

1. Local contribution to global climate change

1. Please describe the present situation and the development over the last five to ten years in relation to (max. 1,000 words):

1.1. Total CO2 equivalent per capita, including emissions from electricity use

The greenhouse gas emissions in Hamburg are assessed on the basis of a common methodology of the German federal states (www.lak-energiebilanzen.de). Non-CO2 emissions are not evaluated separately on the level of federal states. On the national level, CO2 emissions are 87% of overall greenhouse gas emissions. Most of the rest comes from CH4 and N2O emissions which should be much lower in Hamburg due to the insignificance of agricultural activity. For the years from 1998 to 2002, no data is available.

	per capita in t of CO2
1990	11.71
1997	11.72
2003	10.56
2004	9.98
2005	9.69
2006	8.84

The CO2 emission have been decreasing from a peak in the mid 1990s. Main factors were a decrease in energy consumption from housing and a decrease of the electricity consumption of households and small businesses.

1.2. CO2 per capita from use of natural gas

	per capita in t of CO2
1990	1.48
1997	2.00
2003	1.82
2004	1.73
2005	1.66
2006	1.71

Emissions from the use of natural gas are decreasing since 1997. Most of the decrease comes from the housing sector. Other fossil fuels use for heating is decreasing as well. New development in Hamburg is carried out at low-emission standards. The standards of existing houses are rising steadily. The city of Hamburg supports this with its successful programme "Work and Climate Protection".

1.3. CO2 per capita from transport

	per capita in t of CO2
1990	2.89
1997	2.17
2003	2.25
2004	2.17
2005	2.04
2006	1.98

Contrary to the national trend, the emissions from transport in Hamburg have been remaining at about the same level since 1997. Due to the excellent local public transport system, there was no increase in the kilometres travelled by car. Since 2004, emissions from transport have been falling in accordance with the national emissions, due to higher fuel prices.

1.4. Grammes of CO2 per kWh used

	in g
1900	709
1997	641
2003	628
2004	625
2005	581
2006	584

Hamburg imports about 80% of its electricity from the national grid. It is impossible to assign the consumption to the production, so the table above gives the emission factors of the national energy production. The emissions per kWh used decrease steadily because of heavy investments in renewable energy, in particular wind energy.

1.5 Percentage of electricity consumption from renewable sources

	in %
1997	4,46
2003	8,12
2004	9,45
2005	10,39
2006	11,75

No data for 1990 available

2. Please describe the measures implemented in the last five to ten years in order to reduce greenhouse gas emissions, including resources allocated to implementing the measures (max. 1,000 words):

Climate protection has been an important field of activity in Hamburg's municipal administration and politics since the late 1980s. This is the reason why it has been possible to reduce CO2 emissions despite increased economic performance.

2.1. Energy supply

Since 1997, Hamburg is subsidising solarthermal plants within its "Work and Climate Protection" programme. As of today, public funds of more than 7 million euros have been invested, and more than 36,000 m² of solar collectors have been installed. Since 2005, the same programme subsidises bio-energy plants, such as pellet heating plants or cogeneration plants. Public funds to the amount of 1.2 million euros have been invested in this respect, and plants with a total power capacity of 14.5 MW have been installed. Since the end of 2007, Hamburg offers subsidies for building owners who make available their roof surfaces for photo-voltaic plants. This resulted in new installations with a total power capacity of 1 MW. In addition, Hamburg's local development plans impose energy-oriented regulations on larger new building projects. This includes requirements for the use of renewable energies.

2.2. Energy efficiency of buildings

Approximately 40% of greenhouse gas emissions in Germany can be attributed to the heating of buildings. Improvement of the energetic equipment of existing

buildings is a central issue in Hamburg's climate policies.

The following steps have been undertaken:

- Since 1998, modernisation measures to the value of 282 million euros have been initiated via the "Work and Climate Protection" programme. Hamburg's contribution to this programme was 39 million euros. The programme has enabled CO2 emissions to be reduced by 79,000 t per year.

- The "Wohnungsbaukreditanstalt" (Residential Development Loan Corporation) owned by Hamburg funds the modernisation of 4,000 residential units with annually 10 million euros. Emission reduction: 6,600 t CO2 per year.

- In total, the municipally owned housing associations have improved the energetic performance of some 65,000 residential units in the past 10 years. This has made it possible to avoid 75,000 t of CO2 per year, which represents a 22% reduction in emissions.

- Central energy management of the City's public buildings has been successfully implemented. The department in charge has some 3 million euros available annually to subsidise measures such as solar technology, block heating power plants, heat recovery, or energy-efficient power systems. The City offers its energy management know-how to private companies, too.

Programmes such as "Lamp exchange 2:1 for the climate", "fifty/fifty", and boiler and refrigerator replacement have led to remarkable savings. In 2003, Hamburg was designated a partner in the EU Commission's GreenLight Programme. Hamburg had replaced over 200,000 conventional lamps in more than 400 public buildings with energy-saving lights. This saves 22 million kWh of electric energy, some 14,000 tonnes of CO2 and 3.4 million euros of energy costs per year. Over 600 boiler systems have been replaced with modern condensing boilers in recent years (an investment of 18 million euros). This has reduced CO2 emissions by approximately 9,000 t per year, with annual energy savings of some 46,000 MWh.

The requirements which the Hamburg Climate Protection Act and the Hamburg Climate Protection Ordinance make regarding heat insulation and energy-saving systems in buildings surpass those specified in Federal laws. The Hamburg Climate Protection Act contains a special cost-efficiency benchmark for energy-saving measures in public buildings.

2.3. Heat supply

In order to generate heat more efficiently, the pipeline-bound supply of heat by means of district and local heating networks has been further extended.

2.4. Combined heat and power (CHP)

A number of heating plants have been converted into cogeneration plants. The cogeneration has been subsidised with public funds.

2.5. Cooperation with companies

The "UmweltPartnerschaft" (Eco-Partnership) agreed between Hamburg's administration and Hamburg's industry in 2003 offers numerous climate and resource protection services aimed at motivating businesses to participate on a voluntary basis. The measures range from active acquisition of companies through free advice on improving corporate energy efficiency and subsidies for investment in resource-saving measures to the exchange of knowledge and experience via the "UmweltPartnerschaft" (Eco-Partnership) network. One of the cornerstones is the "Unternehmen für Ressourcenschutz" (Enterprises for Resource Protection) programme which assists companies in realising potential for savings. Target groups are Hamburg's small and medium-sized businesses and skilled craft enterprises. To date, more than 1,000 enterprises have received advice, and 690 investment measures have been implemented. As a result, 85,000 tonnes of CO₂ emissions are avoided annually, in addition to reductions in water and chemical usage and the production of waste.

The "Unternehmen für Ressourcenschutz" programme also encompasses Hamburg's municipal enterprises. Here, 11 projects have been implemented to date, which avoid 15,540 tonnes of CO₂ emissions:

1. Hamburg Municipal Sanitation Department: grey water recycling for the company premises, avoidance water 2,630 m³ per year
2. Hamburg Airport: service water usage, avoidance water 5,500 m³ per year CO₂
3. Hamburg Municipal Sanitation Department: heat recovery, waste incineration plant Stellingner Moor, avoidance CO₂ 20 tonnes per year
4. Hamburg Municipal Sanitation Department: modernisation of illumination systems, waste

incineration plant Stellingener Moor, avoidance CO₂ 30 tonnes per year

5. Hamburg Municipal Sanitation Department: ventilation systems, building Neuländer Kamp; avoidance CO₂ 150 tonnes per year

6. Hamburg Public Sewage Company: compressed aeration of first clarifier

7. Hamburg Public Sewage Company: flare system, waste water treatment plant Köhlbrandhöft, avoidance CO₂ 3,840 tonnes per year

8. Airport: central outside air duct (thermal labyrinth), avoidance CO₂ 250 tonnes per year

9. Airport: CO₂ reduction programme, avoidance CO₂ 6,000 tonnes per year

10. Airport: technical installation for an operation ban of aircraft onboard Auxiliary Power Units, avoidance CO₂ 4,090 tonnes per year

11. CTT: 10 van carrier with diesel-electric drive, avoidance CO₂ 500 tonnes per year

Another project is near completion:

12. Hamburg Public Sewage Company: long-distance heating of the Container Terminal Tollerort by waste water treatment plant, avoidance CO₂ 1,030 tonnes per year

2.6. Transport

2.6.1. Local public transport

The "Hamburg Arterial Model": Almost all main and secondary arteries are connected to rail and metro lines.

Local public transport in Hamburg and the direct hinterland has been affiliated in a single public transport association: the "Hamburger Verkehrsverbund HVV" (Hamburg Transport Association), which unites two metro systems, three bus companies and the regional trains of the national rail network. As a result of the expansion of the HVV to the adjacent Federal States Niedersachsen and Schleswig-Holstein, the demand on major railway routes to Hamburg has been significantly increased, and thus a large proportion of commuter traffic from the hinterland has been transferred to bus and rail networks.

With the extension of the S3 line from Hamburg-Neugraben to Buxtehude and Stade, the Hamburger "S-Bahn" rapid transport company has, for the first time, commenced services reaching far into the Metropolitan Region of Hamburg.

In the case of the metro lines, the range of services on offer has been significantly expanded in recent years. In Autumn 2007, the period in which underground trains run every 5 minutes has been extended.

In December 2004, a round-the-clock rapid transport service at weekends has been installed.

The provision of extensive bus services in the municipality of Hamburg has been improved in recent years, thanks to the setting up of 150 additional bus stops. The number of bus services available in Hamburg has also been significantly expanded and thus increased by some 13% in recent years. Almost half of passenger demand for bus services is concentrated on the 22 most important routes, which have been brought together under the term "MetroBus" to facilitate a uniform public presence. These buses travel on tangential routes and along the diagonal arteries according to a fixed timetable at minimum intervals of 10 minutes. In the past seven years, demand on these routes has increased by some 20%; thus every work day some 80,000 additional passengers use the MetroBus routes.

Since Autumn 2006, only buses have been purchased which fulfil the "Euro 5" emissions class, not in force until 2009 (benefit: reduction of nitrogen monoxide emissions by over 70%). Since the end of 2007, voluntary retrofitting of over 300 buses in the "Euro 2" and "Euro 3" emissions classes with so-called closed filter systems has taken place (benefit: reduction of particle mass emissions by some 90%). In the period 2003 to 2008, the "Hamburger Hochbahn AG" public transport company has provided development assistance for fuel cell buses within the scope of the EU-funded CUTE project (Clean Urban Transport for Europe).

To date, 4 car-free Sundays have been held. Funds of 325,000 euros have been applied to this purpose. At the event locations, some 50,000 people and several hundred thousand passengers have been approached directly. A distinctively higher proportion of Hamburg's and the Metropolitan Region's total population has been reached via radio, print media and outdoor advertising.

2.6.2. Bicycles

To avoid unnecessary detours, one-way streets have been opened to cyclists, wherever possible.

The everyday cycle route network links the most important centres of Hamburg's districts with one another and with the city centre.

Hamburg's bicycle transport system comprises many bicycle parking areas as well as "Bike and Ride" facilities for more than 14,000 bicycles at rapid

transit stations. For inhabitants in densely built-up districts, Hamburg provides private bicycle sheds that are installed in private and public premises.

An element of public relations for cyclists is the city map (2004) showing the cycle lane network and routes for leisure cycling as well as "Bike and Ride" facilities. A cycling advisory council was set up and confers on Hamburg's strategy and measures for promoting bicycle traffic.

2.6.3. Urban Planning

The basis of Hamburg's urban planning is to avoid urban sprawl and prevent utilisation of existing wooded land, green spaces and recreational areas. For this reason, significant reserve areas (30%) within the inner city consolidation are being targeted and progressively realised through the development of vacant sites and by adding floors. A prominent example with a high population density is the "HafenCity.

Hamburg's residential building policy provides for new terraced and detached housing of a considerably lower population density in the peripheral urban regions, such as the new city district of Neu-Allermöhe (population density: 1,200 per km²). The high demand for such residential units - particularly by families with children - also needs to be addressed for reasons of climate protection. New-build projects must be linked to the local public transport system and comply with climate-protecting building.

2.6.4. Port

Existing facilities for shore-side electricity to service inland water vessels are being expanded and modernised. Hamburg's Port Authority has signed the declaration at the World Port Climate Conference (WPCC) and is member of the Ecoports Foundation. In addition, it supports and assists the port's terminal management enterprises in climate protection projects, such as van carriers with hybrid drive, power feeds at gantry cranes, light management in logistic halls.

2.7. Waste management

In 2007 Hamburg commissioned a report on "Optimisation of waste management in Hamburg, taking into account the specific aspect of climate protection". The report focuses on the quantity streams and recycling flows of the waste categories biowaste, green waste, waste paper, plastics and metals. On the basis of the report measures to further reduce the amount of municipal waste and optimise recycling flows will be implemented within the scope of a "recycling offensive" project.

2.8. Education and Information

Hamburg has a special municipal department for the field of extracurricular environmental education. The centerpiece of the educational work is the initiative "Hamburg learns sustainability". Enterprises, municipal authorities, education institutions, citizens and experts from all sectors are taking part. The initiative annually publishes an action plan. It encompasses some 110 education measures, amongst them numerous related to climate protection.

Examples:

„Experience Energy“ in day-care facilities

"fifty-fifty - Energy-saving in schools"

"Sunrise Industry Renewable Energies - Growth Potentials and Employment Opportunities in Hamburg"

"Demonstration Container with solar energy plant for developing countries"

"Sustainability Fairs" for climate-friendly products

"Energy efficiency in building management as an example for technical training for sustainability"

Conference in the Framework of the "United Nations Decade of Education for Sustainable Development"

Visitor centre in the "Nationalpark Hamburgisches Wattenmeer" (Hamburg Wadden Sea National Park)

"Hamburg Environmental Centre Karlshöhe"

the "Centre for School Biology and Environmental Education (ZSU)"

The qualification of craftsmen and architects by means of expert forums, workshops and seminars is a main objective of the "Work and Climate Protection" programme. The topics energy saving and renewable energy are being integrated into the vocational basic training, the master craftsman training and the curricula of the universities. In this context, more than 150 model projects with solar energy plants have

been carried out at public institutions. Annually, commendations such as the „Hamburg Solar Award“, the „Passive House Contest“ or „The Future in Building Stock“ are being awarded.

Through actions via different means of communication (info booths, radio spots, print ads, Infoscreen, bus ads, posters, polls etc.), the „Hamburg Climate Contest 2008“ has actively contacted more than 21,000 of Hamburg's citizens/households. Public funds of 222,768 euros were allocated to this contest in Hamburg's fiscal year 2008.

Within the scope of Hamburg's "Strategy for Climate Protection", about 10% of the overall budget is being allocated to communication and education.

2.9. Climate research

Internationally cutting edge research on climate change is being carried out in Hamburg. In addition to the University of Hamburg and the Max Planck Institute for Meteorology - amalgamated into the Centre for Marine and Atmospheric Sciences (ZMAW) - the German Climate Data Centre (DKRZ) and the GKSS Geesthacht Research Centre form the core of a trendsetting alliance of university and non-university research, the "Climate Campus", where more than 450 scientists will work at the end of 2008.

The interdisciplinary climate research project "Integrated Climate System Analysis and Prediction" (CliSAP) is currently being carried out in Hamburg - an "Excellence Initiative" project funded by Germany's federal and state governments.

In the coming years, the Federal Government and the City of Hamburg will invest around 100 million euros for climate research in Hamburg.

Adaptation strategies for the management of climate change effects are being researched at the Hamburg University of Technology (TUHH).

Over and above this, a "Climate Change Assessment Report for Northern Germany" will be generated, similar to the "BALTEX Assessment of Climate Change for the Baltic Sea Basin" (BACC-Tema). The Report will compile and analyse all climate data and research available for Northern Germany, covering the past 50 years.

A research project for the Metropolitan Region of Hamburg entitled "Klimmzug Nord" (Northern Pull-ups) examines the effects of climate change in Northern Germany and will develop recommendations for adaptation strategies and actions. The project is being funded with more than 16 million euros.

3. Please 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):

In a comprehensive "Strategy for Climate Protection" (Klimaschutzkonzept) published in late 2007 and updated annually, Hamburg committed itself to reduce CO₂ emissions by 2 million tonnes until 2012 - about 20 % less in comparison to 1990, representing a per capita reduction of approximately 25%. The city aims to reduce CO₂ emissions by 40 % until 2020, and endorses the joint European target to reduce CO₂ emissions by 80% until 2050.

This goal is to be achieved by means of a fundamental shift away from the use of fossil energies towards climate-friendly, sustainable processes in all fields of energy generation, transport and use. On the path to largely abandon fossil fuels, low-carbon fuels will be used and energy will be saved by means of increases in efficiency.

The strategy includes a catalogue of some 200 individual measures. 25 million euros of funds have been allocated annually to implement these projects. Additionally, funds will be provided from the projected budgets of Hamburg's ministries, from the budgets of municipal enterprises and from third-party funds (approximately 175 million euros in 2007/2008).

Therefore Hamburg has established a coordination centre for climate issues. The centre's overall objective is to endorse and coordinate efforts to protect the climate, both within and outside the city administration. Public relations activities and cooperation with social players will soon be bundled into an energy agency.

Some of the key measures are (cf. questions 2, 9 and 11 for further details):

3.1. Energy strategy: Generation and distribution

In accordance with the principle "No heat without electricity, no electricity without heat", two expert opinions have been commissioned to explore the potential of cogeneration usage in industry and commerce for the production of electricity.

Institutional changes (e.g. setting up municipal utility companies) are also being examined. The goal is to achieve potential CO2 reductions in the double-digit percent range.

3.2. Regenerative energies

It is planned to increase the performance of Hamburg's wind parks from approximately 33 MW to over 100 MW by means of designating new sites and the "repowering" of existing plants.

Hamburg's oil mill is one of the world's largest bio-diesel production plants. To date, bio-energy plants in Hamburg have been started up with financial assistance from the Senate.

Biogas from sewage sludge is produced at Hamburg's sewage treatment plant and used to generate electricity.

Further measures, such as the usage of biowaste and loppings to produce biogas, are also being set up.

Wood ensuing from landscape management in the city is used for fuel logistics, with the long-term objective of establishing an energy wood market in Hamburg. The municipal SAGA/GWG housing association is currently building a wood-burning power plant to produce electricity and heat, which will generate approximately 58,000 MWh of heat and 13,000 MWh of electricity per year.

20 large solar energy systems are currently being installed on commercial roofs. A roof space exchange for photovoltaic systems is being set up. The field of solar thermics is receiving financial assistance. To date, some 3,500 systems have been installed to date financed with 6.8 million euros of state subsidies. It is planned to annually construct 6,000-7,000 m² new solar collectors, up to the year 2011.

3.3. Efficiency increase: Savings in the field of buildings

The "Hamburg Energy Passport" advisory tool will be expanded. It includes an on-site consultation, an expert engineer's analysis of the building and its renovation potential, with specification of the renovation measures required for the building's shell as well as regarding heating and ventilation systems. It is hoped that some 1,000 energy passports will be issued annually by 2011.

