in Hannover

In Hannover's 'Kinderwald', located at the edge of the Mecklenheider Forst woodland, it is the children who call the tune: they can romp to their hearts' content, wade in the water and get nice and dirty! Here, they are the architects and builders of bridges, outdoor sofas and even their own villages in woodland clearings. In this, their very own wood, children and young people plant trees and shrubs, make signposts and tepees, and create places for animals to shelter and hibernate in winter.



The Kinderwald Choir is presented with footballs by German Foreign Minister Frank-Walter Steinmeier as a thank-you for taking part in a benefit event.

Camps, workshop-based craft days, fun and games and diverse projects – some 200 different activities and events are offered each year in Kinderwald Hannover where children can gain valuable experience and appreciate nature at first hand. They are involved right from the word go, help plan activities and can – both literally and figuratively – get their hands dirty. This will help their creativity bloom; they can discover their own strengths and limits, develop team spirit and tolerance, and learn to play a more active part in things. For this contribution to sustainable education Kinderwald Hannover, which celebrated its 10th anniversary in 2006, has twice (in 2006/2007 and 2008/2009) been awarded ‘official project’ status by the United Nations as part of the UN’s Decade of Education for Sustainable Development.



and those in care, celebratory and training events, and choirs), with a total of 198 held between January and July 2008. Kinderwald receives financial support from the *Förderverein Kinderwald Hannover e.V.* and Hannover City Council. More information (in German) is available at www.kinderwald.de.

Its current standing as a ‘Decade Project’ (2008/2009) was awarded primarily for moving forward conceptual approaches in youth work and vocational skills training. 2007 saw a total of 255 events in Kinderwald (involving workshops/craft sessions, activities with families

Healthy eating at school

In order to help schools serve up healthy and ecologically friendly breakfasts and lunches, in 2006 Hannover City Council commissioned its Libraries and Schools division, in collaboration with the Environment and Urban Greenspace division, to run a campaign – funded to the tune of 100,000 Euro – aimed at promoting healthy eating in schools.

Schools can request funding for guidance, initial financing in terms of staff support, classroom activities, and equipping kiosks and kitchens.

The prerequisite for taking part is that schools draw up and submit an outline proposal, offer a varied menu including seasonal, regional, organic and fair-trade products, provide healthy eating options for the maximum number of children on as many days of the week as possible, and integrate the topic of ‘healthy eating’ into the curriculum, teaching practical skills and food awareness.

The initial phase in 2006 involved promoting the programme to primary and special schools; 13 applications were accepted. 2007 saw secondary schools included, with 17 requests approved (two from primary schools, five from non-selective secondary schools, six from selective secondary schools and four from comprehensive schools). The support programme has been well received by schools and continued in 2008, with 16 applications to participate. Requests for funding should be sent to the Libraries and Schools division (Fachbereich Schule und Bibliothek).



‘Dreamcatchers’ in Kinderwald

‘Paper revolution’ project

The aim of the ‘Papierwende’ project, run under the auspices of the ‘ERFOLGREICH ABFALLARM’ (‘successfully reducing waste’) initiative, is to put recycled paper firmly back on the agenda at schools and thus raise awareness among pupils and their parents about protecting the remaining virgin forests and preserving species diversity.

In collaboration with *Bürgerinitiative Umweltschutz e.V.*, a conservation action group, hands-on ‘project mornings’ and environmental awareness-raising events were held during the period under review – 2006 to mid-2008 – at which some 3,000 children and young people learned about the global impact of our paper consumption habits and got practical tips for action, including how to purchase school exercise books using a buyer’s guide to recycled paper.

A priority was making the target group aware of the ‘Blauer Engel’ (‘Blue Angel’) eco logo as a trustworthy seal of quality. For example, at the start of the 2007/2008 school year, over 4,000 Year 1 pupils were given a ‘starter pack’ containing three exercise books bearing the ‘Blauer Engel’ mark, as well as a buyer’s guide for Hannover and a school timetable. The 2008/2009 school year will – to mark 30 years of the ‘Blauer Engel’ scheme – see a repeat of this promotional campaign: a campaign that is very much welcomed by the schools.



The future aim is to achieve the same rates of recovered paper utilisation in school offices that have been attained across the municipal authority.



School-starters are delighted to receive their starter packs with recycled-paper exercise books

Special issues

Ecological standards for buildings within the municipality's sphere of influence

On 27 September 2007 the City Council approved the consultation paper, 'Ökologische Standards beim Bauen im kommunalen Einflussbereich'. Taking into account the 10-point programme of the 'Aalborg Commitments' signed by the Lord Mayor in 2004, the paper set a programme of continuing and improving the City's 'Ecological Standards'.

