



# FINAL APPLICATION NUREMBERG

## Green Capital City 2012/ 2013

### **Award year**

Award year: **Either 2012 or 2013**

### **Municipality:**

Name of municipality: **Nuremberg**

Country: **Germany**

Size of municipality (km<sup>2</sup>): **186**

Number of inhabitants in municipality: **495459**

Name of mayor: **Dr. Ulrich Maly**

Address of mayor's office: **Stadt Nürnberg Rathausplatz 2 90403 Nürnberg**

### **Contact info**

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# 1. Local contribution to global climate change

1a. Describe the present situation and developments over the last five to ten years regarding (max. 1,000 words):

1. Total CO<sub>2</sub> equivalent per capita, including emissions resulting from use of electricity;
2. CO<sub>2</sub> per capita resulting from use of natural gas;
3. CO<sub>2</sub> per capita resulting from transport;
4. Gram of CO<sub>2</sub> per kWh used.

## 1.1. The present situation and developments over the last five to ten years

The City of Nuremberg has put considerable effort into its municipal climate policy and has experienced some success. The City attaches great importance to energy issues. Increased use of renewable forms of energy and high energy efficiency are two tools to fight climate change. Since 2000 Nuremberg has been a member of the Climate Alliance of European Cities, the largest European city network for climate protection. As a member of the Climate Alliance, Nuremberg has committed to reduce greenhouse gas emissions continuously.

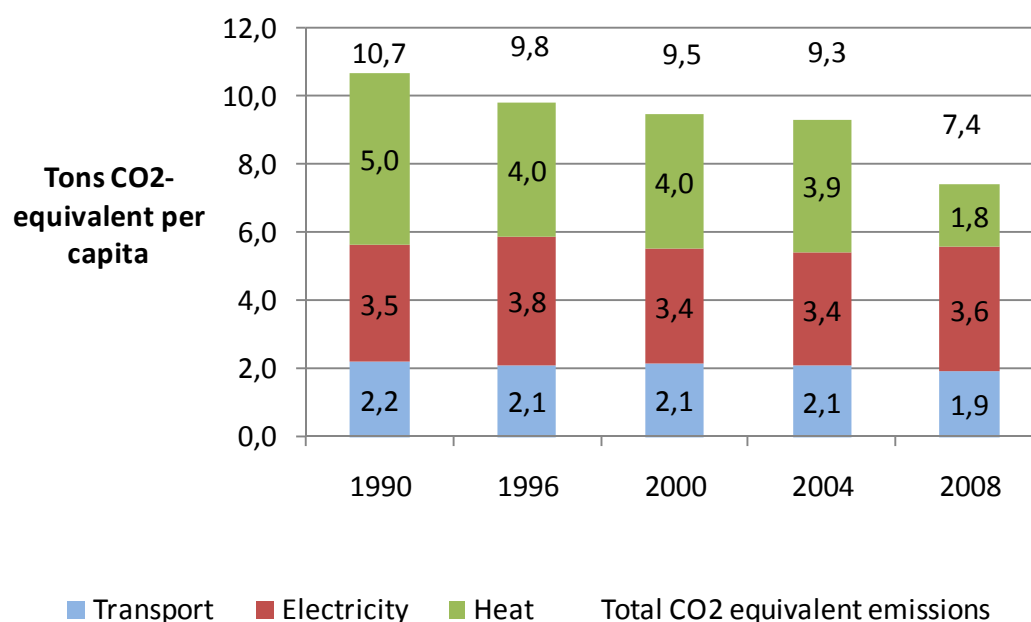
Since 2009 Nuremberg, has also been a member of the Covenant of Mayors.

*Numerical values are available for the year 2008. These values include the conversion of the local power plant Nuremberg-Sandreuth. The power plant produces electricity and district heating in environment-friendly and energy-efficient combined cycle gas & steam technology.*

### 1.1.1. Total CO<sub>2</sub> per capita including emissions resulting from use of electricity

*The methodology for calculating emissions between 1990 and 2008 is based on the former guidelines of the Climate Alliance of European Cities. Since 2010, the City of Nuremberg has calculated emissions with the ECO2Region preferred by the Climate Alliance.*

**Figure 1: CO<sub>2</sub> equivalent emissions per capita**



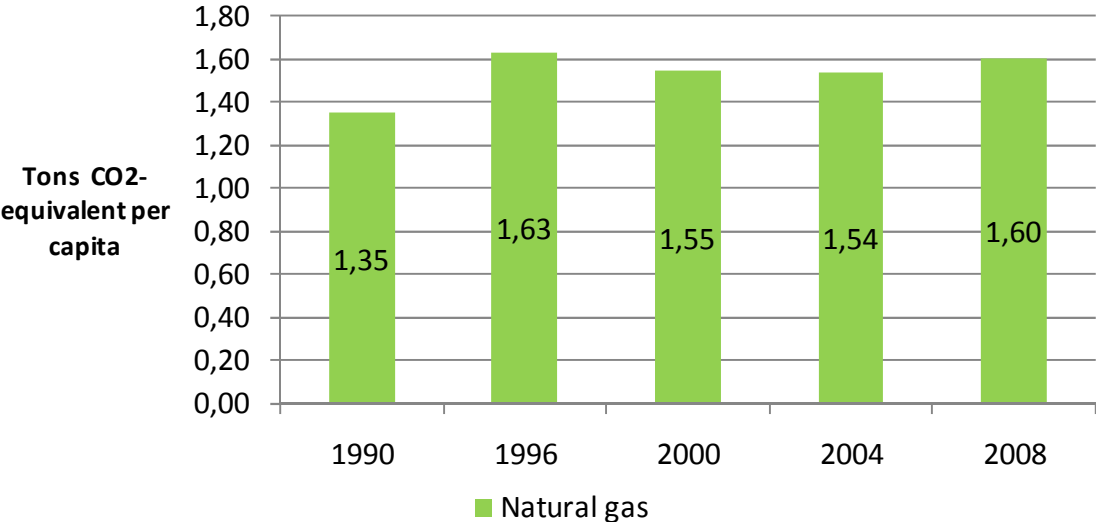
The development of CO<sub>2</sub> emissions and other greenhouse gases is linked to final energy consumption. Between 2000 and 2008, Nuremberg's final energy consumption was reduced by 4.9%. CO<sub>2</sub> emissions decreased continuously between 1990 and 2008. This is a sign of greater efficiency, both in energy production and consumption. The most important sources of CO<sub>2</sub>

emissions are the use of the final energy carriers electricity, natural gas, heating oil, district heating and fuels for transport. Nuremberg's greenhouse gas emissions have reduced considerably during the last twenty years. *Between 1990 and 2008, CO<sub>2</sub> emissions decreased by 29.4% overall. Between 2000 and 2008, CO<sub>2</sub> emissions were reduced by 19.5%. The main contributing factor was the decrease in domestic energy consumption, especially for heating. Another reason was the change from fossil fuels, such as heating oil and coal, to more environmentally-friendly natural gas.*

1.1.2. Use of natural gas

*In Nuremberg, natural gas is an important energy carrier for industry and private households. Final energy consumption and CO<sub>2</sub> emissions from use of natural gas were relatively constant between 1996 and 2008. But the use of natural gas in industry and private households also has another advantage: natural gas has replaced coal and heating oil which have a worse CO<sub>2</sub> equivalent emission factor.*

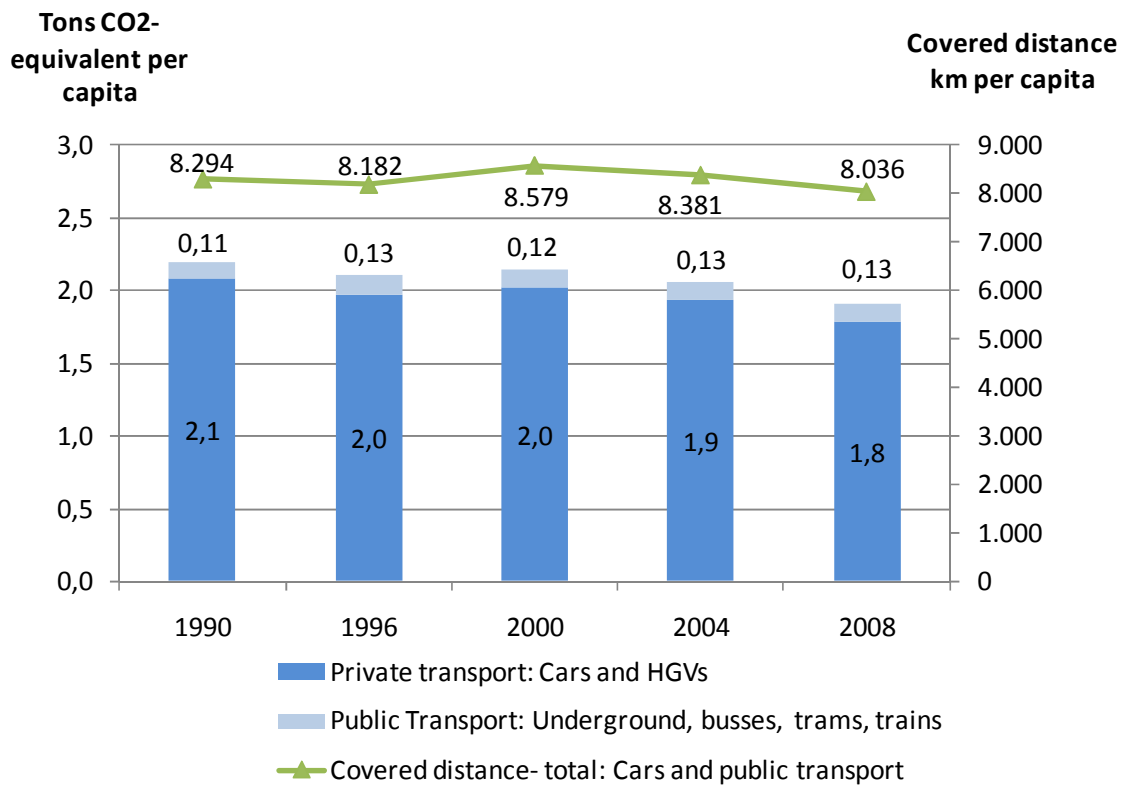
Figure 2: CO<sub>2</sub>-equivalent emissions from use of natural gas



1.1.3. CO<sub>2</sub> per capita resulting from transport

Transport is one of the three main sources of CO<sub>2</sub> emissions. Although the City of Nuremberg has a good public transport system, emissions from cars and HGVs are enormous. The public transport system consists of various means of transport, such as busses, trams, underground and suburban trains. Walking and cycling are also popular in Nuremberg. The public transport system is still improving. New suburban railways to neighbouring cities, such as Ansbach, Erlangen and Neumarkt are under construction. *The new underground line U3 from Maxfeld to Gustav-Adolf-Straße is the third underground line, and it will be extended further.* Nuremberg's good public transport system means that it is possible to live in the city without using a private car. Without the public transport system, CO<sub>2</sub> emissions would be substantially higher.

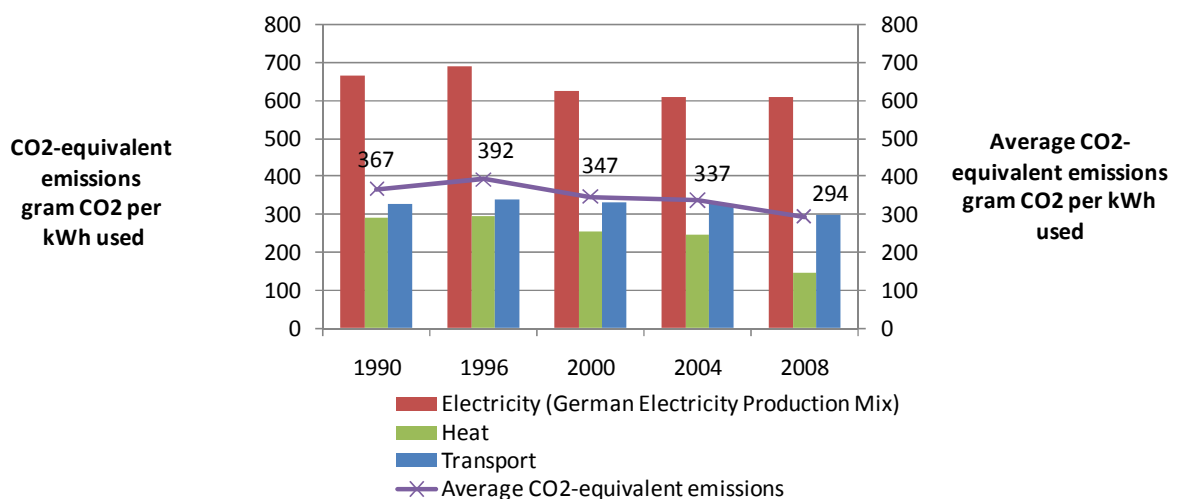
**Figure 3: CO<sub>2</sub>-equivalent emissions per capita from public and private transport**



**1.1.4. Carbon Intensity: Grams of CO<sub>2</sub> per kWh used**

Between 1990 and 2008, the average CO<sub>2</sub> equivalent in grams of CO<sub>2</sub> per kWh used was reduced by 19.9%. The average CO<sub>2</sub> equivalent emission factor includes the use of electricity, natural gas, district heating, process heating, heating oil, coal and transport, but not the emissions for waste water management and waste disposal.

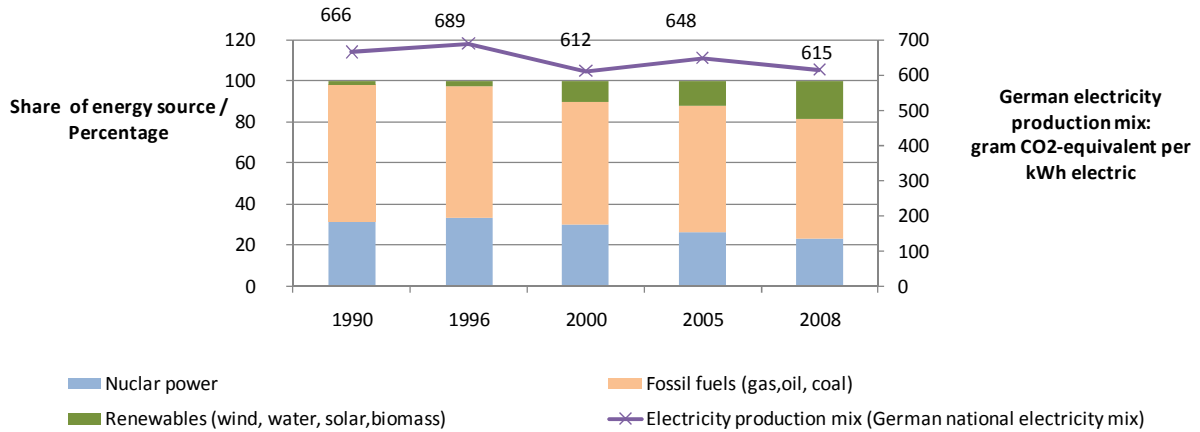
**Figure 4: Carbon Intensity: Gram CO<sub>2</sub> per kWh used**



*Nuremberg uses the German electricity generation mix (> 600 g CO<sub>2</sub> / kWh electricity). The major share of German electricity generation is based on fossil fuels, such as coal and natural gas. This results in higher CO<sub>2</sub> emissions, as compared to other cities with a national electricity generation*

mix based on nuclear power and renewables. The generation of district heating was switched from coal to natural gas between 2004 and 2006.

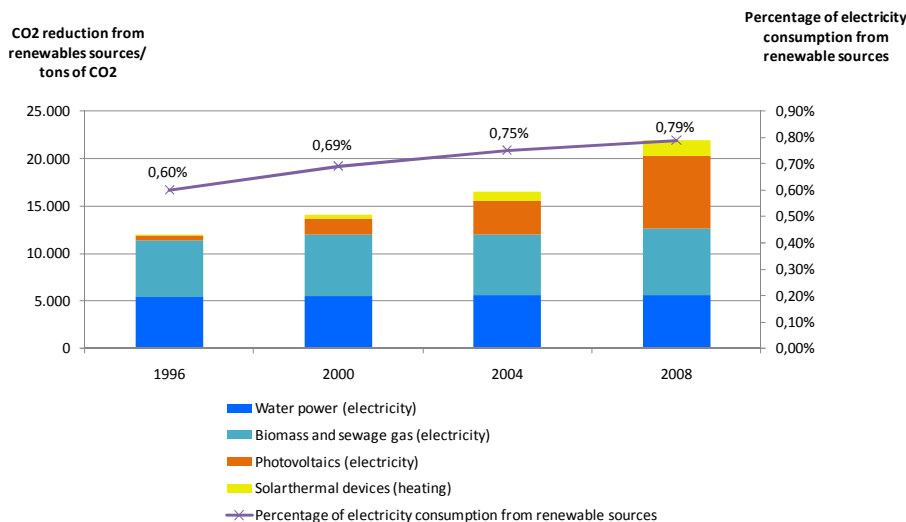
**Figure 5: German electricity generation mix: carbon intensity per kWh electricity**



### 1.1.5. Share of renewables in electricity production

Renewable energy sources are also used in Nuremberg: hydroelectric power is the most important renewable resource. In 2008, almost 9,400 MWh of electricity were generated this way. Photovoltaic and solar-thermal energy are also popular. The photovoltaic energy share increased by 656% between 2000 and 2006. Nuremberg boasts the highest amount of energy production per capita from photovoltaics and solar-thermal energy of all German cities of over 500,000 inhabitants. In Nuremberg, the photovoltaics systems installed produced an overall 9,300 kW<sub>peak</sub> in 2008, generating 8,400 MWh of electricity per year. Every year, 7,560 t of CO<sub>2</sub> emissions are avoided because of photovoltaics. In 2008, solar-thermal devices covered an area of 20,400 m<sup>2</sup> and saved CO<sub>2</sub> emissions of 2,134 t CO<sub>2</sub> per year. In 2009, the project association “8KU” (an association of eight municipal companies) was founded, with the goal of extending regenerative electricity generation.

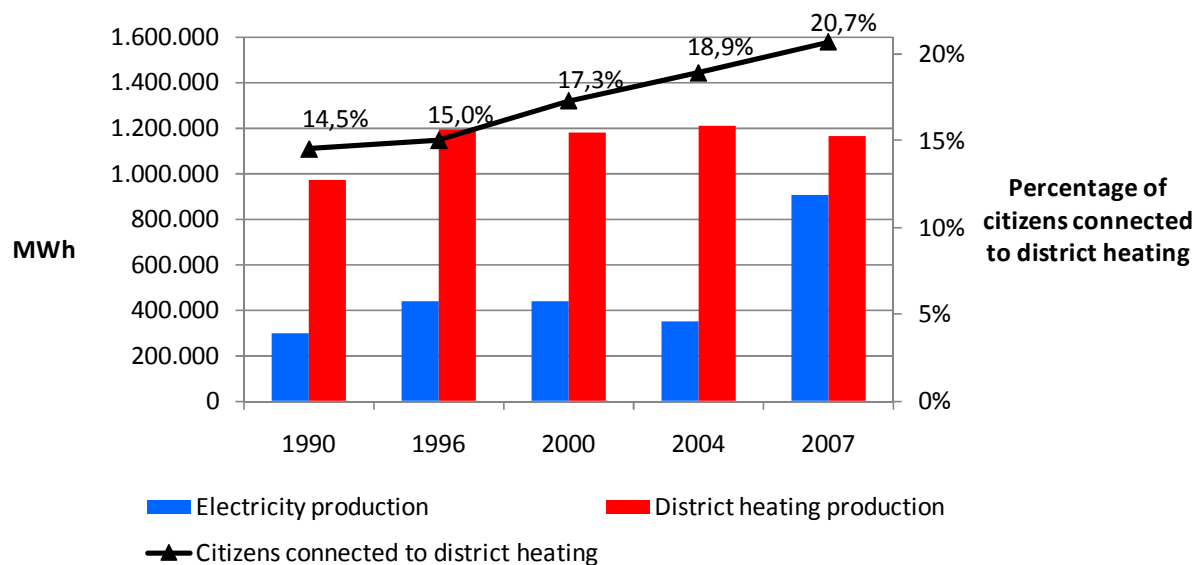
**Figure 6: Reduction of CO<sub>2</sub> by renewables in the City of Nuremberg: Percentage of electricity consumption from renewables and CO<sub>2</sub> reduction from renewables**



### 1.1.6. Percentage of citizens connected to district heating

Almost 5,000 buildings in Nuremberg are connected to district heating. The percentage of citizens connected to district heating increased from 14.5% in 1990 to 20.7% in 2007. Between 2004 and 2006, the local power plant in Nürnberg-Sandreuth was converted to the energy-efficient combined cycle gas & steam technology. Increased electricity generation with less CO<sub>2</sub> gains for the current has decreased CO<sub>2</sub>-equivalent emissions by 643,106 t of CO<sub>2</sub> emissions between 1990 and 2008.

**Figure 7: Local district heating and electricity production in cogeneration in the local power plant Nuremberg-Sandreuth; percentage of citizens connected to district heating**



1b. Describe the measures implemented over the past five to ten years to reduce greenhouse gas emissions, including resources allocated to implementing these measures (max. 1,000 words).

## 1.2. Measures implemented over the past five to ten years (max 1000 words)

### 1.2.1. Energy supply - Renewables

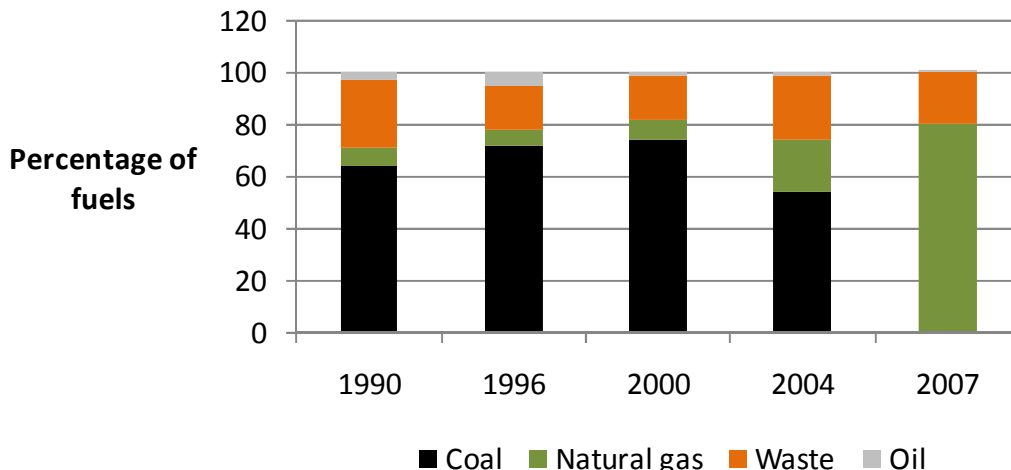
**Photovoltaic systems** were installed on many private and municipal buildings. The national solar energy ranking “Solar-Bundesliga” [Federal Solar League] lists Nuremberg in top position of the cities with more than 500,000 inhabitants. Furthermore, the city has implemented the “Solardachbörse Nürnberg”, which is an exchange platform for photovoltaic system operators, investors and owners of roofs suitable for photovoltaic systems. They implemented about 40,000 m<sup>2</sup> solar roofs. The hydroelectric power plant “Adenauerbrücke” produces the largest share of renewable electricity in Nuremberg. Biomass is largely used for private heating. The new biomass cogeneration plant of the local power supplier N-ERGIE AG will produce 37,000 MWh of electricity and 82,000 MWh of district heating. Regional biomass will reduce CO<sub>2</sub> emissions by 28,000 tons. Since 2003, the sewage treatment plant has used sewage gas for generating electricity and heating in a cogeneration unit. This measure avoids 5,500 tons of CO<sub>2</sub> per year.

### 1.2.2. Energy supply - District heating

Climate protection is an important task for the future, therefore Nuremberg's municipal administration has been active in this field since the 1990s. In the last five to ten years, a number of measures have been implemented to reduce CO<sub>2</sub> emissions: The most important measure

relates to power generation: between 2004 and 2006, the power plant in Nürnberg-Sandreuth changed its main energy carrier from coal to more environmentally-friendly natural gas.