Thanks to the City's subsidy programmes, to date over 100,000 existing apartments have undergone energetic modernisation. Subsidies for the building of new residential units are subject to fulfilling high energetic requirements as defined by the KfW-40 standard.

3.4. "UmweltPartnerschaft" (Eco-Partnership)

The Hamburg Eco-Partnership will be expanded. To date, approximately 1,500 companies have joined, this figure should be 5,000 by 2013. The programme's sub-projects "Unternehmen für Ressourcenschutz" (Enterprises for Resource Protection): heat check, light check, efficiency offensive and drive system check, for which Hamburg pays one third of the consultation costs, are being implemented and a new focus, cooling technology, will be introduced. This should reduce CO2 emissions by 170,000 t per year, by 2012.

The 11 largest CO2 emitters in Hamburg have committed themselves to voluntarily reduce their CO2 emissions by 500,000 t per year, by 2012.

Climate protection criteria are taken into account within the framework of economic subsidies.

3.5. Regulations and standards

Hamburg has passed its own Climate Protection Act. It provides the basis for the setting of energetic regulations within the scope of urban land use planning. Hamburg is thus a national trendsetter as regards the obligatory use of sustainable energy within the scope of land development plans.

In accordance with the Climate Protection Act, the new installation of electric storage heating systems is prohibited. In the years 2000 to 2006, the number of such heating systems was thus already reduced by 25%. Furthermore, Hamburg endeavours to legally enforce replacement of all remaining systems.

In December 2007, Hamburg passed a Hamburg Climate Protection Ordinance which specifies the highest level of heat protection requirements for buildings in all Germany. Hamburg endeavours to further develop this Climate Protection Ordinance in order to establish the passive house standard.

3.6. Energy research

Hamburg's universities are setting new priorities. The Hamburg University of Technology (TUHH) is setting up a research focus on "Climate-friendly energy and environmental technology". The University for Applied Sciences (HAW) is setting up a research focus on "Energy Independence Technology". The newly founded HafenCity University is offering Germany's first stand-alone masters degree course in "Environmental Engineering", covering issues relating to the environment-friendly design of the "built" environment.

Hamburg has placed a bid for a research project "Energy-efficient city" with the Federal Ministry of Education and Research. The project investigates the integration of industrial and/or commercially produced cogenerated heat energy into the municipal heat network, the interlinking and CO2-efficient controlling of various network infrastructures, such as smart metering.

The Hamburg State Office of Geological Affairs is actively participating in the development of an EU project on the usage of the near-surface geothermic potential.

3.7. Subsidies for hydrogen and fuel cells technology

With the assistance of the Federal Government and in coordination with the EU Commission's HyRamp Initiative Hamburg will be developed into an application site for hydrogen and fuel cells technologies.

From 2010 onwards, several next-generation hydrogen fuel cell hybrid buses will be in service; their energy consumption has been reduced by some 50%. Regular use of hybrid buses is planned after 2015.

An emission-free Alster pleasure boat powered by a fuel cell (zero emission ship) is in service.

In the field of aviation, the setting up of a competence and development centre for hydrogen and fuel cell applications has been initiated.

In the field of fixed applications, a field test for the use of fuel cell heating equipment in cogeneration technology for detached houses has been initiated with industrial partners.

The costs of approximately 105 million euros for these projects are being covered to approximately one-third (some 28 million euros) by the Free and Hanseatic City of Hamburg and/or municipal enterprises.

3.8. Climate and energy-saving communication

Climate communication in Hamburg is being further developed as follows:

- Setting up of an energy agency and start of a climate campaign for households
- Development of a professional communication concept, increased allocation of financial funds
- Expansion of the numerous information brochures available
- Extension of the Hamburg Planetarium and the Karlshöhe Environmental Information Centre
- Subsidising and expansion of the existing information network for energy information, e.g. Consumer Advice Centre, Residential Development Loan Corporation, "Elbcampus" of the Chamber of Skilled Crafts and Small Businesses or the "Centre for future-oriented building"
- The internet portal "www.klima.hamburg.de" will be enhanced and updated
- Continuation of the competition for "Sustainable households in Hamburg"
- Development of a supraregional campaign "From the region - for the region" about the benefits of regional economic circuits and regionally produced products

3.9. Controlling

The Wuppertal Institute for Climate, Environment and Energy, a reputable independent research institution, continuously monitors and evaluates Hamburg's Climate Action Plan externally.

4. Please 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):

- Hamburg's contribution to the reduction of climate risks, Parliament of the Free and Hanseatic City of Hamburg (Hamburg Parliament document 13/6944 of 30.10.1990), see attachment "13/6944 Climate Risks"

- UmweltPartnerschaft Hamburg (Hamburg Eco-Partnership) – Agreement between the Senate of the Free and Hanseatic City of Hamburg and Hamburg's industry to support a sustainable economy, Parliament of the Free and Hanseatic City of Hamburg (Hamburg Parliament document 17/2229 of 07.03.2003), see attachment "17/2229 Hamburg Eco-Partnership"

- Förderprogramm „Unternehmen für Ressourcenschutz“ (Enterprises for Resource Protection Subsidy Programme): www.hamburg.de/ressourcenschutz

- Hamburg Airport: letter of intent reducing CO2 Emissions, s. paper attachment 1; Environmental Statement 2005, s. paper attachment 2; hydrogen vehicles, see paper attachment 3.

- Hamburg's Strategy for Climate Protection 2007-2012, Parliament of the Free and Hanseatic City of Hamburg (Hamburg Parliament document 18/6803 of 21.08.2007), see attachment "18/6803 Climate Protection Strategy"

- Agreement regarding the expansion and updating of the Hamburg Eco-Partnership, Parliament of the Free and Hanseatic City of Hamburg (Hamburg Parliament document 18/6801 of 21.08.2007), see attachment "18/6801 Hamburg Eco-Partnership"

- Hamburg Act on Protection of the Climate by Saving Energy (Hamburg Climate Protection Act) of 25th June 1997
http://hh.juris.de/hh/gesamt/KlimaSchG_HA.htm#KlimaSchG_HA_rahmen

- Hamburg Climate Protection Ordinance of 11. December 2007, in: Hamburg Law and Ordinance Gazette, Part I, 04. January 2008

http://hh.juris.de/hh/gesamt/KlimaSchV_HA.htm#KlimaSchV_HA_rahmen

- Hamburg Energy Statement

www.statistik-nord.de/fileadmin/download/Energiebilanz_HH.pdf

- Hamburg Carbon Dioxide Statement
www.hamburg.de/klima/150286/kohlendioxid.html

- Waste management:
<http://www.hamburg.de/abfall/853462/gutachten-awi-klima.html>

- Education, information:

Monitor Wachsende Stadt (Monitoring Report Growing City), http://www.wachsende-stadt.hamburg.de/_res/download/pdf/monitor-wachsende-stadt-bericht-2007.pdf

„Hamburg lernt Nachhaltigkeit“ (Hamburg learns sustainability): www.hamburg.de/startpunkt-runder-tisch

Documentation „NUN-Konferenz 2007 in Hamburg - Klimaschutz lernen“ (Hamburg NUN Conference 2007 - Learning Climate Protection):
www.hamburg.de/nachhaltigkeittlernen-aktuelles

- IBA:
see attachment "IBA booklet climate change.pfd"

2. Local transport

1. Please describe the present situation and the development over the last five to ten years in relation to (max 1,000 words):

1.1. Length of designated cycle lanes in relation to total number of inhabitants in the city

Hamburg's network of cycle lanes has a total length of 1,700 km. With a population of 1.7 million, this represents one metre per person. The cycle lane network runs parallel to roads for motor vehicles and has been in existence for over 30 years. The cycle lane network, which consists of tracks running parallel to roads for motor vehicles as well as of independently routed cycle paths, has been in existence for over 30 years.

Lanes along streets and roads physically separated from streets/roads: 1,500 km

Lanes along streets and roads only separated by a painted line or the like: 20 km

Routes or pathways exclusively dedicated to bicycles and not running along streets or roads (e.g. through parks): 180 km

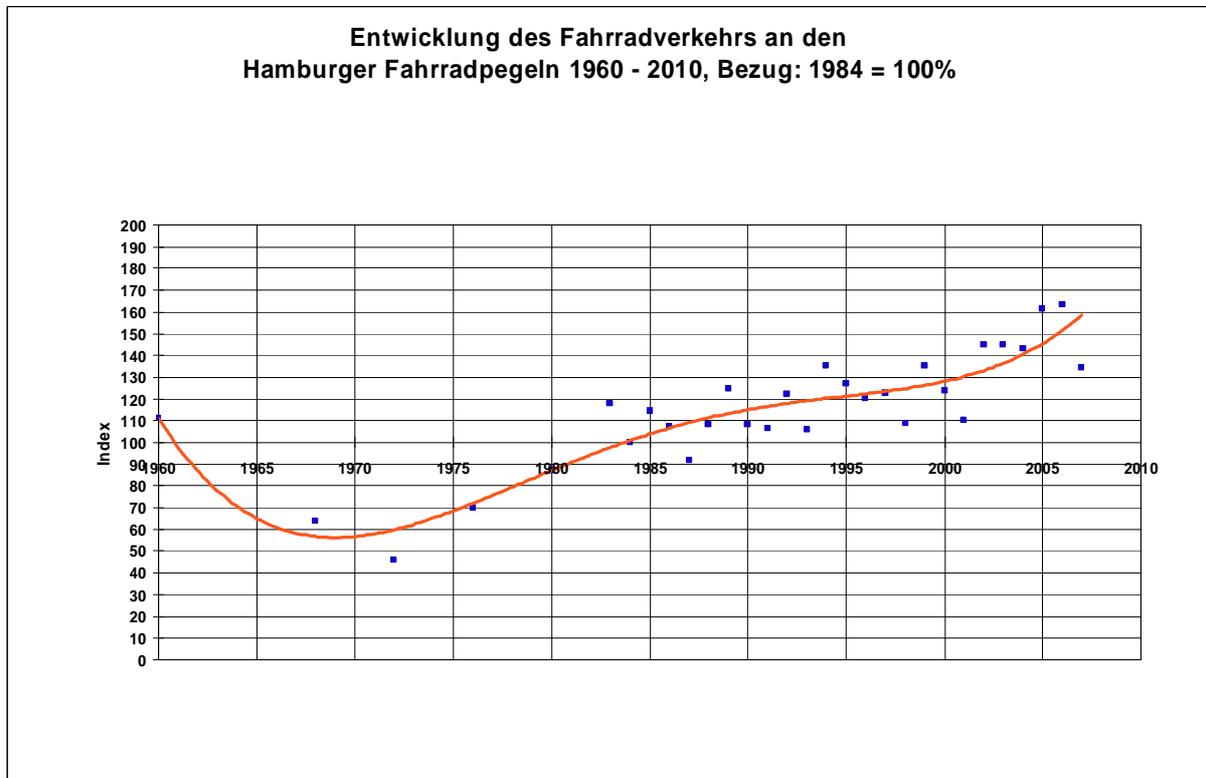
Local roads considered as part of a „cycling network“, but with no separations:

In Hamburg, it is basically possible to cycle on almost any road. On main roads with heavy motor vehicle traffic, there are physically separated bicycle lanes, in areas with a 30 km/h speed limit, you can safely cycle on the main lane. Hamburg's total road network is 3,900 km long, including 45% of 30 km/h speed limit zones with a total length of 1,755 km.

In the past ten years, Hamburg has concentrated on implementing measures to bring its cycle lanes up to a standard which meets modern technical and legal requirements, in particular widening them and introducing more "roll-friendly" surfaces.

In addition to this cycle lane network, Hamburg has begun to implement a network of segregated cycle facilities, the so-called "velo routes network", which will be 280 km long after completion. The velo routes are located largely apart from streets with heavy motor traffic and run primarily through 30 km/h speed limit zones. To date, 18% of the velo routes network is completed (approximately 50 km). Over and above this, there is a network of recreational routes along the rivers Elbe, Alster and their tributaries as well in

Hamburg's green areas and forests. They consist mostly of non-asphalted paths and account for a further 400 km. They are used not only for leisure pursuits, but e.g. also as routes to work.



Development of bicycle traffic at Hamburg's cycle count locations 1960-2010; base year 1984 = 100%

1.2. Share of population living within 300 metres from an hourly (or more frequent) public transport service

The share of population living within a 300 metre radius of local public transport stops (hourly or more frequent) in Hamburg has, for many years, been very close to 100%.

1.3. Proportion of all journeys under 5 km by private car

The results of the study "Mobilität in Deutschland" (Mobility in Germany) MiD, which included a larger than average random sample for Hamburg, indicate that the

proportion of car/lorry users (drivers and passengers) making journeys under 5 km is roughly one third (33%).

In detail, the modal split for journeys from 0 to 5 km in the survey year 2002 is:

- Pedestrians: approx. 40%
- Bicycle: approx. 16%
- Individual motorised transport drivers (car/lorry/motorcycle): approx. 23.5%
- Individual motorised transport passengers: approx. 10%
- Local public transport: approx. 10.5%

1.4. Proportion of local public transport classed as low emissions

At the end of 2007 the proportion of low-emission buses was 75% of the total fleet, including 9 hydrogen-fuelled buses. Hamburg's public transport companies are retrofitting old buses with carbon-particulate filters, if technically possible; new purchases are made exclusively in accordance with the "Euro 5" standards. For details of the bus fleet's proportionate composition as regards „Euro" standards, see attachment „Busflotte Zusammensetzung".

Hamburg's public transport companies run regular training programmes relating to an energy-saving driving style for their drivers and, as a result, have significantly reduced fuel consumption.

With regard to rail traffic both of Hamburg's rapid train networks ("U-Bahn" and "S-Bahn" - underground and rapid trains) are operated using environment-friendly electricity. Most of the services within the regional public rail transport network are electrified, too. When electric operation on the line between Hamburg and Lübeck commences in December 2009, the last older diesel engines which do not fulfil today's environmental demands will disappear from Hamburg.

As regards the underground train system, vehicles of a new, energy-saving generation were purchased to replace older ones, in the period 1988 to 2005. The Type DT 4 vehicles are constructed using light-weight materials and return the electricity released when braking back to the power grid; the result is significantly lower electricity consumption. These modern vehicles make up 68% of the entire fleet of underground train carriages.

A further new generation of vehicles is currently being developed and is planned to progressively replace the old carriages in the fleet, which are over 40 years old, in the period 2012 to 2015. The first vehicles of this generation will enter service as early as 2009. During development of these vehicles, environment protection was accorded a significant role as regards the use of materials and energy consumption.

2. Please describe the measures implemented in the last five to ten years aimed at reducing the total transport volume and at changing the modal split in favour of alternatives to car transport (max. 1,000 words):

The modal split for Hamburg is calculated on an event-driven basis. In 2008, calculation within the scope of the "Mobilität in Deutschland" (Mobility in Germany) MiD survey (journeys according to main method of transport incl. commercial traffic) amounted to the following modal split:

Local public transport	19%
Individual motorised transport passengers	13%
Individual motorised transport drivers	34%
Bicycle	9%
Pedestrians	25%

2.1. Pedestrian traffic

In 45% of the road network, speed has been reduced to 30 km/h, providing safer conditions for pedestrian traffic. Many residential areas of Hamburg are designed as traffic-calmed zones. Barrier-free kerbs have been standard in technical guidelines for many years now and are standard all over Hamburg.

In 2006, a special signpost system for pedestrians was introduced covering the city centre and some areas adjacent to it. The signpost system directs pedestrians to more than 80 destinations, such as the main railway and rapid transit stations, to cultural and tourist destinations (theatres, museums) as well as important streets and sites. The signpost system for pedestrians will be extended in coming years.

2.2. Bicycles

In 2002 bicycle traffic accounted for 9% of the modal split. The cycle lane network was introduced more than years ago, thus the majority of measures related to it generally concentrate on redesigning cycle paths according to planning and legal guideline updates and revisions. This is an ongoing process.

To avoid unnecessary detours, one-way streets have been opened to cyclists, wherever possible.

The everyday cycle route network links the most important centres of Hamburg's districts with one another and with the city centre.

Hamburg's bicycle transport system comprises many bicycle parking areas as well as "Bike and Ride" facilities for more than 14,000 bicycles at rapid transit stations. For inhabitants in densely built-up districts, Hamburg provides private bicycle sheds that are installed in private and public premises.

It is possible for public transport passengers to take their bicycles with them on rapid transit trains (except at peak traffic hours), port ferries and selected bus lines (in the less busy areas of Hamburg).

An element of public relations for cyclists is the city map (2004) showing the cycle lane network and routes for leisure cycling as well as "Bike and Ride" facilities. Further information is available on the internet (www.verkehrsinfo.hamburg.de), where cyclists can find information on cycle routes (including a download option), "Bike and Ride", taking bicycles on local public transport, bicycle rental and much more.

In order to achieve wide acceptance, a cycling advisory council was set up and confers on Hamburg's strategy and measures for promoting bicycle traffic. Participants are representatives of various authorities, from politics and from cyclists' federations.

The level of bicycle traffic has been steadily rising in recent years. An annual count of bicycles carried out at 38 locations in Hamburg shows that bicycle traffic has grown by 60% from 1984 to 2006.

2.3. Local public transport

Hamburg had already developed a concept for municipal and transport development on both sides of the Elbe in

the early 20th century. This concept has been viewed as being exemplary for many decades now and has proven itself right up to the present day: the "Hamburg Arterial Model", which takes the city centre as its focus. The system of main and secondary arteries is supplemented by a concept of regional centres. Almost all main and secondary arteries are connected to rail and metro lines. The goal is to direct residential development in particular along the arteries, where many journeys can be undertaken using the environment-friendly rail networks. The concept has also well-proven itself in recent years.

Local public transport in Hamburg and the direct hinterland has been affiliated in a single public transport association for 45 years now: the "Hamburger Verkehrsverbund HVV" (Hamburg Transport Association), which unites two metro systems, three bus companies and the regional trains of the national rail network. Thanks to the expansion of the "Hamburger Verkehrsverbund HVV" (Hamburg Transport Association) to the adjacent Federal States Niedersachsen and Schleswig-Holstein demand on major railway routes to Hamburg has been significantly increased, and thus a large proportion of commuter traffic from the hinterland has been transferred to bus and rail networks.

There is no data regarding the distribution of the transport volume as per the various transport companies. Instead, the rising number of passengers using the "Hamburger Verkehrsverbund HVV" (Hamburg Transport Association) shall illustrate the development during the past 5 years and the current status:

2003	535.0 million
2004	537.6 million
2005	580.3 million
2006	600.5 million
2007	618.0 million

In the case of the metro lines, the range of services on offer has been significantly expanded in recent years. The most recent development has been the extension in Autumn 2007 of the period, in which underground trains run every 5 minutes, within the scope of the first measures of the "Hamburger Klimaschutzprogramm" (Hamburg Climate Protection Programme). As a result, additional passengers have been attracted to local public transport and thus journeys using individual motorised transport have been reduced.

The introduction in December 2004 of a round-the-clock rapid transport service at weekends has been a huge success. Young passengers in particular are heavy users of this service.

With the extension of the S3 line from Hamburg-Neugraben to Buxtehude and Stade, the Hamburger "S-Bahn" rapid transport company has, for the first time, commenced services reaching far into the Metropolitan Region of Hamburg.