Energy: To reduce environmentally harmful CO₂ emissions as much as possible, prospective purchasers of municipally-owned building land must build to at least Low Energy Plus standard – that heat loss through the building envelope must be 30% less than the statutory minimum. Potential purchasers who commit to building a Passive House will be given priority. The purchaser is obliged to attend an advice session before the sale contract is registered, to receive information on the essential conditions of building for energy efficiency.



For new-build and renovation of the City's own buildings, the rule also applies using the Low Energy House Plus standard or better; the longer-term aim is, however, general introduction of the Passive House standard.

In urban-use planning, masterplans will be increasingly optimised for solar gain and Passive Houses, and the environmental statement to the urban development plan will address energy efficiency aspects.



Rainwater drainage in a private inner court at Kronsberg with the 'hollow and filled trench' system



Detached Passive House

Rainwater: Infiltration, storage, retention and on-site use of rainwater are also obligatory as important contributions to groundwater recharge. They serve ecologically oriented flood protection and help preserve the natural hydrologic balance. On-site rainwater infiltration has been general practice in Hannover for more than ten years; only run-off from streets and squares still often flows into the storm sewers. The future aim is to change this through more consistent rainwater management in the form of retention, infiltration and restricted release to feeder streams. Where technically possible, infiltration methods should also be applied along public roads, paths and paved open spaces, thus removing the need for canalisation.

Soil: Up to now there have been no practical regulations in development plans for soil treatment on contaminated sites. Now, with its standardised soil limit values, far more stringent than those set by federal soil protection regulations, Hannover also has preventive quality standards for soil that make the procedures in development planning much simpler. When limit values are exceeded this does not automatically mean that the soil must be removed or decontaminated; decisions are made on individual cases according to economic considerations. For residential areas the limit values are considerably lower than, for instance, on commercial sites.

With these higher quality standards in several areas the City Administration fulfils its stringent self-imposed obligations, sets a good example and is in the vanguard of German cities. Above all with regard to energy, Hannover makes an exemplary contribution to climate protection.

Hannover emission zone – measures to reduce particulate and nitrogen dioxide levels



Setting up the emission zone

Hannover's emission zone, excluding vehicles with dirty exhausts, is just one of eleven measures in the city's clean air plan. The zone covers around 50 square kilometres, about a quarter of the city area bordered by the outer ring roads to the east, south and west and a main road to the north. It includes most of the streets that have until now been heavily polluted, while providing routes around it on sections of high-capacity dual carriageways for vehicles affected by the ban.

The ban on high-emission vehicles is being introduced in three stages:

- From 1 January 2008: ban on vehicles in **emission category 1** (diesel worse than Euro 2/II and petrol without 3-way catalytic converter)
- From 1 January 2009: ban on vehicles in **emission category 2** (diesel worse than Euro 3/III)
- From 1 January 2010: ban on vehicles in **emission category 3** (diesel worse than Euro 4/IV)

Around 200 road signs were erected at the emission zone borders in December 2007.

Excluding high-emission vehicles reduces pollution on busy roads within the zone. The main objective of an emission zone, however, is to stimulate faster changes to the entire vehicle profile, either by replacing older vehicles with new, low-emission models or fitting particulate filters to older vehicles. Modernising vehicle fleets reduces pollution within the emission zone and also ambient pollution, to which traffic emissions also contribute. The effectiveness of the emission zone is directly related to its extent and the standards set for clean exhaust technology. Additionally, the emission zone ban must apply all year round, as short-term driving bans (e. g., when there is a danger of exceeding limit values) reduce pollution less efficiently and have no more than a delayed effect.

Proportion of vehicles excluded

To estimate the number of vehicles affected by the ban, figures from the federal motor transport authority (KBA) as of 1 January 2006 were used. However, these were available only for the Region Hannover (city and hinterland together), not for the city area alone. The calculation took a proportion of this figure based on vehicle registrations.

When the emission zone was first introduced on 1 January 2008, initially excluding only vehicles in emission category 1, 5.3 percent of cars and 30.4 percent of commercial vehicles were affected. This figure will increase with the next two stages in 2009 and 2010. The figures do not, however, reflect the ongoing process of replacing vehicles independently of the emission zone's influence. Furthermore, vehicles retrofitted with a particulate filter to get a higher classification and thus a permit for the emission zone are also disregarded in the calculation.

New figures on vehicles registrations in the Region Hannover (as of 1 January 2007) show that modernising the vehicle stock is well advanced, with a high proportion of category 3 and 4 vehicles. These figures would indicate that the proportion of vehicles, both private and commercial, affected by the ban after 2010 will be around 20 percent.