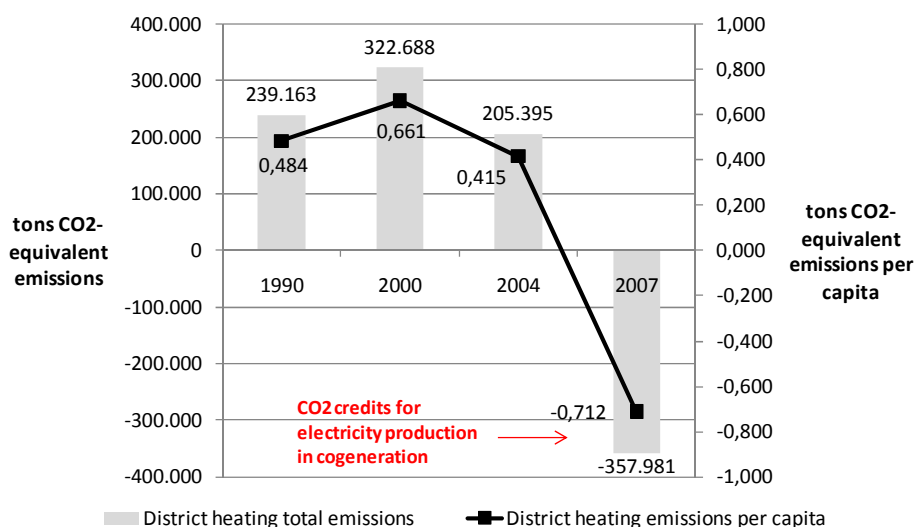
**Figure 8: District heating production in cogeneration: local power plant Nuremberg-Sandreuth - mix of fuels**



The energy-efficient combined cycle gas & steam technology supplies Nuremberg with combined-heat-power (CHP) electricity and district heating. The power plant belongs to the local power supplier N-ERGIE Aktiengesellschaft. The City of Nuremberg holds a 60% share of this company through "Stadtwerke Nürnberg" and can thus influence its activities.

*The generation of district heating and electricity in a cogeneration system improves the CO<sub>2</sub> balance. This efficient electricity production has the advantage that its CO<sub>2</sub> emissions become negative, because electricity generation in coal power plants (German electricity generation mix) is avoided.*

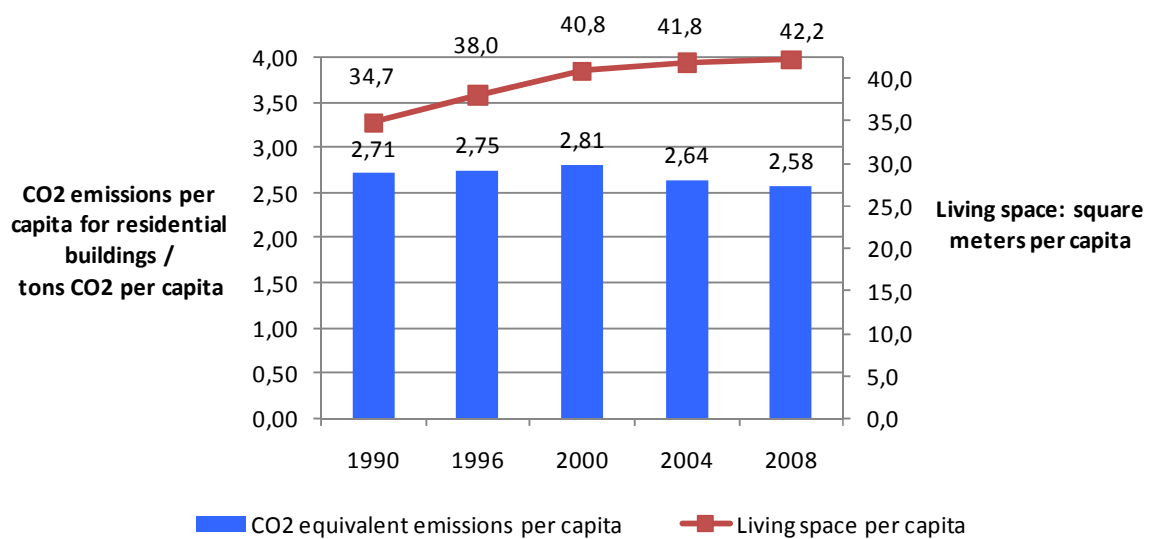
**Figure 9: District heating: CO<sub>2</sub> emissions total and CO<sub>2</sub> emissions per capita**



### 1.2.3. Existing and new buildings: refurbishment of buildings

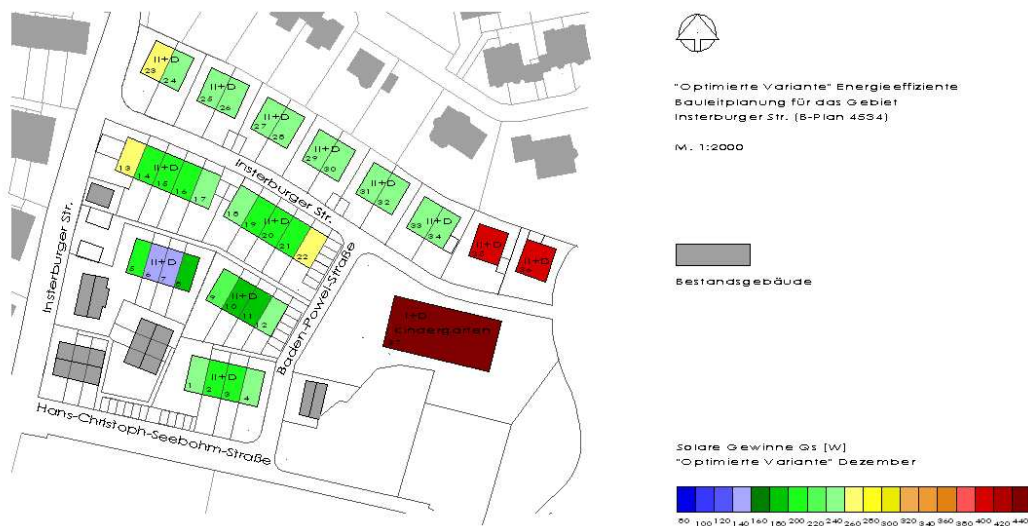
The second significant measure leading to considerable reduction in CO<sub>2</sub> emissions was refurbishment of buildings (insulation and improvements to the efficiency of heating systems). Most buildings in Nuremberg were constructed before 1977. At that time, there were no regulations guaranteeing an energy-efficient building standard. N-ERGIE Aktiengesellschaft has allocated 850,000 Euros p.a. towards building refurbishment as part of the CO<sub>2</sub> reduction programme. Refurbishment of existing buildings and energy-efficient construction of new buildings are two successful measures aiming at further reducing future CO<sub>2</sub> emissions.

**Figure 10: Residential buildings in Nuremberg. Energy efficiency in building refurbishment and new buildings: CO<sub>2</sub> emissions and living space per capita**



Projects in **energy efficient landscape-planning** have demonstrated that with good planning, energy consumption for buildings can be reduced and valuable areas may be saved for urban development.

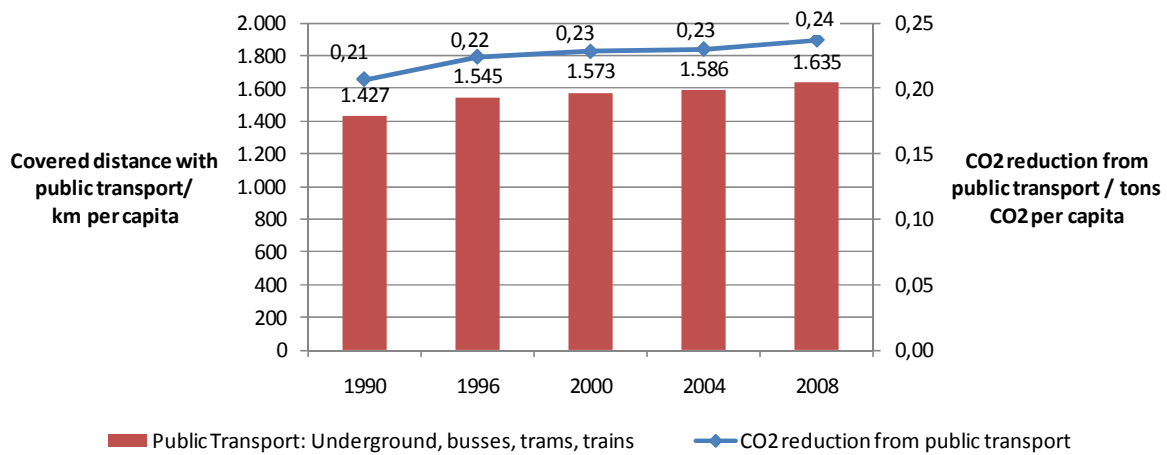
**Figure 11: Energy-efficient landscape planning in Nuremberg: Visualisation of solar gains in the residential area Nuremberg-Katzwang, Insterburger Straße**



### 1.2.4. Transport

The environmentally-friendly implementation of measures in the transport sector remains a challenge for the future. Private transport by car is responsible for most emissions. Between 1990 and 2004, traffic on the inner city circle was reduced by 12%, because more people used public transport. But private transport from the suburbs to the city centre increased by 9%. *The distance covered by public transport per capita increased by 14% between 1990 and 2008. Nuremberg's public transport system comprises three underground lines, several suburban train lines, as well as busses and trams. A lot of the busses run by VAG, the local public transport company, were converted from diesel technology to dedicated gas vehicles.*

**Figure 12: CO<sub>2</sub> reduction from public transport**



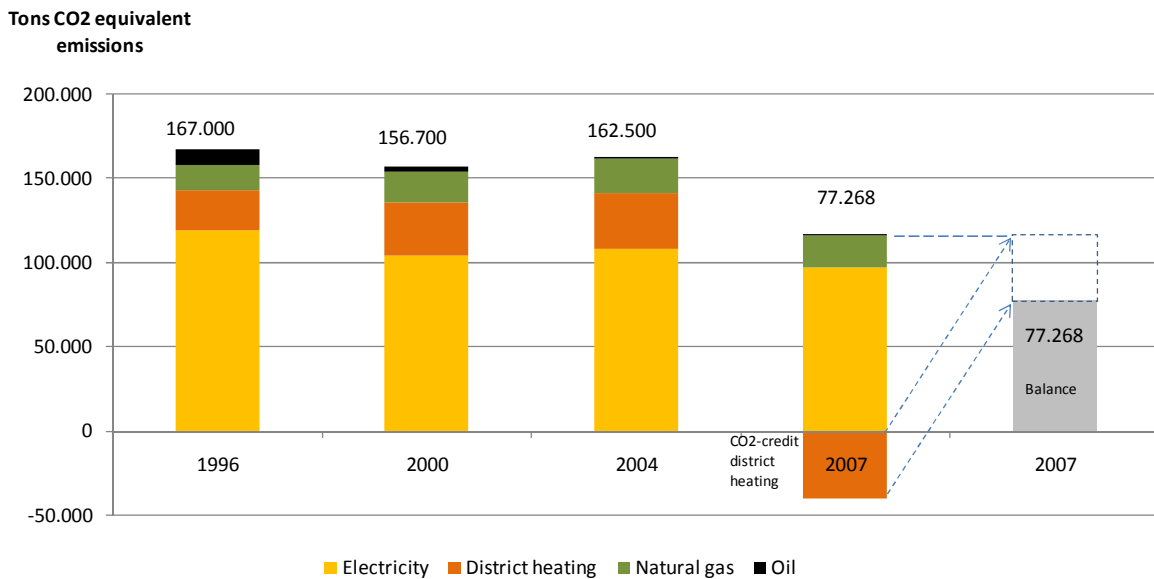
A new underground line U 3 was constructed between Maxfeld and Gustav-Adolf-Straße, to improve public transport. Cycling was also encouraged by the development of new cycle-paths.

*The City of Nuremberg's new initiative, "Solar powered velotaxi" offers environmentally-friendly mobility in Nuremberg. The project started with five velotaxis in April 2010. A velotaxi is a bicycle taxi with solar and electric propulsion assistance, which gets its additional power from 100% renewable energy.*

### 1.2.5. Municipal Energy Management (KEM)

*Municipal Energy Management (KEM) has the function of documenting and evaluating the energy consumption of all municipal buildings. Between 2000 (156,700 t of CO<sub>2</sub>) and 2007 (77,268 t of CO<sub>2</sub>), CO<sub>2</sub> emissions were reduced by 50%. Since 2008, all municipal buildings have used green electricity.*

**Figure 13: Municipal Energy Management: CO<sub>2</sub> reduction in municipal real estate**



The CO<sub>2</sub> reductions in municipal buildings are due to several measures:

- Reduction of final energy consumption due to building refurbishment
- Use of environmentally-friendly district heating produced in cogeneration plant
- Replacing heating oil by natural gas and district heating
- Employee training resulting in more environmentally conscious behaviour

#### 1.2.6. The department for public procurement of products

The department for public procurement of products and services orders only energy-efficient lamps and refrigerators. Since 2008, green electricity has been procured for all municipal buildings. In the context of the local Agenda 21, the City of Nuremberg established a working group “Energy”. Working with citizens and stakeholders, it provides information and facilitates cooperation in the fields of energy-efficiency and renewables.

#### 1.2.7. Industry

Nuremberg's economic structure changed from traditional heavy industry to service and light industry. Many industrial enterprises converted their energy consumption from heating oil to more environmentally-friendly natural gas or district heating. In 2009, the City of Nuremberg commissioned an energy advice company, ENERGIRegion GmbH, to do a “branch energy analysis” for the economic area of Nuremberg. This study will lead to further improvement in efficiency in the industrial sector. Energy consultation with participating business enterprises will start in 2010.

#### 1.2.8. Land-use change

Conversion areas of the national railway company, Deutsche Bahn AG, were especially developed for housing. The former US Army Merrell-Barracks were refurbished. Since 1996, the Federal Office for Migration and Refugees with over 1,000 employees has been housed in this large building.

### **1.2.9. Agriculture, horticulture and forestry**

*Agricultural and horticultural areas account for 16.3% of the area of Nuremberg. The Knoblauchsland area in the northern part of Nuremberg provides fruit and vegetables grown in horticulture. The City of Nuremberg assists agricultural companies by providing information on sustainable energy consumption. In 2009, a horticultural company installed a new biomass heating plant to supply 40,000 square meters of greenhouses. Biomass replaced 2 million cubic metres of natural gas and reduced CO<sub>2</sub> emissions by 4,000 tons.*

*16.1% of Nuremberg's area are covered by forest. Regionally produced wood is used for private wood-burning stoves for heating and for biomass heating plants.*

### **1.2.10. Waste management: "Waste to Energy"**

*Every year, 230,000 tons of waste are brought to Nuremberg's waste incineration plant. The waste incineration plant supplies energy to the district heating plant in Nuremberg-Sandreuth. Waste thus replaces 80,000 tons of coal per year, reducing the CO<sub>2</sub>-balance by 120,000 tons of CO<sub>2</sub> emissions. The European Waste Framework Directive links recycling techniques for energy generation to the criterion of energy efficiency. For waste incineration plants, this coefficient has to be at least 0.60. With a coefficient of 0.62 in operation, the Nuremberg plant fulfils this criterion and must be seen as a recycling plant with high energy efficiency. This is due to the supply of district heating to the municipal district heating network.*

### **1.2.11. Education and information**

*The energy advice centre, "Energie-Technologisches Zentrum Nürnberg" (etz Nuremberg) offers advice on energy efficiency to companies, local authorities and individual citizens. An educational project KEiM (Keep energy in mind) aims at improving energy-conscious behaviour for students in Nuremberg schools. The annual event "Altbautage Mittelfranken" provides information about energy improvement after refurbishment of existing buildings.*

*1c. Describe the short and long term objectives for reduction of GHG emissions, including measures adopted, but not yet implemented, and budgets for future measures already adopted (max. 1,000 words).*

## **1.3. Short and long term objectives and measures for reduction of GHG emissions**

### **1.3.1. Status of plans and targets**

The City of Nuremberg's policy objectives for climate protection result from the following premises

- national climate protection policies of the Federal Government
- municipal decisions
- membership in the Covenant of Mayors (20% reduction of CO<sub>2</sub> emissions by 2020, via 20% increase of energy efficiency and 20% increase of regenerative energy by the year 2020).

The City of Nuremberg set itself an ambitious goal: a 40 % reduction of CO<sub>2</sub> between 1990 and 2020. *The first step, a 29.4% reduction of CO<sub>2</sub> between 1990 and 2008, has already been implemented.* Increasing energy prices and negative environmental effects require many measures to improve the situation in the future.

### **1.3.2. Measures included in plan**

### **Short term Measures:**

**Planning:** A plan for energy use in Nuremberg will be drawn up in 2010/2011, outlining a strategy for the future in the fields of both energy production and consumption.

#### **Energy efficiency**

Information for private households and industry concerning energy-efficient lighting, heating, use of electricity and combined-heat-power (CHP) will reduce final energy consumption and CO<sub>2</sub> emissions. The competence initiative ENERGIEregion Nuremberg has the task of improving energy efficiency in the Nuremberg Metropolitan Region. It is a subsidiary of the city of Nuremberg. The Energy Technology Center Nuremberg is an established energy advice in Nuremberg, which provides a cooperation platform for future energy efficiency projects.

#### **Building refurbishment**

The advisory board of the Nuremberg Building Department will facilitate increased building refurbishment by private owners to an energy efficient standard. An annual event on building refurbishment, the "Altbautage Mittelfranken", demonstrates efficient ways of modernising buildings. This event is especially aimed at private owners.

#### **Transport**

Cycling and walking are supported by better bicycle paths and footways. Extension of the new initiative "Velotaxi" (bicycle-taxi) as a way of sustainable transport. Improvement of public transport will reduce private transport by better timing of the timetables.

### **Long term measures:**

#### **Energy efficiency**

The extension of district heating seems meaningful, for the cogeneration based on natural gas in the power plant Nürnberg-Sandreuth is more environmentally-friendly than other separate ways of producing electricity and heat. CHP and tri-generation are the two measures providing electricity, heat and cooling in an efficient manner, especially for industry, municipal buildings and other large buildings, such as the trade fair & exhibition centre NürnbergMesse, hospitals and the airport. Energy efficient refurbishment of commercial, municipal and residential properties is an important measure, because the existing building stock by far exceeds newly-built properties.

#### **Building refurbishment**

The Nuremberg Housing Association (WBG) is actively refurbishing its buildings to energy-efficient standards.

#### **Transport**

Transport Extension of the underground line U 3 to Gebersdorf will improve public transport in the south-west of the city. The installation of new suburban railways to Ansbach, Erlangen and Neumarkt will shift transport from cars to environmentally-friendly public transport. The use of gas-dedicated cars by the municipality, and commercial and private owners should be increased.

#### **Renewables**

The use of biomass for heating is an important measure for the future to reduce CO<sub>2</sub> emissions from private households and industry. Cogeneration (CHP) based on biomass will also decrease CO<sub>2</sub> emissions. Photovoltaics and solar-thermal energy on municipal, commercial and private roofs can increase production of renewable electricity and heat.

### **1.3.3. Budgets approved**

The following lists some concrete examples for major investment by the City of Nuremberg or its subsidiaries made in climate protection:

CO <sub>2</sub> reduction programme	850,000 € p.a.
N-ERGIE (local energy supplier) Pellet Power Station Project Nuremberg	35.90 million € (investment)
Bio Gas Plant Project (Gollhofen/Ippenheim)	14.5 million €

#### 1.3.4. The wbg Nuremberg GmbH Housing Association – a municipal example for energy-efficient objectives and measures

The wbg Nuremberg GmbH is the largest real estate company linked to a municipality in the Nuremberg Metropolitan Region.

The portfolio of this subsidiary company of the City of Nuremberg comprises about 18,000 company-owned residential properties let for rent, with an overall net dwelling area of about 1.1 million square metres, which corresponds to about 10 per cent of all residential properties in Nuremberg. For some years, the wbg Nuremberg GmbH has been one of the leading players in refurbishment of existing properties for energy-saving, and has realised projects such as the first 3-litre-house in Bavaria at Jean-Paul-Platz, and has implemented large-scale refurbishment projects, such as that of the St. Johannis housing estate with about 1,000 residential units.

In the past 20 years, the wbg has invested around 230 million € in modernising and refurbishing their existing properties. Today, about 7,500 of its overall 18,000 residential units have been refurbished for energy-saving. Since 2008, the wbg has held "energy performance certificates" for all its residential buildings. With an average final energy use of about 12.5 litres of heating oil per square metre per year, the wbg is one of Germany's top "eco-efficient" real estate companies. For comparison: in 1990 the Federal German average in 1990 was at about 19 litres per square metre per year. The company has the vision of achieving an average end use of 7 litres per square metre per year by 2015, reducing CO<sub>2</sub> emission by 60 %.

In addition to many smaller modernisation projects, the following measures have attracted attention well beyond Nuremberg's city boundaries in past years:

**Table 1: Investment of WBG**

Year	Housing Estate	Measure	Standard 1 litre = 10 kWh/m <sup>2</sup>	no of residential units	Investment (mio €)
2000- 2004	St. Johannis	Modernisation of listed buildings	7 litre	about 1000 units	36.1
2000- 2006	Schweinau	Ecol-refurbishment and new construction	5 litre	about 200 units	5.8
2002	Jean-Paul-Platz	EU-Goal-2 Project modernisation	3 litre	6 units	0.5
2004	Ingolstädter Straße	DENA I-Project	4 litre	24 units	1.6
2005	Bernadottestraße 42-48	DENA II-Project low energy house	3 litre	24 units	1.8
2009	Kollwitzstraße 1- 17	DENA III-Project EnEV-50 + passive house	3 litre	72 units	6.1
since 1998	Nordostbahnhof	Modernisation / conversion	7 litre	about 900 units	60.0

since 2006	Mögeldorf	Modernisation	7 litre	500 units	about 20-25
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### Photovoltaics on wbg Nuremberg GmbH Housing Association

In addition, the wbg has installed photovoltaic systems on many of its roofs. Today, there are 54 systems with an overall collector area of 9,600 square metres, generating an annual energy input of about 1 million kWh/year, corresponding to the supply to 330 households.

### District Heating

Switching residential properties to district heating has resulted in a further saving of CO<sub>2</sub> emissions; so far, about two thirds of the wbg's residential properties are connected to district heating.

*1d. Describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation. (max. 600 words)*

#### 1.4. Documentation

Nuremberg's contribution to the reduction of CO<sub>2</sub> emissions is documented in the following reports (in German):

- Climate Protection Report 1999: Klimaschutzbericht 1999 Stadt Nürnberg
- Climate Protection Report 2006: Klimaschutzbericht 2006 Stadt Nürnberg  
<http://www.umwelt.nuernberg.de/klimaschutznbhg.htm>
- Climate Protection Schedule 2010/2020: Klimaschutzfahrplan 2010/2020 Stadt Nürnberg  
[http://www.umwelt.nuernberg.de/download/info/klima/kimaschutzfahrplan\\_stadt\\_nuernberg2010\\_2020.pdf](http://www.umwelt.nuernberg.de/download/info/klima/kimaschutzfahrplan_stadt_nuernberg2010_2020.pdf)
- Nuremberg Sustainability Report (2008): Nürnberg nachhaltig (2008)  
<http://www.nuernberg.de/imperia/md/umweltreferat/dokumente/nachhaltigkeitsbericht.pdf>
- Annual Energy Reports by Municipal Energy Management: Hochbauamt, Kommunales Energiemanagement (KEM): Energiebericht  
<http://www.nuernberg.de/imperia/md/baureferat/dokumente/kem/energiebericht2008.pdf>
- Business Report of the local power supplier N-ERGIE Aktiengesellschaft: Geschäftsbericht 2008  
<http://www.nuernberg.de/imperia/md/umweltreferat/dokumente/nachhaltigkeitsbericht.pdf>
- Updated Environmental Statement 2008 - power plant Nürnberg-Sandreuth of local power supplier N-ERGIE Aktiengesellschaft  
<http://www.n-ergie.de/N-ERGIE/dokumente/umwelterklaerung2008.pdf>
- Report for the Covenant of Mayors: Energy and Emission Inventory 1990 and 2004
- Statistics of the City of Nuremberg: <http://www.statistik.nuernberg.de/>

1e. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.

#### 1.5. Disadvantages resulting from historical and geographical factors

- Urban development was influenced by the city's foundation in the Middle Ages, and industrialisation in the 19th century. During WWII, many buildings in the city centre were destroyed. They were reconstructed after 1945. The fact that many buildings are listed as historical buildings has repercussions for building refurbishment.
- Nuremberg is the commercial centre of Northern Bavaria and the largest city in the European Metropolitan Region of Nuremberg. This fact determines the amount of traffic from other cities and regions to Nuremberg. The city is an important junction for road, train and air traffic. Nuremberg's position in Central Europe also affects traffic from Eastern Europe, especially from the Czech Republic.
- Nuremberg's climate is moderate. Summers are usually not very hot, but winters can be cold, so that a lot of energy is needed for heating.
- The city area is limited. It is therefore not possible to install renewable energy sources which require a large amount of space. Biogas could only be produced in agricultural areas which are situated in the north of the city (Knoblauchland). There is, however, a conflict with food production. Geographical conditions therefore allow only a limited use of renewables. Hydroelectric power is used in two power plants on the river Pegnitz. There are no plans for further hydroelectric power plants. There are no geothermal power plants, because they would not be efficient in these geographical conditions. The use of wind power is not possible either.
- *Nuremberg uses the German electricity generation mix (> 600 g / kWh electricity). The major share of German electricity generation is based on fossil fuels, such as coal and natural gas. This results in higher CO<sub>2</sub> emissions, as compared to other cities with a national electricity generation mix based on nuclear power and renewables.*

## 2. Local Transport

2a. Describe the present situation and developments over the past five to ten years regarding (max. 1,000 words):

1. Length of designated cycle lanes in relation to total number of inhabitants in the city;
2. Share of population living within 300 metres from a hourly (or more frequent) public transport service;
3. Proportion of all journeys under 5 km by private car;
4. Proportion of public transport classed/classified as low emission.