The provision of extensive bus services in the municipality of Hamburg has been improved in recent years, thanks to the setting up of 150 additional bus stops. The number of bus services available in Hamburg has also been significantly expanded and thus increased by some 13% in recent years.

The clear increase in the number of passengers in recent years is also apparent with regard to bus services. Almost half of passenger demand for bus services is concentrated on the 22 most important routes, which have been brought together under the term "MetroBus" to facilitate a uniform public presence.

These buses travel on tangential routes and along the diagonal arteries according to a fixed timetable at minimum intervals of 10 minutes. In the past seven years demand on these routes has increased by some 20%, thus every work day some approx. 80,000 additional passengers use the MetroBus routes.

Since Autumn 2006, only buses have been purchased which fulfil the "Euro 5" emissions class, not in force until 2009 (benefit: reduction of nitrogen monoxide emissions by over 70%). Since the end of 2007, voluntary retrofitting of over 300 buses in the "Euro 2" and "Euro 3" emissions classes with so-called closed filter systems has taken place (benefit: reduction of particle mass emissions by some 90%). In the period 2003 to 2008, the "Hamburger Hochbahn AG" public transport company has provided development assistance for fuel cell buses within the scope of the EU-funded CUTE project (Clean Urban Transport for Europe).

To date, 4 car-free Sundays have been held in 2008; passengers were able to use bus and rail services free of charge on these days. The "Hamburger Verkehrsverbund HVV" (Hamburg Transport Association) won 5,000 new season-ticket holders as a result of these events. "Car-free Sunday" was supplemented by a free open-air entertainment programme.

2.4. Car and lorry traffic

With its so-called „axis model“ (highly efficient road and rail traffic axes) Hamburg, also in coordination

with the Metropolitan Region of Hamburg, is practising for many years already a settlement policy which helps to avoid individual motorised transport.

In addition, Hamburg cooperates with the Federal Government, the Deutsche Bahn AG (German national railway company), the Hafentbahn Hamburg (Port Railway) and other partners to improve the rail infrastructure, as to be able to transport more cargo by railroad.

70% of all container traffic from Hamburg's port with destinations to and from Hamburg's european hinterland (30% of Hamburg's total container handling) is being transported by rail. Hamburg aims to further improve the modal split in favour of rail transport. The transit turnover with destinations Scandinavia and Eastern Europe (30% of Hamburg's total container handling) is already now being transported to 90% by feeder ships.

Over and above this, Hamburg pursues the concept of managing all such traffic which is unavoidable in an environmentally sound manner. By concentrating commercial traffic and individual motorised transport on Hamburg's arterial road network, the other parts of the city are relieved.

In order to optimise the city's traffic processes, Hamburg has developed a comprehensive and networked traffic management which encompasses all modes of transport. The tasks involved are being handled by various municipal institutions with a high degree of cooperation. The operative units of Hamburg's Ministry for Urban Development and the Environment - in charge of operating the traffic light systems, the traffic control systems for the city's motorways and the river Elbe tunnel, the dynamic car-park routing system and the internet portal www.hamburg.de/verkehr as well as for coordinating road works and collecting traffic data - are successfully cooperating with each other as well as with the Police and Port Authority. By means of a technical network, the traffic monitoring camera systems and the traffic management centres of "Hamburger Hochbahn" (public transport company) and Hamburg's police are interconnected.

To achieve a smoother and safer traffic flow, Hamburg is applying innovative technologies in the field of traffic light control for many years now. Currently, there are approximately 1,700 traffic lights in Hamburg, a large proportion of which is already being operated traffic-dependently. The goal is to relieve such roads and crossroads which frequently experience traffic jams and to improve overall traffic flow. This is not only economically advantageous but also contributes considerably to reduce environmental pollution by car exhaust emissions.

To reduce traffic induced by drivers searching for a free car park, Hamburg operates modern, dynamic car-

park routing systems each in the inner city (approx. 30 multi-storey car parks with around 9,200 parking spaces) and in the Harburg district centre (8 multi-storey car parks with around 5,500 parking spaces) as well as around the Altona railway station and at the sports stadiums. The Harburg system was recently modernised and expanded.

3. Please describe planned short- and long-term measures for (max. 1,000 words):

3.1. Reduction of overall demand for transport

A general reduction in demand for transport can, first and foremost, be achieved by means of urban planning measures which shorten journeys to work. These are based on principles such as inner-city consolidation, use of conversion areas close to city centres, focusing of building development projects and building methods on demographic developments and the resultant demand for accommodation and building of new homes close to existing local public transport routes (cf. question 10, section 2.).

3.2. Reduction of individual motorised transport

For the years 2007 to 2012, the Hamburg Senate has launched a comprehensive "Strategy for Climate Protection" with an annual budget of 25 million euros. Transport is a key cornerstone of efforts in this regard. In addition to funds ensuing from the climate protection concept, hundreds of millions of euros of current budgetary funds have been allocated for road-building and road maintenance, of which a proportion is serving to protect the climate. Over and above this, Hamburg's public transport companies are also investing billions of euros not included in state budgets.

3.2.1. Improving the situation of pedestrians as road users

The goal is to achieve a shift from car journeys to journeys on foot for local journeys under approx. 1.5 km. The destinations of these journeys are predominantly shops, schools and to reach local public transport services. A shift away from car journeys can,

first and foremost, be achieved by improving the pedestrian infrastructure, in particular by:

- comprehensive maintenance of existing footpaths which are sufficiently wide,
- closing gaps in the network, thus avoiding detours,
- creation of well-lit, clean roads and paths,
- development of a barrier-free, senior citizen-friendly network,
- building of crossing facilities, focusing primarily on the vicinity of heavily used pedestrian routes close to schools, day-care centres, care homes, sports facilities, etc.,

These measures will generate additional requirements to the sum of 1.1 million euros in the biennial budget for 2007/2008. The same sum has been planned for the 2009/2010 biennial budget.

3.2.2. Increasing the attractiveness of the bicycle traffic system

In 2002, bicycle traffic accounted for 9% of the modal split. The target is to reach 18% in 2015. The new "Strategy for Promoting Bicycle Traffic in Hamburg" which was resolved in January 2008, includes important targets as well as 80 specific measures planned to be implemented by 2015. These measures include:

- A network of basic cycle routes (280 km) to be completed by 2015 and equipped with a special signpost system for cyclists. Redesigning the existing cycle lane network will continue to be an important task.
- "Bike and Ride" facilities will be further increased, thus making it even more attractive to combine public transport with use of a bicycle in a chain of journeys.
- In 2009, a public bicycle hire system will be introduced with some 1,500 bicycles and 130 hire stations distributed in an area including the city centre and the most densely populated districts. The first half hour for people using these bicycles will be free of charge.

As an additional long-term measure, a publicity campaign for more bicycle use will be initiated.

In the coming years, an annual budget of 7 million euros is planned for measures concerning the bicycle traffic system.

3.2.3. Expansion of the local public transport network

Significant improvements to the local public transport network are planned in coming years:

- Inauguration of the S-Bahn rapid transport system to Hamburg Airport in December 2008
- Inauguration of the underground train line in the "HafenCity" (a new inner-city district) in 2011
- Inauguration in 2012 of the new low-floor light rail system with a 40 km network to connect those city districts, which have previously been poorly connected to public transport
- Gradual changeover to hybrid bi-articulated buses by 2020

3.2.4. Measures in the field of individual motorised and commercial transport

In order to reduce the noise and exhaust emissions of individual motorised and commercial transport, the following measures are planned (among others):

- Replacement of suitable traffic light intersections with roundabouts
- Compilation of a framework plan for capacity-oriented traffic light sequences
- Further technical development and stronger crosslinking of the traffic management system
- Modernisation of the traffic management centre; implementation is planned until 2010.
- Development of a lorry routing concept to bundle traffic streams
- Examination on whether to introduce a city toll
- Examination on whether to establish a low emission zone, with particular consideration of commercial traffic
- Conversion of the municipal motor pool to smaller, CO2-optimised vehicles
- Ecological driver training for municipal administration employees and drivers working for municipal companies such as the sanitation department and public transportation services

3.3. Promotion of less environmentally damaging modes of transport

The introduction of four annual "Car-free Sundays" per year while simultaneously providing the opportunity to use the local public transport network free of charge is a measure with a considerable public relations effect. The running of voluntary car-free Sundays while providing free public transport in the HVV tariff zone together with an entertainment programme on these Sundays is planned within the scope of a wide ranging publicity campaign aimed at persuading people to use the HVV. The measure will be primarily financed by Hamburg's public transportation services, will however generate additional expenditure to the sum of 200,000 euros in the 2008/2009 biennial budget.

4. Please describe how the above issues can be documented should your city be short listed for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words):

- Strategy for Promoting Bicycle Traffic in Hamburg, Hamburg Parliament document 18/7662, see attachment "bicycle traffic"
- Hamburg Parliament document "bicycle hire system", see attachment "bicycle hire system"
- infas first interim report MiD February 2002, see attachments "MiD 2002" and "MiD interim report 2008"
- Coalition Agreement of Hamburg's governing parties for the current 19th legislature period, see attachment "coalition agreement"
- Annual reports of the public transportation companies, see paper attachments 1-5
- HVV - brochure, se "attachment hvv"
- Map "Hamburg's Cycle Routes" (Hamburgs Fahrradrouen), 2004, see paper attachment 6
- Hamburg's Strategy for Climate Protection (Klimaschutzkonzept Hamburg), see attachment "Climate Protection Strategy"
- "Hamburger Verkehrsverbund HVV" (Hamburg Transport Association): Changes in demand are observed by means of passenger counts and surveys. Both automatic, continuous counts using automatic passenger counting systems and manual data gathering by personnel are

carried out. An exact analysis of turnover is also carried out as an additional measuring method. In the case of special or locally limited measures, market research is carried out to establish the exact degree of success.

3. Availability of green areas open to the public

1. Please describe the present situation and the development over the last five to ten years in relation to the percentage of citizens living within 300 m from public green areas and the total of square metres of public green areas (max. 1,000 words):

Hamburg has a total area of 75,524 ha and, with 6,800 ha of public green areas (9% of total area), is one of the greenest cities in Europe. Over and above this are the 3,432 ha of wooded area owned by the city (5% of total area) and 6,123 ha of nature reserves (8% of total area), as well as the 13,750 ha "Nationalpark Hamburgisches Wattenmeer" (Hamburg Wadden Sea National Park), which is situated outside Hamburg.

1.1. Public green areas

Hamburg's networked system of open spaces is a comprehensive urban open space concept and a prerequisite for ecological and social development of the city as well as for maintenance of the city's unique structural qualities in terms of natural landscape. Radial landscape axes and the two tangential green rings form the principal structural elements of the open space network. This basis is supplemented by recreational hubs serving half-day and all-day recreation: district parks, regional parks and local recreation areas. In order to sufficiently provide the population with green and open areas for leisure, sport and recreation within an appropriate distance of residential areas, the landscape axes and green rings are complimented with a compact open area structure comprising individual spaces such as parks, playgrounds, sports fields and allotments. These individual areas are interlinked with each other as well as with the landscapes axes and green rings via a network of green corridors and paths.

Green area utilisation in Hamburg (As at 1 January 2004)

Type of use	Area in ha	% of total green area
Parks	3,000	43

Allotments	1,915	28
Cemeteries	900	13
Sports fields	600	10
Playgrounds	270	4
Bathing areas	65	1
Other	50	1
Total	6,800	100

Statistically speaking, the population of Hamburg is well provided for in terms of public parks: 17 m² per capita. Alone the parks with at least 1 ha of area make up 57% of the total park area (1,687 ha of 2,958 ha or 9.7 m² per capita - as at 1 Jan. 2007). According to a study based on statistical areas, 1, 541,823 inhabitants, or approximately 89% of Hamburg's population, live within a maximum distance of 300 metres from a park (300 m as the crow flies from the apartment building - not the actual apartment - to the park, ignoring barriers such as canals, railway lines and industrial estates).

Many of the gardens and parks are historically important. A total of 57 public green areas are classed as worthy of conservation in accordance with the Hamburg Conservation of Monuments Act (Denkmalschutzgesetz), while a further 45 properties are significant from a cultural history perspective. Hamburg's parks are protected by the Park Act (Grünanlagengesetz) and Park Ordinance (Grünanlagenverordnung). In addition, with 245,000 trees lining the roads, Hamburg maintains an exceptionally large tree inventory. An estimated additional 150,000 individual trees are situated within public parks, which are complimented by the woodland-like tree inventories in the large parks and other woodland parks (not including forests within the meaning of the Hamburg State Forestry Act [Landeswaldgesetz]).

Small bodies of water are frequently an integral element of the parks. For administrative reasons, larger category 2 bodies of water are not classed as part of the actual parks, even where they border the parks. From the perspective of the population, however, every body of water is a component of the recreational area. Particularly in Hamburg, many parks encompass or are adjoined by canals, which make them appear larger and more interesting.

A special characteristic of the lakes and waterways in Hamburg is their general accessibility. The banks of the river Elbe within the Hamburg area are all publicly accessible, while the banks of the Alster and other

smaller rivers are accessible to the public on at least one side. The lakes formed by the Alster and its tributaries have been totally accessible to the public since 1953, in particular the "Outer Alster" and "Inner Alster", which form two lakes covering an area of 184 ha in the very heart of Hamburg.

1.2. Protected areas

Hamburg has 29 nature reserves, whereof 16 are wholly or partially protected areas in accordance with the Fauna, Flora and Habitats Directive (FFH Directive) and 6 are wholly or partially EU Special Protection Areas (SPAs) for wild birds. In total, this equates to 6,123 ha or practically 8% of Hamburg's area, a higher figure than any other German federal state. In 1998, 4,318 ha or just short of 6% of Hamburg's area was nature reserve; in 2003, that figure was 5,490 ha or just over 7%. Since 2004, a new nature reserve has been formed (Hummelsbütteler Moore) and three others were considerably enlarged (Mühlenberger Loch, Raakmoor and Schnaakenmoor), representing an expansion of approximately 11,5%.

Furthermore, Hamburg has 36 landscape protection areas with a total area of 14,563 ha (19% of Hamburg's total area). Landscape protection areas serve to comprehensively protect cultural landscapes with their typical regional characteristics, landscape features and ecosystems.

1.3. Forestry

Hamburg has 4,400 ha of forestry within the meaning of the Hamburg Forestry Act (Waldgesetz), of which 3,400 ha are owned by the city - for the greater part for hundreds of years - and 1,300 ha are located in nature reserves and FFH areas. In addition, Hamburg owns a further 1,600 ha of forestry in outlying areas of the adjacent Federal States Schleswig-Holstein and Niedersachsen that can be used by the population for recreational purposes. Regional forestry in Hamburg is classed as recreational woodland and can be used by everyone for recreational purposes (Sections 8 and 9 HmbWaldG (Hamburg Forestry Act)). These forests are visited 50 million times annually and feature 500 kilometres of forestry tracks and hiking paths as well as 100 kilometres of bridle paths. The number of trees in Hamburg's private gardens has been estimated to be at least 500,000, while Hamburg's forests encompass approximately 300,000 trees.

2. Please describe the measures implemented during the last five to ten years aimed at increasing the size and quality of public green spaces (max. 1,000 words):

2.1. Ongoing measures with regard to green space inventory and maintenance

A focal point of urban renewal in Hamburg is the improvement and sustainable development of open and green areas in disadvantaged districts of the city. Hamburg develops concepts and programmes to cater appropriately for the needs of the population in terms of green and recreational areas. The provision of parks is founded on guide ratios derived from area utilisation planning, the landscape programme and the green area global directive: 6 square metres per capita of parkland in close proximity to dwellings (up to 500 m walking distance), plus 7 square metres per capita of principal parkland, which equates to 13 per capita.

Within the scope of project-based population participation processes, measures for improving or creating open spaces are being supported in 30 development areas. On the basis of integrated neighbourhood development concepts, projects are being prepared and implemented in both private properties and public areas. Local housing companies, schools and residents are important partners for restructuring the residential environment and improving playgrounds and schoolyards.

Within the scope of urban renewal, 3-4 million euros of subsidies are being invested annually in implementing green and residential environment measures. Typical measures (implemented or being planned) are:

- Creation of new parks
- Restructuring of open and recreational areas in close proximity to dwellings
- Maintenance and improvement of squares and roadside areas
- Maintenance and improvement of parks
- Restructuring of school playgrounds
- Sports facilities
- Principal green corridors/n

Exemplary measures that have been subsidised in recent years or are currently being planned:

- Social urban development: improvement and networking of open and green areas in "socially disadvantaged city neighbourhoods", for example: Altona old town, Billstedt
- User programmes in open areas for children, young people, senior citizens, less mobile people: basic renovation of 81 playgrounds, creation of 6,000 m² annually for use by senior citizens
- Improvement of parks with the following objectives:
 - ecological management concepts for 36 woodland parks (approximately 700 ha)
 - garden conservation
 - (partial) re-landscaping
- Improvement of the quality of cycle paths in public green areas, for example: signposting 2nd green ring, development of 14 km of principal cycle paths in green areas from 2005 to 2010
- Networking of green areas, for example to promote hiking, cycling and the natural propagation of flora and fauna in the city
- Conservation of public green areas, preservation and development of living space and use of environment-friendly technology and materials within the meaning of Agenda 21 (application of technical directives such as tree maintenance guidelines, natural maintenance guidelines and landscaping calculation principles)
- Development and management of programmes for safeguarding the valuable tree inventory on streets and in parks (e.g. digital tree register, tree management guidelines)
- Preservation of allotments as an integral city component, in order to enhance the quality of living for families and senior citizens (safeguarding the quantity of allotments through the so-called "10,000 Contract" between the Free and Hanseatic City of Hamburg and the "Landesbund der Gartenfreunde in Hamburg e.V.", which stipulates the preservation of nearly 36,000 allotments in Hamburg and the replacement of such allotments, which must be removed due to legally binding changes in land utilisation.

2.2. Protected areas

In recent years, Hamburg has undertaken exceptional efforts to protect and develop the city's bio-diversity

and hence preserve the rich variety of animal and plant life. Within the "Natura 2000" areas, targeted maintenance and development measures have been implemented to preserve Europe-wide protected endangered species of flora and fauna, for example: new habitats for the great-crested newt in the "Stellmoorer Tunneltal" nature reserve, for the corn crake in the "Moorgürtel" nature reserve and for hemlock water dropwort in the Elbe FFH area.

For the protection and advancement of wild birds, amphibians and wild flora, the Contractual Nature Conservation Programme in cooperation with farmers (for approximately 25% of Hamburg's green areas) has been in place for more than twenty years. This involves concluding contracts with farmers to farm green areas using conservation-friendly methods. The promotion of nature conservation in the countryside through the corresponding farming methods encompasses an area of 1,700 ha. Large-scale improvement schemes create new valuable habitats (for example, comprehensive wet habitats in new territories) and implement targeted measures for the protection of endangered species (for example, protection of amphibians).