Exemptions

Hannover City Administration has set rules for general exemptions for certain groups of vehicles:

- vehicles with foreign registration plates for 2008
- petrol-driven vehicles with 3-way catalytic converters that are not eligible for a 'green disc' (unlimited access to the zone)
- circus and funfair vehicles for events within the emission zone (funfairs, festivals) driving to and from the venue; they must carry proof of booking at the event.
- local buses
- coaches
- commercial vehicles running on biodiesel or rapeseed oil; certification by the manufacturer or a garage must be carried.
- vehicles with temporary registration plates and trade plates.

These general exemptions apply initially until the end of 2009. An application is not necessary.

Discretionary exemptions can be granted by Hannover City Administration under § 1, para. 2 of the vehicle registration regulations, on application, to avoid cases of particular hardship caused by a ban.

4,132 such exemptions had been approved by the end of July 2008; 84 percent were for infrequent use (max. 500 or 2,000 km per year, for which the driver(s) must keep a logbook, and 16 percent for other exceptional reasons.

Studies of the emission zone's effectiveness

Back in 2006, the State of Lower Saxony commissioned a model calculation on the effectiveness of an emission zone in reducing pollution by particulates (PM10) and nitrogen dioxide (NO₂). For particulates a reduction of up to 3 µg/m³ (annual average) was predicted for some main roads, less on other roads. This reduction would, however, only occur after the third stage of vehicle exclusion on 1 January 2010. Better potential reductions in nitrogen dioxide levels were expected, as much as 7 µg/m³ (annual average).

Public reaction

Despite extensive public relations work, the public consultation process on the Hannover air purity plan in the summer of 2006, and focused press work after the City Council approved the plan on 12 July 2007, it was not until late in 2007 that many local people began to realise that their cars would be banned from the city in the new year. This was apparent from the increasing numbers of telephone calls to the City Administration Environmental Protection Division, most of them in November and December 2007.

For this reason, Hannover City Administration in consultation with the city police authority did not impose fines on vehicles that entered the emission zone without permit discs or exemption certificates for the first four months of 2008.

Instead, drivers who had not yet obtained and displayed a permit disc were informed of their obligation by the police in the course of normal traffic control work. The City Administration's traffic wardens also left flyers on vehicles without permit discs to tell drivers about this obligation. This period of grace ended on 30 April 2008.

Even so, there is still a great need for public information. At the beginning of 2008, especially, there were many telephone enquiries, most of them about the City exemption criteria, the disc system and the borders of the emission zone.

Further information on the emission zone and the exemption regulations

Internet	www.hannover.de
Booklet	'Hannover breathes easy – the emission zone', available in German, English, Russian and Turkish.
Telephone	+49(0)511 168 40601 and 168 46926
Email	umweltzone@hannover-stadt.de

The 'Gartenregion 2009' project



Stadtpark – the rose garden

The Hannover region has a garden potential of exceptional diversity and quality compared to other conurbations, thanks to a long and illustrious garden tradition and the public and private commitment that has created and tended it. Carrying this tradition forward, most recently in the 'City and Region as Garden' project for the EXPO 2000 World Exposition, it is plain that this shared foundation can be built upon. Therefore the Region Hannover authority, along with Hannover City Council and Administration and the other 20 local authorities in the region, are planning the 'Gartenregion 2009' network project.

Eilenriede woodland study centre



'Garden' as a concept

The term 'garden' is to be found in all religions and cultures; it is generally understood, easy to communicate and nevertheless many-faceted. The garden is a symbol of hope, contentment, delight, of peaceful and harmonious relationship with nature; at the same time a garden is a real place where people work, design and shape their surroundings and enjoy them singly or with others. The term 'garden' as used here includes all these facets and comprises all the forms and statements applied to greenspace.

Objectives

The 'Gartenregion 2009' project is intended to:

- enhance the existing garden qualities in the region
- stimulate personal identification with the region
- bring more tourists to the Hannover region
- stimulate the regional economy by enhancing the competitiveness of the region as a place to live and work, and
- raise the status of garden culture in individual and public awareness - 'making friends for gardens'.

The project in Hannover

In the 'Garden Year', 2009, there will be events throughout the Hannover region in gardens, parks and open countryside.

Construction measures

In preparation for the Garden Year, Hannover City Council and Administration is investing in selected gardens and parks, with funding from the Hannover Region. These include:

- **Herrenhausen Gardens** new technical equipment for events in the Großer Garten: public address system for the parterre, restoration of the garden theatre, renewing the illuminations
- **Operndreieck** redesigning Rathenauplatz, a green space next to the opera house in the city centre
- **Eilenriede study centre** building a woodland observation tower
- **Stadtpark** reinstating the historical herbaceous perennial and rose gardens

- **Maschsee** improvements to the west bank jetty
- **Hinüberscher Garten** improving the herbaceous plantings, the pond and flower island, further development of vistas
- **Ricklingen cemetery** building an open-air chapel.