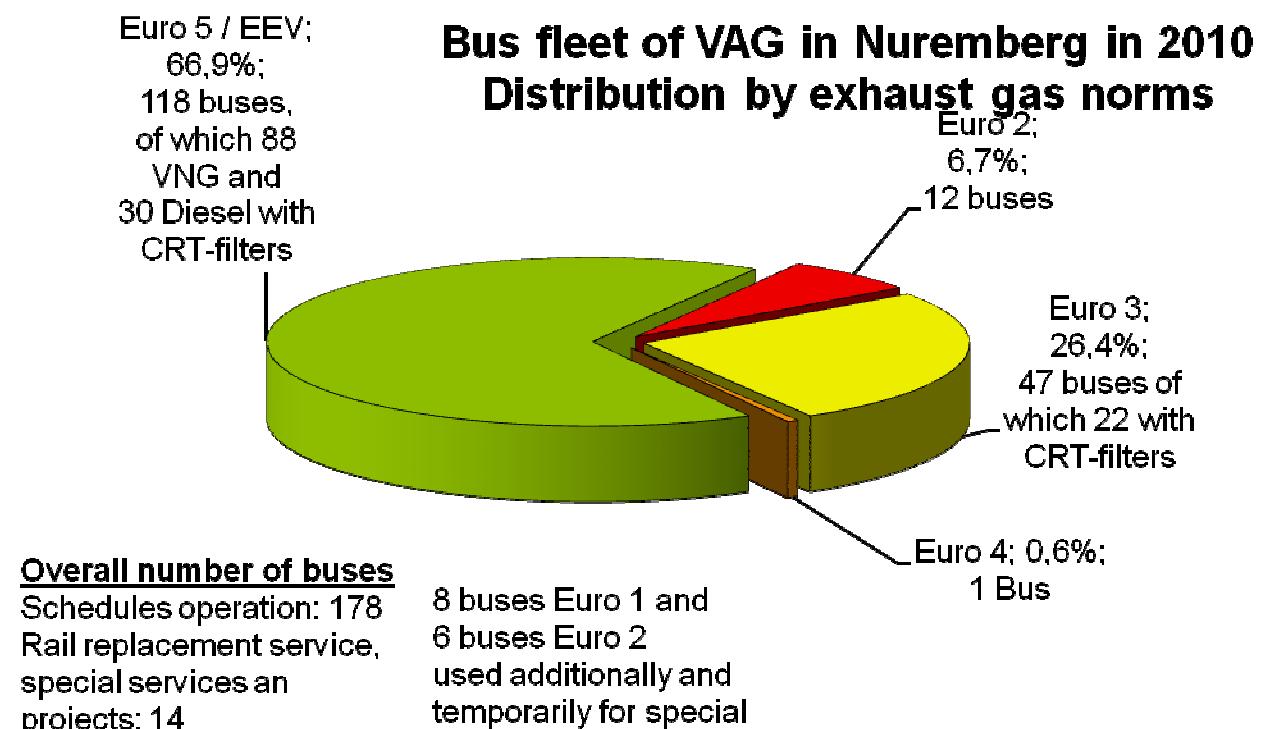
To 2a-1: The length of the network of designated cycle lanes is about 300 kilometres, for a total number of inhabitants of the City of Nuremberg of approximately 503,000.

To 2a-2: The number of citizens living within a comfortable access radius of the underground system: about 170,000; of the tram system: around 185,000; of the bus service: around 94,000, and of the suburban train service: about 51,000.

To 2a-3: Half of all journeys by private car are under 5 km. More than half the journeys made by Nuremberg citizens are shorter than 5 kilometres (2009: 64%). About a third of those journeys (2009: 34%) are made by private car.

To 2a-4: In 2009, an overall number of 179 busses were used in the regular operation of Nuremberg's public transport authority, the VAG (Verkehrs-Aktien-Gesellschaft). 16 new natural gas and diesel busses were acquired; they completely fulfil the latest European emissions norm Euro 5, and in addition also comply with the even more demanding EEV norm (Enhanced Environmentally Friendly Vehicle).

The following chart shows that all VAG busses comply with the EURO 5/EEV norm and thus fulfil the low emission criterion. Thus, 118 busses - or 66.9 % of the bus fleet - in regular scheduled bus operation fulfil this criterion.



For nearly two decades, the VAG has continually tested new engine and exhaust gas technologies, in closest co-operation with industry, from particle filter systems to natural gas motors, hydrogen motors right through to diesel-electrical drives. The most recent example are two new articulated busses which will be in operation from the second half of 2010, powered by a EURO-6 engine; thus their engines already comply with the new exhaust gas norm which only comes into force in 2014.

This long-term co-operation between VAG and industry has born fruit for both sides: industry was provided with valuable results for further development right through to series production readiness, and VAG via these tests has always stayed in close touch with the latest developments and could assess before ordering vehicles what benefits the new technologies entail and how much effort has to be expended for maintenance and repair of the vehicles.

Various specialist departments are currently analysing the future of electro-mobility or developing strategies in this field. Results remain to be seen.

*2b. Describe the measures implemented over the past five to ten years aimed at reducing the total transport volume and encouraging a shift away from transport by car (max. 1,000 words).*

Since the early 1970s, the historic city centre has been gradually pedestrianised, in particular in an attempt to address the issue of worsening air quality. Traffic volumes on the other streets grew by only 20–29 % of the traffic originally on the then closed roads. Forecasts predicted that the pedestrianisation of Rathausplatz/Theresienstrasse Square (thereby closing a road which carried on average 25 000 cars/16 hours) would result in traffic chaos in surrounding streets. This chaos did not materialise. After one year, traffic monitoring revealed that overall traffic flow in the historic city was reduced by up to 25 %, and the increase in traffic in adjacent streets proved very limited, ranging between 4 and 19 %, well below experts' forecasts. Significant improvements in air quality have been achieved. The following measures are described in detail in the annotations of the City of Nuremberg's Clean Air Plan (see attachment in Chapter 6 Air Quality) and its update:

#### 1. Topic Environmental Network

- o optimising local public transport (ÖPNV)
- o priority for local public transport over private car transport – adapted traffic signalling, additional bus lanes
- o further extension of designated cycle lanes and of the footpath network
- o establishing "urban railways" for extensive development of local public transport
- o further extension of suburban railway network for commuters travelling into Nuremberg

#### 2. Topic Traffic Guidance

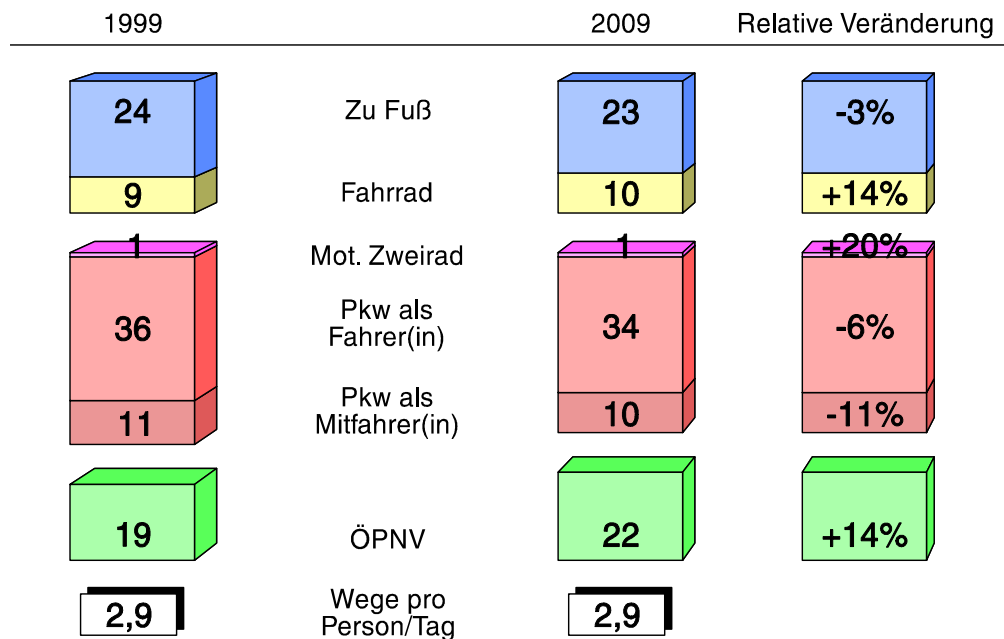
- o increased car park space management
- o further extension of dynamic traffic and parking guidance systems
- o reduction of goods traffic due to shift of the main customs office and establishing the container railway terminal at Nuremberg State Harbour
- o guidance of HGV traffic

- o developing strategies for establishing intelligent logistics concepts
- o planning and building measures at special "traffic hot spots"

## VERHALTENSÄNDERUNGEN



- Verkehrsmittelwahl Nürnberg -



### Charter on Sustainable Development

In 2004, VAG signed a Charter on Sustainable Development whose basic goal is ecologically sound, socially fair and economically feasible mobility; this demand is to be taken into account in any decisions taken by the company.

This charter was proclaimed in 2003 by the UITP, the International Association of Public Transport, comprising 2500 companies in over 80 states.

The sustainability approach is implemented in the vehicle fleet and beyond, for example repeatedly in building technology, such as in the tram maintenance depot and its photovoltaics system with 90 kWpeak. When operation started in 2003, it was Germany's largest photovoltaic system of its kind.

### "Mobility for All"

One of VAG's fundamental concerns is living up to this high standard.

In 2009, around 97 per cent of the city area, 99 per cent of the inhabitants and 97 per cent of all jobs in Nuremberg were accessible by public transport; this is achieved with a close network of three underground lines (overall track length of 34 km), 6 tram lines (36 km) and 70 bus lines as well as 20 night bus lines (457 km during the day, and 382 km in night operation).

In 2003, the European Conference of Ministers of Transport honoured the VAG's then three decades of commitment to the needs of people with disabilities with the first prize, the "Access and Inclusion Award for Transport Services and Infrastructure".

### The VAG Service Promise

It was introduced in 2009 on a voluntary basis and comprises the criteria of punctuality, good accessibility, safe and clean vehicles, barrier free access, and continuous information – a fair offer for new customers, too.

*2c. Describe planned long and short term measures in relation to (max. 1,000 words):*

- 1. Reduction of overall demand for transport;*
- 2. Reduction of individual motorised transport;*
- 3. Promotion of less environmentally damaging modes of transport.*

*The short term measures should include description of measures adopted, but not yet implemented, and budgets for future measures already adopted.*

*With regard to long term measures, the description should include planned measures yet to be sanctioned politically.*

In order to safeguard sustainable mobility, which is indispensable for guaranteeing a city's basic functions, the City Council adopted a catalogue of traffic political objectives and related measures. The basic aim is to shift as much car travel as possible to the so-called "Umweltverbund" (Environmental Network), comprising travel by local public transport, bicycle and on foot. For this purpose, a variety of traffic planning measures need to be implemented, most of them long-term. Examples of measures required include development of the local public transport network, car park space management, extension of the network of cycle paths, and the traffic guidance system of Messe/Stadion/ARENA, as well as measures implemented in the historic centre of the Old Town. All in all, Nuremberg is well placed, and for some measures, such as traffic guidance systems, the extension of the pedestrian precincts and residents' parking policies, is already in the top tier of major German cities. Against the backdrop of accelerated climate change and stricter legal limits on various emissions in cities, Nuremberg's main objective of shifting as much individual traffic to the Environmental Network has become more topical than ever.

Short to medium term measures for bicycle travel: More and more Nuremberg citizens use their bicycle for daily travel to work or to school, to go shopping or in their leisure time. Thus the share of cycle traffic as a proportion of overall traffic doubled between 1985 and 2005. For journeys to work and educational institutions, and for shopping, the share increased to 13%, and for leisure travel to 23%. It is known that 29% of all households in Nuremberg do not own a car, which means that the share of bicycle traffic could be increased further. Traffic planning takes this into account by consistently promoting cycle travel as a permanent transport policy. The City of Nuremberg has the objective of achieving a bicycle share of 20% within the city. By purposefully extending the network of cycle-paths and footpaths, as well as establishing the corresponding infrastructure, the City intends to promote the use of an intelligent transport mix. Developing the cycle-friendly infrastructure (bike parking facilities, signposting etc.), will make new bicycle links to the surrounding villages and towns increasingly attractive.

A comprehensive cycling campaign ("Nürnberg steigt auf" – Nuremberg gets on its bike) is intended to help achieve the objectives and comprises the following measures:

#### Signposting Strategy

Currently, there are about 135 kilometres of signposted main cycle routes within the Nuremberg city area. The signposting strategy adopted by the City Council provides for signposting a further 150 kilometres of cycle routes linking city districts.

#### Cyclists' City Map:

In June 2008, the fifth amended edition of the Cyclists' City Map was published. The number of

copies printed was increased from 6,000 to 20,000 copies. The new Cyclists' Map is intended to give strong support to the trend towards more and more citizens using their bicycle for everyday journeys. After all, apart from walking, cycling is the mode of transport which is most conducive to protecting the environment and the city. In addition, about half of all car journeys are shorter than 5 kilometres.

#### Bike parking facilities

Currently, in the Old Town alone, there are about 1,300 publicly accessible bike parking racks. In early 2008, a bike parking strategy was adopted which provides for around 330 additional roofed bike stands in the Old Town. Bike parking facilities, roofed if possible (Bike&Ride) are provided at all major public transport stops, and will also be provided in further extension plans for the public transport network.

#### Long-Distance Links Between Green Spaces

Attractive cycle paths and footpaths, linking a whole network of green spaces, lead through the inner city and towards leisure areas in the vicinity of the city.

The concept of "übergeordnete Freiraumverbindungen" (long-distance links between green spaces) was adopted in the land utilisation plan and integrated landscape plan for the City of Nuremberg. In 2008, the north-south axis was introduced, further routes are being planned.

#### Extension of cycle path network

The budget allocated to measures for extending cycle travel were significantly increased to 4.5 million Euros in the medium term investment plan for 2009-2014 (compared to 1.09 million Euros for 2003-2006).

#### Public bicycle hire system

The City of Nuremberg was chosen in a competition for a pilot project "Innovative Public Bicycle Hire Systems – New Mobility in the Cities". The competition was organised by the Federal Ministry of Transport, Building and Urban Affairs. Public bicycle hire systems are intended to promote cycle travel and at the same time attract new public transport users.

#### PR work

In order to promote an intelligent transport mix, the image of cycling has been addressed by numerous activities and projects, such as "Mobile Citizens' Meetings", "City Council Cycling", "Nuremberg – Intelligent Mobility", "One into Three in Bicycle Path Construction", "Bike to Work and "VIPs on Bikes".

For the current year of 2010, VAG have ordered 8 solo busses from Mercedes and five articulated busses from MAN; 2 of the articulated busses will be furnished with trial EURO 6 engines. When commissioning these 13 new vehicles, VAG had environmental compatibility and economic viability in mind.

All above busses have EEV engines. The articulated busses have PURE DIESEL® technology as well as the closed, electronically controlled particle filter system CRTec®.

#### Medium to long-term public transport measures

The hierarchy of the various modes of transport (bus, tram, urban railway, underground and suburban railway) will be determined by the public transport development plan with forecasts which run until 2025. The central task of the public transport development plan is to devise a public transport network which will be able to cope with future traffic volumes, and achieve the most favourable modal shift towards public transport, whilst taking into account economic considerations. In April 2008, engineering consultants were commissioned to produce the public transport development plan. An expert working group has been appointed to help prepare the plan, as well as a project advisory council comprising representatives from the City Council, from

advocacy groups and associations and other stakeholders. The public transport development is to be finalised in 2010.

*2d. Describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation. (Documentation should not be forwarded in this phase) (max. 600 words).*

We are currently building up a sustainability monitoring system which will contain documentation on the issues mentioned.

Since 1998, the VAG has provided dialogue marketing ("individualised marketing") to about 50,000 inhabitants, since 2003 to about 100,000 inhabitants per year. This is intended as a direct promotion of environmentally-friendly public local transport. The following effects (measured before/after) could be documented:

- about 20 additional journeys on public local transport per person per year
- about 13% more public transport journeys
- about 80 million km in private cars less
- CO<sub>2</sub> reduction by 14,400 tons
- saved external cost of about 6 million Euros

In addition a variety of marketing measures helped promote public local transport. This method resulted in a decreased percentage of journeys not made with public local transport because people were uninformed - from 14% (1989) to 13% (1998) and 9% (2009).

*2e. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.*

### 3. Green Urban Areas

3a. Provide the percentage of green and water areas (public and private) in relation to the overall area, including trends over the past five to ten years.

Add a map indicating:

- the proportion of area located within the inner city / on city boundaries;
- the distribution across the city;
- size of areas;
- fragmentation;

(max. 500 words plus map).

The city-owned and city-operated company "Service Öffentlicher Raum" (SÖR = Service Public Domain, roughly equivalent to a Parks Department) looks after public park areas within the city boundaries. Additionally, there are other general "green areas", e.g. graveyards, open-air swimming pools with surrounding grounds, grounds belonging to schools and nursery schools etc (about 150 ha), grounds belonging to other municipal properties, municipal forests, forests owned by the Bavarian State within the city boundaries, all private gardens, as well as roadside vegetation (about 250 ha).

#### Public Parks, Playgrounds, Allotments

<u>1996</u>	<u>2004</u>	<u>2009</u>
417 ha	565 ha	619 ha
2.2 %	3.0 %	3.3 % of the overall city area (18,640 ha)

On 25.01.2006, Nuremberg City Council adopted the current land development plan with integrated landscape plan. This legally ensured planning reliability for all municipal green areas. The following framework data resulted for Nuremberg:

231 green and recreational areas (565 ha)

173 playgrounds (54 ha)

Allotments (336 ha)

Green areas along streets (214 ha)

Forest (2,998 ha)

Street trees (only partially mapped) 26,049 trees

A map showing the contours of the parks is appended as a city-wide overview (in two parts) in pdf-format.

Files:

- [Grünanlagen\\_Nord.jpg](#)
- [Grünanlagen\\_Süd.jpg](#)

3b. Describe the present situation and the development over the past five to ten years in relation to the percentage of citizens living within 300 m of public green urban areas, the total number of square metres of green urban areas per

*capita and public green urban areas per capita. Describe any additional development of other green elements such as number of trees outside designated green areas, green fences and green roofing etc. (max. 1,000 words).*

## Public Parks

Data technology does not currently allow the calculation of the percentage of citizens living within a certain distance of a public park. However, the distribution of public parks within the city is such that the majority of the population is within 300 metres of a public park. For Nuremberg's 502,828 inhabitants (July 2009), the figures quoted in 3a result in an overall green public park area of 12.3 square metres per inhabitant. If one were to include all green areas maintained by SÖR (see 3 a: 1,019 ha), this figure would be 20.3 square metres of green area per inhabitant. All other additional green areas (listed in 3a) are not taken into account by SÖR. They would, however, considerably increase the green public area per inhabitant.

## Trees in Nuremberg

Since 2004, all street trees and tree root zones and their vegetation have been mapped in the new tree land register. It is hoped that gradually, all spatially distributed trees will also be registered.

In 2007, 24,193 street trees were listed in the register. In addition, 226 trees were newly planted in 2006. For reasons of traffic safety, 132 trees were felled in 2006 (89 in 2005). Thus with an overall number 24,377 street trees (on 28.02.2007) the number of street trees increased by 94, compared to the previous year (24,283 trees in 2006). In 2005, there was private sponsorship (an "adopt a tree" programme) for 484 trees, as compared to 460 in 2006. This demonstrates the great commitment Nuremberg citizens show for their city trees. In the future, the spectrum of tree species will need to be adapted to urban and climate changes.

*3c. Describe any measures implemented over the past five to ten years aimed at increasing the size and quality of green urban areas (max. 1,000 words).*

The Green Campaign: a comprehensive portfolio of projects within the context of the EU Objective 2 Funding for Nuremberg 2000 – 2006/2009

In 1999, the European Council created the "EU Objective 2 Funding Programme" which benefited the southern districts of Nuremberg, as a designated core programme funding area. 50% of the funding came from the European Regional Development Fund (ERDF), and 20% from public funding programmes of the Free State of Bavaria. Thus, only 30% of the cost had to be born by the City of Nuremberg.

The following objectives were implemented in the course of the campaign "Grün in die Südstadt" [Green for the Southern Districts]:

- improved quality of open spaces to encourage public use
- improvement of residential environment
- creating spaces which are more attractive for children and young people
- friendly, pleasant environment for resident enterprises and their employees
- creating a high-quality "green network" consisting of public parks, playgrounds and streets with vegetation.

"Grün in die Südstadt" [Green for the Southern Districts] was initiated as the main outcome of the Conference for the Future I held in 2000, as a co-operative partnership between private and public institutions. As a further result of this conference, committed citizens established the volunteer project group "Grüne Bänder" [Green Ribbons]. This project group, together with representatives from the Town Planning Department, developed a concept for green and free areas for the entire southern part of Nuremberg. This served as the basis for the Town Planning Department and the city-owned and city-operated company SÖR, in co-operation with the project group, to develop an

overall plan for improved green and play areas to be provided in the southern districts, including green axes, which would be eligible for funding by the EU. This was then taken as the basis for the Green Campaign. The implementation of the Green Campaign for the southern districts has led to 26 projects, establishing or refurbishing public parks and playgrounds, five supplementary road construction projects as well as the re-landscaping of Aufseßplatz. Existing public parks were completely refurbished, and playground facilities were increased.

In the process, a new green area was created in Kanzlerstraße. Existing school grounds of the schools VS Herschelplatz, VS Sperberstraße and VS Gabelsberger Straße were re-designed as play grounds, likewise the school grounds of the Sigena-Gymnasium. In Neulichtenhof, a nature playground was established. The Green Campaign thus provided many new playing and leisure possibilities for children and young people in the southern districts – a demand voiced by the public during the first Conference for the Future. Because Nuremberg's southern districts are densely built up, there were only very few places where green and play areas could be developed. It was therefore only possible to create two new playgrounds.

Since 1955, following a City Council decision, all school grounds have to be made available as play areas after school hours. It was, however, only in 1992 that the City started providing the first school grounds with play equipment similar to that in public playgrounds. In the southern districts, four schools were equipped in such a way and made more attractive. 13 public playgrounds were completely refurbished. Play facilities have thus been significantly improved. Some play areas which were deserted in the past, are now used intensively after refurbishment and re-design. When playgrounds are planned, the City of Nuremberg places great emphasis on the involvement of children and young people. In the course of two "user involvements", they are given the opportunity of contributing their individual wishes and ideas. Children and young people can also do practical work as part of the building process. The last Children's Meeting (held every two years parallel to the Citizens' Meeting) expressed its satisfaction with the majority of the projects. The children praised the results and, unlike in earlier meetings of this kind, did not file any demands for the improvement of playgrounds.

The situation for public green areas was similar to that for the playgrounds. Here, too, significant improvements could be achieved by improving the quality of existing areas. Adults were, of course, just as much involved in the planning process, as the children in the design and planning of the playgrounds. Citizens' associations were particularly involved. A citizens' project group "Grüne Bänder" [Green Ribbons] was established, allowing the planners to get direct information about the wishes and needs of the residents. Now, the implementation is nearly finished, with remarkable results. Complaints concerning insufficient green spaces have decreased significantly. Some streets have also been improved by vegetation, serving as links to and between the green areas. The southern districts are now much more pleasant to live in.