2.3. Forestry management measures

Natural forestry management has been in place for three decades in Hamburg: measures for natural regeneration and increasing the quantity of deciduous trees aim at stabilising the forest, while avoiding deforestation and pesticides. The Hamburg forestry was the first forest enterprise in Germany to be awarded the internationally recognised Forest Stewardship Council (FSC) label for sustainable forest management. The objective of Hamburg's forestry administration is to establish, cultivate and maintain locational, functional and healthy forest habitats as naturally as possible; habitats that are as resilient as possible to external influences and burdens on account of their size, diversity and age structure. This objective is to be achieved with a minimum of expenditure by benefitting from natural development processes, including self-development of the forest itself. This objective, which was established almost 30 years ago within the "Silviculture General Framework" (Waldbauliche Rahmenrichtlinien) of 1980, is the guiding principle of Hamburg's forest management. In order to achieve this goal, the framework encompasses the following principles of action that are binding for all foresters:

- Establishment of new forest areas
- Forest rejuvenation

- Development of stable mixed forests by promoting naturally grown mixed trees. Intervention only where the existence or qualitative development of the main tree types are under threat; whereby forest maintenance is only to be implemented outside periods of planting and shoot development. Where possible, felled trees are to be shifted to nearby tracks by horse. Machines and special forestry hauling vehicles are only permitted on the designated maintenance breaks and tracks.
- Biotopes and protection of endangered species
- Leaving deadwood and old tree groups in situ

3. Please describe planned short- and long-term measures for the establishment of green areas open to the public (Max. 1,000 words):

3.1. Planned measures for the networking, improvement and management of green areas.

The planned measures primarily are a continuation of the ongoing measures described under 2., in order to preserve and improve the successes already achieved in the area of green space acquisition, networking, improvement and management.

The following specific projects are currently being implemented or planned:

- Selective upgrading of - and bridging gaps within - the green and open areas significant to the city as a whole.
- Qualitative improvement of parks and other public open areas
- Specific park planning of a city-wide park concept and global directive for Hamburg's districts

Planned measures (in thousand euros):

	2009	2010	2011	2012	2013
Parks and playgrounds, new and redesigned	5,750	6,650	3,150	4,607	3,930

Allotments	700	880	880	880	880
Street trees	1,250	1,350	1,350	1,350	1,350
Planten un Blomen" Park	600	750	350	350	350
Neugraben- Fischbek Park	578	0	0	300	644
Ecological maintenance measures, redevelopment of woodland inventory in parks	750	750	750	750	750
Total	9,628	10,380	6,480	8,237	7,904

3.2. igs 2013 - In 80 gardens around the world

Between April and October 2013, Hamburg will be hosting an International Garden Show. The igs 2013 is not only about gardens and flowers - the aim is to create a 21st-century public park on the Elbe island of Wilhelmsburg, Europe's largest river island. The choice of location itself reveals that Hamburg's appealing combination of water and green areas will play a significant role here, too. In addition to the water, Wilhelmsburg is also characterised by an international population and the nearby port. This has inspired the exhibition motto "In 80 gardens around the world". At the exhibition site in Wilhelmsburg, a range of show gardens and virtual travels will transport visitors to other worlds. With its team of professionals, igs hamburg 2013 GmbH has been tasked with skilfully implementing the project since the beginning of 2007. An investment budget of 77.65 million euros has been allocated up to 2013 for the design of the park - planned as a permanent structure - and other necessary infrastructure facilities.

3.3. Nature reserves

In order to preserve and upgrade the typical Hamburg landscape in terms of ecosystem and recreation, further areas need to be protected. Hamburg needs natural environments and landscapes, not only as habitats for wild plants and animals, but also as recreational and experiential spaces for the city's population. Hamburg's expansive cultural landscapes, such as the marshlands, geestlands and waterways, need to be

sustainably managed and their functions maintained and strengthened.

In the coming years, the Hamburg Senate plans to approve two new nature reserves (Flassbargmoor and Rothsteinmoor) and also expand the following nature reserves: Wittenbergener Heide, Die Reit, Westerweiden / Alte Süderelbe, Rodenbeker Quellental. This will increase the total area of Hamburg's nature reserves by approximately 60 ha.

By 2010, the registered expanse of protected landscape areas will amount to approximately 25,300 ha (ca. 35% of Hamburg's total area). An extensive zone of 500 ha of protected landscape is planned for the district of Wilhelmsburg, with the aim of securing the ecological balance and providing a recreational area for the population. The completion of a biotope networking system scheduled for the coming years will strategically avoid cutting into habitats and create new structural links in the future.

The Nature Conservation Act (Naturschutzgesetz) is currently being amended, with particular emphasis on the habitat system, enabling better protection of riverbanks, hedgerows and structural aspects of the landscape. The habitat system is to encompass 15% of Hamburg's total area - including bodies of water; however, excluding those in the Nationalpark Hamburgisches Wattenmeer.

4. Please describe how the above issues can be documented in case your city is short listed to participate in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max. 600 words):

The information can be documented using archived geographical map illustrations (GIS), aerial imagery (total coverage of Hamburg at a scale of 1:5000).

• Public green areas: see attachment "Parktypisierung",
<http://www.hamburg.de/contentblob/154134/data/faltplantextneu>

<http://www.hamburg.de/contentblob/154154/data/erlaeuterungsbericht>

<http://www.hamburg.de/gruenesnetz>

<http://www.hamburg.de/contentblob/154158/data/system-freiraumtypen-pdf>

- Hamburg directive „green“ (Globalrichtlinie Grün):
<http://www.hamburg.de/contentblob/86076/data/gruen-pdf>

- brochures:
<http://www.hamburg.de/contentblob/135150/data/hamburgs-gruen>

<http://www.hamburg.de/contentblob/135234/data/wandsefaltblatt>

- allotments:
www.kleingarten-hh.de/fileadmin/grafik/Tag_des_Gartens/TDG2007/FlyerTdG2007.pdf

- historic gardens and parks:
<http://www.hamburg.de/contentblob/173388/data/t-d-o-programm-2006>

<http://www.hamburg.de/altona/politik-verwaltung/pressemitteilung/720464/hirschpark.html>

- protected areas:

www.hamburg.de/start-naturschutzgebiete/

www.hamburg.de/start-landschaftsschutzgebiete/

- forestry: www.forst-hamburg.de/wald.htm

- budget plan

<http://www.hamburg.de/contentblob/24072/data/einzelplan6.pdf>

- Igs: www.igs-hamburg.de/133.0.html

- pocket guidebook "Hamburg: Parks and Squares for the Developing City", a guide to landscape architecture, see paper attachment 1

4. Quality of ambient air

1. Please describe the present situation and development over the last five to ten years in relation to (max. 1,000 words):

The "Hamburg ambient air pollution network" (Hamburger Luftmessnetz - HaLM) exceeds the statutorily required standard and currently comprises 17 air quality monitoring stations and one mobile monitoring unit for measuring air quality; whereby a distinction is made between stations monitoring background, ozone and traffic emissions. Monitoring is effected constantly in accordance with EU directives and the Federal Immission Control Act (Bundesimmissionsschutzgesetz).

To facilitate the efficient measurement of air quality, a computer-controlled ambient air pollution network was developed for which both the hardware and software was completely restructured in 2002/2003. The concentrations of all pollutant components are continually measured by the measuring stations and collated into 10-minute values, which are sent on an hourly basis to the central computer of the "Hamburg ambient air pollution network" (Hamburger Luftmessnetz - HaLM) at the "Hamburg Institute for Hygiene and Environment" (Institut für Hygiene und Umwelt - HU). Following an automatic and manual plausibility check, the information is then recorded in a database where it can be evaluated with various software tools.

The mobile monitoring unit is used to record area-related air pollution and take reference measurements.

The monitoring stations are grouped in three different categories of stations:

- suburban background (stations located in suburban areas), such as the monitoring stations Blankenese, Bramfeld, Neugraben, and Tatenberg
- urban background (stations located in urban areas), such as the monitoring stations Billstedt, Airport, Heimfeld, Sternschanze, Veddel, and Wilhelmsburg
- stations located at kerbside/traffic hotspots, such as the monitoring stations Habichtstrasse, Kieler Strasse, Max-Brauer-Allee, and Stresemannstrasse.

The following tables present information on Hamburg's air quality:

Table 1: Number of days per year on which the daily mean value of PM10 concentration exceeded the threshold of 50 µg/m³

Number of days per year on which the value of 50 µg/m ³ was exceeded for PM10					
	suburban background	urban background		kerbside/traffic hotspot	
	1 station	6 stations		2 (2001-04) / 3 stations	
		from	to	from	to
2001	-	8	22	31	32
2002	15	8	33	37	43
2003	25	23	54	49	49
2004	7	8	12	18	20
2005	11	9	29	19	45
2006	19	15	31	35	45
2007	7	6	23	14	26

Table 2: Number of days per year on which the ozone concentration (floating 8-hour mean value) exceeded the threshold of 120 µg/m³

Number of days per year on which the value of 120 µg/m ³ was exceeded for ozone (8 h mean)				
	suburban background		urban background	
	4 stations		2 stations	
	from	to	from	to
1998	5	9	-	5
1999	12	23	5	7
2000	7	9	4	5
2001	1	5	1	2
2002	3	10	1	4
2003	14	23	7	13
2004	0	3	0	1
2005	2	7	1	2
2006	14	22	9	11
2007	3	11	3	8

Table 3: Annual mean values of NO₂

Annual mean concentration of NO ₂ [µg/m ³]						
	suburban background		urban background		kerbside/traffic hotspot	
	up to 4 stations		up to 6 stations		4 to 6 stations	
1998	19	19	30	42	46	62
1999	19	23	27	41	53	56
2000	17	21	20	37	49	51
2001	17	20	21	38	39	53
2002	17	20	21	39	46	60
2003	18	21	25	44	50	69
2004	15	19	23	41	54	64

2005	17	19	23	39	57	68
2006	19	20	23	39	62	73
2007	16	18	22	40	58	72

Table 4: Annual mean values of PM10

	Annual mean concentration of PM10 [$\mu\text{g}/\text{m}^3$]				
	suburban background	urban background		kerbside/traffic hotspot	
	1 station	6 stations		2 (2001-04) / 3 stations	
		from	to	from	to
2001	-	20	29	31	32
2002	21	21	28	32	32
2003	24	25	33	35	35
2004	19	21	27	29	31
2005	20	21	28	30	34
2006	21	22	29	31	36
2007	19	19	26	28	31

2. Please describe the measures implemented in the last five to ten years in order to improve air quality, including for example (max. 1,000 words):

2.1 Clean air plans

The Free and Hanseatic City of Hamburg presented a clean air plan in October 2004 and an air quality management action plan in December 2005. Both plans were prepared with the specified public participation and subsequently published. Since that time, the plans have been available for viewing on the internet at:

fhh.hamburg.de/stadt/Aktuell/behoerden/stadtentwicklung-umwelt/umwelt/luft/start.html .

The plans include fundamental information on the "Hamburg ambient air pollution network" (Hamburger Luftmessnetz - HaLM), traffic development, long-term developments, air quality and the causes of NO₂ and fine particulate matter PM₁₀. The plans also detail long-term and short-term measures to reduce pollution, which have been specifically developed or which are relevant for the reduction of pollution throughout the city area.

Active air quality management has been pursued in Hamburg since the early 1980s:

In terms of traffic (cf. also question 2), a whole host of traffic control and emission-reducing measures have been introduced. For example:

- A hierarchical road network (national motorways and national trunk roads, main roads and secondary roads) is in place to handle the various types of traffic and their tasks.

- Priority for local public passenger transport - such as the introduction of special bus lanes, or traffic light controls manipulated by bus traffic (green-light responses).

In addition to motor vehicles, industrial facilities make up the second sector that is responsible for considerable air pollutant emissions, often of a singular nature. In comparison to previously applicable threshold values, in many cases the new threshold values represent a reduction by over half. Over a number of years, air-polluting facilities in Hamburg have been refurbished and upgraded in line with the Technical Instructions on Air Quality Control, with the result that they now operate well-within or frequently well-below permissible emission levels. Enhancements in the degree of efficiency and/or energy-saving measures will further reduce fuel consumption, in turn reducing NOx emissions from these facilities.

The most important measures commenced to date are:

- Introduction of adaptive network management / "intelligent traffic lights"
- Promotion of cycle and pedestrian traffic
- Expansion and upgrading of the local public passenger transport system (for example, links to the airport and HafenCity)
- Fitting busses run by "Hamburger Hochbahn AG" public transport company and City administration vehicles with carbon-particulate filters
- Implementation of a study determining the components of particulate matter
- Deployment of low-emission fuel cell busses
- Additional monitoring of pollution through the installation of passive collectors measuring nitrogen dioxide levels.
- Regularly implemented car-free Sundays, when public transport (HVV) may be used free of charge
- Support measures to equip ships with diesel particulate filters within the scope of the "Hamburg Environmental Technology Sponsorship Programme" (Hamburger Förderprogramm für Umwelttechnologie)
- Special monitoring at the Cruise Center terminal in HafenCity for the measurement of nitrogen dioxide and sulphur dioxide levels

- Throughout recent years, industrial facilities have been upgraded in accordance with statutory requirements. With regard to emission-relevant facilities, such as incineration plants, requirements have also been stipulated which extend beyond state-of-the-art technology.
- Implementation of road construction measures to improve traffic flow in Hamburg

2.2. Actions by public enterprises

Hamburg's municipal and public enterprises have implemented various projects with the goal to reduce traffic-induced air pollution. First and foremost is the use of vehicles fuelled by natural gas. Their engines are almost free of any emissions of sulphur dioxide, carbon and other particulates. They produce 25% less CO₂ than petrol-fuelled cars. Therefore, natural gas vehicles do not only reduce air pollution, but also contribute to climate protection.

2.2.1. Hamburg Wasser (Hamburg Water)

"Hamburg Wasser" (Hamburg Water) is the largest municipally owned drinking water supply and waste water disposal company in Germany.

- For its business uses, the company operates the largest natural gas motor pool in Hamburg: In 2008, 57 vehicles are in operation, in 2009, about 25 more will be put into service.
- Simultaneously, the company is developing a technology to produce biogas from sewage sludge. So in future, the company's vehicles could be powered by fuel which is generated as a by-product of waste water treatment.

As of today, 20 natural gas fuelling stations exist in the Greater Hamburg area, to supply and service public and private natural gas vehicles.

2.2.2. Flughafen Hamburg GmbH (Hamburg Airport)

In order to minimise air-polluting emissions at Hamburg's airport, the „Flughafen Hamburg GmbH“

(Hamburg Airport company) has implemented various measures, mainly in regards of the vehicles on the airport apron and the aircrafts' auxiliary power units.

- New service vehicles are being fuelled primarily with low-emission natural gas or liquid gas. As of today, 15 passenger cars are propelled with gas, and all 27 luggage tow tractors are equipped with a gas-fuelled engine.
- In order to acquire hands-on knowledge with the everyday use of hydrogen-fuelled vehicles, there is a scientifically monitored Hydrogen Project at the airport. It operates, among else, two fuel cell luggage tow tractors equipped with the emission-free hydrogen combustion technology.

2.2.3. Stadtreinigung Hamburg (Hamburg Municipal Sanitation Department)

"Stadtreinigung Hamburg", the municipal corporation in charge of disposing Hamburg's household waste from private households and commercial waste similar to household waste operates the following projects:

- Driver training in energy-saving driving style
- Successive changeover of all utility vehicles to Euro 5 engines and BlueTec technology
- Use of vehicles with low tare weight and high payload
- Test of 4 new vehicle types: 1 natural gas garbage collection lorry at the end of 2008, 2 fuel cell vehicles as of mid-2009 (waste paper basket vehicle and flat-bed vehicle), 1 hydraulics-hybrid garbage collection lorry early in 2009, 1 electro-hybrid garbage collection lorry in spring 2009

2.3. Public Relations

The most comprehensive information for the public is provided on the internet site of the "Hamburger Luftmessnetz" (Hamburg ambient air pollution network) at www.hamburger-luft.de, which publishes the full extent of measurement data pertaining to air pollution as well as a range of additional information, including the location of measuring stations.

Certain data (for example, in summer, the current hourly averages of ozone and nitrogen dioxide and the

most recent PM10 daily averages) are published via the videotext system of a local TV station (ARD-N3).

This is supplemented by a telephone information service that provides details of current air pollution levels (Tel. no. 42845 2424).

3. Please describe planned short- and long-term measures for improvement of air quality (max. 1,000 words):

The most important measures currently being planned are:

- Introduction of an environmental zone: Analysis is currently being carried out into whether certain areas of the inner city should be closed to vehicles that do not fulfil progressive exhaust emission standards.
- Promotion of cycle and pedestrian traffic
- Further expansion and upgrading of the local public passenger transport system
- Support for car-free residential projects
- Development of an incentive system for the introduction of 1,000 new „Green Taxis“ with gas-fuelled engines
- Development of innovative motor vehicle drive technology programmes
- Commissioning of studies to determine the impact of traffic measures on emissions (budget as of 2009: 100,000 euros per year)
- Creation of incentives to reduce shipping emissions by way of a budget-neutral differentiation of port fees in proportion to the environmental-friendliness of ships
- Study pertaining to an onshore power supply for cruise ships; whereby ships in port would be supplied with power from land-based facilities, to avoid using on-board generators. This would reduce emissions emanating from shipping
- Analysis into the use of natural gas as a fuel for ships with the short-term goal of supplying natural gas on land to the Cruise Center terminal, and the long-term objective of bringing natural gas into general use as a maritime fuel on both land and water

4. Please describe how the above issues can be documented in case your city is short listed to participate in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max. 600 words):

The measures presented can be evidenced by means of the following documentation:

- 22nd Ordinance to the Federal Immission Control Act, http://bundesrecht.juris.de/bimschv_22_2002/index.html
- "Hamburger Luftmessnetz" (Hamburg ambient air pollution network) leaflets, see attachment "Halmfaltblatt 2006 und 2007"
- results of measurements taken by the "Hamburger Luftmessnetz" (Hamburg ambient air pollution network), <http://www.hamburger-luft.de>
- Coalition Agreement of Hamburg's governing parties for the current 19th legislature period, see attachment "Coalition Agreement"

5. Noise pollution

1. Please describe the present situation and development over the last five to ten years in relation to (max. 1,000 words):

Within the scope of implementing "Directive 2002/49/EC of the European Parliament and the Council of 25 June 2002, relating to the assessment and management of environmental noise", the proportion of Hamburg's population subjected to noise emanations from road, railway and air traffic sources as well as industrial, commercial and port facilities has been determined in terms of the noise indicators L_{den} , for noise levels during the day, evening and night, and L_{night} , for noise levels at night. The assessment was calculated on the basis of national provisional computation methods; namely, the "Provisional computation method for environmental noise on roads - VBUS", the "Provisional computation method for environmental noise on railways - VBUSch", the "Provisional computation method for environmental noise at airports - VBUF", the "Provisional computation method for environmental noise from industry and commercial facilities - VBUI", and the "Provisional computation method for determining the number of individuals exposed to environmental noise - VBEB".

In terms of the industrial, commercial and port sector, in addition to plants located in the port area, only those industrial or commercial zones with one or more plants as per Appendix 1 of the "European Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control" are afforded consideration. The period of reference is 2006.