Events

Three types of events are planned for the 'Garden Year'.

- Those which would be staged by the City of Hannover, the neighbouring authorities and other promoters in any case (Herrenhausen festival weeks, plant days in the Stadtpark, fireworks competition etc.). These will receive no co-financing from the Hannover Region, but event marketing will be improved as part of the Garden Region project.
- A few flagship events, organised and financed solely by the Hannover Region, including the musical, 'Der geheime Garten' (The Secret Garden), to be performed in an exceptional garden in each of the 21 Region Hannover member authorities through the summer months.
- Extra events staged by the City of Hannover, neighbouring local authorities or other organisations, which will be eligible for co-funding from the Hannover Region.

Hannover City Administration has drawn up proposals for the third type of event in consultation with artists in the region and agreed them with the Region Hannover; feasibility studies are in progress.

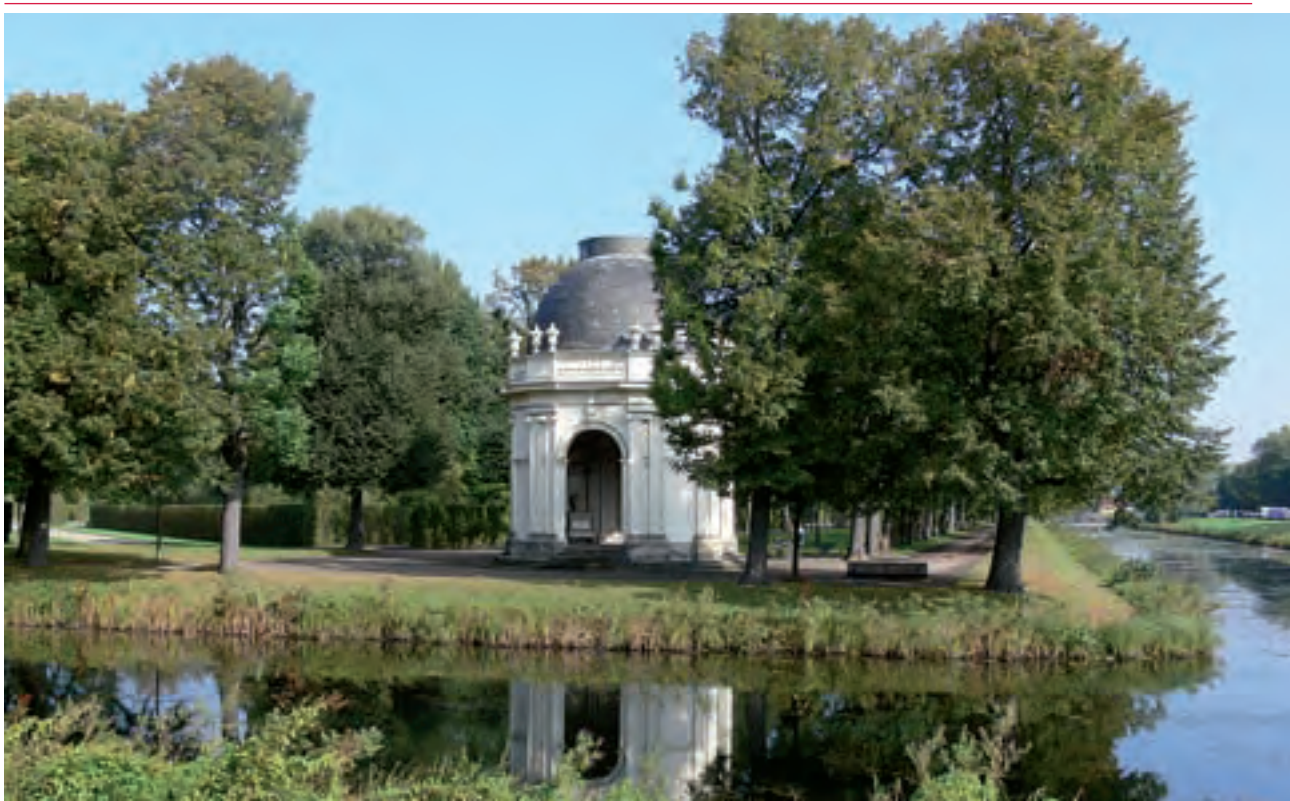


Maschsee

Further information on the 'Gartenregion 2009'

Internet	www.gartenregion-hannover.de
Telephone	+49 (0)511 168 44640
Email	67.20@hannover-stadt.de

Herrenhausen – Großer Garten



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