In total, the individual measures implemented resulted in an overall construction expenditure of around 7.6 million Euros. The following measures were realised:

1 Refurbishment of Square (investment 2,627,300 €):

- Aufseßplatz – Competition (145,300 €)
- Aufseßplatz - Landscaping (2,482,000 €) 14 Green Public Parks with Play Areas Provided (Investment 4,088,200 €):
- Annapark – public park (85,200 €)
- Don-Bosco-Heim / sports grounds (136,800 €)
- Frankenstraße - playground (276,000 €)
- Hasenbuck – establishing public park with play area provided (495,200 €)
- Herschelplatz – public park with play area provided (201,900 €)
- Kanzlerstraße – purchase of grounds and establishing public park (62,300 €/ 153,300 €)
- Maffeiplatz – public park with play area provided (93,400 €)
- Nördlicher Melanchthonplatz – with playground (176,500 €)

- Pferdemarkt – overall construction measure public park (1,196,000 €)
  - Sperberschule – landscaping grounds (200,900 €)
  - Südtiroler Platz (587,700 €)
  - Voltastraße (172,200 €)
  - Pettenkofer- /Kochstraße (190,000 €)
  - Pettenkofer-/Listerstraße / park for ball games (60,800 €) 7 Playgrounds: (Investment 1,057,900 €): 4 School Playgrounds (Investment 711,400 €): 5 Street Conversions (Investment 5,891,200 €):
- In the context of maintenance work, in the past 3 three years
- two public parks were completely refurbished (Europaplatz – about 2,000 square metres; Jenaer Straße – about 6,500 square metres)
  - parts of the City Park were refurbished, about 5,000 square metres

In the course of the past 5 years, 1,500 trees have been planted along city streets.

### **Pegnitz Valley West Project**

In 1999-2001, in co-operation with the Free State of Bavaria / Water Board, essential building measures were carried out in the area of Pegnitz Valley West, with the goals:

- creating a near-natural and ecological course of the river, while safeguarding flood protection by:
- creating new U-shaped bends in the river (lengthening the course of the river by 238 metres),
- creating a structured riverbank and flattening the floodplain areas,
- creating shallow water zones, islands and backwaters as succession areas for improving the Nuremberg biotope network,
- improving the leisure and recreation value by supplementing and extending the network of cycle-paths and footpaths, by establishing a fitness trail, access to the water ("Experience water"), areas for "free playing" (football, handball, volleyball, street ball etc.), refurbishing and redesigning sports fields of the district sports facilities, redesigning playgrounds and creating a space where children can experience nature, as well as establishing an irrigation ditch fed by a waterwheel on the River Pegnitz.

These measures cost about 4.5 million Euros.

*3d. Describe planned long and short term measures for the establishment and management of green urban areas (public and privately owned) taking into consideration their function:*

- *people's quality of life and recreation;*
- *additional ecosystem services and functions such as, regulating water balance, balancing climate extremes, filtering air pollution, education etc.*

*(max. 1,000 words):*

*With regard to short term measures, the description should include measures adopted, but not yet implemented, and budgets for future measures already adopted.*

*With regard to long term measures, the description should include planned measures which are yet to be adopted politically.*

For further development of green areas, the consolidation and improvement of available green areas and parks is seen as the most important priority. This includes:

- measures for promoting use across the generations (e.g. movement trail for senior citizens, integrative playgrounds)
- restoring ditches and brooks to near-natural courses
- creating green axes providing access to nature areas around the city
- maintenance and support of typical regional nature locations (e.g. nutrient-poor sward, sandy areas)

Since Nuremberg is a densely built-up city and therefore only has very few opportunities for expanding green areas, the emphasis for future development of urban green spaces is mainly on the improvement of existing green areas. Those public green areas which have been secured in the municipal land development plan, but not yet developed, provide some potential for future development of urban green areas. It was most gratifying that the area for playgrounds was expanded by 5% between 2006 and 2008. Additional urban green areas could be generated in the context of the future development of the 47 conversion areas of the German Railway (key project in the Building Department). The land development plan shows six areas for this, subject to planning permission.

### **Pegnitz Valley East Project**

In analogy to the measures for "Pegnitz Valley West", there are plans to upgrade "Pegnitz Valley East" with about 4.2 ha of water and green areas, with the focus on "water world".

- "Feel – sense- experience" water,
- kiosk or cafeteria with toilet facilities,
- information tower with changing exhibitions on the topic "Water",
- outdoor units on the focal topics of "Technology and Water", as well as "Nature and Water".

Estimated cost for the implementation of these measures: about 3.5 million Euros

*3e. Describe how the above issues can be documented should your city be shortlisted to participate in the second phase of the evaluation.*

*(Documentation should not be forwarded in this phase) (max. 600 words)*

Currently, it is not possible (for technical reasons) to provide graphics displaying the green urban areas, distinguishing the green areas in relation to the city (e.g. inside or outside the Middle Ring Road). In 2010, technical improvements are to be made. Once this is achieved, classification and registration of green urban spaces will be implemented. The other data provided will be found retrieved from the existing files.

*3f. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.*

The historic Old Town with its narrow, winding alleys and its back yards, although historically extremely valuable, is unsuitable for green spaces. The same applies to the city districts in the north-west and south which were built during industrialisation in the 19th century and are also characterised by narrow streets and densely built-up areas. In these districts, all plots available for urban green areas have already been developed. There is only very limited potential for further development, if any.

## 4. Sustainable Land Use

4a. Describe the present situation and developments over the past five to ten years in relation to (max. 1,000 words):

1. percentage of green areas, water areas, residential areas, industrial / economic areas, mixed areas, brownfields (this will provide important background information on the character of the city and is not an evaluation criterion in itself);
2. soil sealing (m<sup>2</sup>) per inhabitant;
3. new developments: proportion of on brownfield sites, densification in the inner-city or urban cores, on greenfields;
4. population density in built-up areas in inhabitant / hectare (city area minus green and water areas);
5. population density for new developments in inhabitant / hectare.

4a 1.

City areas are classified by type of use and are published in the Statistical Almanac for Nuremberg 2008 as follows:

### City areas classified by type of use

	2008
buildings and enclosed areas	41%
of which: residential areas	23%
mixed areas	6%
industrial/economic areas	8%
special areas incl. brownfields	4%
agricultural areas	23%
transport	11%
forest areas	17%
leisure areas (public parks, playgrounds, gardens)	5%
water	2%
others	2%
total	100%

The percentage figure for "settlement/residential areas" includes properties which are marked for residential building, but not yet built on. At present, no distinction is made between residential, industrial, trade and industry and mixed areas of land use.

### Brownfield Areas

The City of Nuremberg's brownfield register lists a total number of 3,200 former and existing industrial sites which may reasonably be expected to have contaminated soil. Insofar, this is a register listing areas suspected to be brownfield areas. There are concrete test results for 915 of these sites. In addition, 38 former dumping sites have been registered and evaluated.

### Conversion Areas

Originally, the term "conversion" was used for the new use of formerly military areas within the city. Now, it is also used for areas formerly used by the Post Office and the railways, i.e. formerly state-owned companies providing services for the public. Now that all former military areas within the city

have been converted, the conversion of former railway areas has become one of the main elements of Nuremberg's city development.

Within the Nuremberg city area, 46 individual areas with an overall size of about 284 ha formerly used by the Deutsche Bahn, are no longer required for their purposes. In order to develop these conversion areas "railways" together with the real estate owners and to give them a meaningful new use, a framework agreement on area development was concluded on 23.01.2004 between the City of Nuremberg and the German Railways (DB AG), as well as the aurelis Real Estate GmbH & Co. KG (aurelis). The legal and formal determining factors were identified for each of the individual areas, and common goals and time schedules were established.

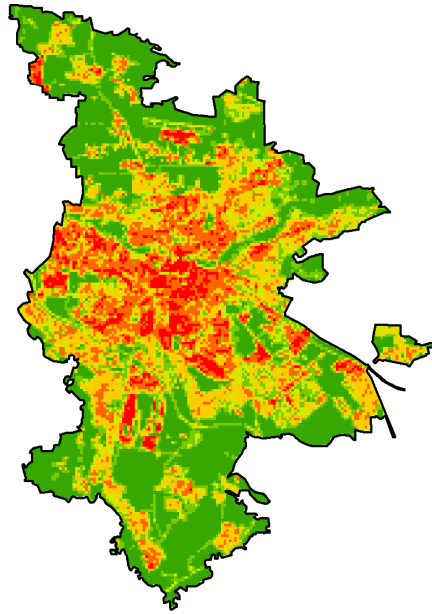
In June 2009, the state of works was as follows:

- overall 10 areas with identified characteristics with a total area of about 24 ha were finalised, i.e. the right to build was established. The areas were sold or have been built on.
- 6 areas with identified characteristics with a total area of about 143.5 ha are currently pending. This includes areas which are most important for city development and which foremost in public awareness, such as Brunecker Straße, Kohlenhof, Nordbahnhof and Nordostbahnhof.
- For four areas with identified characteristics, the envisaged building plan process could not be started yet.
- For 24 areas with identified characteristics, there is no need for action at the moment. Two areas will be permanently required for railway operation; they will be taken out of the framework agreement.
- By giving a new use to railway areas which are no longer required, a substantial share of the settlement areas needed can be met by conversion of formerly used areas in the inner city area. This corresponds to the goal of the land development plan of using as little as possible of the non-built-up areas in the outskirts for building purposes.

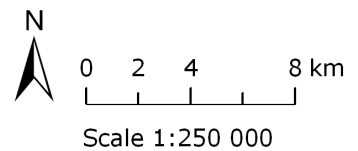
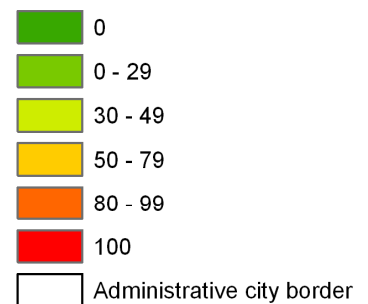
4a 2.

In 2000, the sealed surface in Nuremberg was 115 square metres per inhabitant (figure provided by Landesamt für Statistik – Regional Statistical Office).

# NÜRNBERG

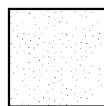


## Degree of soil sealing [%]



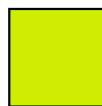
**POPULATION 495 459 AREA 186 km<sup>2</sup>**

**Population density**



2 722 capita/km<sup>2</sup>

**Average sealing degree**



38.0 %

**Sealed surface/capita**

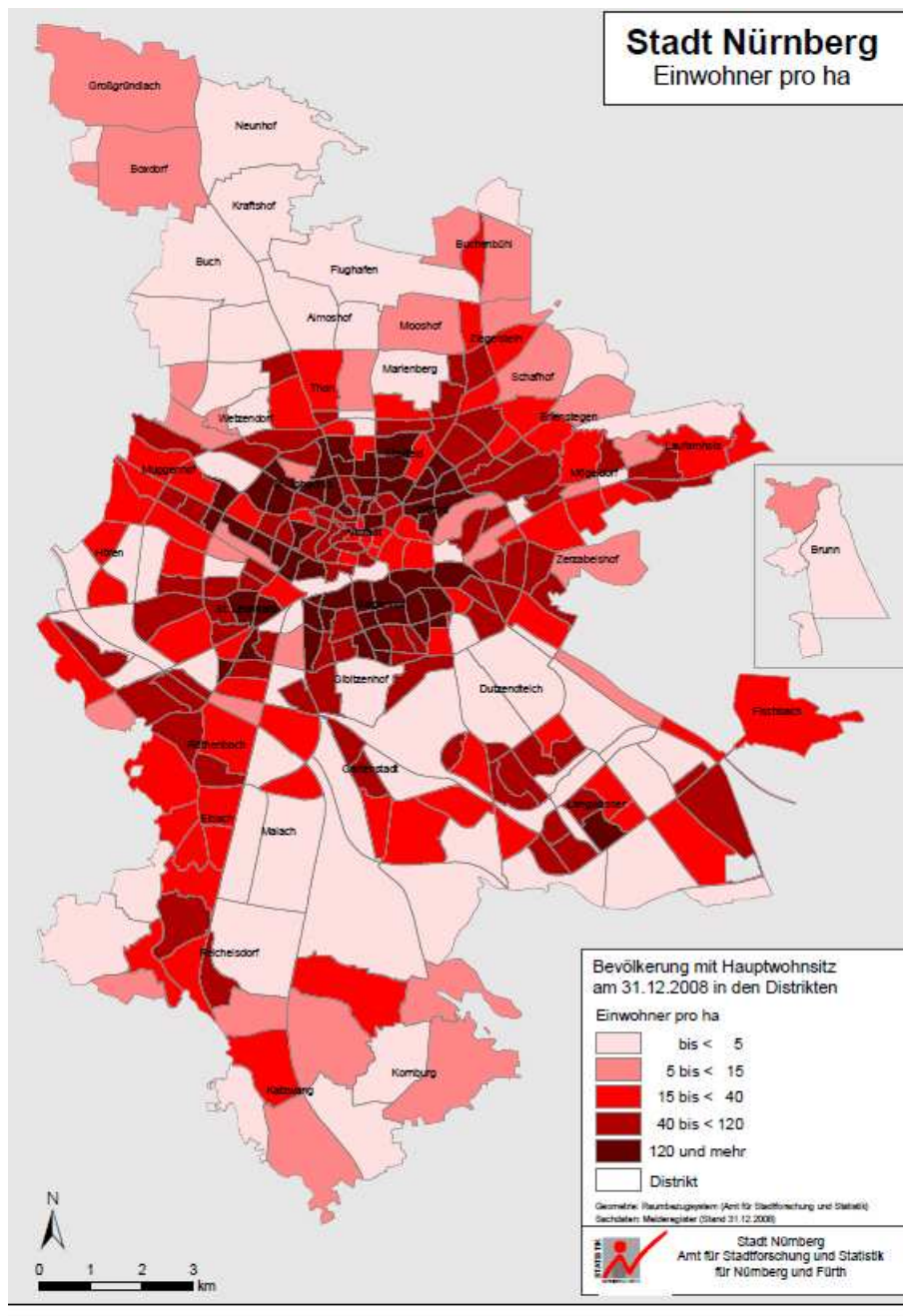


138 m<sup>2</sup>/capita

#### 4a 3.

The land register for building in the Town Planning Department documents building activities in the city. Information registered and evaluated here includes the type of building (house for one or several families), the number of residential units built and the scope of area use. The land register for building does not provide information on the development of settlements on (former) brownfield areas, neither does it distinguish between building inside the city and outside (building in the open countryside).

#### 4a 4. Map of Population Density



4a 5.

At present, there is no information on population density in new developments. Depending on the type of settlement (house for several or one family), the population density may vary greatly. It would also be necessary to distinguish between planned population density (number of planned dwelling units X average size of household) and actual population density. In Nuremberg, current examples of "land-saving" settlements and building concepts are the use of the former Sebaldus compound (former printers) in the so-called "Sebalder Höfe" (shopping centre) or the settlement "Am Leonhardspark" under construction on the former abattoir area.

4b. Describe the measures implemented over the past five to ten years regarding (max. 1,000 words):

1. *Minimising the total area of derelict and contaminated land;*
2. *Increasing or sustaining population density in built-up areas while protecting green areas and providing a high quality of life within densely populated areas;*
3. *Renovating urban land and renewing urban design to make city living attractive and enable a more sustainable lifestyle (e.g. short distances to services and facilities reduces the transport demand and promotes walking and cycling; multi-apartment houses save on energy for heating, cooling, reduce infrastructural needs...);*
4. *Limiting urban sprawl by cooperating with the neighbouring municipalities;*
5. *Integrating current and future changes such as economic growth, demographic or climate change through sustainable land use planning.*

4b 1.

Measures for minimising the total area of derelict and contaminated land: Since the mid 1980s, about 200 sites with a total area of 4.4 million square metres have been examined, decontaminated (if necessary), and could then be put to new use. The size of the various sites ranged from several hectares to much smaller building projects. Measures for minimising derelict sites which were formerly built on:

- monitoring areas in the context of the land register for building

- registering unused derelict sites, as a prerequisite for reactivating these areas

- increasingly taking into account unused derelict sites and other areas with development potential within the city when devising the land development plan and integrated landscape plan

- PR work (e.g. exhibition "How to live? Where to live? Save space, win quality of life" information panels on land saving in Nuremberg)

4b 2.

Internal development (i.e. development within the city boundaries) offers the possibility of gaining new residential space within the city, whilst at the same time limiting development in areas outside the city which are not yet built up (urban sprawl). This might be summed up in the slogan: "Development happens inside the city". Activating land potential within the city may mean closing gaps between buildings, increasing population density in existing areas, and putting unused sites or conversion areas to new use (area recycling).

4b 3.

At all times, Nuremberg has various ongoing urban renewal projects. New projects for city renewal include the northern part of the Old Town, as well as the area in Nuremberg's west. The City of Nuremberg is participating in a project initiated by the Association for National Urban Development "koopstadt". In total, six city districts are being examined in the context of "koopstadt" with comprehensive approaches to urban renewal in mind. New public parks have been established on formerly built-up areas (e.g. Südstadtpark, public park Am Pferdemarkt).

4b - 4.

The special purpose association "Gewerbepark Nürnberg-Feucht-Wendelstein" [Industrial Park Nürnberg-Feucht-Wendelstein] is a co-operative project between municipalities on the use of the former Muna area (military conversion area). There is informal exchange in the context of regular conferences of the city axis (e.g. neighbourhood, planners' and environment conferences).

4b -5.

Participation in research projects, e.g.

- simulation exercise for trade of contingents for designated areas between municipalities
- model project "Urban Strategies for Mitigation of Climate Change – Municipal Strategies and Potential"

*4c. Describe planned long and short term measures in relation sustainable land use (max. 1,000 words):*

*The short term measures should include a description of measures adopted, but not yet implemented, and budgets for future measures already adopted.*

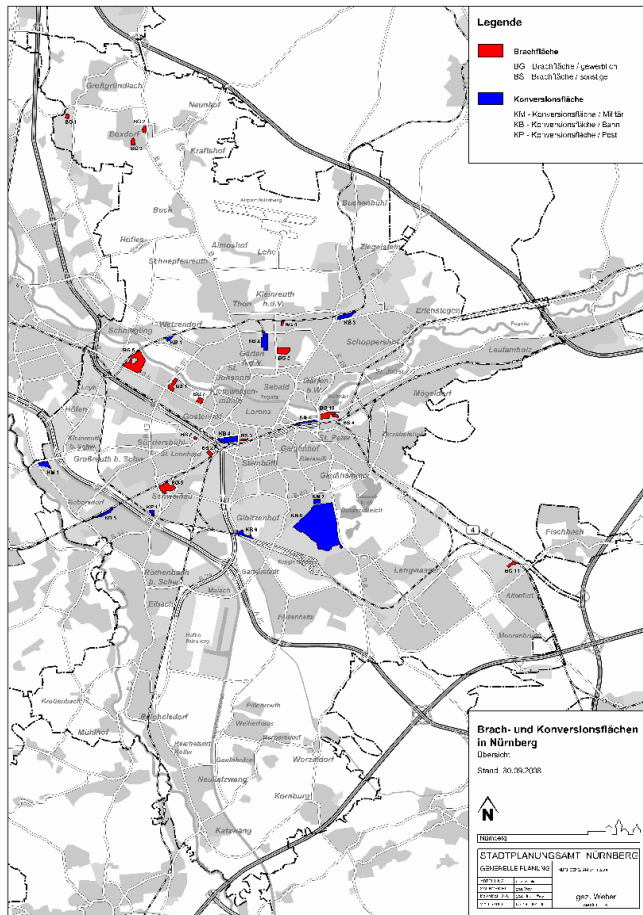
*The long term measures should include a description of planned measures not yet politically sanctioned.*

4c.

Measures in relation to sustainable development of settlements include e.g.:

- Conversion of railway areas

When former railway land can be put to new use, a significant percentage of Nuremberg's demand for settlement sites can be met using these areas within the city.



- Building area management

Long-term task with the short-term objective of preparing an internet presentation of areas for residential building.

- Preparation and continuation of soil protection report

4d. Describe how the above issues can be documented should your city be shortlisted to participate in the second phase of the evaluation.

(Documentation should not be forwarded in this phase) (max. 600 words)

The land register for building allows numerous important and useful evaluations, but does not permit any statements about development within /outside the city boundaries, or checking the success of the measures for limiting area usage. There have been plans for quite some time to extend the land register for building to include these options.

4e. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.

Nuremberg has a comparatively low percentage of urban green spaces and is densely built-up; there was no inheritance of generously proportioned parks from feudal times. In other cities, such parks were the backbone of the city, or open spaces became the crystallization point for public parks (e.g. the Englischer Garten in Munich or the Schlosspark in Karlsruhe).

## 5. Nature and Biodiversity

5a. Describe the present situation and developments over the past five to ten years in relation to areas designated for nature protection and biodiversity under either municipal, communal, national or local schemes (max. 1,000 words).

The current situation, as well as the development during the past 5-10 years can be characterised by the following focuses:

- further development of concrete legal protection of larger areas of free space and forests, as well as landscape elements and natural elements within the city boundaries (2000)
- integration of this content and these areas (24% of the city area) in the municipal development plans via a specific framework plan (species and biotope protection programme 1996) and expert planning in the land development plan (2008)
- integrating the content, concepts and legal framework of the European Council's FFH Guideline and of the corresponding Federal and State regulations (2006) in co-operation with the Free State of Bavaria
- development and implementation of concrete instruments to avoid, decrease, compensate for and replace interference [with habitats] in the framework of concrete urban building development and infrastructure projects
- setting up and running a municipal landscape protection association for concrete implementation of projects on species and nature protection with the aim of sustaining and promoting biodiversity within the city boundaries (overall investment in 2009 about 240.000 Euros) in co-operation with nature protection associations and farmers
- comprehensive and area-wide monitoring of nature and species protection aspects in the context of the city biotope mapping and its continuous updating (2006-2009)
- working out and implementing key projects in the context of particular potential areas within the city area, in co-operation with nature protection associations, state institutions and companies (e.g. bat protection, amphibian protection, stork project, Nuremberg sand axis); investment of about 2 million Euros in 2005 - 2020
- special protection for and development of flowing bodies of water in the city area, by establishing and implementing water management plans (annual budget about 200.000 Euros)
- City of Nuremberg joining the declaration "Municipalities for Biological Diversity" (decision 28.04.2010) and establishing a local alliance for bio diversity, including nature protection associations, universities and the city.

Existing Protection Measures:

- New designations under the Landscape Protection Directive (according to § 26 Federal Nature Conservation Act) of the City of Nuremberg. 19 individual areas were designated as protected areas, a total of 4,422 hectares. This comprises 24% of the total city area (18,637 hectares) and is an increase of 25% compared with the first designation of protected landscapes in 1978.
- New designation of 6 natural monuments (according to § 28 Federal Nature Conservation Act) within the city area. These are outstanding old trees, including an avenue with 113 plane trees which was designated as an ensemble.
- Directive for the protection of trees within Nuremberg city boundaries (Tree Protection Directive) of 1999.
- Protected Forest Directive for parts of the Lorenzer Reichswald [Lawrence Protected Forest] and the southern Reichswald [Protected Forest] of the Rural District Office Nürnberger Land of 2003 and the Protected Forest Directive for parts of the forested area Lorenzer Reichswald [Lawrence Protected Forest] (south-western part) of the Rural District Office Roth of 2005.
  - In March 2006, flora and fauna habitats, and in September 2006, a bird protection area were officially registered in the context of the European network "Natura 2000" (§§ 32-38 Federal Nature Conservation Act). These cover a total of 2,565 hectares, 14.5% of the Nuremberg city area (18,637 hectares) and include the compact clearings in the Reichswald, Irrhain, in the Erlenstegen

water works, in the zoo with Schmausenbuck, Kornberge near Worzeldorf, Rednitz valley in Nuremberg and Nuremberg Reichswald.

- Since 2008, the biotope mapping for the City of Nuremberg, comprising 784 digitalised biotopes and a total of 2,455 individual areas, has been an important data pool for all environmental purposes. In addition to the 784 biotopes, 345 potential biotopes have been mapped. At the same time, the legally protected biotopes (according to § 30 Federal Nature Conservation Act or Article 13 d Bavarian Nature Conservation Act) were mapped.

*5b. Describe measures implemented over the past five to ten years in order to (max. 1,000 words):*

1. *Manage the areas designated for nature protection and biodiversity as described above;*
2. *Protect nature in other open spaces;*
3. *Promote public knowledge and understanding of nature and biodiversity, particularly among young people.*

to 5b 1. Management plans and measures for protection areas:

- In 1984, the Bavarian Parliament asked the State Government to draw up a species and biotope protection programme safeguarding increased protection of the fauna and flora, including their habitats. In 1996, in co-operation between the Bavarian State Office for Environmental Protection and Nuremberg City Environmental Department, the species and biotope protection programme for the City of Nuremberg was drawn up, including a comprehensive catalogue of management plans and measures. (ABSP Nürnberg – Bavarian State Government for Landscape Development and Environmental Issues, 1996)

- In 2006 the landscape plan integrated in the City of Nuremberg's land development plan became legally binding.

- The 2008 biotope mapping for the City of Nuremberg (784 digitalised biotopes, a total of 2,455 individual areas) is used as a data basis for all management measures, including notes on management, use and potential damage/threats.

- Six flora/fauna habitat management plans, implementing the European FFH Guideline, have been initiated or completed.

- In the context of the funding of farming environmental measures in Bavaria, according to (EU) No 1698/2005, 45 hectares of agricultural area and 15 hectares of forest within Nuremberg city boundaries were put under nature protection by agreement, and will be managed according to ecological specifications. Many diverse species protection measures have been implemented to promote biodiversity.