Accordingly, the number of individuals affected is as follows:

	Affected by $L_{den} > 55$ dB(A)	Affected by $L_{night} > 45$ dB(A)
Road traffic	363600	420900
Rail traffic	56200	38900 ($L_{night} > 50$ dB(A))
Air traffic	43700	5000 ($L_{night} > 50$ dB(A))
Industry/commercial /port facilities	4200	10200

In line with the requirements of the EU directive, the analyses are updated at least every 5 years, from which commensurate developments regarding issues of concern can be ascertained. Therefore, the next update is scheduled for 2012. In the past, such systematic studies were not carried out.

2. Please describe the measures implemented during the last five to ten years in order to reduce noise (max. 1,000 words):

2.1. Rail traffic - goods traffic railway line

To cope with the requirement for goods traffic travelling to and from Scandinavia and in order to promote transfer of heavy goods traffic from roads to the railway, the national German railway company, DB AG, is planning to upgrade the goods traffic railway line (route 1234) in Hamburg. The scheme envisages an increase in the number of trains from around 35 trains per workday to around 85 per workday, while extending the length of trains by around 200 metres to up to 650 metres and increasing speeds from around 60 km/h to up to 80 km/h.

In order to protect the population from the anticipated rise in sound emissions, route section 1234 has been incorporated into the voluntary development programme of the Federal Ministry of Transport, Building and Urban Affairs (BMVBS). As such, in line with certain cost-analysis considerations, this enables passive or active noise protection measures to be granted for such houses and apartments along the route section that are affected by threshold limits exceeding those specified under the noise remediation directive. The remediation thresholds in residential areas have been set at 70 dB(A) during the day and 60 dB(A) at night. In addition, the Free and Hanseatic City of Hamburg has provided 50% co-funding for active noise protection initiatives that have been privately financed by property owners. Funds of 3 million euros have been made available for this purpose.

In 2007/2008, construction began on the first 6 noise barriers financed by the Federal Railway Authority and the Federal Government. A further 2 noise barriers have been financed by affected residents and the City of Hamburg.

2.2. Air traffic

Hamburg airport is located on the outskirts of the city area, approximately 10 km from the centre, and is surrounded by numerous densely populated residential zones. Flughafen Hamburg GmbH – the company operating the airport – has been involved with various voluntary noise protection programmes in the past aimed at boosting the installation of sound absorbing ventilators and sound insulating windows. Commensurate funding has been made available for such measures within the scope of the 7plus voluntary noise protection programme and the 8th Flughafen Hamburg GmbH voluntary noise protection programme. In all, Flughafen Hamburg GmbH has invested over 35 million euros in noise protection initiatives during the past 30 years, thus fitting around 14,500 residential properties with sound insulating windows and installing over 7,000 sound absorbing ventilators.

In 2001, Hamburg airport introduced take-off and landing fees that are incremented in line with noise levels. While an aircraft designated under noise class 1 (less than 72dB(A)) will be charged just 5.50 euros for each take-off and landing, an aircraft of noise class 7 (more than 87 dB(A)) will be required to pay 1,350 euros. The differentiation in terms of noise means that two similar-sized aircraft such as the Airbus A319 (68 t MTOM, 130 seats) and the considerably louder McDonnellDouglas MD87 (62 t MTOM, 137 seats) will pay significantly different fees. Each flight (take-off and landing) to Hamburg in an MD87 (noise class 6) costs around 800 euros more than in an A319 (noise class 3). Should the aircraft be delayed and land after 11.00 p.m., the landing fee for the MD87 would be almost 1,200 euros more than for the A319.

Over and above this, restrictions on nocturnal air traffic are also in place. Scheduled take-offs and landings for regular charter and scheduled flights of passenger aircraft are permissible between 6 a.m. and 11 p.m. Any traffic between 12 midnight and 6 a.m. requires an exemption certificate in each individual case, to be granted by the air traffic noise protection officer or their duty officer. Cargo flights and ferry flights require authorisation in each legitimate individual case between 11 p.m. and 6 a.m. In addition, take-off and landing fees also increase after 10 p.m. (take-off) and 11 p.m. (landing).

2.3. Port

- Soft Touch Down: Project to reduce the output level of noise sources at the port terminals.

- Implementation of a noise advisory council, as communications platform between port enterprises, Hamburg Port Authority and residents.
- Port Feeder Barge: Project to shift port-internal traffic onto the waterways, in order to reduce lorry traffic.
- Increase of the proportion of cargo handling transported by rail, through modernisation and expansion of the Port Railway lines as well as the Port Railway links to the hinterland, starting in 2008.
- Use of newest technical installations (bellows) for construction works, in order to reduce noise emissions and thus ease the strain on affected persons.
- Setting up port planning ordinances with regulations concerning the layout of building structures in port areas (noise protection) resp. noise quota system for the port areas.

3. Please describe planned short- and long-term measures aimed at reducing noise (max. 1,000 words):

3.1. Road traffic - noise barrier superstructure on the A7 motorway

In cooperation with the Federal Government, Hamburg has developed a comprehensive noise protection concept for upgrading the A7 between the river Elbe tunnel and the regional boundary with the adjacent Federal State Schleswig-Holstein. A new aspect of the concept as compared to previous analyses is that, for the entire A7, the noise protection system has been planned and considered in relation to each individual residential area. The result is that a total length of around 1.7 km of the A7 will be "screened-off" using funding provided by the Federal Government, which will also bear the cost of screening off a further 500 metres of the A7 on one side (gallery). The Federal Government is investing a total of around 400 million euros in the upgrading and noise protection scheme -150 million euros more than originally planned for Hamburg. However, this does also give rise to a significant increase in the planning costs, which Hamburg has to finance. The upgrading of the A7 will now not only improve the performance of the road network, but for the first time will also be tolerable for people living within a broad area. The tunnel-like noise barrier superstructure will incorporate a 1.2 m to 1.5 m strong, sand-filled top layer and will also be planted with greenery.

The 8-lane expansion of the A7 is scheduled for completion by 2015. A fundamental element of the A7 upgrading is a concept that ensures statutorily prescribed noise protection in accordance with the Federal Immission Control Act (Bundesimmissionsschutzgesetz). The concept commissioned by Hamburg envisages comprehensive, uniformly structured and consequently effective protection of the population; whereby the noise protection measures comprise a technically sophisticated combination of noise protection barriers, galleries and tunnels. The divisional effect that the A7 has had on the city since the 1970s will be reduced, in turn allowing large sections of the separated districts to be reunited.

3.2. Directive relating to the assessment and management of environmental noise

In 2007, within the scope of implementing "Directive 2002/49/EC of the European Parliament and the Council of 25 June 2002, relating to the assessment and management of environmental noise", noise pollution emanating from the sources road traffic, rail traffic (from non-federal railway lines), air traffic and industrial, commercial and port facilities was measured. Planning is currently being undertaken in various districts. Specific, notable projects will be presented with the Hamburg Senate resolution at the end of November 2008, following submission of the Noise Protection Action Plan for the Hamburg conurbation.

In this context, the following measures are planned:

3.3. Development of a citywide speed concept

At many streets in Hamburg, the traffic noise level surpasses the limits defined in the guideline for traffic management measures for the protection of the population from noise („Lärmschutz-Richtlinie StV", noise control guideline - it stipulates e.g. for residential areas 70 dB(A) / 60 dB(A) as orientation help). Frequently, problems also arise with the air quality (PM, NOx) and with traffic accident hotspots. All three action fields (noise, air and road traffic safety) can be positively strengthened with matched traffic speeds. At the same time, the network of main roads must meet the mobility requirements of all the varied traffic participants, as well as the needs of commercial traffic and local public transport. Goal of the citywide speed concept is to systematically present

the cornerstones for a consideration of the partly rivalling requirements of traffic, road traffic safety and immission control. For this purpose, a balanced decision basis is being prepared, which is feasible traffic-wise and also meets the need for protection from noise.

3.4. Development of a concept for steadying traffic flow

A steady traffic flow contributes very audibly to noise reduction, since it reduces the number and intensity of the especially annoying braking and acceleration events. It also improves particulate matter emission, since these emissions originate mainly from abrasion and road dust resuspension. In many cases, an improved traffic flow also achieves to reduce traffic jams. Against this background, it is planned to examine Hamburg's road network and traffic installations (traffic lights etc.), as regards how a traffic flow steadying - at simultaneously matched speed levels - can be achieved. This encompasses e.g. the introduction of traffic control based on traffic volume and speed, review of the green waves, as well as coordination of the traffic lights as regards travel speeds.

3.5. Development of a „Park and Ride“ strategy for the Hamburg conurbation to reduce commuter traffic

„Park and Ride“ installations which are well accepted by the public lead to a reduction of environmental pollution, if they succeed to avoid car travels into Hamburg's city centre. However, the interests of the P+R rail stations and their surroundings have to be taken into account, too, since increased commuter traffic at these locations can cause new strains, and the construction as well as maintenance of these installations can cause costs for the affected municipalities. It does therefore make sense to develop an conurbation-wide P+R strategy in cooperation with the neighbouring municipalities.

3.6. Development of a lorry routing concept

Cargo traffic causes significantly higher noise per vehicle than private car traffic (one lorry is as loud as 10-20 private cars together). However, since lorry traffic is largely indispensable for the City, it is planned to develop a lorry route network which bundles

cargo traffic on relatively insensitive routes and protects the noise-sensitive roads with high residential densities. Over and above the noise relief of the affected citizens, the safety issues of the existing hazardous materials network will also be considered.

3.6. Implementation of a noise control programme at existing roads within Hamburg's obligation

Even after implementation of those approaches to avoid, route and organise traffic, and for road renovation, which are possible at planning level, there will remain numerous segments in Hamburg's main road network, where irreconcilable high noise levels occur. Also, some affected residents may suffer increased strain, e.g. due to the bundling of traffic from residential areas onto main roads. To support the action planning, especially to provide alleviation for such cases of hardship, and for acceptability reasons, it would make sense to implement a noise remedial programme and provide it with funds adequate to the task. In case that deepening noise action plans are to be implemented and appropriate measures are to be executed for Hamburg's districts, criteria will have to be developed, which allow to evaluate whether these activities can be subsidised. A preliminary, relatively simple model for allocating subsidies for passive noise protection installations could be a prioritisation according to the criteria urgency, financeability and synergy effects with related target areas (energetic renovation, CO₂). The development of such an assessment model will assure a transparent and targeted allocation of funds.

4. Please describe how the above issues can be documented should your city be short listed for participation in the second phase of the evaluation (documentation should not be forwarded in this phase) (max. 600 words):

To date, the costs for compiling Hamburg's noise maps and surveys on the affected areas and residents amounted to about 20,000 euros per year (e.g. for materials, software, training etc.), which were financed from the City's regular budget. The costs for generating the „Guidelines for drawing up the Noise Protection Action Plan“ were 50,000 euros.

Specifically, these include:

- Comprehensive strategic noise maps for Hamburg in relation to road traffic sources

<http://www.hamburg.de/contentblob/144208/data/lden-strasse-pdf.pdf>

<http://www.hamburg.de/contentblob/144212/data/lnight-strasse-pdf.pdf>

- Comprehensive strategic noise maps for Hamburg in relation to rail traffic sources (on non-federal lines), see attachments "A3_UBahn_Dfz_LDen.pdf and A3_UBahn_Dfz_LNight.pdf"

- Comprehensive strategic noise maps for Hamburg in relation to industrial, commercial and port facility sources

<http://www.hamburg.de/contentblob/144224/data/lden-industrie.pdf>

<http://www.hamburg.de/contentblob/144228/data/lnight-industrie.pdf>

- Comprehensive strategic noise maps for Hamburg in relation to air traffic sources

<http://www.hamburg.de/contentblob/144216/data/lden-flughafen-pdf.pdf>

<http://www.hamburg.de/contentblob/144220/data/lnight-flughafen-pdf.pdf>

- Comprehensive, building-precise analysis of Hamburg in relation to numbers affected by road traffic sources

<http://www.hamburg.de/contentblob/144154/data/leitfaden-abbildung1.pdf>

- Harbour projects /conferences:

Port Feeder Barge: (<http://www.portfeederbarge.de/>),
Upgrade and expansion of the Port Railway
infrastructure and Port Railway links to the
hinterland, starting in 2008: (<http://www.hamburg-port-authority.de/presse-und-aktuelles/umfragen/163-ausbau-hamburger-hafenbahn.html>)

Noise-reducing bellows, see attachment "Faltenbalg"

Port planning ordinances
(http://hh.juris.de/hh/AltenwHfPlV_HA_Hafenplanungsverordnung.htm,

http://hh.juris.de/hh/KlGrasHfPlV_HA_rahmen.htm)

Conferences:

http://wpccrotterdam.com/endorsed_by,

<http://www.ecoport.com/page.oc1?pageid=22>,

<http://nomeports.ecoports.com/page.ocl?pageid=42&version=&mode=>

- Hamburg Airport: report on aircraft noise, s. paper attachment 1

- Hamburg Senate document 2007/61: "Implementing the EC directive relating to the assessment and control of environmental noise for the Hamburg conurbation", see attachment "SDrs_Umsetzung EG-Richtlinie Umgebungsärm_2007-00061.pdf"

- "Guidelines for drawing up the Noise Protection Action Plan"

<http://www.hamburg.de/laermaktionsplanung/143562/laermaktionsplanung-start.html>

- Studies on noise pollution within the environment affected by the goods traffic railway line

<http://www.hamburg.de/start-gueterumgehungsbahn/129790/gueterumgehungsbahn-start.html>

- Überdeckung der Bundesautobahn A7 (noise barrier superstructure on the A7 motorway)

<http://www.hamburg.de/laerm/nofl/143564/a7-deckel-start.html>

6. Waste production and management

1. Please describe the present situation and development over the last five to ten years in relation to (max. 1,000 words):

1.1. Amount of waste per capita

The total quantity of municipal waste from private households and of commercial waste similar to household waste amounted to 883 kg per capita in 1997, increased to 902 kg in 2002 and then fell back to 865 kg in 2007.

Municipal waste generation per capita (specifying recycled and disposed of quantities):

	1997		2002		2007	
	kg per capita	%	kg per capita	%	kg per capita	%
Recycling of municipal waste	408	46	513	57	537	62
Disposal of municipal waste	475	54	389	43	328	38
Total	883	100	902	100	865	100

Table 1

Household waste generation per capita (specifying recycled and disposed of quantities):

	1997		2002		2007	
	kg per capita	%	kg per capita	%	kg per capita	%
Recycling of household waste	151	28	142	28	163	34
Disposal of household waste	383	72	370	72	316	66
Total	534	100	512	100	479	100

Table 2

The quantity per capita according to individual waste streams is based on the following tables:

Municipal waste generation in Hamburg per capita (specified):

Household and commercial waste excluding construction/demolition and other industrial waste

Municipal Waste	1997		2002		2007	
	kg	%	kg	%	kg	%
Waste recycling						
1 Waste paper	219	25	216	24	185	21
2 Glass	33	4	25	3	20	2
3 Mixed packaging from households	20	2	23	3	16	2
4 Plastics	4	0	7	1	6	1
5 Metals	16	2	19	2	26	3
6 Waste wood	19	2	27	3	38	4
7 Textiles,	3	0	2	0	3	0
8 biowaste and food waste	20	2	23	3	25	3
9 Organic waste	49	6	49	5	48	6
10 Bulky waste	12	1	9	1	35	4
11 Waste Electrical and Electronic Equipment	1	0	3	0	6	1
12 Street cleaning waste	11	1	11	1	12	1
13 Mixed commercial waste	1	0	98	11	119	14
Subtotal	408	46	513	57	537	62
Waste disposal						
14 Household and commercial waste	417	47	336	37	320	37
15 Bulky waste	48	5	42	5	0	0
16 Street cleaning waste	7	1	9	1	8	1
17 Market waste	2	0	2	0	0	0
Subtotal	475	54	389	43	329	38
Total	883	100	902	100	866	100

Table 3

Household waste generation in Hamburg per capita (specified):

Household waste	1997		2002		2007	
	kg	%	kg	%	kg	%
Material recycling (source separated)						
1 Waste paper	60	11	54	11	52	12
2 Glass	29	5	22	4	16	4
3 Mixed packaging from household	20	4	23	5	16	4
4 Plastics	0	0	0	0	0	0
5 Metals	0	0	5	1	4	1
6 Waste wood	0	0	3	1	11	2
7 Textiles	3	1	2	0	2	1
8 Bulky waste	12	2	9	2	35	8
9 Waste Electrical and Electronic Equipment	1	0	2	0	6	1
10 Batteries	n.n.		0.16	<0.0 4	0.15	< 0.04
Biological treatment (source separated)						
11 Biowaste and food waste	13	3	16	3	15	3
12 Green waste	14	3	6	1	6	1
Recycling Subtotal	151	28	142	28	163	28
Waste incineration with energy recovery						
13 Household and commercial waste	290	54	328	64	316	72
14 Bulky waste	42	8	42	8	0	0
Mechanical Biological Treatment (MBT)	0	0	0	0	0	0
Landfill						
15 Household and commercial waste	45	8	0	0	0	0
16 Bulky waste	6	1				
Subtotal	446	72	370	72	316	72
Total	534	100	512	100	438	100

Table 4

1.2. Proportion of total/biodegradable waste sent to landfill

In 1997, the proportion of waste sent to landfill from the overall total was 108,300 tonnes, or roughly 7%. Approximately one third of this (i.e. around 36,100 tonnes) was biodegradable organic waste. Therefore, the proportion of biodegradable waste sent to landfill amounted to around 2% of the overall total. Since 1999, the waste type „municipal waste“ generated in Hamburg is no longer sent to landfills, but instead - if it is not recycled - disposed of in waste incineration plants by the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department).

	1997		2002		2007	
	Quantity in tonnes	%	Quantity in tonnes	%	Quantity in tonnes	%
Total waste sent to landfill	108,300	7	0	0	0	0
Biodegradable waste sent to landfill	36,100	2	0	0	0	0
Total amount of waste	1,507,000	100	1,557,000	100	1,524,300	100

Table 5

1.3. Percentage of recycled municipal waste

	1997	2002	2007
	%	%	%
Recycled municipal waste	46	57	62

Table 6

See table 2 for details as regards composition of this recycled waste.

1.4. Extent and purpose of energy recovery

Hamburg operates currently 5 plants within the city limits, which treat municipal waste thermally resp. use it for energy recovery. By cogeneration of heat and power, the waste incineration plants resp. the biomass

power plant for incineration of waste wood produce district heating and/or electrical power. The gas produced and subsequently treated in a biogas plant is being used in a block heat and power plant for generating thermal and electrical energy:

In total, these plants have fed 1,270,748 MWh heat into Hamburg's long-distance heating network and 231.678 MWh electrical power into the City's electricity grid in the year 2006. At full use of these plants' capacities, the amounts of heat and electricity fed into the grids do basically not differ from year to year.

In detail:

	Heat generation in MWh per year	Electricity generation in MWh per year
Waste Processing Plant Borsigstrasse	698,400	--
Waste Processing Plant Rugenberger Damm *	496,800	37,200
Waste Incineration Plant Stellingener Moor	70,375	35,824
Biomass Plant Borsigstrasse	--	154,000
BioPlant Stellingen**	5,173	4,653
Total	1,270,748	231,678

* A proportion of the energy produced here is also sold as process and heating steam to industry customers.

** Figures for 2007, since this plant has only been in operation as of April 2006.

A wood cogeneration plant for the energetic utilisation of wood is in trial operation since September 2008, the energy recovery of bio and green waste is to be expanded, see sections 3.1.4. and 3.2.4.

An upgrade and modernisation of the waste incineration plants Stellingener Moor and Borsigstrasse, also in order to optimise their energy efficiency, is being planned.

2. Please describe the measures implemented over the past five to ten years aimed at reducing the amount of waste produced and the amount of waste sent to landfill, especially biodegradable waste sent to landfill, including awareness programmes. (max. 1,000 words):

The reduction of the overall amount of waste and optimal usage of household and commercial waste generally requires early separation of the individual waste categories - such as paper, packaging (metal, plastic, composites), glass and bio-/organic waste - at the respective point where the waste is produced. Consequently, separate collecting systems for the following waste categories have been established in Hamburg for more than 10 years:

2.1. Measures for the segregated collection of waste paper

Waste paper from private households is collected separately by the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) using the following systems:

- Depot containers in public places
- Collection of bundles placed on the roadside (street collection)
- Paper bins in large residential buildings
- Disposal at 15 recycling centres
- Since April 2008, collection at all Hamburg households with the Blue Bin

Depending on its type and quantity, commercial waste paper is collected separately, using a variety of containers.

2.2. Measures for the segregated collection of waste glass

Waste glass from private households is collected separately in depot containers located in public places and large residential buildings. After being sorted into various glass quality categories, the glass is sent to glass factories for material recycling. Commercial waste glass is separately collected at the respective enterprise that produces the waste.

2.3. Measures for the segregated collection of packaging waste (plastics and metals)

Lightweight packaging made of plastic, metal and composites is separately collected in yellow bags or yellow bins from private households and smaller commercial enterprises within the scope of the "German Regulation on the Avoidance and Recovery of Packaging Waste" (Verordnung über die Vermeidung und Verwertung von Verpackungsabfällen) - BGBI. (Federal Law Gazette) 21 August 1998, p. 2379.

2.4. Measures for the segregated collection of biodegradable waste

Biodegradable kitchen and garden waste is separately collected in biowaste bins from private households and at the 15 recycling centres of the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department), then sent to composting plants. Commercial garden waste is also primarily sent to composting plants.

Commercial food waste (from canteens) and other food waste in quantities from 10,000 tonnes to 20,000 tonnes is processed into animal food or, following treatment, used as pig fodder. Since 2006, approximately 20,000 tonnes of this type of waste have been fermented in a biogas production facility. The biogas produced here is subsequently used to generate electricity and heating energy at a cogeneration plant in Stellingen. Both facilities are operated by the same company.

2.5. Measures for the segregated collection of metals

Larger quantities of household metal waste are accepted by the 15 recycling centres of the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) and subsequently sent for material recycling.

2.6. Measures for the segregated collection of waste textiles

Waste textiles, particularly old clothes and shoes, have been collected up to 2007 within the scope of the waste paper street collection procedure. Clothing containers from charitable organisations and commercial enterprises are located in publicly accessible places near churches, car parks and shopping centres. Textile waste is also collected separately by the 15 recycling centres of the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department). In addition,

commercial textile recycling companies also make house-to-house collections in certain neighbourhoods.

2.7. Measures for the segregated collection of waste wood

Since 1998, waste wood has been separately collected at the 15 recycling centres of the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) and subsequently sent for recycling. Since 2005, wood wastes are being used for energy recovery in a biomass power plant in Hamburg. The facility produces approximately 160,000 MWh electrical power per year.

2.8. Measures for the recovery of bulky household waste

Since mid-2005, all mixed bulky waste from private households has been sorted at sorting facilities, and the sorted wood is subsequently being used in a biomass power plant for energy recovery, as stated in section 2.7.

2.9. Measures for the recovery of commercial waste

Commercial waste either undergoes sorting or is used directly for energy recovery.

2.10 Awareness programmes

Hamburg has carried out comprehensive public relations work in the past 5 to 10 years. Within the scope of these activities, Hamburg's Ministry for Urban Development and the Environment and Municipal Sanitation Department - which, as Hamburg's public waste disposal company, is responsible for the collection and disposal of household waste - provide information on low-waste consumer alternatives and services regarding the separate collection of waste by way of brochures, campaigns and their internet websites.

Examples:

- Information on the internet: www.abfall.hamburg.de and www.srhh.de/srhh/opencms/privatkunden/abfallabc

- In 2006, Hamburg's Municipal Sanitation Department commissioned the environmental agency "Deutsche-Umweltaktion Gem.e.V." to carry out tutorials at Hamburg primary schools.
- Five school cases with teaching materials can be borrowed free of charge for use at secondary level in Hamburg schools.
- A range of guided tours of the 15 recycling centres of the Municipal Sanitation Department for kindergartens and schools as well as guided tours of the incineration plants (for 6th class pupils upwards) provide a comprehensive insight into the issue of waste avoidance and recycling.
- The annual "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) information brochure provides all Hamburg households with information on waste and cleanliness.

2.11. Further measures implemented during the last five to ten years

In the Free and Hanseatic City of Hamburg, the goals for waste avoidance, for proper and environmentally sound waste recovery as well as for waste disposal compatible with public welfare are being implemented as stated in Germany's Act for Promoting Closed Substance Cycle Waste Management and Ensuring Environmentally Compatible Waste Disposal. In order to implement articles 23 ff of this act as well as the EU Directives on waste electrical and electronic equipment, end-of-life vehicles, packaging and batteries, the Electrical and Electronic Equipment Act, the End-of-life Vehicle Ordinance, the Packaging Ordinance and the Battery Ordinance were decreed in Germany. In 1998, the implementation of the Battery Ordinance resulted in the founding of the „Stiftung Gemeinsames Rücknahmesystem Batterien“ (common collection system for spent batteries), in order to organise the collection, recycling and disposal of primary and rechargeable batteries. This foundation is located in Hamburg.

For the segregated collection and recovery of biowaste from Hamburg's households, the Hamburg Biowaste Ordinance was decreed. Regulations as regards the segregated collection of other waste types are stated in the Waste Container Ordinance. Parent act for both of these specifically Hamburg ordinances as well as further regulations, such as the Hamburg Municipal Sanitation Act, the Bylaws of the Hamburg Municipal Sanitation Department and the Scale of Fees, is the Hamburg Waste Management Act.

Hamburg's citizens can dispose hazardous waste from their private households at the 15 recycling centres of the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department). In addition, these problem wastes can be disposed of at the mobile hazardous waste collecting facilities, which are available in Hamburg's residential areas at fixed dates.

Commercial enterprises are obliged to dispose all of their wastes, including hazardous wastes, in their own responsibility. Information on this subject, on the annual amounts of commercial waste generated in Hamburg and their disposal routes is detailed in Hamburg's "Waste management plan for hazardous waste" (Abfallwirtschaftsplan Gefährliche Abfälle).

3. Please describe planned short- and long-term measures for the reduction of the amount of waste produced and waste sent to landfill, especially biodegradable waste. (max. 1,000 words):

3.1. Short-term measures for the reduction of the amount of waste produced

3.1.1. Improvement of the waste paper collection process

In order to optimise waste paper collection in Hamburg, over and above the existing disposal methods, municipal blue bins are currently being provided free of charge to private households for the separate collection of waste paper. The blue-coloured paper bins are being advertised through comprehensive public relations measures. The aim is to increase the quantity of waste paper collected by 30,000 tonnes by 2012. To date, the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) has invested 9 million euros for the introduction of the blue bins and optimisation of the waste paper collection process.

3.1.2. Improvement of waste management within the housing industry

To further reduce the amount of household waste that requires disposal, the housing industry is being urged to increase the availability of containers for the separate collection of recyclable waste (waste paper, biowaste and packaging) by means of a range public relations measures, discussions with housing companies and targeted information initiatives. In line with this, and to provide a more just billing process for the remaining waste in terms of the parties responsible for such, additional waste chutes are to be installed in around 5,000 apartments.

3.1.3. Hamburg's valuable material bins

Within the scope of a pilot project implemented in three Hamburg districts, plastics and metals (so-called material-like non-packaging) as well as small electrical and electronic equipment is encompassed within the collection of packaging waste in yellow bags and bins. The project costs for the "Hamburg valuable material bins" amount to 400,000 euros. Following evaluation of the project, an assessment will be made as to what extent the "Hamburg valuable material bin" can be introduced into the city as a whole.

3.1.4. The valuation report "Optimisation of waste management in Hamburg taking into account the specific aspect of climate protection"

At the end of 2007, Hamburg's Ministry for Urban Development and the Environment commissioned the valuation report "Optimisation of waste management in Hamburg, taking into account the specific aspect of climate protection". In particular, the report focuses on the quantity streams and recycling flows of the waste categories biowaste, organic waste, waste paper, plastics and metals in terms of their respective CO2 reduction potential. The results of specific scenarios for 2012 and 2020, including the respective CO2 avoidance costs, will be available at the end of 2008. Medium- and long-term measures to further reduce the amount of municipal waste and optimise recycling flows will be developed on the basis of these results and subsequently implemented within the scope of a "recycling offensive" project. 85,000 euros have been invested for the valuation report.

3.2. Long-term measures for the reduction of the amount of waste produced

3.2.1. Expansion of the waste paper collection process and a further increase in the amount of paper collected by 20,000 tonnes, by the year 2020 (as compared to the current 90,000 tonnes).

3.2.2. Expansion of the lightweight packaging collection process in Hamburg and increase in the quantity of yellow bins provided to private households.

3.2.3. Possible introduction of the Hamburg valuable material bin throughout Hamburg and consequent rise in the quantities of lightweight packaging, plastics, metals and small electrical and electronic equipment.

3.2.4. Expansion of the energy recovery and material recycling of biogenic waste, which will involve the preparation of a concept for optimally exploiting biogenic waste. Differentiated collection and utilisation solutions for the various types of biogenic waste will be investigated, and adequate capacities will be created where required. The concept will be based on the valuation report "Optimisation of waste management in Hamburg, taking into account the specific aspect of climate protection".

3.2.5. Potentials for improving waste management in the housing industry shall be explored by means of the introduction of a "waste register" (Abfallpass). The establishment of waste registers will be promoted and their ecological and economic benefits shall be emphasised.

The necessary budget for 2009/2010 has yet to be adopted.

4. Please 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):

- The development of the amounts of waste is documented in Hamburg's annual „Abfallstatistik" (Waste statistics):

<http://www.hamburg.de/start-siedlungsabfall/136998/statistik-siedlung2.html>

- More detailed statistics can be made available, too (see tables 1-4). The individual measures are also detailed in Hamburg's "Abfallwirtschaftsplan Siedlungsabfälle" (Waste management plan for municipal waste):

<http://www.hamburg.de/contentblob/137022/data/awp-hausmuell.pdf>

- In addition, reports on each respective measure can be made available in appropriate form on specific dates.
- Measures for improving valuable material recovery are also documented in the "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) business and sustainability report, since this institution is officially in charge of waste disposal in the Free and Hanseatic City of Hamburg.

<http://www.srhh.de/srhh/export/sites/srhh/download/PDF/GB2007.pdf>

<http://www.srhh.de/srhh/export/sites/srhh/download/PDF/Nachhaltigkeitsbericht2007.pdf>

- Waste Processing Plant Borsigstrasse with Biomass Power Plant Borsigstrasse:

http://www.mvb.symhosting.net/wp-content/uploads/2008/07/mvb_umweltbericht_2008.pdf

- Waste Processing Plant Rugenberger Damm:

<http://www.mvr-hh.de/>

- Waste Incineration Plant Stelling Moor and „Biowerk“ Stellingen (BioPlant); see pages 36-37 of the "Stadtreinigung Hamburg" business report:

<http://www.srhh.de/srhh/export/sites/srhh/download/PDF/GB2007.pdf>

- Segregated collection of waste wood:

http://www.mvb.symhosting.net/wp-content/uploads/2008/07/mvb_umweltbericht_2008.pdf

- Awareness programmes, see attachment "PR"

- Stiftung Gemeinsames Rücknahmesystem Batterien" (common collection system for spent batteries):

<http://www.grs-batterien.de/>

- Laws, ordinances and bylaws on waste issues are available on the internet site of "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department):

<http://www.srhh.de/srhh/opencms/gesetze/verordnung.html>

- Waste disposal by private customers
([http://www.srhh.de/srhh/opencms/privatkunden/problemst
offe/](http://www.srhh.de/srhh/opencms/privatkunden/problemst
offe/))

and commercial customers:

([http://www.hamburg.de/contentblob/137024/data/awp-
gefaehrliche-abfaelle-2005.pdf](http://www.hamburg.de/contentblob/137024/data/awp-
gefaehrliche-abfaelle-2005.pdf))

- Valuation report "Optimisation of waste management in
Hamburg, taking into account the specific aspect of
climate protection",
[http://www.hamburg.de/abfall/853462/gutachten-awi-
klima.html](http://www.hamburg.de/abfall/853462/gutachten-awi-
klima.html)

7. Water consumption

1. Please describe the present situation and development over the last five to ten years in relation to (max. 1,000 words):

1.1. Proportion of urban water supply subject to individual water metering

Water consumption of all customers of Hamburg's municipal water supply company "Hamburg Wasser" (Hamburg Water) is charged to 100% individually on the basis of water meter readings. In Hamburg, this is even the case for over 90% of apartments in apartment buildings.

1.2. Water consumption per capita

Current per capita water consumption in Hamburg is 110 litres per day. In the past 30 years, there has been a clear trend to a heightened awareness concerning the use of drinking water. The decrease in specific water consumption (see table below) is mainly due to the following factors:

Water meters in houses/apartments, modernisation of sanitary fittings, water-saving domestic appliances and the consumers' more conscious use of drinking water.

Table: Development of specific water consumption in litres per person per day

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Households	125	122	123	120	120	119	118	113	111	110

The per capita water consumption of 110 litres per day relates only to consumption in households. A calculation on the basis of overall water consumption in Hamburg (incl. industry and commerce), would result in a higher figure.

Table: Specified water consumption (in litres per capita per day and in m³ per capita per year)

Year		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Households	l/c/d	125	122	123	120	119	118	118	113	111	110

	m ³ /c/y	45.63	44.53	44.90	43.8	43.44	43.07	43.07	41.25	40.52	40.15
Business	l/c/d	47	44	43	43	42	41	40	39	39	40
	m ³ /c/y	17.16	16.06	15.70	15.70	15.33	14.97	14.60	14.24	14.24	14.60

In both consumer groups, there visibly is a significant decrease in water consumption. This decrease is predominantly due to the economical use of drinking water.

1.3. Water loss in pipelines

When transporting drinking water from waterworks to end customers, water can be lost due to leaks and bursts in the pipeline network. The overall loss is calculated based on the water volume balance between tap water supplied by the waterworks and water received by the consumers. Water losses in Hamburg have been at extremely low level for many years now. In Europe, Germany is the country with the lowest volume of water losses, and Hamburg in turn lies well below the German average. Water losses in Hamburg are thus at a Europe-wide minimal level.

Table: Water losses in the drinking water pipeline network in percent

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Water loss in %	4.1	4.2	4.0	3.9	3.6	3.9	4.0	4.1	4.0	4.2

In 2006, Hamburg's 18 waterworks fed a total of 115.1 million m³ of drinking water into the city's pipeline network. Taking the water volume balance as the basis of calculation, the total loss was 4.83 million m³ per year. This represents a water loss of 4.2%. The specific real water loss in m³/(km x h) is considered to be an important figure for evaluation of water losses in pipeline networks. Hamburg's drinking water network has a total length of 5,478 km. Hamburg's specific real water losses therefore amount to 0.08 m³/(km x h). In large cities, values under 0.1 m³/(km x h) can be classed as "low water losses".

Table: Specified percentage of leakage in the drinking water supply system within the city

Year	Pure water supply	Water consumption	Overall water loss ¹	Real water loss ²	Total length of pipelines	Specific real water loss

	mill.m ³	mill.m ³	mill.m ³	%	mill.m ³	km	m ³ / (km x h)
1997	131.6	126.2	5.4	4.2	4.08	5,475	0.085
1998	127.3	121.9	5.4	4.0	4.02	5,515	0.083
1999	126.5	121.5	5.0	3.9	3.78	5,521	0.078
2000	124.4	119.5	4.9	3.6	3.64	5,515	0.075
2001	123.0	118.6	4.4	3.9	3.32	5,518	0.069
2002	121.5	116.7	4.7	4.0	3.55	5,509	0.074
2003	121.9	117.0	4.9	4.1	3.66	5,503	0.076
2004	117.0	112.2	4.8	4.0	3.59	5,486	0.075
2005	114.1	109.5	4.6	4.2	3.42	5,483	0.071
2006	115.1	110.3	4.8	4.3	3.63	5,478	0.076

Overall water loss¹: Total water losses in the pipeline network including measuring differences, calculated as difference between the amount of pure water supplied by the 18 waterworks and the total water consumption.

Real water loss²: The conveyance losses in the pipeline network excluding measuring differences represent 75% of the overall water loss.

1.4. Compliance with the EU Drinking Water Directive

At any given time, drinking water in Hamburg fully complies to the requirements of the EU Drinking Water Directive. Groundwater is the sole source for drinking water supply in Hamburg. Thanks to regular monitoring, it is possible to ensure that current quality standards are fully adhered to at all times, and that any problems are recognised early on. To this end some 30,000 samples for chemical analysis and some 27,000 samples for micro-biological examination are taken annually from ground- and drinking water. Some 490,000 chemical and some 141,000 micro-biological individual analyses are carried out.

Hamburg has excellent water quality. Raw water is drawn exclusively from groundwater reserves and requires very little treatment. The only procedures carried out are aeration, de-ironing and filtering and, at a very few sites, light preventative chlorination. The water thus retains its natural character.

2. Please describe the measures implemented in the last five to ten years to reduce water consumption and water loss in pipelines, including e.g. (max. 1,000 words):

2.1. Proactive Leakage Management

Annually, approximately 1,000 km of pipelines in Hamburg's around 5,500 km long drinking water network are inspected. Additionally, 20,000 valves are inspected every year, to ascertain their functional efficiency.

Table: Monitoring of valves

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Shut-off valves	3,355	2,961	2,940	3,511	3,000	1,327	2,253	6,612	6,082	3,800
Hydrants	2,613	2,672	2,486	2,892	2,472	1,231	1,806	5,871	4,527	4,330
Connection valves	12,465	12,341	10,214	11,819	9,804	6,392	8,221	12,501	25,127	34,800
Total	18,433	17,974	15,640	18,222	15,276	8,950	12,280	24,984	35,736	42,930

2.2. Network rehabilitation

The good condition of Hamburg's around 5,500 km long drinking water network can be attributed to the long-term, comprehensive maintenance programme, which has been in operation for many years now (see table below).

Table: Mean investment and maintenance expenditures

Year	Investments	New laying	Maintenance	Renovation
	million € per year	Km per year	million € per year	Km per year
1991 - 1995	25.259	69.481	7.396	19.299
1996 - 2000	24.895	76.623	7.160	8.905
2001 - 2005	24.049	80.037	5.332	3.845

Within the scope of the maintenance programme the old cast iron pipes (GG) were either retrospectively lined with cement mortar (GGnZm) or replaced with new pipes, mostly manufactured from ductile cast iron with a PE casing and a cement mortar lining (GGGZmPe) (see table below).