In 2010, State funding in the programme of nature protection by agreement amount to 14,300 Euros

Some examples:

- Maintenance and development of habitats for the Scarce Copper butterfly in the context of usage and maintenance measures with private ground owners

- Protection Measures for Amphibians (guiding measures, such as mobile protection fences and road tunnels for amphibians)

Budget for establishing a stationary guiding system for amphibians in 2009/2010: 10,200Euros

- Stork project in the Rednitz valley (index species: Common Spadefoot (*Pelobates fuscus*), Banded Dart (Etheostoma zonale), and White Stork (*Ciconia ciconia*)) financed with funds from the municipal compensatory measures. This project included the preparation of a management and development programme for the Green Club-tailed Dragonfly (*Ophiogomphus cecilia*). Best practice Beispiel des Bayerischen Umweltministeriums für die Verwendung von Ersatzzahlungen.

Gesamtbudget von 1,2 Mio. Euro aus Ersatzzahlung der Deutschen Bahn AG, Projektdauer ca. 15 Jahre

- "The Return of the European Tree Frog" The project is aimed at the conservation of biodiversity by settling populations of the European tree frog in selected biotope areas in the City of Nuremberg, in co-operation with Nuremberg Zoo.

to 5b 2.

Protection Measures outside Protection Areas: The project's budget amounts to about 23,000 Euros

- Water management plans have been drawn up for the 23 most important category III bodies of flowing water. Overall budget for the implementation of the water management plans about 200,000 Euros per year.

- The 2008 biotope mapping for the City of Nuremberg (784 digitalised biotopes, a total of 2,455 individual areas) is used as a data basis for all management measures. Various species protection measures for the promotion of biodiversity have been implemented in Nuremberg.

- Franconian Sand Axis This is the largest Bavarian nature conservation programme, a co-operation between three associations, seven districts and five cities – including the City of Nuremberg. It aims at preserving and promoting sand habitats as irreplaceable elements of the Franconian landscape.

Budget: between 2005 and 2007, the overall amount for the City of Nuremberg was 550,000 Euros. The City of Nuremberg initiated the follow-up project "Stadt – Sand – Fluss" (City – Sand – River).

- "Lifeline Railway" The project is aimed at conserving and optimising biodiversity and linking biotopes on selected railway property in the Nuremberg city area, in co-operation with Deutsche Bahn. Overall amount: 18,700 Euros

- Support for particularly endangered species. The protection of swifts, bats, peregrine falcons, hornets, beavers and other endangered species is an important contribution to biodiversity and is followed-up in close cooperation with the Zoological Garden Nuremberg. For example, nesting boxes were installed for kestrels and peregrines which have been breeding in Nuremberg again since then. For some decades, there has been systematic care of bats and nesting boxes, and breeding birds and water birds have been counted and documented.

- Establishing the Airport Eco Account on the Open Spaces of Nuremberg Airport In the past 5 years, the areas surrounding the runway at Nuremberg Airport have been maintained using scientific plans to maximize biodiversity. These measures are monitored and optimised by expert advisers.

To 5b 3.

Approaches and activities in environmental education:

- Nuremberg Landscape Conservation Associations runs co-operative projects with environmental education aspects with nursery schools, schools, companies and citizens. Projects include measures returning bodies of flowing water to a near-natural state.

- International Day of Biodiversity

- Activity of the Department for Environmental Issues for the "Freiwilliges Ökologisches Jahr" ( FÖJ = Year of Voluntary Environmental Work), mainly aimed at participants in the FÖJ project.

- "A Sandy Ribbon for People and for Nature" PR publications for this project included a brochure "A Journey of Discovery for Young and Old at Nuremberg's Sandy Ribbon", June 2009

- Project Stadt/Sand/Fluss [City – Sand – River] This is a continuation of the nationally important nature protection project "Franconian Sand Axis" in the City of Nuremberg. One of the main aims of this project has been the provision of sustainable environmental education activities particularly for children and young people, but also for adults. Excursions, project days and "adopt an area" schemes are intended to further sustainable learning, as is co-operation with the cultural project "Field of Experiences for all Senses". In 2007/2008 and again in 2009/2010, these projects of the Department for Environmental Issues were honoured with the UNESCO Award of "official project for the World Decade of Education for Sustainable Development".

Project budget 2007 – 2010: 60,000 Euros

- Information on Nature Protection Area Hainberg

- Stork Project The project aims at sustainable ecological improvement of habitats in the Rednitz valley, with particular focus on the White Stork. A variety of guided walks were offered, surveys were conducted, and information boards were put up.

Environmental education outside the Department for Environmental Issues. Some examples:

- European Bat Night. Since 2005, Nuremberg has organised the local European Bat Night in co-operation with various associations (Bund Naturschutz, Landesbund für Vogelschutz, Naturhistorischer Gesellschaft und Höhlen- und Karstverein) under the patronage of the Environmental Department, Nuremberg Zoo and the association AG Vogel- und Fledermausschutz im Nürnberger Tiergarten (working group for bird and bat protection in Nuremberg Zoo).
- The project "BATS WELCOME" is an initiative of the Bavarian Environmental Department (LfU) which actively promotes the creation and maintenance of bat quarters in residential areas.

Many other organisations offer varied and exemplary activities. These include the nature protection associations, the Natural History Society, the Adult Education Centre (BZ), the Office for Culture and Leisure (KuF), the Educational Institute, the many Agenda groups, and other municipal departments, such as the zoo and SÖR. More detailed information may be obtained from them on request.

*5c. Describe planned long and short term measures to protect urban nature and biodiversity (max. 1,000 words).*

*With regard to short term measures, the description should include measures adopted, but not yet implemented, as well as budgets for future measures already adopted.*

*With regard to long term measures, the description should include planned measures not yet politically sanctioned.*

Planned long and short term measures to protect nature: Many diverse species protection measures are implemented to promote biodiversity. Some examples:

1. The current biotope mapping for the City of Nuremberg, including 784 digitalised biotopes and a total of 2,455 individual areas is an important data pool for all environmental purposes. It has resulted in the following suggestions for protection measures: Landscape Protection Area Dutzendteich Lake including numerous existing landscape elements and natural monuments and other projects.

2. In addition to these suggestions for protection measures resulting from the biotope mapping, the following protection measures are planned:

- Nature Protection Area Ziegellach
- Designation of 12 hectares of Landscape Protection Area in the rail triangle Langwasser (protection procedure pending).
- Designation of an oak forest as landscape element in Langwasser

3. "Saving *Astragalus arenarius* in Nuremberg" The project is intended to secure a unique population of the vetch species *Astragalus arenarius* in Nuremberg. This species is a floral curiosity in Southern Germany and is rare in Nuremberg.

Project finalised, overall budget amount: 10,000 Euros

4. "The Return of the European Tree Frog" The project is aimed at the conservation of biodiversity by settling populations of the European tree frog in selected biotope areas in the City of Nuremberg, in co-operation with Nuremberg Zoo. Project budget: 23,000 Euros

5. "Many Hands for Nature and Art" This project tries to link nature protection, art and citizens' involvement in the southern districts of Nuremberg. It builds on the "Sandy Ribbon for People and

for Nature". Both this and the Nature Experience Path have created an attractive backdrop for environmentally-sensitive nature experiences, sustainable environmental education, and volunteer commitment. A network of companies, schools and active citizens has been established. Overall amount applied for: about 120,000 Euros in the space of 6 years; finance for the first three years was granted.

- Monitoring of birds and bats. Annual check-up of populations of 1300 nesting boxes for birds and bats for hole-nesting birds and bats in municipal green areas. In Nuremberg, for the past 40 years, this measure has been implemented by the bird protection supervisor or the Association for Bird and Bat Protection. For the past 8 years, bats have also been ringed to document their migration and population dynamics.

6. Focus on Landscape Conservation by the Nuremberg Landscape Conservation Association The Nuremberg Landscape Conservation Association was the first association of its kind at city level, and thus became a model for further associations in cities across the entire Federal Republic. Co-operation with the Landscape Conservation Association is always on a voluntary basis. Practical work in the biotope areas is mainly carried out by local farmers. Landscape conservation aims to preserve ecological and landscape variety. Since 1992, the following measures have been regularly implemented and repeated to maintain and establish near-natural habitats:

- Measures to maintain and develop complex habitats, e.g. in the Nature Protection Area "Sandpits at Föhrenbuck"
- Establishment and maintenance of low nutrient and dry habitats as new, valuable sand habitats in Nuremberg city area.
- Proper maintenance measures to conserve ecologically valuable wet habitats, such as e.g. in the cane brake areas in Erlenstegen, in the floodplains of the Fischbach and the Rednitz, and along the Main Danube Canal.
- Measures returning habitats to a near-natural state and conservation measures in and around bodies of flowing water, such as e.g. Siechgraben, Lachgraben and Brandgraben
- Maintenance measures on the irrigation meadows in Hopfengarten and at Igelsee Lake to conserve an old cultural landscape, the "irrigation meadow".

Maintenance and development of ecologically valuable biotopes; budget for 2009: 74,900 Euros  
Budget for species protection measures for 2009: about 56,950 Euros

• Focus on Compensatory Measures by the Nuremberg Landscape Conservation Association The Nuremberg Landscape Conservation Association was commissioned by the City of Nuremberg, Nuremberg Airport, the Nuremberg forest enterprise, and the Bavarian Harbours Group to implement regular compensatory measures. These measures supplement the association's conservation measures and serve the purpose of building up a functioning compound system of linked biotopes. The following compensatory measures were implemented:

- Establishment of marsh areas and wet meadows
- Establishment of meadows with fruit trees
- Establishment of still bodies of water
- Returning ditches to a near-natural state
- Maintenance of nature protection areas
- Establishing complex biotope sites in the area of the State Forest

Budget for compensation measures for 2009: about 25,750 Euros

## 7. Eco Account

Since 2005, the City of Nuremberg, in the context of the municipal eco account, has made ecological improvements to municipally owned land. This is intended to compensate for the impact of municipal or private building projects. The Landscape Conservation Association is in charge of the planning and implementation of these improvement measures, as well as of the negotiations with tenants. As in landscape conservation, the implementation of the measures is undertaken by local farmers. The measures are a meaningful supplement to the association's landscape conservation measures and thus serve the development of a functioning compound system of linked biotopes. The following improvement measures were implemented:

- Forest conversion measures
- New establishment of sandy low nutrient meadows and marsh areas
- measures returning ditches to a near-natural state
- New planting of hedges and edges of forest areas

Eco account budget for 2009: 81,150 Euros

- In future it is planned to coordinate the various activities for the management of urban biodiversity in a municipal agency in cooperation with scientific partners.
- Life Project of the Landesbund für Vogelschutz (Land Association for Bird Protection) "Optimising Flowing Bodies of Water in Middle Franconia for the Green Club-Tailed Dragonfly"
- Project for supporting a FFH species with high value for indicating near-natural bodies of water. Administrative support and PR-effective accompaniment on all levels, co-financing with municipal funding from the stork project.

Contribution by City of Nuremberg: about 100,000.00 Euros

*5d. Describe how the above issues can be documented should your city be shortlisted to participate in the second phase of the evaluation.*

*(Documentation should not be forwarded in phase one) (max. 600 words)*

Documentation for above projects and plans:

- Nature Protection Directives for Hainberg and Föhrenbuck
- Landscape Protection Directive of the City of Nuremberg
- Natural Monument Directive of the City of Nuremberg
- Tree Protection Directive of the City of Nuremberg
- Directives designating protected landscape elements for the City of Nuremberg
- Directive on Bannwald [protected forests]
- FFH and SPA areas in the City of Nuremberg
- Biotope mapping – new – for the City of Nuremberg
- ABSP [Species and Biotope Protection Programme] for the City of Nuremberg
- Landscape plan for the City of Nuremberg . <http://www.landschaftsplan.nuernberg.de>
- Individual agreements in the course of the Programme Nature Protection by Agreements
- Programme for bodies of flowing water
- <http://sandachse.de>
- Information brochure (A Sandy Ribbon for People and for Nature, June 2009, VAG and LPV)
- all brochures, leaflets and project documentation reports for the projects mentioned may be requested from the Untere Naturschutzbehörde [Lower Nature Protection Authority].
- Paper submitted to the Environmental Committee on the ecological improvement of the Rednitz valley (Life Project Optimising Bodies of Flowing Water in Middle Franconia for the Green Club-Tailed Dragonfly) of 10.10.2007
- <http://www.lpv.de>
- Paper submitted to the Environmental Committee "Biodiversity Day" of 22.04.2009, RIS
- Information brochure (Ein Sandband f. Mensch u. Natur, Juni 2009, VAG u. LPV – A Sandy Ribbon for People and for Nature)
- Annual Report Nuremberg Landscape Protection Association 2009
- Two award certificates for the 2007/2008 and 2009/2010 UNESCO Award "official project for the World Decade of Education for Sustainable Development", presented to the Department for Environmental Issues.
- Nuremberg as Nature Protection Municipality 2007. Thanks to the many and various initiatives of both the municipality and various associations, Nuremberg was the winner for Bavaria in the competition "Federal Nature Protection Capital", with corresponding certificate. <http://www.duh.de/naturschutzkommune.html>
- Draft presented to Environmental Committee "Day of Biodiversity" of 07.10.2009

- Draft presented to Environmental Committee 28.04.2010 International Year of Biodiversity 2010 – Signing of declaration "Municipalities for Biological Diversity"

*5e. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.*

Unfavourable circumstances: With the beginning of industrialisation in the second half of the 19th century, enormous amounts of land began to be used for industry, trade and housing. Due to continuous structural change and increased demand for residential and industrial land, this trend has continued to the present day. In addition, there are competing demands, in particular from farming and recreation, while space remains scarce.

## 6. Quality of local Ambient Air

6a. Describe the present situation and developments over the past five to ten years in relation to (max. 1,000 words):

1. Number of days per year on which EC limit values were exceeded for PM<sub>10</sub> (daily mean of 50µg/m<sup>3</sup>);
2. Number of days per year on which EC limit value/long term objective were exceeded for ozone (8h mean of 120µg/m<sup>3</sup>);
3. Annual mean concentration of NO<sub>2</sub> and PM<sub>10</sub>.

Air quality has been monitored in Nuremberg since the late 1950s. Today six quality monitoring stations are run in the city area – three by the Bavarian State Authority for the Environment, two by the municipal laboratories, and one as a joint station of the two agencies. All these installations are in compliance with European Air Quality Monitoring directives. Additionally the City is running a mobile air quality monitoring unit which has realized studies in a grid of 1x1 square kilometres over the last four decades, a comprehensive survey in the complete area of the city according to the First General Administrative Provision for the Federal Immission Protection Act, section on air of 24.07.2002, chapter 4.6.2. Due to longstanding efforts and additional detailed analysis of air quality in the city far more than usual information on temporary and spatial structure of air quality and on its development over the last 40 years exist than legally requested.

1. Number of days per year on which EC limit values were exceeded for PM<sub>10</sub> (daily mean of 50µg/m<sup>3</sup>);

Year	2004	2005	2006	2007	2008	2009
Days of PM <sub>10</sub> > 50 µg/m <sup>3</sup>	33	33	33	25	18	22

PM<sub>10</sub> is measured in five stations. The data reported are related to the station with the worst air quality situation according to Directive 1999/30/ EC of 22 April 1999.

2. Number of days per year on which EC limit value/long term objective were exceeded for ozone (8h mean of 120µg/m<sup>3</sup>);

Year	2006	2007	2008
Days of O <sub>3</sub> (8h) > 120 µg/m <sup>3</sup>	46	15	12

Ozone is measured in two stations. The data reported are related to the station with the worst air quality situation according to Directive 2002/3/EC of 12 February 2002.

3. Annual mean concentration of NO<sub>2</sub> and PM<sub>10</sub>  
Annual mean concentration of NO<sub>2</sub> and PM<sub>10</sub> are measured in 6 respectively 5 fixed stations. Three of them are positioned (according to European Regulation) near to highly frequented main roads in the city, two of the stations are positioned in areas with dense building structures and one station is positioned in the area of the airport.

Data for PM<sub>10</sub> (annual mean in µg/m<sup>3</sup>)

Station	2004	2005	2006	2007	2008
Bahnhof	32	30	29	24	23
Ziegelsteinstraße	27	27	27	23	21
Von-der-Tann-Straße	-	-	-	25	27
Muggenhof	27	27	28	23	-
Flughafen	21	22	21	17	16
Jakobsplatz	-	-	22	19	18

Data for NO<sub>2</sub> (annual mean in µg/m<sup>3</sup>)

Station	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Bahnhof	45	44	43	43	43	46	47	40	37	38
Ziegelsteinstr.	-	-	-	43	36	40	42	35	36	37
Von der Tann Str.	-	-	-	-	-	-	-	53	55	53
Muggenhof	39	34	36	40	38	43	37	34	34	30
Flughafen	27	26	33	31	28	29	29	22	24	20
Hauptmarkt (ab 2005 Jakobsplatz)	30	28	33	37	-	37	38	34	35	30

*6b. Describe the measures implemented over the past five to ten years to improve air quality, including for example (max. 1,000 words):*

The Council of the European Union adopted Directive 1999/30/EC on 22 April 1999 and defined limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air.

In order to match these regulations, the City of Nürnberg decided to analyze local air quality in detail, in its temporary as well as its spatial dimension, and to develop a local air quality management concept. On invitation by the City of Nuremberg, experts from the European Commission (Mrs. Lynn Edwards), German state authorities, a number of neighbouring cities (e. g. Erlangen, Fürth) and European twin cities (e. g. Glasgow/UK, Nice/France, Siauliai/Lithuania) met on 13 July 2000 in an international workshop in Nürnberg to discuss municipal response to the air quality requirements set by the European Union.

As a follow-up of these activities, the municipality implemented a number of measures to improve air quality and cooperated with representatives from industry and business (notably with logistic companies and experts) as well as with state authorities, scientific and research units and representatives from civil society (e. g. nature and environment protection alliances).

It could be proven that industrial sources as well as power-plants and waste incineration had been modernised and technically improved during the 1990s in a way that they no more contributed substantially to local air pollution. So activities focused on traffic emissions.

A most substantial effort had been initiated already in the 1990s, but completed only more recently: the City Council decided to block traffic crossing the city centre by only allowing access to delivery services and to private homes. At the same time, the pedestrian areas in the city centre were extended. These combined measures reduced traffic in the city centre (within the boundaries of the inner city circle) enormously and the traffic on the inner city circle has been kept constant since that time. Air quality data show that in the city centre air quality is in full accordance with European regulations and limit values have never been exceeded.

Thus commuter and truck traffic on the main roads and on the middle circle became the most important issue to be tackled in order to further improve air quality in the city.

A broad and concise Air Quality Action Plan was established. It was adopted by the City Council and the responsible authorities on 22. April 2004. It is under revision and extension at the moment. The latest version is attached as appendix. It covers activities in four main areas of action:

#### 1. Environmental Network (linking various modes of transport)

2. Traffic Management (by co-operation of logistic systems, improvement of traffic signs and orientation/guidance for specific transport modes)

3. Energy Efficiency and Climate Protection Activities in the building sector (contributing to emission reduction in heating and cooling of buildings)

4. Implementation of advanced vehicle technology

## Clean Air Action Program Nuremberg 2009

I. Environmental Network	II. Traffic Management	III. Energy Efficiency and Climate Protection	IV. Advanced vehicle technology
Further development of public transport  - short-distance traffic development plan  - extension of rail systems (tram, underground)	Green logistics: Development of strategies for intelligent logistic concepts for express services and specialized delivery services in the food and beverage sector	Projects promoting energy efficiency and climate protection (implementation of the climate protection road map 2010-2020)	Initiatives promoting environmentally friendly retrofit of cars and commercial vehicles
Improvement of cycle lane system accompanied by an information and publicity campaign	Intersection-free extension of the Frankenschneidweg (main traffic axes crossing the city)	Domestic heating:  reduction of coal and oil heating and promotion of district heating and heating based on renewable energies (solar-thermal, geothermal, biomass)	Low emission standard retrofit for municipal vehicles
Preference given to public transport via adjustment of traffic lights , separate bus lanes etc.	Development of traffic guidance system and parking space guidance system		Modernization of public car park (buses and other public utility vehicles, service cars and other motor-cars)
	Parking space management with reserved spaces for residents		
Extension and promotion of metropolitan railway network for commuters	Reduction of truck traffic in the city centre by displacement of general custom office and rail container terminal from its original, inner-city location [to the harbour area		
Facilitation of traffic flow by adjustment of traffic lights			
	Special measures for "hot spots"		
	"Low emission zone" (only vehicles meeting certain exhaust gas standards are allowed within the area)		

Information on air quality levels is made available to the public, both inhabitants and tourists (e.g. on web pages, information screens) in order to increase public awareness. Other publications: "Daten zur Nürnberger Umwelt" [Nuremberg Environmental Data] published quarterly and distributed to political parties, NGOs and interested citizens. All reports are also available as downloads through the internet.

Air quality data are available as online real-time information under web page <http://www.umweltdaten.nuernberg.de>

6c. Describe planned long and short term measures for improvement of air quality (max. 1,000 words):

The short term measures should include a description of measures adopted, but not yet implemented, and budgets for future measures already adopted.

### City of Nuremberg Air Quality Plan - Time for Implementation

Measure	Spatial effect		Time for implementation
	small scale	large scale	
Further development of public transport - short-distance traffic development plan - rail-bound transport improvement ▪ tram ▪ underground	medium  medium medium	medium  medium medium	long term (2015)  short term short term
Further development of cycle path system	high	medium	
Preference given to public transport via ▪ adjustment of traffic lights ▪ separate bus lanes	medium medium	medium medium	medium term medium term
Construction of urban railway for regional development of public transport	medium	high	medium term
Promotion of metropolitan railway network for commuters	medium	high	short term or medium term
Promotion of traffic flow by adjustment of traffic lights	medium	high	short term or medium term
Parking space management, reserved spaces for residents	medium	low	medium term or long term
Development of traffic guidance system and parking space guidance system	medium	low	short term
Reduction of heavy traffic in the city centre by removal of custom office and container terminal to the harbour area	high	middle	short term
Reduction of industrial emissions	medium	low	medium term
Domestic heating			short term or medium

<ul style="list-style-type: none"> <li>▪ reduction of wood, coal and oil heating</li> <li>▪ promotion of district heating and gas heating</li> </ul>	medium or high	medium or high	term
"Environmental zone" (only vehicles meeting certain exhaust gas standards are allowed within the area)	low	low	short term
Guidance for heavy goods vehicles	high	low	under consideration
Special measures for "hot spots"	not available	not available	planning stage

6d. Describe how the above issues can be documented should your city be shortlisted to participate in the second phase of the evaluation.

Local newspapers report regularly on the air quality situation in the city. A yearly summary is presented in the City Council and all air quality data are available as monthly, quarterly and annual overviews in a print version as well as in electronic version.

6e. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.

## 7. Noise Pollution

7a. Describe the present situation and developments over the past five to ten years in relation to (max. 1,000 words):

1. Share of population exposed to noise values of L (day) above 55 dB(A);
2. Share of population exposed to noise values of L(night) above 45 dB(A).

In 2006, 23% of the population were exposed to a noise level of L (day) above 55 dB(A) and 32% to a noise value of L (night) above 45 dB(A). No data are available for earlier years, hence no time series analysis can be calculated.

7b. Describe the measures implemented over the past five to ten years to reduce noise including i.e. the existence, quality and level of implementation of a noise management plan (max. 1,000 words):

Since 1994, there has been a traffic flow diagram for traffic noise pollution for Nuremberg, for all main roads and other important inner city roads. In the Environmental Department, this served as the basis for drawing up environmental compatibility tests, as well as for commenting on traffic and building development planning. Since 1978, there has been a sound proof window programme for reducing noise pollution in houses near main thoroughfares. This noise pollution plan needed to be updated in the context of the EU Environmental Noise Directive, and this resulted in the Strategy for Measures and Activities of 08.03.2006 Noise causes diseases, reduces work performance and well-being, has a negative effect on real estate value, and causes considerable costs. The City of Nuremberg therefore considers the noise problem, especially traffic noise, to be an important issue in the basic services it has to provide for its citizens. The following measures are to be continued or implemented in the long or short term:

- a sound proof window programme,
- removal of stretches of cobbled street,
- noise-reducing street surfaces,
- noise protection embankments and walls,
- traffic policy measures, especially promotion of the environmental alliance of public transport, cyclists and pedestrians, and
- PR campaign "Nürnberg - intelligent mobil" [Nuremberg – intelligently mobile] An attractive programme of subsidies for sound proofing windows (90 % subsidy) was created, with funds coming from the current economic stimulus package. This economic stimulus package provides 1,704,000 Euros for the 2009–2011 to municipal and state funding. Demand has been high, and all funds have been committed until the end of 2011. In addition, until 2011, an amount of 3,000,000 Euros was envisaged in the context of the economic stimulus package, for setting up sound protection walls along the Frankenschnellweg.