Table: Pipeline network materials used in km

Year	Asbestos cement	GG	GGnZm	GGGZm	Steel	GGGZmPe	PVC/PE	Total
1949	90.967	2,346.147	0.000	0.000	455.759	0.000	0.000	2,892.873
1959	127.740	3,150.360	0.000	0.000	434.160	0.000	0.000	3,712.260
1969	144.540	3,578.910	0.000	51.120	414.440	344.330	39.610	4,572.950
1979	144.015	3,226.289	59.968	49.185	353.042	1,116.393	255.480	5,204.372
1989	113.794	2,763.519	236.643	46.595	291.464	1,595.686	378.046	5,425.747
1999	43.098	2,098.523	410.478	54.896	256.229	2,262.380	395.660	5,521.264
2006	37.264	1,566.371	434.668	52.870	438.734	2,527.977	420.334	5,478.218

The success of these measures is clearly visible when considering the development of pipe damage (see table below). By these means, it was possible to reduce the damage rate in the entire pipeline network to less than 1 occurrence of damage per 10 km of pipeline per year. These successes have contributed to the very low rate of water loss in Hamburg's pipeline network.

Table: Damages to supply and connection pipelines

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Supply pipelines	712	541	651	540	549	537	601	412	503	478
Connection pipelines	465	375	409	337	274	287	275	181	176	211

2.3. Domestic and non-domestic metering

2.3.1. Water meters

The goal of drinking water supply policies is to record individual customers' water consumption, in order to

provide incentives to use water sensibly. All "Hamburg Wasser" (Hamburg Water) customers are billed on the basis of water meters. In order to expand this principle to also include individual households in apartment buildings, the apartments were equipped with apartment water meters.

Of the water meters installed in the past five years, 96% have been installed in private households and 4% in commercial enterprises.

The tariff system differentiates between low base fees, which depend on the size of the water meter and make up about 10%-20% of the consumer's annual water costs, and a fee per unit of water consumed, which accounts for about 80%-90% of the consumer's annual water costs. This tariff structure, which is reciprocal to the cost situation of the water supply company, encourages economical use of water resources. This tariff system has not been changed in the past ten years.

The installation of apartment water meters is prescribed under the Hamburg Building Regulation. These regulations have applied to new buildings since 1987, and since 1994 it has been prescribed that all old buildings must be retrospectively fitted with apartment water meters by 2004. Hamburg is the only federal state in Germany to have implemented the retrospective obligation to install apartment water meters in old buildings. The Senate has given financial subsidies for the retrofitting of apartment water meters.

Table: Water meters in Hamburg

Year	Apartment water meters	House water meters	Large and bulk water meters
1996	198,017	223,558	1,372
1997	246,377	224,439	1,347
1998	284,807	227,448	1,324
1999	331,196	228,737	1,296
2000	373,019	230,299	1,281
2001	410,796	231,379	1,267
2002	450,765	232,101	1,249
2003	511,611	231,638	1,242
2004	577,905	230,541	1,256

2005	723,755	227,986	1,241
2006	779,744	227,761	1,227

2.3.2. Private extraction of groundwater

Hamburg obtains the majority of the raw water for its drinking water supply system from within its own federal state boundaries, which, for a city-state of this size and with significant levels of industry, is a remarkable achievement. To this end, groundwater reserves must be protected from contamination by means of water protection areas in the city, and they must be managed sustainably by means of minimising the volumes of water extracted. The volumes extracted by industry in Hamburg are metered and are subject to a charge (Groundwater Fee Act) in order to reduce consumption. Any existing groundwater extraction rights (licences issued under water law) must be paid for, which resulted in numerous (often very long-term) groundwater extraction rights being given back. The political goal is to reduce industrial water extraction or to shift it to shallower aquifers which are not needed for drinking water supply. Water of a slightly lower standard is often sufficient for industrial purposes.

Voluntary investments of Hamburg's industry and commerce in the reduction of ground-/drinking water consumption in companies are successfully subsidised by the Senate via the "Unternehmen für Ressourcenschutz" (Enterprises for Resource Protection) programme. The subsidised projects have achieved savings/substitutions of 567,000 m³ of ground-/drinking water per year. To this end, the companies involved have implemented a broad variety and volume of measures, such as multiple usage, closed circuit cooling, installation of water-saving valves, etc. It was thus possible to reduce private extraction of groundwater in Hamburg (e.g. by industrial companies) by almost 75% in the period from 1980 to 2006.

2.3.3. Drinking water consumption by public institutions

For approximately 17 years, it has been ensured that Hamburg's public institutions make efficient use of drinking water. Thanks to regular investment and the initiation of special programmes, water consumption has, for example, been reduced by half since 1996. The Hamburg programme is unique in its consistency. The City has developed energetic standards (also for

installations using water) which must be taken into consideration when public institutions construct new buildings or make alterations to existing ones: the InES information system for energetic standards (www.energiestandards.de).

Specific measures:

- Sports fields have been equipped with shallow groundwater wells.
- Approximately 7,000 waterless urinals have been installed.
- Some 65,000 continuous flow controllers have been installed in taps (6 litres/minute).
- Some 10,000 continuous flow controllers have been installed in showers (9 litres/minute).
- Rainwater utilisation systems are used to flush toilets.
- Some 1,500 toilets have been retrofitted to flushing volumes of 4.5 l / 2.5 l. Numerous toilets have been retrofitted to reduce flushing volumes from 9 l to 6 l / 3 l.

2.4. Bylaw implementation in relation to efficiency in water usage

Effective as of 20th July 1994 the Hamburg Building Regulations prescribe the equipping of all apartments with apartment water meters. These regulations had to be implemented by 30th September 2004.

Since the Groundwater Fee Act was introduced in 1989, groundwater extraction in Hamburg has been subject to payment of an annual fee. When a licence under water law is awarded, an annual fee of currently 0.10 resp. 0.11 € per m³ is charged (public water supply companies are subject to a lower rate). These fees have a significant impact to economical usage of groundwater resources.

2.5. Awareness campaigns

"Hamburg Wasser" (Hamburg Water) has been running an extensive publicity campaign since the 1980s aimed at achieving public awareness and acceptance of careful use of water. The means to communicate directly with customers were a customer magazine ("Wasser-Magazin"), special information brochures, open days and the "Water Forum". Further activities include press conferences

and press releases, exhibitions, information for schools, teaching materials for teachers and newsletters for politicians, lobby groups, public authorities and local government.

In addition to this, a customer information centre provides focused advice to customers on "careful use" of drinking water and demonstrates water-saving technologies. A mobile information centre, the "water saving bus" visits weekly markets, shopping centres, exhibitions and various events.

The City has also subsidised the installation of rainwater utilisation systems for many years.

3. Please describe planned short- and long-term measures on reducing water loss (max. 1,000 words):

In accordance with the target value of $0.1 \text{ m}^3/(\text{km} \times \text{h})$ stated in DVGW worksheet W392 (of May 2003) real water losses of $0.08 \text{ m}^3/(\text{km} \times \text{h})$ are classified as "low water losses" for large cities (cf. section 1.3.). The low levels of damages and water loss already achieved 10 years ago will also in the future be kept as minimal as possible by means of continued inspection measures and investments.

4. Specify how your future plans and measures incorporate preparedness of water infrastructure to deal with future impacts of climate change in your regional environment

4.1. EMAS-Registration (21.04.2008 - 20.03.2011)

In order to continuously improve its environmental performance, the "Hamburger Wasserwerke GmbH" HWW (Hamburg Waterworks) applies an environmental management system in accordance with European Regulation (EC) No 761/2001 and European standard ISO 14001:2004, section 4, regularly publishes an environmental statement, has its environmental management system and environmental statement audited by an accredited, independent environmental verifier, is registered in the EMAS register and therefore entitled to use the EMAS logo. Hamburg Waterworks is also certified compliant to European norm 9001 for quality management systems.

4.2. Water demand prognosis

In the innovative water demand prognosis compiled in 2007, the prognosis, which previously was based on extrapolation of existing consumption metering with consideration of data from Hamburg's statistical office and generic analyses of influencing factors on water consumption, was expanded to encompass the sociological dimension of consumer groups behaviour. In various scenarios, the impact of, among else, climate change was analysed. The study's result was that climate change has hardly any directly noticeable effects for water demand. Its consequence mainly is an increase of peak water demand during warm, dry periods.

In future, this prognosis model will, additionally to identifying the effects of altered impact factors on water demand, allow to adapt the data basis to actual developments and to derive new prognoses from this basis. Furthermore, these data provide a good fundament for answering the question whether the security of supply as a whole or in subareas is jeopardised by the above-mentioned increase of peak demand and which consequences have to be drawn from this.

4.3. Research project transformation management

Hamburg participates in the research project „Transformation Management for a Sustainable Water Infrastructure - Sustainable Water Supply and Sewage Disposal Infrastructure in Municipalities“. In cooperation with supply and disposal enterprises from six different municipalities and with scientists from the areas economics, sociology, law, spatial sciences, municipal engineering and ecology, the research project aims to develop sustainable long-term infrastructure concepts. The project will generate a concept for a multidimensional evaluation of water management transformation strategies, in order to develop sustainable resource protection and efficient resource use.

5. Please describe how the above issues can be documented should your city be short listed for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max. 600 words):

- Hamburg Building Regulation (apartment water meters)

http://hh.juris.de/hh/BauO_HA_2005_rahmen.htm

- Action plan for long-term securing of drinking water supply, "Hamburger Wasserwerke GmbH" HWW (Hamburg Waterworks), 1986, see paper attachment 1
- Action plan, "Hamburger Wasserwerke GmbH" HWW (Hamburg Waterworks), 1996, see paper attachment 2
- Action plan, "Hamburg Wasser" (Hamburg Water), 2007

http://www.hamburgwasser.de/html/img/pool/broschuere_haendlungskonzept.pdf

- HW Environmental statement 2006, "Hamburger Wasserwerke GmbH" HWW (Hamburg Waterworks), 2007

http://www.hamburgwasser.de/html/img/pool/emas_umwelterklaerung_hww_2006.pdf

- Environmental statement 2007 "Hamburg Wasser" (Hamburg Water), 2008

http://www.hamburgwasser.de/html/img/pool/emas_umwelterklaerung_hw_2007.pdf

- Sectoral plan water supply Hamburg - Hamburg Ministry of Building, 1983
- HWW business reports 1995-2007, see attached business reports in paper 1995-2004 (see paper attachments 3-12) and web links:

2007:

http://www.hamburgwasser.de/html/img/pool/gb_2007.pdf

2006:

http://www.hamburgwasser.de/html/img/pool/gb_2006.pdf

2005:

http://www.hamburgwasser.de/html/img/pool/gb_2005_hww.pdf

2004:

http://www.hamburgwasser.de/html/img/pool/gb_2004_hww.pdf

- Customer database with data regarding drinking water supply to customers
- Geographic and technical pipeline network information systems GIS and TIS
- Database with data regarding groundwater extraction, raw water feeds to the treatment plants, tap water feeds to the drinking water transportation network

- Laboratory information and management system with data on chemical and micro-biological analysis results
- Water requirement forecast 2030 for the supply area of "Hamburger Wasserwerke GmbH" HWW (Hamburg Waterworks) - Report on results, "Institut für sozialökologische Forschung" ISOE (Institute for Social-Ecological Research) Frankfurt am Main & "COOPERATIVE Infrastruktur und Umwelt" Darmstadt, 2007, see paper attachment 13
- Hamburg Senate and Parliamentary documents:

"Groundwater protection in Hamburg" of 16.04.1991 (Hamburg Parliament document 13/8043), see attachment "Drs. 13-8043 groundwater protection"

"Water supply report for Hamburg" of 09.01.1996 (Hamburg Parliament document 15/4715), see attachment "Drs. 15-4715 water supply report"

"Development of the drinking water supply system in Hamburg" of 22.08.2000 (Hamburg Parliament document 16/4604), see attachment "Drs. 16-4604 drinking water supply system"

"Groundwater protection in Hamburg - Overview and perspectives" of 22.05.2001 (Hamburg Parliament document 16/6083), see attachment "Drs. 16-6083 groundwater protection overview"

8. Waste water treatment

1. Please describe the present situation and development over the last 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 treatment in Hamburg fulfils the requirements stipulated in the 1991 EU Commission directive on urban waste water treatment to 100%. With a current influent load of 2.7 million population equivalents (p.e.), the combined Köhlbrandhöft/Dradenau treatment plants treat around 150 million m³ of waste water per year. The average effluent concentrations of 49 mg/l and 4 mg/l in terms of the parameters COD and BOD₅ are significantly lower than the respective reference values of 125 and 25 mg/l. The threshold for total phosphorus of 1 mg/l is being undercut by 30% on average. Annual reduction of the total nitrogen load has been significantly higher than 70% (for example, a constant 78% in the period 2005-2007). The minimum requirements have, therefore, clearly been exceeded.

On top of this, a further catchment area with approximately 80,000 p.e., Buxtehude/Apensen, was connected to the combined waste water treatment plants in 2003. The corresponding increase in the pollution load of around 3% was balanced out by a patented SAT (store and treat) biological centrate treatment plant which reduced nitrification in the main flow, and that had meanwhile been built and put into operation by the "Hamburger Stadtentwässerung" (Hamburg Public Sewage Company) HSE.

Prior to 2000, waste water treated in the Hamburg treatment plants only met around 90% of the EU directive requirements. Problems arose in the area of denitrification due to the fact that, as Hamburg is located in the North Sea catchment area, the city was required to meet the directive's special requirements pertaining to sensitive areas. These stipulate an average total nitrogen concentration in effluent of maximum 10 mg/l, or at least a 70% reduction of total nitrogen in the treatment plants. While the central combined treatment plants Köhlbrandhöft/Dradenau - then serving 1.85 million p.e. - already met these requirements, the Stellinger Moor plant, which served approximately 250,000 p.e., did not have a large enough biological process to achieve the reference values. As a consequence, in order to comply with German waste water treatment regulations, in 1990 the Senate of the Free and Hanseatic City of Hamburg had already resolved to close the Stellinger Moor treatment plant and connect the west Hamburg catchment area to the central combined treatment plants by 2000. Throughout the

1990s, the conditions were gradually created for the planned change-over, including construction of a new pumping plant for the transfer of raw water, construction of the Altona transport sewer with its capacity of up to 2 m³ of waste water per second, and the building of the west culvert beneath the Elbe on the inflow to the combined treatment plants Köhlbrandhöft/Dradenau. A variety of capacity increment analyses were carried out within the combined treatment plants. These encompassed an analysis of the treatment capacity according to statistical measuring criteria as well as a dynamic treatment plant simulation including the anticipated inflow loads from the Stellingener Moor catchment area. This included testing various development and optimisation concepts in terms of their impact on effluent quality. As a result of this comprehensive planning, the catchment area change-over was essentially secured by expanding the intermediate storage basin for the centrate produced by dewatering digested sludge, an internal return flow with a high ammonia content. The storage basin allows centrate quantities to be controlled, consequently balancing out the burden on the biological treatment stage.

With the high connection degree (approximately 99%) to the high-capacity central sewage treatment plant Köhlbrandhöft-Dradenau, there are but few decentral sewage treatment plants left in Hamburg, which, in accordance with the „EU Council Directive concerning urban waste-water treatment“, cannot be replaced by a connection to the public sewer system, even in the long run. With an ordinance for Hamburg's administration (Globalrichtlinie D1/99: Global Directive of 10.05.2005 for steering water rights consent processes on discharging household effluent from waste water treatment plants with connected loads of up to 150 population equivalents), Hamburg has stipulated a markedly higher benchmark as regards the purifying capacity of small waste water treatment plants than the minimum requirements defined in the German Federal Waste Water Ordinance. For the protection of Hamburg's lakes and waterways, this ordinance puts special emphasis on nitrogen removal (nitrification and denitrification). These requirements developed in Hamburg have meanwhile also been adopted in the technical approval procedures for small sewage treatment plants, which are handled centrally for all Germany by the „Deutsches Institut für Bautechnik“ (German Institute for Building Technology).

2. Please describe the measures implemented in the last five to ten years to improve waste water treatment (max. 1,000 words):

2.1. Alster and Elbe relief concept

Hamburg's Public Sewage Company HSE has successfully concluded two large-scale investment programmes in the past ten years. The objective was to significantly reduce within the collecting system the overflow of combined water running into lakes and waterways, by means of the construction of combined water storage basins and sewers. Therefore, now 90% of the separable or biodegradable pollution load transported by rainwater through the sewerage system flows to treatment plants for treating. Together the two programmes (Alster and Elbe relief concept) created more than 135,000 m³ of combined water storage. The quantity of combined water overflow was reduced by over 90% as compared to the level early in the 1980s, while the quality of the lakes and waterways has since improved considerably.

2.2. Process for the treatment of process waste water with a high ammonia content

In 1999, Hamburg's Public Sewage Company HSE developed an innovative and patented treatment process for return flows with high ammonia content from the sludge dewatering process. This so-called "store and treat" (SAT) process allows quantity management and biological treatment of process waste water to be carried out simultaneously in the same basin. On account of the high concentration levels of ammonia in the influent, nitrification can be stopped after the nitration stage and the nitrite formed in the treatment plant main flow can be directly denitrified. In this way, 25% of the oxygen normally required for nitrification can be saved. The amount of energy required is also reduced accordingly.

The first SAT reactor, with its 4,000 m³ capacity, was put into operation in 2002 and complimented with a second reactor of similar capacity in 2005. On average, the facility nitrifies around 3,400 kg of ammoniacal nitrogen per day, which correspondingly reduces the burden on the main flow through the treatment plant.

2.3. Energy production from treated sludge

In terms of sludge treatment, for around 10 years the combined treatment plants Köhlbrandhöft/Dradenau have been equipped with a modern and efficient chain of processes encompassing the sewage sludge treatment stages of thickening, digestion, dewatering, drying and

incineration. In addition to the safe disposal of residue, the aim of this chain of processes is to optimally exploit energy resulting from the treated sludge. To this end, the sewage gas formed during the anaerobic digestion of sludge is converted into electricity in a gas turbine and gas motor, whereby the heat and the steam produced through the thermal exploitation of the sewage sludge is also used to generate electricity as well as to heat the digestion plant and plant buildings. As a result, the combined plants are able to self-generate almost 100% of their heating requirements and more than 60% of their electricity.

The treatment plants aim to generate a completely self-sufficient energy supply in the coming years through further optimisation measures. The sewage sludge incineration plant VERA was presented to the public as an official EXPO project in 2000.

2.4. Optimisation of secondary settling tanks

In order to improve filtration performance in the secondary settling tanks in the Dradenau treatment plant, including during periods of extreme hydraulic loads, a variety of optimisation measures were implemented. These measures included, amongst others, the installation of skimming and guide partitions as well as a grid to reduce the power of the inflow current. In a further phase, the tanks will be equipped with an online sludge level measurement system to support the timely recognition of malfunctions.