Strategic Noise Mapping according to EU Environmental Noise Directive has been realized and published in 2009 based on contributions by numerous agencies (e.g. Federal Railway System, Airport, State Agency for the Environment).

### **Strategic noise mapping according to the EU Environmental Noise Directive**

Various organisations have been individually responsible for measuring different sources for traffic noise in the context of the implementation of the EU Environmental Noise Directive, so far: the Federal Railway Authority mapped noise from railway tracks, the Flughafen München GmbH [Munich Airport Company] aircraft noise at Nuremberg Airport, and the Landesamt für Umweltschutz (State Environmental Office LfU) the traffic noise from motorways, Federal and State roads outside the conurbation.

The strategic noise mapping for the Nuremberg city area was finished in 2009. Distinctions were made by types of noise polluter: road traffic, rail traffic (only trams and underground, excluding railways) and specific trade plants (IPPC plants: integrated pollution prevention & control). The maps are available to the public on the internet. As of 07.06.2010, the relevant analysis for regions affected by noise pollution will also be available for public inspection. The noise reduction action plan is still being worked out.

*7c. Describe planned long and short term measures aimed at reducing noise pollution (max. 1,000 words):*

*The short term measures should include a description of measures adopted, but not yet implemented, and budgets for future measures already adopted.*

*The long term measures should include a description of planned measures which are yet to be adopted politically.*

The noise protection measures of the activity strategy mentioned under 7b will be continued. Noise mapping for Nuremberg (see 7b) shows noise levels in various parts of the city. First it highlights those areas where noise can spread unhindered, as is the case in places without buildings. On the other hand, this means that no residents are affected by this noise. The Environment Office then uses the existing data to generate a noise rating map showing those areas where noise pollution is highest for residents. Meanwhile, this noise rating map has been made available. In addition, starting in 2010, information concerning noise mapping and noise reduction action planning will be provided at citizens' meetings held by the City of Nuremberg. Milestones in Nuremberg's Noise Reduction Action Planning Judging by experiences in other bigger cities, noise reduction action planning will take about three years. The following milestones are envisaged for Nuremberg:

1. Establishing a working group across municipal departments

2. Analysis of the noise and conflict situation

- noise analysis for streets and roads (excluding motorways), tram rail traffic and above-ground underground stretches, as well as industrial noise from the IPPC enterprises examined
- stakeholder analysis
- conflict analysis
- determining survey areas for which a catalogue of measures should be planned
- 09.06.2010 City Council decision on guideline values

The noise reduction action plan will be established in two steps. In the first step, critical areas will be established by noise pollution concentration, in analogy to 70/60 dB(A) day/night. Noise survey areas will be established on the basis of the noise pollution concentration; noise reduction measures will be preferentially planned for these areas. In the second step, survey areas will be established by noise pollution concentration, in analogy to 65/55 dB(A) day/night. These indicative values were established as health-relevant threshold values by noise effect research. They are considered to be target values for noise reduction planning. Related measures will be planned for the medium and long term. With target values of 65/55 dB(A) day/night, the City of Nuremberg makes an important contribution to safeguarding the well-being of its population.

3. Analysis of existing planning and noise protection measures in survey areas

- Evaluating existing planning, e.g. building planning and planning approval for street construction work with reference to noise protection measures
- taking into account noise protection programmes which have already been implemented
- investigation of synergy effects with air pollution prevention measures

End of first quarter 2011

Finalising analysis of existing planning and noise pollution reduction measures

#### 4. Planning Measures and Involving the Public

- strategies and action plans for noise reduction action planning (short, medium and long term)
- drawing up an effect analysis
- drawing up plans for measures
- involving the public
- involving public stakeholders
- Third quarter 2011

Draft catalogue of planned measures and presentation to Environmental Committee

Fourth quarter 2011 and first quarter 2012

PR campaign and involvement of public agencies

#### 5. Drawing up Overall Strategy / Concept

- Assessment of objections and suggestions for change
- further development of catalogue of planned measures and repeated assessment of effectiveness of measures
- cost benefit analysis, financing

Late second quarter 2012

Presentation of overall concept to Environmental Committee

#### 6. Drawing up Action Plan

Third quarter 2012 City Council decision

According to § 47c and § 47d of the Federal Immission Control Act (BImSchG), noise mapping and noise reduction action plans must be checked every 5 years, and revised, if necessary. In addition, the action plan needs to be revised, if there have been any significant developments in the noise situation.

Financing Noise Reduction Action Planning:

The cost for the noise reduction action planning will probably amount to about 250,000 Euros. This includes planning costs only, but no costs for implementing these measures.

*7d. Describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation.*

*(Documentation should **not** be forwarded in this phase) (max. 600 words)*

Documentation on the issues will be provided in the form of reports, tables and listings, as well as explanatory text.

*7e. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.*

Over the years, several factors have contributed: to the development of noise pollution in Nuremberg. Nuremberg has been an industrial and trading centre for centuries. This fact and the city's location at the intersection of several major roads and railways have led to an infrastructure focused on production and transportation. Residential areas were built near-by and are very compact. This structure makes it difficult nowadays to avoid noise impact on the inhabitants.

During World War II, Nuremberg was heavily destroyed. When it was rebuilt, urban planners gave priority to a layout favouring road traffic. This led to heavy goods vehicles – the chief source of our major noise problems today.

## 8. Waste Production and Management

8a. Describe the present situation and developments over the past five to ten years in relation to (max. 1,000 words):

1. Amount of waste per capita;
2. Proportion of total/biodegradable waste sent to a landfill;
3. Percentage of recycled municipal waste.

1. Amount of waste per capita Graph 1 (all graphs see attachment) shows the amount of waste collected by the municipality and disposed of by incineration. Waste is classified as follows: - waste from private households - waste from commercial or industrial enterprises which is of similar nature and composition to waste from private households - waste from private or public facilities that is declared to be waste for disposal

Graph 2 shows the overall amount of waste collected in the municipality from the same sources as in graph 1. It includes both incinerated waste (as in graph 1) and recycled waste - which has increased from 293 kg/capita/annum in 1999 to 315 kg/capita/annum in 2008.

2. Proportion of total biodegradable waste to landfill

Graph 3 shows that already in 2003 – 3 years before the respective law came into effect – no biodegradable materials were landfilled.

3. Percentage of recycled municipal waste

Graph 4 shows the proportion of total municipal waste from households and comparable sources which is recycled. The following types of waste were recycled: paper/cardboard/cartons, waste glass, textiles, scrap wood, recycled materials, sales packing, scrap metal, used slag, organic waste and green waste. An upward trend can be seen particularly for organic and green waste, collected separately, with an increase from 75.6 kg/capita/a in 1999 to 80.2 kg/capita/a in 2008. Graph 5 shows waste composition for 2008. All waste for disposal is treated in the municipal incineration plant and the heat generated is used for steam production. Via a turbine, this steam generates electricity, and finally, the exhaust steam is fed into the existing district heating network. Furthermore, any residual materials (e.g. slag, metals, fine dust and plaster) are recycled. This series of processes for recycling materials and recovering energy, achieves an effective recycling rate of nearly 100% (thermal recycling) .

Files:

- [8\\_waste management graphiken extra.xls](#)

8b. Describe measures implemented over the past five to ten years aimed at reducing the amount of waste produced, the amount of waste sent to landfills, particularly biodegradable waste, and measures which have promoted awareness raising programmes (Max. 1,000 words).

In Nuremberg, waste management is based on closely interlinked waste treatment plants, facilities and measures. Plants: Incineration plant and residue landfill (class II) Facilities:

- a)bring systems: 6 recycling centres, 7 garden waste collection centres, problematic waste collection points, Christmas trees collection points, waste glass containers
- b) collection systems: weekly waste and biodegradable waste collection, bulky waste collection on demand, containers for recycled paper, “yellow bags” and containers for packing materials, container service

- Measures: Waste advisory centres are the interface between the public and the various institutions for waste management. They provide information about services and advice on all matters of waste avoidance, recycling and disposal. There is a wide and varied spectrum of information services – the advisory centres can be contacted by telephone or in person, and information is provided in brochures and leaflets. About 100 consultations are provided directly to owners, caretakers or tenants of private households or enterprises. Furthermore, special activities can be arranged for schools and kindergartens.
- A special programme has been established with the Children’s Museum. Children and teenagers are taught about waste avoidance, waste separation and recycling with hands-on exercises. Since 1991 Nuremberg has had an international team of specially trained voluntary waste advisors. They tour the city districts with our “information bus” and provide advice on all questions regarding waste avoidance and separation. Every year, they have about 70 assignments, with about 3000 counselling interviews. The questions asked most frequently by the public are answered and published in several brochures, such as e.g. “Ratgeber Abfall” (Waste Guidebook), which provides detailed and clear information. As the first topic in any ecological waste concept is waste avoidance, the brochure starts right at the beginning with tips and tricks regarding waste-reduced shopping, economising on the use of paper or how to throw a party without creating a mountain of waste. Providing information to foreign citizens is a top priority.
- The brochure “Gemeinsam gegen Müll” (Joint Action against Waste) gives information in six languages on the topic of waste separation in Nuremberg. The main issues about biodegradable waste are published in a separate leaflet in German, Turkish, English, Serbian/Croatian, Russian and Greek. Furthermore, there are foreign voluntary waste advisors who can provide counselling interviews in their mother tongues. We have specially trained advisors for commercial enterprises. They have special knowledge and are able to answer technical questions. They assist companies in developing waste management concepts and disposal documentation. Outside working hours and at weekends, a call centre with skilled staff provides public information on all questions concerning waste. Important information regarding waste avoidance, recycling and disposal can also be found on the website of the municipal waste management department Abfallwirtschaftsbetrieb Stadt Nürnberg (ASN).
- The Nuremberg Swap and Donate Market is a non-profit online facility by ASN aimed at encouraging waste avoidance. Everyone can get involved here. Free of charge, without time limit and in an uncomplicated way, all sorts of things can be offered on this website, either to be given away for free or to be swapped for something else. Another highly popular idea was established over 12 years ago – the “market of long faces”. Right after Christmas, anyone who has received a present they are less than enthusiastic about may take this item to an auction, and perhaps it will find a happy new owner there. Any Nuremberg citizen planning a party can hire the municipal “tableware van”. Plates, cups, cutlery etc. may be hired, so no disposables need to be bought. The City of Nuremberg supports the second-hand shops run by the Bavarian Red Cross, by passing on to them reusable and recyclable things and materials collected at the recycling centres.
- The City of Nuremberg supports citizens who compost organic waste from their kitchens or gardens by subsidising the purchase of composting equipment. The City of Nuremberg makes great efforts to minimize the amount of waste left behind after public events. When municipal facilities or premises are used, food and beverages may only be served on reusable tableware and with reusable cutlery, handed out for a deposit, unless this is prohibited for reasons of public safety and public order. This is also stipulated in the City’s ordinances for special use permits, for public parks and for waste management. By now, the ceramic mugs with an annually changing design and used at the famous Nuremberg Christmas Market have become sought-after collectors’ items. A decisive criterion for judging an event’s environmental compatibility is its waste management. Our advisors

therefore give assistance to organizers of big events, such as “Rock im Park”, in developing and implementing waste management strategies. In order to reduce the amount of residual waste in biodegradable waste, collection vans have been equipped with an automatic sensor for contraries. These will set off an alarm when an electro-conductive material (metal) part exceeding a certain size is detected in the organic waste container. The City of Nuremberg does not stipulate a minimum size for waste bins. As collection charges depend on the size of the bin for residual waste, there is a financial incentive to use the additional free-of-charge systems, both bring and collection systems. Further savings may be achieved in sharing a residual waste bin with one or more neighbours.

- Back in 1989, Nuremberg started a separate collection for electronic scrap. Again this was long before respective regulations and laws came into force. In 1997, Nuremberg City Council decided to gradually establish an environmental management concept in every municipal department, with the following objectives: increased environmental protection, reduced costs by saving resources and better organization and involvement of employees. For the implementation and supervision of these waste management concepts, each department may appoint an environmental officer. Environmental guidelines for the entire municipal administration have made environmental protection a common objective for all city employees. For example, these guidelines specify objectives of environmental protection when tendering or contracting to third parties. The City of Nuremberg’s waste management concept is one module of the environmental management concept. Its components are waste avoidance, environmentally safe disposal of waste and development of exemplary solutions in the field of environmental protection. These guidelines are summarized in the brochure “Abfallwirtschaft in der Stadtverwaltung Nürnberg” (Waste Management in the City Administration of Nuremberg).

*8c. Describe planned long and short term measures to reduce of the amount of waste produced and minimise the amount of waste sent to landfills, particularly biodegradable waste (max. 1,000 words)*

*The short term measures should include a description of measures adopted, but not yet implemented, and budgets for future measures already adopted.*

*The long term measures should include a description of planned measures yet to be politically sanctioned.*

to 8 c) Strategic goals of Nuremberg Waste Management Policy

#### 1. From Recycling to Circular Flow Economy

Six years ago, the City's top eco-political objective, to cease tipping municipal waste, in particular biodegradable waste, in landfills, was achieved. This was made possible by the consistent implementation of household waste sorting and separate collection of recyclable / reusable waste, and by building an up-to-date incinerator plant, also incorporating energy recovery. By incinerating residual waste in our energy-efficient plant and generating electricity and heat for district heating, around 66,500 tons of mineral coal can be substituted every year (energy recycling). At the same time, this avoids around 110,000 tons of harmful CO<sub>2</sub> emissions. There is, however, an economic problem. So far, the recycling of products has not led to reduced consumption of resources. Some environmentalists even argue that this is an obstacle to mandatory reduction of resource consumption. So far, waste recycling has not reduced the absolute amount of resources consumed.

It may be essential to establish product-related environmental compatibility assessments and impact predictions across the entire product life cycle, including the development, production,

marketing, use and disposal phases, thus encompassing the total resource consumption. In future, waste management activities will need to take into account waste creation, as well as optimal waste disposal. The eco-political objective of the next few years must be to transform the waste and recycling economy into an economy of material flows and to strengthen recycling of resources. The City of Nuremberg therefore intends to take part in a relevant research project within the next few years. The objective is to investigate whether it is possible to retrieve valuable metals (e.g. copper) from filter dust.

to graph 1 The total amount of waste for disposal decreased considerably between 2004 and 2005. In this period, the collection of organic waste from households was significantly expanded. Furthermore, from 2004, 10,000 tons of scrap wood from bulky waste collections were recycled separately.

to graph 2 Between 2002 and 2003, the total amount of waste decreased considerably, because recycling by business enterprises became effective through the implementation of the commercial waste ordinance. At the same time, less organic and green waste had arisen due to weather conditions.

## 2. Climate Protection – Reduction of CO<sub>2</sub>-Emissions

In Nuremberg, since 2001, no municipal waste has been tipped on landfill sites, thus substantial amounts of gases harmful to the environment (methane, carbon dioxide) could be avoided. In addition, for more than 15 years, there have been separate collections of paper, glass, organic waste, plastic waste from packaging, scrap wood, metals, electrical appliances, cooling appliances and many more. All these materials are recycled. Today, the recycling share in Nuremberg's municipal waste is about 56 %, and it is intended to increase this share. Recycled secondary raw materials have reduced the energy needed for the production of new goods by up to 50 %.

By incinerating residual waste in our energy-efficient plant and generating electricity and heat for district heating, around 66,500 tons of mineral coal can be substituted every year (energy recycling). At the same time, this avoids around 110,000 tons of harmful CO<sub>2</sub> emissions.

But smaller steps, in particular technical optimisation of waste plants, are also taken to reduce CO<sub>2</sub> emissions. For example, in the waste incineration plant, the gas-fired burners for nitric oxide separation have been replaced by heat exchangers using waste heat from the plant. This results in a permanent saving of 3,100 t of carbon dioxide per year.

## 3. Hierarchy of Recycling of Materials and Energy

In order to comply with European regulations and establish practical systems of separate collection of various recyclable waste fractions, while the system is still cost-effective for the citizens, there needs to be a rather fundamental reform of German legislation.

The EU Waste Framework Directive stipulates the goal of introducing separate collection of at least paper, metal, plastics and glass by 2015. This is to implement the predominance of reusing and recycling of waste. European legislation bases its stipulation of separate collections on the fractions of different materials only, and does not distinguish between types of end use. European legislation has thus taken a different approach from Germany, where the "dual collection system" for packaging waste was introduced, based on the "polluter pays principle". European legislation stipulates separate collection of the named fractions, whether they result from packaging or consist of the same material from non-packaging waste.

The attempt to implement the five-step waste hierarchy and its basic subordination of any other recycling measures, in particular use of waste for energy generation as opposed to recycling of materials, to further the concepts of resources and climate protection, is also considered an important and correct approach by the City of Nuremberg. But the City of Nuremberg also thinks that it is necessary to make use of all possibilities, and to deviate from this priority ranking, should this be necessary for a more environmentally compatible approach to waste management. In particular, there should be flexible regulations for any deviation from the priority of materials recycling over energy generation, in order to safeguard high-grade recycling and only use those waste streams for materials recycling which have a sufficient market in practice.

*8d. Describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation.*

*(Documentation should **not** be forwarded in this phase) (max. 600 words)*

Supporting documents such as licenses, file copies of brochures etc., documentation, test records, statistics, board decisions and waste management ordinance can be provided.

8e. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.

In the air raids of 1945, the historic city centre and extensive industrial and business areas were reduced to ashes and rubble. In the following decades, and up to the present day, contaminated soil from former industrial plants, deposits of debris from the period of reconstruction and ammunition finds, have all been a major challenge for safe disposal. Special challenges in the implementation of waste management measures arise in the historic city centre with its small shops, many and varied “catering events” and a series of public events throughout the year. Average household size also has repercussions on the amount of waste arising and waste separating behaviour. In Nuremberg, the proportion of single households is above average, at 43.4 %. These produce a proportionally larger amount of waste than larger households. Nuremberg is the commercial centre of Northern Bavaria with a central agglomeration of shopping facilities. Because of its central location in the European market and its convenient traffic connections, the city has attracted enterprises from the traffic and logistics sector. The Cargo Centre at Nuremberg Harbour is proof of this development. The city's central location also leads to a certain amount of waste left behind.

## 9. Water Consumption

9a. Describe the present situation and developments over the last five to ten years in relation to (max. 1,000 words):

1. Proportion of urban water supply subject to water metering;
2. Water consumption per capita;
3. Water loss in pipelines;
4. Compliance with the EU Water Framework Directive.

9a-1.

The N-ERGIE [water, gas and electricity supply] company measures water volumes at the following places:

- all exits from waterworks;
- all exits into the water supply network;
- all water volumes supplied to customers.

The amount of drinking water supplied can be calculated from these measured data. All unmeasured amounts are summed up as "network losses" (see 9a-3). Water volumes supplied to the fire brigade for fire fighting, to the gardens and parks department for watering (with sponsorship schemes for watering), and to drinking water wells are not measured (i.e. supplied free of charge). Leakages, water left running in winter (protection against frost) or in summer for safety reasons, and water used during building / construction measures in the water network (e.g. flushing pipes beyond the regular scheduled measures) are also not measured.

9a-2.

Some explanations for the figures presented:

- Water delivered is the entire volume of water sold in the city area of Nuremberg by the N-ERGIE company. This includes water delivered to business customers (industry, trade etc.) The N-ERGIE company does not supply all Nuremberg inhabitants with water. In the south of the city (the Kornburg and Greuth districts with around 3,500 inhabitants) water supply is via the special purpose association Schwarzachgruppe. Until 2007, some districts in the north of the city were also supplied by the special purpose association Water Supply Knoblauchsland (about 7,600 inhabitants).
- The calculated per capita water consumption is significantly above the average figure for the Federal Republic (supplied by bdew = Federal Association of the Energy and Water Sectors). This is not caused by any particular consumer behaviour of Nuremberg citizens, but by the fact that our data also include water supplied to trade and industry (see above).
- The per capita consumption in the last 10 years shows a significant downward trend.

### Water delivery by N-ERGIE to its customers in 2006-2009 (in million m<sup>3</sup>)

	mio m <sup>3</sup>	l/capita and day
2006	32	169.5
2007	30	165.5
2008	30	156.4
2009	30	156.8

9a-3.

#### Network losses

Network losses are calculated as the difference between the water volume fed into the network and the water volumes sold, the company's own consumption as well as the water volumes provided free of charge (see 1).

Year	2003	2004	2005	2006	2007	2008
Network losses (%)	10.3	7.3	11.17	7.0	7.0	7.0

9a-4.

Water Extraction Directive: The N-ERGIE company already meets the objectives of the Water Extraction Directive in many respects. These include:

- No water extraction for Nuremberg's water supply is above the long term groundwater regeneration rate; none of the water-bearing strata used by us is overused or shows a long-term decrease in groundwater volume. 95% of our water is extracted from the first groundwater storey.
- Our extraction catchment areas are protected by extensive source water protection areas.
- In the water protection areas, the N-ERGIE company is actively fighting to prevent or (if not possible) at least to decrease any impairment in the amount and quality of groundwater.

The strategies used have included purchase of land in particularly sensitive areas, in some cases demolition of buildings, conversion of farmed fields to grassland, co-operation with agriculture (cultivation agreements), influencing planning for traffic routes and trade areas to be favourable to water protection.

- The success of these measures is monitored. For the past 15 years, for example, in co-operation with farmers we have worked towards nitrate and pesticide input not increasing, and ideally decreasing. In one water extraction area we have been able to measure a decrease of nitrates in the water.
- In the water extraction areas, the amount and quality of groundwater is intensively monitored.
- Our price structure is a significant incentive for water-saving. The costs in water supply are mainly fixed, volume-independent costs. If this cost structure were to be mirrored in our price structure, the logical result would be a "water flat rate" for our customers. In reality, our prices are almost

exclusively volume prices.

9b. Describe the measures implemented over the past five to ten years to reduce water consumption and water loss in pipelines, including e.g. (max. 1000 words):

1. Proactive leakage management;
2. Network rehabilitation;
3. Non-domestic metering;
4. Byelaw implementation in relation to efficiency in water usage;
5. Awareness raising campaigns.

9b-1.

### 1. Proactive Leakage Management

- Cathodic corrosion protection for all steel pipes
- Systematic water monitoring – regularly scheduled leakage monitoring of all drinking water supply pipes with data loggers, about 400 km/a
- Network inspection, about 400 km/a
- Hydrant inspection, about 2250 pieces/a
- Provision of stand-by for emergencies and of control centre (central fault management) for 24 h/d
- Keeping fault statistics and deriving refurbishment and renewal strategies from these figures
- Systematic evaluation of the age structure and material classes [of the network elements] to derive refurbishment and renewal strategies
- Calibration (matching actual measured and calculated values) of network calculations for checking networks losses

### 2. Network Renewal / Rehabilitation

Year	Renewed network pipes (km)	Rehabilitation of cement mortar coating (km)	Renewed house connection pipes (no of pieces)
2008	6.5	3.0	600
2007	5.5	10.5	900
2006	5.0	5.5	400
2005	4.5	13	850
2004	5.0	12.5	750

In addition, every year about 430,000 € is invested in replacing sliding valves and hydrants. If water can be blocked off in short pipe lengths, the blocked off stretches contain a relatively low volume of water, and there is less water loss when work has to be carried out on the network.

In addition, about 180,000 € per year is spent on disconnecting or dismantling unused connection pipes to households, to avoid corrosion damage and thus leakage.

3. The water consumption of all customers is metered, the non-metered amounts supplied are limited to very small volumes (see 9a 1.).

We do not have any knowledge of whether any industrial plants extract and use groundwater. Information about water use for irrigation in the agricultural area Knoblauchland is also lacking.

4. We have no knowledge of any bylaw concerning economic water usage. We should point out that the pricing structure for waste water has a damping effect on the amount of drinking water supplied. The charge for waste water is worked out per cubic metre of drinking water supplied. This on the one hand promotes water saving in general, but on the other hand has also led to an increasing use of rain water, in particular for watering gardens. So people can decrease both their drinking water charges, and their waste water costs.
5. For many years, the N-ERGIE company has urged its customers to use drinking water carefully. On the one hand this involves information on ways of saving water. On the other hand, we appeal to our customers to take seriously the issue of water protection. We have addressed both aspects in the following media and events:  
Website, information brochures, EWAG almanac and N\_ERGIE customer magazine [distributed to all households], "Haus im Haus" [House in the House] with demonstration of water-saving fittings, materials for schools and guided tours for school classes.

9b-2.

User Network Renewal / Rehabilitation

Year	Renewed network pipes (km)	Rehabilitation of cement mortar coating (km)	Renewed house connection pipes (no of pieces)
2008	6.5	3.0	600
2007	5.5	10.5	900
2006	5.0	5.5	400
2005	4.5	13	850
2004	5.0	12.5	750

In addition, every year about 430,000 € is invested in replacing sliding valves and hydrants. If water can be blocked off in short pipe lengths, the blocked off stretches contain a relatively low volume of water, and there is less water loss when work has to be carried out on the network. In addition, about 180,000 € per year is spent on disconnecting or dismantling unused connection pipes to households, to avoid corrosion damage and thus leakage.

9b-3.

The water consumption of all customers is metered, the non-metered amounts supplied are limited to very small volumes (see 9a 1.). We do not have any knowledge of whether any industrial plants extract and use groundwater. Information about water use for irrigation in the agricultural area Knoblauchslund is also lacking.

9b-4.

We have no knowledge of any bylaw concerning economic water usage. We should point out that the pricing structure for waste water has a damping effect on the amount of drinking water supplied. The charge for waste water is worked out per cubic metre of drinking water supplied. This on the one hand promotes water saving in general, but on the other hand has also led to an increasing use of rain water, in particular for watering gardens. So people can decrease both their drinking water charges, and their waste water costs.

9b-5.

For many years, the N-ERGIE company has urged its customers to use drinking water carefully. On the one hand this involves information on ways of saving water. On the other hand, we appeal to our customers to take seriously the issue of water protection. We have addressed both aspects in the following media and events: Website, information brochures, EWAG almanac and N\_ERGIE customer magazine [distributed to all households], "Haus im Haus" [House in the House] with demonstration of water-saving fittings, materials for schools and guided tours for school classes.

## Wassernutzung – wie viel Wasser wofür?

Der Wasserverbrauch liegt in Deutschland am Tag bei 127 Liter pro Person.

So teilt er sich auf (Haushalt):



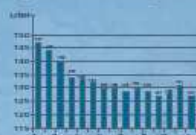
1 Liter entspricht 10 Liter

	46 Liter Baden, Duschen und Körperpflege	
	25 Liter Toiletenspülung	
	15 Liter Waschewaschen	
	8 Liter Geschirrspülen	
	8 Liter Raumreinigung, Autopflege und Garten	
	5 Liter Essen & Trinken	
	10 Liter Sonstiges	

Für all dies wird bestes Trinkwasser verwendet – oder mit welchem Wasser möchten Sie duschen?

Täglich werden in Nürnberg 100.000 Kubikmeter Trinkwasser gebraucht.

Füllt man den Business Tower Nürnberg (Höhe 135 m) mit Wasser, ergibt das etwa die tägliche Trinkwasseremenge.



Entwicklung des mittleren Wasserverbrauchs pro Kopf und Tag in Deutschland (Quelle: BfW)

## Trinkwasserschutz – Vorbeugen ist besser als Aufbereiten

### Ziele der N-ERGIE:

- Trinkwasser möglichst naturnah gewinnen
- Aufbereitungsverfahren minimieren

Voraussetzung dafür ist Grundwasser, das frei von Verunreinigungen und Beeinträchtigungen ist. Um die Qualität des Grundwassers langfristig zu sichern, werden große Wasserschutzgebiete ausgewiesen. Allein für die Wasserversorgung von Nürnberg ist das eine Gesamtfläche von rund 19.500 Hektar, das ist mehr als die Fläche der Stadt Nürnberg!

### Maßnahmen der N-ERGIE für den nachhaltigen Trinkwasserschutz:

- Schadstoffe im Grundwasser auf ein Minimum beschränken
  - Kooperation mit der Landwirtschaft für eine grundwasserträgliche Landnutzung
- Schutz der Wassereinzugsgebiete
  - Erwerb von Flächen im Bereich der Wasserschutzgebiete
- Überwachung der Ressource Grundwasser
  - Einbindung in Bauverfahren z. B. bei Straßenbau, Gewerbe- und Industriegebieten oder Abwasserentsorgung
  - Regelmäßige, vorbeugende Überwachung der Grundwasserqualität



**N-ERGIE**  
Spürbar näher.

## Trinkwasser – Trinkwasserqualität

**Was ist drin im Wasser?**

Wer glaubt, je reiner das Wasser, desto besser, der irrt. Chemisch reines Wasser ist ein künstliches Erzeugnis – es kommt in der Natur nicht vor. Auf seinem Weg durch die Atmosphäre und den Boden nimmt das Wasser eine Vielzahl von Stoffen in unterschiedlicher Konzentration auf.

Sehr viele der für uns unsichtbaren Stoffe sind erwünscht!

- Salze geben dem Wasser Geschmack.
- Mineralien versorgen unser Blut und besorgen als Elektrolyte den Energietransport der Nervenbahnen.
- Calcium ist u. a. wichtig für Knochenaufbau und Zähne, Magnesium für den Stoffwechsel.
- Natrium reguliert den Wasserhaushalt im Körper.

Art und Menge der im Wasser gelösten Stoffe sind Merkmal dafür, ob das Wasser bei uns als Trinkwasser gelten darf oder nicht. Denn nicht alles, was danach aussieht, ist auch Trinkwasser.

**Alles unter Kontrolle!**

Die N-ERGIE garantiert ein hygienisch einwandfreies und geschmacklich gutes Trinkwasser.

- Die vom Gesetzgeber in der Trinkwasserverordnung vorgeschriebenen Grenzwerte werden von der N-ERGIE selbstverständlich eingehalten.
- Zur ständigen Qualitätskontrolle betreibt die N-ERGIE ein eigenes, modern ausgestattetes Labor. Pro Jahr werden dort ca. 30.000 physikalische, chemische und mikrobiologische Einzeluntersuchungen durchgeführt.
- Regelmäßige Kontrolluntersuchungen durch die Aufsichtsbehörden bestätigen: Das Nürnberger Trinkwasser ist „ein guter Tropfen“.



**Wasserhärte:**

Das Nürnberger Trinkwasser hat eine mittlere Härte von 9,3 °dH bis 14,6 °dH.

Für genaue Analysewerte des Nürnberger Trinkwassers und weitere Informationen zur Wasserhärte besuchen Sie bitte unsere Homepage: [www.n-ergie.de](http://www.n-ergie.de)



**N-ERGIE**  
Spürbar näher.

## Trinkwasser – von der Quelle zum Wasserhahn

Die N-ERGIE versorgt mehr als eine halbe Million Menschen über dieses Verteilungssystem täglich mit frischem Trinkwasser.



**Aufgaben der Hochbehälter:**

**Druckausgleich:**

- Die vier Hochbehälter liegen ca. 50 bis 60 Meter über dem Versorgungsgebiet.
- Aus ihnen fließt das Wasser über sogenannte „Fallrohrleitungen“ in das Verteilungsnetz.

**Vorrat:**

- Bei einem Gesamtvolumen von rund 210.000 Kubikmeter Wasser reicht der Speichereinhalt rechnerisch für gut 2 Tage.
- Tagesschwankungen beim Trinkwasserverbrauch können aus den Hochbehältern ausgeglichen werden.



Files:

- [BEWERBUNG\\_9\\_Attachment\\_to\\_9b.doc](#)

9c. Describe planned long and short term measures to reduce water loss (max. 1,000 words):

The short term measures should include a description of measures adopted, but not yet implemented, and budgets for future measures already adopted.

The long term measures should include description of planned measures yet to be politically sanctioned.

9c-1.

Short-term measures for 2010, budget committed

- renewal of network pipes in danger of breaking within the city area, about 6 km, cost 2.7 million €
- cement mortar coating renewal of network pipes within Nuremberg city area, about 5.5 km, cost 1 million €
  
- renewal of connection pipes to households within Nuremberg city area, about 650 pieces, cost about 2.2 million €
  
- 430,000 € for replacing sliding valves and hydrants
  
- 180,000 € for disconnecting or dismantling unused connection pipes to households
  
- 100,000 € for inspection of network
  
- 100,000 € for inspection of hydrants
  
- 40,000 € for leakage testing of network pipes
  
- 730,000 € for providing on-call service for emergencies

9c-2.

Long-term measures

- Development and purchase of strategic tools, such as asset simulation and optimised planning principles for optimising suitable network planning, network management and network maintenance strategies, as well as deriving the resulting need for finances.
  
- Drawing up an economic plan for five years, based on the results of asset simulation, the useful life span and fault profile of equipment, legal stipulations, third party measures as well as repair and rehabilitation and provision of on-call service for emergencies
  
- Planning measures, whilst taking into account optimised planning principles

*9d. Describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation.*

*(Documentation should **not** be forwarded in this phase) (max. 600 words)*

- List of measures planned for network in 2010
  
- Medium-term economic plan 2010-2014
  
- Documentation of results for "Asset Simulation" and "Optimised Planning Principles"
  
- Data bases with measured values of amounts supplied, amounts discharged, groundwater levels, results of water analysis

- Documentation of water protection areas, comprising sizes, monitoring programme and planned measures
- Information material for the public, website
- Results of analysis and planning for managing surface water bodies / ground water in the sense of the water framework directive

Link: <http://www.wasserrahmenrichtlinie.bayern.de/bewirtschaftungsplanung/karten/index.htm>

*9e. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.*

One of the disadvantages leading to water leakage in the network is the fact that there is still a high percentage of cast pipes (more prone to breakage) dating back to the years before 1945.

## 10. Waste Water Treatment

*10a. Describe the present situation and developments over the past five to ten years in relation to the proportion of total waste water treated in accordance with the Urban Waste Water Directive (max. 1,000 words).*

Waste water collection for the Nuremberg city area (with 502,815 inhabitants) is mainly achieved with a combined system. The sewage network has a length of 1,415 kilometres. The waste water of 99.9 % of all properties is connected to the central sewage treatment plants. The very few properties not connected to the public sewer network are remote individual houses or gardening companies in the outskirts. The waste water from these properties is treated in approved small sewage treatment plants or pit latrines without an outlet. The sludge removed from these plants is monitored by the City Waste Water Treatment Department and is treated in the central sewage treatment plant. Thus all properties are connected to a proper waste water treatment system. This situation was achieved ten years ago. Nuremberg's two waste water treatment plants have been adapted to increasingly strict stipulations according to §7a WHG [Water Management Law] since the mid 1980s. Thus, for over 10 years, they have been up to the current state of technology fulfilling all requirements for further waste water treatment for the elimination of nutrients according to the Urban Waste Water Directive.

*10b. Describe the measures implemented over the past five to ten years to improve waste water treatment (max. 1,000 words).*

Investment for improvement of waste water treatment plants was finalised 10 years ago, including nitrogen and phosphorus removal as well as a final fine filtration process). In the recent past, the emphasis has been on the reduction of the amount of waste water including storm water discharged into the water bodies, as well as on the reduction of the volume of surface water carried in rainy weather. By building rain overflow basins and reservoir sewers with an overall reservoir volume of 501,056 cubic metres, 17 rain outlets have been completely closed down or refurbished to comply with existing guidelines. At five pumping plants, the reduction of waste water including storm water was optimised, and a further three rain outlets are currently being redesigned. These measures have contributed to a measurable improvement of the water quality in the rivers Pegnitz and Rednitz. They are classified as "critically polluted" with a marked trend towards "moderately polluted".

The City Waste Water Treatment Department aims to avoid any discharge of untreated storm water into the receiving water bodies. As far as the waste water treatment plants are concerned, efforts have been made to optimise processes. By managing the intake volumes, the plant load could be evened out. As a result, parts of the plants which need a lot of resources could be closed down, for example one aeration basin for high load biological treatment in both Waste Water Plant 1 and 2, as well as an aerated grit chamber; while the discharge values for the waste water treatment plants remain safeguarded. Control technology measures resulted in savings in energy (electricity and heating oil) and other resources (methanol as substrate, precipitating and flocculating agents). In addition the use of hazardous materials was reduced, or they were replaced by less hazardous substances.

*10c. Describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation.*

*(Documentation should **not** be forwarded in this phase) (max. 600 words)*

Since 2003, the City of Nuremberg Waste Water Treatment, and since 2009, the City Water Treatment and Environmental Analysis have been certified according to DIN EN ISO 9001/14001 quality and environment management. For all plants, there are official authorisation and approval

documents. These, and the building records document the state of the plants as well as the various construction stages. Since certification in 2003, environmental reports including an environmental balance have been presented annually. These reports list the measures and results. In addition, all plants used for waste water treatment are obliged to monitor themselves and document the results, as well as submit to comprehensible external monitoring by the supervising authorities. All relevant reports are available.

*10d. List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.*

The industrial region of Nuremberg lies within the Middle Franconian basin, one of Bavaria's low-precipitation areas and has low flow rivers. Waste water treatment plants were therefore adapted to these conditions. Major efforts had to be made and strict stipulations concerning water protection and neighbourhood protection had to be fulfilled, because there was not much space available and this was in the immediate vicinity of residential areas. In the past 10 to 15 years, there has been major structural change. Many companies in the metal-working and electrical trades have partly or completely closed down. Similarly in the food industry, the abattoir and a dairy plant, as well as a major brewery have moved to the surrounding countryside. The amount of waste water and the time distribution and load have changed considerably since the plants were planned. In order for the plants to continue fulfilling the official stipulations, existing management and control concepts had to be adapted, or newly designed, as in the case of biological waste water treatment.

See appendix: Umweltbericht SUN 2008 (Environmental Report SUN 2008)

## 11. Environmental Management of the Municipality

11a. Describe the present situation and development over the past five to ten years in relation to (max. 1,000 words):

1. Number of municipal departments with certified environmental management systems (ISO 14001/EMAS);
2. Percentage of consumed eco-labelled, organic and energy-efficient products by municipalities, measured as a share of the total product consumption within similar category/type;
3. Energy consumption of municipal buildings per square meter.

### 11.a.1.

A number of municipal offices and agencies have been certified according to international Environmental and Quality standards and norms, notably  
 – ASN (437 employees), the municipal agency for waste management (first certified according to ISO in 1997).

- the municipal agency for waste water management, which was first certified according to ISO 14000 as well as for ISO 9000 in 2003. The newly formed agency for waste water management and environmental analysis, named SUN (415 employees), has been certified for all sectors of work according to ISO 9000, ISO 14000 and (the laboratory unit) ISO 17025.

- the agency for municipal homes for elderly people (Nürnberg Stift) has implemented a not certified QM-system.

- the recently formed municipal road and public space service (SÖR, 865 employees) was first certified according to ISO in 2009.

Between 1998 and 2000, the City of Nuremberg directed and co-ordinated a project implemented by four Bavarian cities, "Eco Audit in Municipal Administration", and in this context implemented EMAS certification in the following institutions:

- Nuremberg State Theatre (first entry 18.05.2000)
- Nuremberg Environmental Department (first entry 15.03.2001)
- 2 elementary schools, Bismarckstraße and Großgründlach (first entry 07.06.2002 and 30.06.2003 resp.)
- Vocational School B4 for professions in the retail trade and credit business, wholesale and foreign trade (first entry 01.06.2003)
- Vocational School B14 for office professions (first entry 01.06.2003)
- Company Running Franconian Stadium (first entry 11.01.2006)

### 11a. 2.

Purchasing for the municipal administration is organised according to the principle of decentralised administration of resources. All municipal offices, agencies, services or other units have to follow the "Guidelines for Environmentally-Friendly Purchasing", a voluntary municipal environmental compatibility check which has been set in force by the City Council in 1990 and which is binding for the purchasing offices. We will give detailed information on a number of products as examples for the implementation of environmentally-friendly purchasing policies.

### Environmental friendly products in the municipal administration

Cost reduction by using recycled paper (100% since 2009)

	Recycled paper	Fresh fibre paper	Savings
wood (in Kg)	-	67,269.8	<b>67,269.8</b>
Water (in l)	460,290.6	1,172,057.0	<b>711,766.4</b>
Total energy consumption (in kWh)	94,186.7	240,767.9	<b>146,581.2</b>
CO <sub>2</sub> -Emission (in kg)	19,893.5	23,800.4	<b>3,906.9</b>

### Number of Tissue Towel Rolls (100 % Recycled Paper)

2005/2006 20,000,000

2006/2007	14,000,000
2007/2008	15,000,000
2008/2009	17,000,000

### Toilet Tissue (Recycled Paper)

single layer crepe	2005/2006	285,000
single layer crepe	2006/2007	300,000
single layer crepe	2007/2008	350,000
two layer tissue RAL UZ 52008/2009		280,000 (test phase)

### Energy saving bulbs and electric bulbs

	2005	2006	2007	2008
Energy saving bulbs (service life: 8000-16,000 hours)	770	755	1200	470
Electric bulbs (service life: max. 2000 hours)	3,750	5,225	3,050	2,300
Overall Consumption	4,520	5,980	4,250	2,770
Energy saving bulbs and electric bulbs				
<b>Quota of energy saving bulbs in relation to the total quantity of lamps ( in %)</b>	<b>17</b>	<b>12,6</b>	<b>28</b>	<b>17</b>

Recycled paper: Since January 2009, only recycled paper is purchased (mandatory procedure). This includes paper towels and toilet paper.

Office furniture: Office furniture in municipal offices have to be certified according to "Blauer Engel" (Blue Angel) standards.

Energy saving light bulbs: Since more than 10 years the City of Nuremberg has been changing lighting from conventional bulbs to energy saving light bulbs so that today 100 % energy friendly lighting appliances are used.

Vehicles: Environmental protection and emissions reduction are priorities when purchasing municipal vehicles (mandatory procedure). This is monitored by external auditors. The system has been implemented in 1997. Since 2005, all cars purchased have been in exhaust class Euro 5, an exhaust emission standard which comes into force in 2010. Latest acquisitions of trucks for various purposes have been made according to standard Euro 5/EEV which is a standard going beyond Euro 5.

Organic Products in Nuremberg Schools, 2009

On 23.07.2003, Nuremberg City Council unanimously decided to aim at supplying 10 % of all products consumed in school cafeterias and other municipal canteens and service points from organic farms or certified organic processors by 2008. In October 2008 more ambitious targets of up to 50% of organic food in schools and day care centres were set.

Organic Lunch Box Drives 2005 - 2009. Since 2005, the "Organic Lunch Box Drive" has been implemented in Nuremberg and other municipalities in the Metropolitan Region. In the first year, about 5,000 boxes were handed out to first-formers free of charge. On 24 September 2009, in the fifth Organic Lunch Box Drive, again all first-formers were handed their new "Organic Lunch Box" with tasty snacks for school breaks. 10,000 "Organic Lunch Boxes" were distributed to 413 classes. After Berlin, Nuremberg was the second city to introduce this Organic Lunch Box Drive.

### 11a-3

The characteristic value for energy used for heating all municipal buildings has continuously decreased in past years. While in 2006 (adjusted to weather conditions) the value was still at around 165 kWh/square metre per year, in 2008, it was reduced to about 146 kWh/square metre per year. A similarly positive trend can be observed for the significant city buildings, such as schools, municipal office buildings, municipal baths, cultural institutions and large child care centres. Thus the average heating energy use characteristic of this group of buildings was a value of about 133 kWh/square metres per year in 2006, reduced in 2008 to only about 124 kWh/square metres per year. The goal is finding the best solution for construction projects fulfilling all functional, need-based, economic and design quality criteria, as well as saving resources and energy and preserving existing buildings. The City of Nuremberg stipulated stricter "Energetic Standards and Planning Requirements" in order to achieve its high climate protection goals. Thus, all new buildings must be constructed to passive house standard. When existing properties are refurbished, the standard required by the City of Nuremberg is about 20 per cent higher than that stipulated by the current (Federal) Energy Saving Regulation.

The City of Nuremberg owns property comprising about 1.2 million square metres of heated space, mainly school buildings. Some selected examples for refurbishment of existing properties for energy saving:

Conversion of a restaurant building to Nursery School – Child Care Centre – Advice Centre, Schlachthof (former abattoir), Philipp-Koerber-Weg 2 (2002 - 2004): The heating energy needed was reduced by 75% (energy used in 2008: 78 kWh/square metre), and the primary energy use was reduced by 80%.

Complete refurbishment of Child Care Centre in Adam-Klein-Straße 37a (2005): The building housing the child care centre was completely refurbished with heat insulation technology.

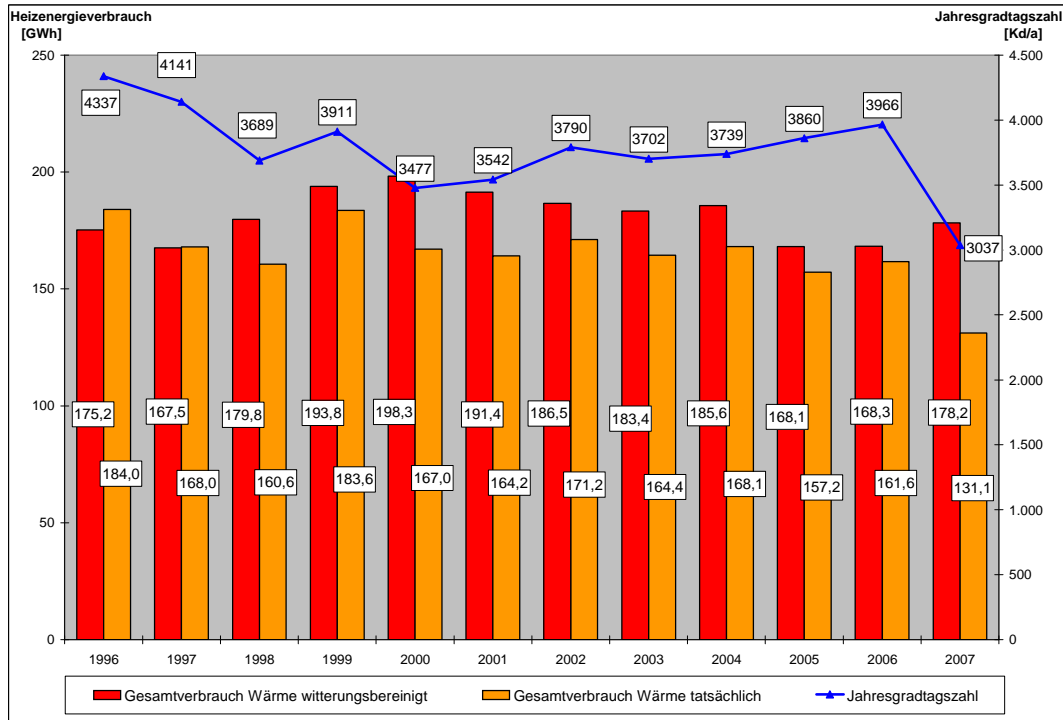
The amount of heating energy used was reduced by about 50% (compared to the value before refurbishment) to 120 kWh/square metre per year.

Internal Thermal Insulation Project (since 2001): The Internal Thermal Insulation project, implemented in the buildings of the Bildungszentrum (Adult Education Centre) and in Gemeinschaftshaus Langwasser (Langwasser Community Centre) was successfully completed (between 2000 and 2003). All structural-physical prognoses concerning damage-free processes and energy-saving were confirmed.

New (municipal) buildings Südpunkt (2004 to 2008):

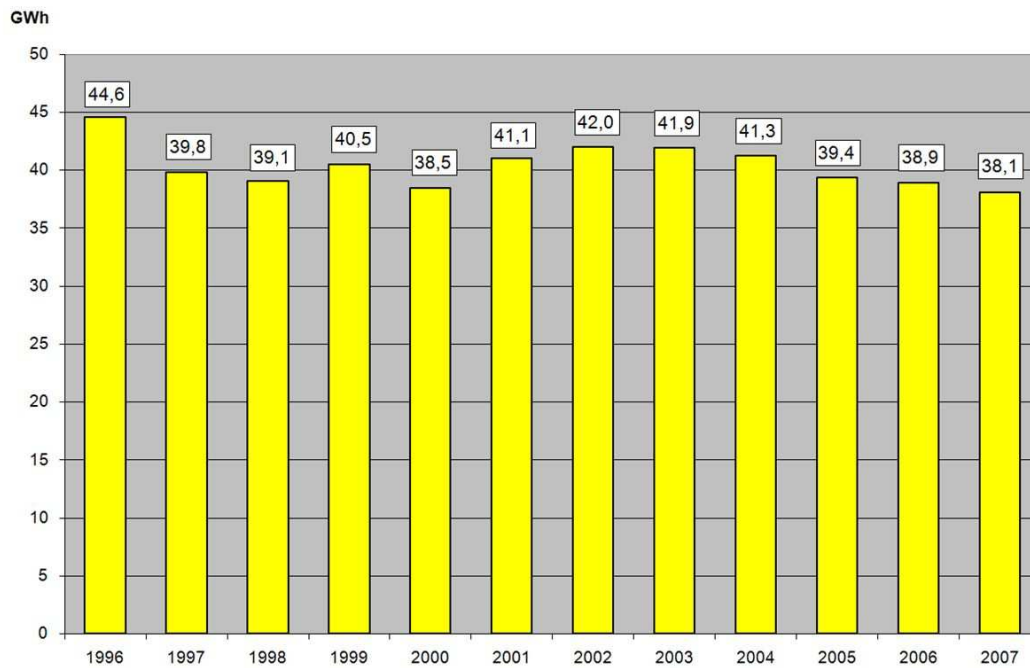
One of the largest projects of the past years, the new construction of the Südstadtforum Qualifizierung und Kultur – südpunkt (Southern City Forum Qualification and Culture, with about 4,700 square metres usable floor space), was the first project to take in the requirements for the construction of new buildings to passive house standard. Due to the forum's high PR profile and its wide information network this project had a signal effect for further sustainable development in the city's southern districts. In 2009, the forum's first operative year, the heating energy used for the entire complex was 38 kWh/square metre. This value is far below the required value of the current Energy Saving Regulation.

## Heat Consumption in Municipal Buildings 1996 – 2007



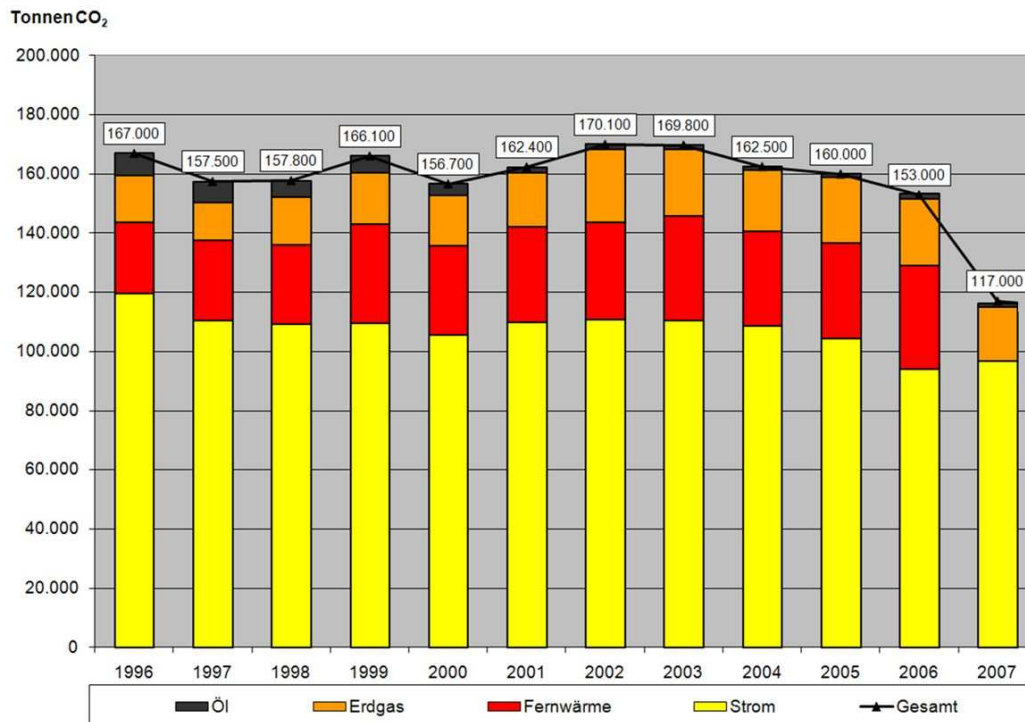
Quelle: Energiebericht KEM 2008

## Consumption of electricity in municipal buildings 1996 – 2007



## CO<sub>2</sub> emissions of municipal buildings 1996 - 2007

Quelle: Energiebericht KEM 2008: Entwicklung CO<sub>2</sub>-Emissionen aller städtischen Dienststellen und Eigenbetriebe



11b. Describe the measures implemented over the past five to ten years in relation to (max. 1,000 words):

1. Developing an overall policy for environmental management of municipal activities;
2. Increasing the share of the total consumption of eco-labelled, organic and energy-efficient products;
3. Increasing the energy efficiency of municipal buildings.

11b1) For a couple of years, the Department for Environment and Health has been working on a sustainability report for the City. The first comprehensive report on sustainable development of the City of Nuremberg was published in 2009. The City Council decided to follow up this report regularly (i.e. the next full reports will be published in 2011 and 2014). The report is based on indicators characterising the state of the environment and its development trends, sustainability of the local economy and businesses, and socio-economic features of civil society. These indicators will serve as orientation marks for future development projects and political decisions in order to analyze their effects on sustainability and adjust – if necessary – development concepts. A "Master Plan Environment and Health" is being worked out which will provide an overview on all programmes, projects and other measures in these sectors and evaluate their impact on sustainability. The sustainability report as well as the Master Plan will be monitored continuously in close co-operation with the Municipal Institute for Statistics and Urban Studies, both in quantitative and in qualitative terms. The vision is to provide instruments which will allow all citizens at any time to follow the development and the state of our city's environment, business indicators and social agenda.

The following long-term expert plans were implemented in Nuremberg, with public involvement (i.e. the plans are published, and each citizen has the right to voice objections and make suggestions for changes and improvements):

- Clean Air Plan
- Strategic Noise Mapping and Noise Reduction Action Plan
- Alliance for Bio-Diversity (various city district development projects and special project "Nürnberg ans Wasser" (moving Nuremberg to the water)

11b2) The Department for the Environment has launched an information campaign on the new European regulation for public procurement, which permits the application of environmental criteria in the procurement process. Internal municipal regulations will be adjusted step by step to the new rules, e.g. by a) integration of low engine emission standards for vehicles b) emission-free/-reduced products in the building sector c) eco-friendly IT-equipment and appliances d) eco friendly technical materials used in waste water treatment etc.

11b3. Since 1997, there has been a successful municipal energy management scheme which systematically monitors and reduces heating and electric energy used in municipal buildings. The scheme purposefully influences project development, new construction projects, refurbishment of existing buildings, maintenance and running of buildings, i.e. the entire life cycle of municipal buildings. The City of Nuremberg thus acts as an important model for its citizens in the way that it deals with its own buildings and properties. The appended graphs demonstrate that the amount of electricity used by the entire municipal administration decreased by about 9 percent between 2002 and 2007. This is a very good result, in spite of increasing IT technology use. Since 2000, heating energy, adjusted to various weather conditions, has also continuously decreased by 13 per cent. Due to a slight increase in 2007, the overall saving of 10 per cent was achieved. This is a very good value, particularly with poor municipal finances in mind.

*11c. Describe planned long and short term measures to improve municipal environmental management (max. 1,000 words):*

*The short term measures should include description of measures adopted, but not yet implemented, and budgets for future measures already adopted.*

*The long term measures should include description of planned measures yet to be politically sanctioned*

In 2010, in the context of the Nuremberg Metropolitan Region which comprises 33 cities and districts, the City of Nuremberg launched an initiative to create an agency for "Climate Protection and Sustainable Development" within the Nuremberg Metropolitan Region. The members of the Council of the Metropolitan Region agreed to this. The next short-term measure will now be the establishment of a steering committee comprising representatives from politics, economy and science which is to define the goals and methods of this body and to supervise the implementation of the project. The following concrete measures are to be implemented:

- Alliance for Climate Protection of the Nuremberg Metropolitan Region with an agreement on common climate policy goals
- Improved coordination of institutions and projects within the Region
- Exchange of expert opinion on best practices and sharing of successful solutions and experiences
- Common definition of promotion projects and application for funding for implementation of climate policy goals
- Improved communication of climate protection competence, both internally and externally

Some examples for long-term measures: The Sustainability Report gives an overview of trends in the city's social, economic and environmental development in a three-year-period of time (first published in 2009 for the period of 2004-2008). This information is used to draw conclusions and to develop action plans. For the sector "Environment and Health" a Master Plan is under preparation. Similar concepts are in progress for Climate Protection (Schedule 2020-2050 including mitigation and adaptation) as well as for public parks and green areas, for playgrounds and sport areas. A major activity was initiated with the recently published Public Transport Plan (covering the years 2010-2020), with the intention to tackle the most urgent transport problems caused by the steadily increasing commuter traffic. Special attention is given to the promotion of cycle traffic and to the development of long-distance combined cycle-paths and green belts.

*11d. Describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation (max. 600 words).*

Nuremberg provides a special documentation (hard copy) including the following documents:

- Annual Reports (e.g. on Waste Management, Waste Water Treatment, Climate Protection, Water Consumption etc.)
- Decisions of the Municipal Council on Climate Protection Policies
- Minutes of the Council of the Nuremberg European Metropolitan Area (Europäische Metropolregion Nürnberg) since 2004
- Plans (e.g. land development plan with integrated landscape plan) and maps esp. in the sector of planning of urban green areas
- Results of traffic census
- Online-analysis data of the quality of ambient air and of river water in print version as well as in electronic version
- Noise register
- Action Plans (e.g. on Air quality)
- Public opinion polls, data analysis and evaluation by Nuremberg Statistics Agency
- Internet presentations by the Environmental Department and other municipal offices with many links to institutions providing relevant data and documents
- Blue pingu (internet address for organic food markets etc.)
- Integrated multi-media document with ppt presentation, animation and video clips
- Films (on the sewage treatment plant or on sustainable mobility)
- Booklets, brochures, flyers and leaflets

## 12. Dissemination Programme

*The European Green Capital will act as a role model to inspire other cities and will, therefore, have to disseminate and promote its experience and best practice to all other European cities.*

*Please describe the programme of events and activities that your city will commit to should you win the European Green Capital Award. For example:*

1. *A dedicated website;*
2. *Opening conference (showing why the city was selected and sharing best practice);*
3. *Workshops/events/conferences (also, hosting of European events like Green Week and Mobility Week);*
4. *Closing ceremony;*
5. *Travelling exhibition sharing best practice & experience;*
6. *Publications;*
7. *Articles in international magazines;*
8. *Dissemination of guidelines;*
9. *Films;*
10. *Guided tours in the city showing the innovative solutions.*

*Co-operation and partnership among authorities, citizens, business communities, and other stakeholders aimed at sharing experience and best practice.*

### Programme Goals

Nuremberg is a German city with a rich historical heritage (Free City of the Empire in the 15th century, Nazi Party Rallies, war damage in the Old Town, Nuremberg Trials) presently undergoing strong economic structural change, but also a city sending out signals for the future concerning the environment, a solidarity-based society and economy. In addition, there are lively networking links and co-operation arrangements between Nuremberg – the central city of the European Metropolitan Region Nuremberg – and the surrounding 33 North Bavarian towns, cities and regions. Should Nuremberg win the Award, the City intends to centre its PR activities on the idea of developing a "green" city fit for the future, building on present economic and cultural structures and linking up with the urban and rural surroundings. The City of Nuremberg thus intends to show concrete examples which are practical and can be implemented, using campaigns, events and a comprehensive information and motivation strategy which might be transferable and useable in many other medium-sized European cities. By disseminating successful and affordable best practice examples, Nuremberg would like to inspire and encourage other cities to become "green cities" too.

### Programme Strategy

Nuremberg's PR activities will focus on the following topics:

- publicity for and promotion of the topic "Organic Metropolis Nuremberg" – promotion of organic foods on a wide level (in schools, works canteens, at events and in retail)
- Nuremberg City of Bio Diversity – maintaining and expanding bio diversity and green areas within the city
- Nuremberg Energy Metropolitan Region – examples of better energy-efficiency in cities (refurbishing existing housing stock) and rural areas (renewable energy / bio mass)
- From sustainability towards a Masterplan for the Environment – monitoring and transparency for all interested parties/ stakeholders

In particular, Nuremberg intends to:

- involve as many citizens, networking partners and players in industry, politics, science and administration as possible;
- make visible those co-operations between city and rural surroundings which seem to be easily transferable to other locations;
- use international contacts (EUROCITIES, Covenant, partner cities) to promote the dissemination

of the Green Capital City concept on a wider platform;

- continue supporting and promoting citizens' involvement and commitment; and
- target particularly young people (general education in schools, vocational schools, colleges and universities) when addressing the topic of a "city fit for the future".

## **Programme of Events**

The City of Nuremberg will organise a year-long programme of activities with various events briefly described below:

1. Opening Conference in the context of the world's largest trade fair for organic products, "BIOFACH" in the Nuremberg Trade Fair and Conference Centre in January 2014. The agenda will be content-oriented, supplemented by a creative cultural event (band, cabaret). The conference, focusing on the topic of "organic products", will aim at national and international experts and opinion leaders from politics, industry and science. There will be close co-operation with the towns, cities and regions of the Metropolitan Region Nuremberg.

2. The BIOFACH is also in close contact with an important project organised by the City of Nuremberg: "Organic Metropolis Nuremberg".

In 2003, Nuremberg City Council unanimously decided that "the City of Nuremberg should set itself the goal of increasing the use of both organic products and regional products. Objectives for 2014: 10 % of agricultural area used for organic food, 25 % of organic products and regional products for all municipal institutions, events, specialist markets, but in particular 50% in schools and day care centres, at receptions and at the City of Nuremberg's farmers' markets. The main method of promoting organic agriculture is fostering the demand for organic food and products.

For municipal events, the various organisers can make legal stipulations and/or safeguard that organic food products are served. Municipal event organisers include: markets, special markets, the Christmas Market (Market Department), Bardentreffen singer-songwriter festival (Culture Department). For example, the number of organic options offered at the Nuremberg Christmas Market has been increased. Examples include: organic mulled wine, organic spicy gingerbread, organic roast sausages. For several years, the Market Department has also supported organic producers and traders at Nuremberg's farmers' markets, some of which are characterised by a very high percentage of organic products.

Last year, for the event "Stadt(ver)führungen" [Conducted (Seductive) Tours], there was a co-operation with the "Summer Kiosk – Market for Eco Design" in Rosenaupark (Eco = differentiated overall consideration of the entire lifespan of any particular product). In addition, under the programme heading "Gelüste und Geschmäcker" [Appetites and Tastes], guided tours and encounters were organised in and to shops which are particularly active in the organic sector (such as e.g. Organic Food Store Lotus). In December 2009, a further market, the "Winter Kiosk – Market for Sustainable Presents" was organised, with catering exclusively with organic produce.

The "Bio Experience" on the Main Market Square is a very special highlight. Nuremberg, as Organic Metropolis, organised this major consumer event, giving a wider public the opportunity to find out about certified organic food stuffs and to obtain information on organic food. In addition, this independent event organised by the City, publicly and emphatically underlines Nuremberg's intention to promote organic produce. Annually, around 25,000 visitors enjoy the many and varied organic products on offer. About 100 exhibitors from the organic sector, catering stands, an extensive cultural programme, as well as a special programme for children and young people, have ensured that the event has been extremely popular.

Large-scale consumers: Nuremberg kitchens catering for large numbers of people are a further very important target group for the objectives mentioned above, because great amounts of food ingredients are prepared here. They include e.g. the Municipal Clinics. Here, catering already

includes 30 per cent regional produce, but for cost reasons, so far less than 10 per cent organic produce. In order to increase this share, further networking with regional organic farmers is planned. At this point, it must be pointed out that the focus is not only on the use of organic produce, but also on the increased promotion of regional produce, as well as on products from fair trade.

#### Increasing networking in the organic product sector - BioFach and Marketing for Organic Metropolis Nuremberg

Because of the outstanding economic importance of the organic food sector, the Environmental Department has forged a "strategic partnership" with NürnbergMesse [Nuremberg Trade Fair and Exhibitions Organisers] in order to promote the importance of "organic" as a location factor for Nuremberg and the region, in the context of the trade fair "BioFach", the world's most important fair for organic products. Nuremberg has a major potential to become one of the top players in the field of "Organic Markets", both in Germany and throughout Europe. Against this background, the City and NürnbergMesse have been significantly involved with an initiative proposed by the Nuremberg Chamber of Trade and Commerce – named "Bio-Markt Metropolregion" [Organic Market Metropolitan Region N] - as well as in the registered association "Bio-Innung" [Organic Chamber]. As the first German city, Nuremberg also joined the international association "Citta del Bio" and thus promoted activities on international cooperation.

The objective of this involvement is increasing networking in the organic product sector. On the occasion of the BioFach 2010 trade fair, a joint marketing campaign was organised in order to give increased publicity to the economic importance of the organic product sector in the city and in the region. The campaign will be entitled "Nürnberg: Where organic people meet".

Nuremberg's children and young people are a particularly important target group. In recent years, in addition to the "organic lunch box drive", there has been a series of other school events and workshops intended to raise interest in organic food, aimed at teachers, janitors, parents and school students. A total number of several 1,000 participants have attended these events. This included e.g. several cooking workshops, "bio days" held for school classes whose pupils had won a drawing competition, in-service training for teachers on an organic farm, "Schools for the Senses" for children in after-school care from the first to the sixth form in Nuremberg and surroundings. There were displays giving the children an opportunity to try basic tastes, find out about the difference between fresh food and convenience food, explore food by touch, hearing and smell and allocate various fruits and vegetables to their seasons.

Students of the Academy for Home Economics at the Vocational School in Nuremberg, in the context of their training run their own school canteen independently. Every day, 60 meals are served to students and teaching staff. Since November 2009, there has been a 100% organic menu twice a week, at no extra charge. This is Germany's first certified organic school canteen, and it has received several awards.

### 3. Energy Region Nuremberg

With 500 companies and over 60,000 employees working in this sector, as well as a turnover of more than 10 billion Euros, the energy sector plays a major role in the Nuremberg Metropolitan Region. Nuremberg Metropolitan Region boasts a unique concentration of competence in the energy sector, with the combination of energy technology / automation / power electronics and energy and buildings, and with numerous companies, universities, colleges and research institutes. This initiative is supported by strong partners: science, industry, politics/administration, chambers of commerce and associations in Nuremberg Metropolitan Region. This Region is characterised by a healthy mix of globally active companies and successful medium sized companies which offer components, products and services from the entire value creation chain of energy supply, transport and efficient energy use. The favourable research environment in Nuremberg Metropolitan Region contributes greatly to the performance of the local energy industry. The universities of Erlangen-Nürnberg, Bayreuth, Würzburg, as well as the Universities of Applied Sciences in Nuremberg,

Ansbach and Weihestephan-Triesdorf offer a wide spectrum of courses relevant to the energy industry and to energy technology.

The City of Nuremberg, as one of the initiators, has advocated that a business field "Climate Protection and Sustainable Development" should be established in the Nuremberg Metropolitan Region – and a basic policy decision to this effect was taken on 30.04.2010. In the context of the PR work for Green Capital City, Nuremberg will continue to campaign for making the public increasingly more aware of the topics of climate protection and sustainable development, through networking and expert co-operation of the 33 cities and districts in the Nuremberg Metropolitan Region, through exchange of best practices, joint lighthouse projects and a "Climate Alliance of the Nuremberg Metropolitan Region". In particular, Nuremberg will co-operate with the Competence Initiative EnergieRegion e.V. and its centre for energy technology.

#### Competence Initiative ENERGIEregion

As a regional player for Middle Franconia – but increasingly also beyond this region – the competence initiative ENERGIEregion has the task of creating a network linking companies, research institutions, universities, technology institutions, and politicians, of generating projects on energy technology, organising events on key topics, and co-operating with other networks, such as the Bavarian Cluster for Energy Technology. The objective of the competence initiative ENERGIEregion is sustainable promotion of the competitiveness of companies active in the energy sector, initiating and implementing co-operation between companies, setting up and maintaining the region as an internationally renowned location for energy technology and the energy industry, securing and extending jobs and supporting and advising research and development projects.

#### Energy Campus Nuremberg – ECN

There are plans for a joint research institution for future energy technology. The ECN will bring together the university of Erlangen-Nürnberg, the University of Applied Sciences Nürnberg, and the regional Fraunhofer Institutes, IIS and IISB, located in Nuremberg to conduct leading-edge research on energy efficiency and climate protection. In winter 2009, the Free State of Bavaria announced initial funding of 50 million Euros for this project. The competence initiative ENERGIEregion also comprises the additional institutions and activities listed in attachment 1. For selected projects and events of Nuremberg Metropolitan Region see attachment 2

#### Project "Comprehensive Energy Balance for Nuremberg Metropolitan Region"

Until 2010, the project will collect, aggregate and process basic energy data, in order to calculate a final energy balance for the entire Nuremberg Metropolitan Region and to initiate the implementation of measures for increased climate protection in the region

#### Project "Establishing Regional Energy Technology Centres in Nuremberg Metropolitan Region"

This project is to set up a network of independent energy agencies in several area municipalities, based on the model of the Nuremberg Centre for Energy Technology [etz] The project's initiators expect major synergy effects with etz's existing know-how and the network effect.

The Nuremberg Centre for Energy Technology has existed since 2001, as a successful centre for start-ups and services. The Project "Sector Energy Analysis for the City of Nuremberg" examined existing sector energy analyses in order to find out whether they were applicable to various trades practised in the City of Nuremberg, and selected the vehicle repair and catering sectors. A special training programme is planned to train Project "NETZQ – Decentralised Monitoring and Improvement of Grid Quality Using Power Electronics and New ICT Technology" Due to increasingly unsteady, decentralised power input (photovoltaics, wind power, block-type thermal power stations etc) power grids are increasingly pushed towards the limit of their capacity, particularly as far as maximum permissible voltage is concerned. Increasing interference from power electronic systems (harmonics) is an additional problem incurred. The project NETZQ is intended to develop relevant device technology. It will be tested across parts of two grids, urban and rural.



Grafik: Stadt Nürnberg, Geo 10/2007  
 Kartengrundlage: Übersichtskarte von Bayern 1 : 2.000.000  
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Files:

- [12 attachment 1 institutions and activities.doc](#)
- [12 Attachment 2 Events 2008.doc](#)

#### 4. Conferences / Workshops

- Nürnberg aims to organise a series of international conferences in co-operation with EUROCITIES und Covenant of Mayors, as well as a "Conference on Sustainability".
- Nuremberg will host an expert event "Greener Metropolitan Region" in co-operation with towns, cities and regions of the Metropolitan Region Nuremberg.
- There are plans for scientific conferences, in co-operation with the universities of the Metropolitan Region Nuremberg, on various topics including electro-mobility and energy-efficient buildings.
- Nuremberg will present its activities in the context of European events, such as e.g. the OPEN DAYS.
- Nuremberg will present its best-practice examples in the context of existing national co-operation projects, such as e.g. koopstadt 2020
- There will be dissemination within existing bodies promoting co-operation at expert and political level (environmental conference of the city axis Nürnberg-Erlangen-Fürth-Schwabach- Ansbach).

#### 5. Visitor Programme

- "Green Weekend in Nuremberg" for tourists -Initiatives in co-operation with the Hotel and

Catering Association and Nuremberg Tourism Centre (eco-friendly travel, guided tours, nutrition, ecological adventures in Nuremberg, experience vs consumption etc.)

- "Mobile Citizens' Meetings" – politicians and citizens cycle to ecologically interesting destinations, such as e.g. tour of passive heating houses in Nuremberg (plus other tours on related topics)
- "Green City" as the main topic of the "Science Night"
- Tours on ecological topics for delegations of international experts from politics and industry, in Nuremberg and surroundings

## 6. Films

Agenda 21 Cinema – film series on environmental topics, already tried and tested successfully

Films on sustainable mobility

7. Proactive "Greening up" – "Nature in the City" Day, involving all organisations

8. City Cycles – councillors and partners to cycle as many kilometres as possible within 3-4 week period

## Educational Work

The City of Nuremberg in particular wants to co-operate with schools and universities, in order to interest and motivate young people on environmental and sustainability topics, such as e.g.:

- co-operation with universities (films, project models, short cartoons) and specialist colleges (Triesdorf)
- co-operation with schools, vocational schools and the media, e.g. school students producing critical short films on the environment, or "green projects" for school grounds
- competitions with awards, e.g. specially endowed Nuremberg Sustainability Award 2013
- co-operation with "Grünklusiv" (Nuremberg association of landscape planners and landscaping companies)

## Competitions

Presentation of the Nuremberg Environmental and Sustainability Award

## **Closing Ceremony**

- With eco fireworks over Nuremberg Castle
- With internationally renowned experts and motivators, such as Prof. Töpfer
- With cultural highlights
- With Nuremberg's commitment to consistent future activities as Green Capital City

## Website and Internet

Nuremberg will establish a website on the topic "Green Capital City" with links to various topics and organisations, the Metropolitan Region etc, providing information on topics, events, co-operation possibilities, opportunities for getting actively involved, best practices for download in German and English. The internet will be the City of Nuremberg's main communication medium. Envisaged use of new forms of communication, such as flash mobs or twitter

## Publications

- publications on the topics bio diversity and model bio city
- papers in international specialist magazines, such as e.g. on the concept of Nuremberg Zoo

(integration of local plant and animal species) or on the topic "Environment and Human Rights"  
• dissemination of guidelines. e.g. those worked out by Nuremberg's Municipal Energy Management and BUG

#### Branding

- Decorating exterior of public transport vehicles with designs by school children on the topic of Nuremberg Green City
- Rental bicycles
- City Light campaign (Blue Night Nürnberg)
- Info screens in underground stations
- Cinema spots (shorts) in all European languages