2.5. Analyses for more comprehensive waste water treatment

The general objective of implementing the EU Water Framework Directive is to achieve good water quality in Hamburg's lakes and waterways by 2015. As a consequence, Hamburg's Public Sewage Company HSE is currently investigating which priority substances stipulated in the directive that have a hazardous impact on lakes and waterways but are yet to be treated, are present in the effluent from the Köhlbrandhöft/Dradenau combined waste water treatment plants and in what quantities these substances are emitted. Based on the results, the impact of the treatment plant effluent on pollution in the Elbe can be assessed in terms of individual substances in order to subsequently develop any necessary strategies to remove the substances in question.

2.6. Hamburg initiatives to achieve sustainability in waste water management

2.6.1. Separation of yellow water

Sustainable waste water management has been a top priority in Hamburg for more than a decade.

In addition to the urban concept for public toilets in Hamburg, which are all equipped with energy and water saving technologies, urinals have been installed in critical and overly polluted locations. The urinals are operated without water, and the urine is separately collected and transported.

Urine makes up only around 1% of the volume of waste water, but is responsible for the majority of nutrients contained in it. Furthermore, specific pharmaceuticals are introduced into waste water via urine. Without treatment, such undesired residue medication ends up in lakes and waterways. The separate collection of urine is also significant because nutrients and phosphorus can be removed and - as recyclable materials - used for alternative purposes, such as fertilisers.

This technical development was undertaken in cooperation with the urinal operators, JCDecaux and shows that 85% of nitrogen and over 90% of phosphates can be removed from the urine. The elimination of micro-pollutants is also achievable.

On the basis of these positive results, Hamburg is endeavouring to develop the separate collection of urine on a larger scale.

2.6.2. Hamburg Water Cycle

The "Hamburg Water Cycle (HWC)" concept was developed with the objective of improving the sustainability of water management in the future. The concept aims to separate the collection, drainage and treatment of rainwater, grey water and black water material flows in order to avoid the dilution of pollutants. Waste water separation and treatments adapted to individual material flow compositions have the potential to reduce purification costs for the majority of waste water and improve utilisation of the recyclable material and its energy content. This concept is also suitable for application in existing cities.

The HWC will be initially introduced in an urban environment for 720 residential units on an approximately 35 ha large area within the scope of the

Hamburg International Building Exhibition (IBA 2013). The goal is to create a green, water-rich and climate-neutral residential area.

2.6.1. Thermal load scheme for the tidal Elbe river

All over Europe, the construction of numerous new power plants is being planned, and at the lower reaches of the river Elbe, too. In order to ensure that the heat loads discharged into this stream remain water-ecologically sound and that the Elbe habitat is protected permanently, the Federal States Hamburg, Niedersachsen and Schleswig-Holstein have conjointly decided to create a new thermal load scheme for the tidal Elbe river. By means of transstate-coordinated requirements, this scheme aims to offer a higher planning security for the power plant operators as well as permanently rule out any harmful water use. The thermal load scheme defines a technical framework which is based on the requirements of the European Fauna, Flora and Habitats Directive, the Water Framework Directive, and the Fish Directive and which shall ensure an effective protection of the Elbe and its creatures. The thermal load scheme is anticipated to enter into effect on 1. January 2009.

4. Please describe how the above issues can be documented should your city be short listed for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max. 600 words):

- Printed papers

Hamburg Parliament document 9/4319 (16.03.1982)
"Concept for reducing the overflow from the combined water sewage system into the Alster and its tributaries" (Konzept zur Entlastung der Alster und der Nebengewässer von Überläufen aus dem Mischwassersielnetz), see attachment "9-4319 Alster"

Hamburg Parliament document 15/1775 (06.09.1994) "Elbe relief concept" (Elbe-Entlastungskonzept), see attachment „15-1775 Elbe Relief Concept"

Hamburg Parliament document 11/6118: "Combined waste water treatment plants Köhlbrandhöft/Dradenau - Bille relief concept" (Klärwerksverbund Köhlbrandhöft/Dradenau), see attachment „11-6118 Bille Relief Concept"

Hamburg Parliament document 16/4843 (26.09.2000)
"Report on the waste water disposal plan" (Bericht

Abwasserbeseitigungsplan), see attachment „16-4843
Waste Water Disposal Plan“

Hamburg Parliament document 17/2299 (19.2.2003) "Mid-
Bille redevelopment programme" (Sanierung der Mittleren
Bille), see attachment „17-2299 Mid-Bille“

Hamburg Senate document 1999/0041 "Determination of the
impact of damaged waste water sewers on groundwater"
(Ermittlung der Auswirkungen schadhafter Abwassersiele
auf Grundwasser), see attachment „99-0041 Waste Water
Sewers“

Hamburg Parliament document 16/785 of 13.05.1988:
"Determination of the impact of damaged waste water
sewers on groundwater" ("Ermittlung der Auswirkungen
schadhafter Abwassersiele auf das Grundwasser"), see
paper attachment 1

- Publications

"Upgrade of Hamburg's canalisation" (Ausbau der
Entwässerungsanlagen in Hamburg), 1983, see paper
attachment 2

Technical Report 3/1998, Hamburg Public Sewage Company
HSE: "The river Elbe relief concept" (Hamburger
Stadtentwässerung, Fachbericht Heft 3/1998: "Das Elbe-
Entlastungskonzept - Durch Gewässerschutz zu gesünderer
Umwelt und höherem Freizeitwert") see paper attachment
3

Technical Report 4/2000, Hamburg Public Sewage Company
HSE: "Waste water disposal in Hamburg" (Hamburger
Stadtentwässerung, Fachbericht Heft 4/2000:
„Abwasserentsorgung in Hamburg - Gesundheitsvorsorge
durch Entsorgungssicherheit, Gewässer- und
Umweltschutz“), see paper attachment 4

Report of the Free and Hanseatic City of Hamburg:
"Long-term strategy for reducing pollutant discharge
into the river Elbe and the North Sea" (Bericht der
FHH: "Langzeitstrategie zur Verminderung der
Schadstoffeinträge Hamburgs in die Elbe und Nordsee"),
see paper attachment 5

"Waste water disposal plan of the Free and Hanseatic
City of Hamburg" (Abwasserbeseitigungsplan der FHH), see
paper attachment 6

"Waste water disposal plan of the Free and Hanseatic
City of Hamburg", 2000 (Abwasserbeseitigungsplan der
FHH) see paper attachment 7

"The river Bille relief concept" (Das Bille-
Entlastungskonzept)

<http://www.hamburgwasser.de/cms/website.php?id=/de/index/leistung/abwasserentsorgung/gewaesserschutz/billeentlastungsprogramm.htm>

Press report on the Hamburg Senate's concept for public toilets, 06/2000, see paper attachment 8

Press report of the separation of yellow water, 05/2006, see attachment "Yellow Water"

Certificate 2006 „Green Goal“, see attachment "Green Goal"

Environmental reports 2007, "Hamburg Wasser" (Hamburg Water), see paper attachment 9

- Statistics

HSE/HW business reports 1995-2007 and flyers, see attached business reports in paper 95-98 (paper attachments 10-13), pdf 99-03 and web links:

2007:

http://www.hamburgwasser.de/html/img/pool/gb_2007.pdf

2006:

http://www.hamburgwasser.de/html/img/pool/gb_2006.pdf

2005:

http://www.hamburgwasser.de/html/img/pool/gb_2005_hse.pdf

2004:

http://www.hamburgwasser.de/html/img/pool/gb_2004_hse.pdf

Action Concept "Hamburg Wasser" (Hamburg Water):

http://www.hamburgwasser.de/html/img/pool/broschuere_haendlungskonzept.pdf

Environmental Statement 2007 "Hamburg Wasser" (Hamburg Water):

http://www.hamburgwasser.de/html/img/pool/emas_umwelterklaerung_hw_2007.pdf

- Flyers:

http://www.hamburgwasser.de/html/img/pool/broschuere_wasserkompetenz_aus_einer_hand.pdf

http://www.hamburgwasser.de/html/img/pool/broschuere_umweltschutz_fuer_die_hansestadt.pdf

http://www.hamburgwasser.de/html/img/pool/broschuere_schutz_vor_starkregenfolgen.pdf

http://www.hamburgwasser.de/html/img/pool/produktblatt_entsorgung.pdf

http://www.hamburgwasser.de/html/img/pool/produktblatt_kanalnetz.pdf

http://www.hamburgwasser.de/html/img/pool/produktblatt_klaeranlagen.pdf

- Coalition Agreement of Hamburg's governing parties for the current 19th legislature period, 2008, see attachment "Coalition Agreement"

- Globalrichtlinie D1/99 (Global Directive of 10.05.2005 for steering water rights consent processes on discharging household effluent from waste water treatment plants with connected loads of up to 150 population equivalents), see attachment "global directive 2005")
- Status report: see attachment "status report"
- Thermal load scheme, see attachment „Wärmelastplan“

9. Environmental management of the municipality

1. Please describe the present situation and development over the last five to ten years in relation to (max. 1,000 words):

1.1. Number of municipal departments with certified environmental management systems (ISO 14001/EMAS)

At present, the municipally owned "Hamburg Wasser" (Hamburg Water) and "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) are listed on the EMAS Register in accordance with EMAS II; "Hamburg Wasser" with 24 sites in Hamburg and "Stadtreinigung Hamburg" with one site. "Hamburg Wasser" (Hamburg Water) is the city's municipal drinking water supply and waste water disposal company with 2,400 employees - making it the largest municipally owned drinking water supply and waste water disposal company in Germany. "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) is responsible for waste disposal in the city and has 2,500 employees. "Hamburg Wasser" (Hamburg Water) is certified compliant to ISO 14001.

Over the course of the past 10 years, the following entries and changes concerning Hamburg public institutions have been recorded on the EMAS Register:

Year	Entries	Type of public organisation
1999	2	City Hall, Municipal Sanitation
2000	2	City Hall, Municipal Sanitation
2001	3	City Hall, Municipal Sanitation, A.v. Humboldt Grammar School
2002	4	City Hall, Municipal Sanitation, A.v. Humboldt Grammar School, St. Georg General Hospital
2003	4	Municipal Sanitation, A.v. Humboldt Grammar School, St. Georg General Hospital, Water Police
2004	4	Municipal Sanitation, A.v. Humboldt Grammar School, St. Georg General Hospital, Water Police
2005	7	Municipal Sanitation, A.v. Humboldt Grammar School, St. Georg General

		Hospital, Water Police, Surenkamp School, Niendorf Comprehensive School, A. Thaer Grammar School
2006	6	Municipal Sanitation, A.v. Humboldt Grammar School, Water Police, Surenkamp School, Niendorf Comprehensive School, A. Thaer Grammar School
2007	6	Municipal Sanitation, A.v. Humboldt Grammar School, Surenkamp School, Niendorf Comprehensive School, A. Thaer Grammar School, Hamburg Waterworks with 16 sites
2008	6 (2)	Of the 4 schools, 2 were deleted in 2008 and 2 temporarily removed until September 08; then possibly presentation of a new environmental statement or deletion; i.e. currently listed are "Stadtreinigung Hamburg" (Hamburg Municipal Sanitation Department) and "Hamburg Wasser" (Hamburg Water)

Over and above this, eleven municipal bodies have participated in the "Ökoprofit" (Ecoprofit) project. "Ökoprofit" is a project initiated by the "UmweltPartnerschaft Hamburg" (Hamburg Eco-Partnership). Cooperation partners of Hamburg's Ministry for Urban Development and the Environment are Hamburg's Ministry for Economy and Labour, Hamburg's Chamber of Commerce, Hamburg's Chamber of Skilled Crafts and Small Businesses and a consulting company. The goal of the project is to systematically implement cost-saving environmental measures within private and public institutions. Additionally, environmental management structures are introduced into these companies; these structures can be used as the basis for further environmental management systems such as DIN EN ISO 14001ff. and EMAS. Every course brings together some 15 companies from various industries. Hamburg offers 2 courses per year. The course lasts one year, with 10 workshops and 6 half-day consultations on site, before concluding with an audit. Participation is open to small businesses, companies and public institutions. The project has been in existence in Hamburg since 1999. To date, 136 businesses (138 sites) have successfully participated in "Ökoprofit" (Ecoprofit), in the Ecoprofit introductory programmes 1 to 10. 18 re-certifications have already been carried out within the scope of the "Ökoprofit" Club. The following public institutions have taken part in the programme to date: Grootmoor Grammar School, Students' Union, German Electron Synchrotron DESY, Centre for School Biology and Environmental Education, Eppendorf University Clinic, Institute for Hygiene and

Environment, Vocational School for Electrical Engineering (G10), Hamburg Public Libraries, Vocational School for Recycling and Environmental Engineering (G8), Hamburg Adult Education Centres, Altona Nord Citizens' Centre, Elbe Workshops, Hamburg Sport Federation, Hamburg Junior Sports.

1.2. Percentage consumption of eco-labelled, organic and energy-efficient products measured as share of the total consumption by municipalities of products in the same category/type

For legal reasons, the city's public institutions cannot categorically demand a specific eco-label. However, when making purchases or awarding contracts, Hamburg always specifies criteria which apply to eco-labels such as the "Blue Angel" (see below 2.2, Guidelines for environment-friendly purchasing). As regards its horizontally focused activities, such as refrigerator replacement, light bulb replacement, WC refitments or waterless urinals, the city always uses the most energy- and water-efficient products available on the market.

As Hamburg is a city with 1.7 million residents, it has not yet been possible to gather the data requested from all public institutions, in the short period of time available. Data regarding products with eco-labels are only available for the following product groups:

1.2.1. Energy consumption

In a Europe-wide public tendering procedure, the City of Hamburg has purchased 236 GWh of eco-energy certificates for the period 2008 - 2010, in accordance with the RECS system. Including the share of renewable energy contained in the national production mix (approximately 13% in 2007), 100% of the electricity used for public buildings in the years 2008 - 2010 can thus be attributed to regenerative energy sources, i.e. the City of Hamburg uses 100% eco-energy.

In the years 2002 and 2003 eco-energy certificates for 10% and in 2004 for 5% of the energy requirements of Hamburg's public institutions were purchased via a Europe-wide public tendering process in accordance with the RECS system.

1.2.2. Paper

The amount of recycled paper used in Hamburg's administration currently lies at approximately 30% of the city administration's overall paper consumption.

1.3. Energy consumption of municipal buildings per square meter

	Year	2000	2001	2002	2003	2004	2005	2006	2007
Electric energy (kWh/m ² year)		31.1	33.7	35.1	36.7	38.2	38.9	39.7	42.3
Heat energy (kWh/m ² year)		171.5	165.4	162.6	158.6	150.1	148.3	144.8	140.7

The data for heat energy have been adjusted to take into account the influence of the elements. Only exclusively public buildings, such as schools, universities, city administration offices, courts, etc., have been taken into consideration. Hospitals and so-called represented companies such as theatres, the municipal sanitation department, etc. have not been taken into consideration, since there is no centrally recorded data for them and/or it could not be gathered at short notice.

2. Please describe the measures implemented in the last five to ten years in relation to (max. 1,000 words):

2.1. Developing an overall policy for environmental management of municipal activities

By creating standards for an environment- and climate-friendly administration, the City of Hamburg wishes to serve as a role model for its citizens and companies.

2.1.1. Energy management for public buildings

The city views the reduction of energy consumption in its own sphere as a strategic long-term task. A central department with the task of "Energy management for public buildings" has been established. In addition to all matters relating to energy contracts, this

department specifies energetic standards and technical regulations, and defines the type of energy supply, and monitors consumption. Furthermore it provides a comprehensive range of consulting and services to all municipal departments, e.g. the "InES" database (Information system Energetic Standards).

Thanks to integrated, technically and commercially considered modernisation measures for heating, lighting and other electrical systems as well as for heat insulation of buildings, it has been possible to make environmental investments economically feasible.

The energy management department has some 3 million euros available annually to subsidise these measures (e.g. solar technology, block heating power plants, heat recovery, energy-efficient power systems).

The City offers its know-how to private companies, too. Hamburg has been awarded an "Energy Globe Award" for the overall concept of climate protection activities in the public and private sectors.

2.1.2. Environmental Roadmap

Building on the process of the Local Agenda 21, in 2001 Hamburg presented a sustainability strategy under the title "Environmental Roadmap - Goals for a sustainable Hamburg". The roadmap applies Hamburg's overall sustainability concept to the field of environmental protection and formulates clear and specific goals for the city as regards quality and action.

2.1.3. Strategy for Climate Protection

In accordance with "Hamburg's Strategy for Climate Protection", the municipal administration has a role model function concerning the type and usage of municipal buildings as well as concerning working methods and techniques, energy efficiency and conservation of resources.

2.2. Increasing the share of the total consumption of eco-labelled, organic and energy-efficient products

When purchasing products, Hamburg advocates sustainable environment protection. In 2007, the City introduced new guidelines for environment-friendly purchasing which, as part of Hamburg's contract awards manual, are binding for all ministries and departments.

In particular these regulations relate to:

- Office and school furniture
- Electrical equipment (lamps, refrigerators, etc.)
- Electronic equipment (PCs, printers, monitors, photocopiers)
- Office paper and materials
- Cleaning supplies
- Building products

Wherever eco-labels exist for the tendered products, their criteria are adopted as contract award criteria. In the case of services, certifications of the companies compliant to quality management standards such as EMAS, Ökoprofit (Ecoprofit), ISO 9002, or ISO 14000 ff. are taken into consideration. For products, disposal concepts must also be presented.

In the case of official vehicles, the smallest vehicle category must be selected and, within the vehicle category, the one with the lowest fuel consumption and CO2 emissions must be purchased. Diesel-powered cars must be equipped with a carbon-particulate filter. Tyres with reduced rolling friction must be purchased; they must also be particularly quiet. Since fuel consumption is also defined by the driver's behaviour, the City's drivers attend "Eco-Driving" courses.

When civil servants travel on municipal business, the costs arising from CO2 emissions are taken into consideration, and compensation payments are made for flights. These costs must be stated on a case-by-case basis whenever a travel permit application is made, and thus have an awareness-building function. The external costs generated by CO2 emissions must be taken into account whenever an application to fly on municipal business is decided upon.

The City only uses tropical woods for building projects if they originate exclusively from sustainable forestry (as certified by the Forest Stewardship Council label - FSC). The guidelines also stipulate that PVC may not be used if suitable alternative products are available.

Compliant to the Hamburg Act on Waste Management, the City's authorities and public institutions are obliged to contribute to achieving waste management goals. Thus products should be used which are characterised by their long service life, ease of repair and reusability or recyclability.

The Hamburg Climate Protection Act specifies requirements regarding the purchase of systems and equipment, ensuring an energy use compliant with climate protection criteria.

To what extent these measures achieve an increase of the share, will be examined in an evaluation planned for 2009.

2.3. Increasing energy efficiency of municipal buildings

Since the 1990s, Hamburg has intensified its efforts to improve energy efficiency in public buildings, with the aim of making climate protection – by modernising in particular heating, lighting and other electrical systems as well as the heat insulation of buildings – economically feasible.

The requirements which the Hamburg Climate Protection Act and the Hamburg Climate Protection Ordinance make regarding heat insulation and energy-saving systems in buildings surpass those specified in Federal laws. The Hamburg Climate Protection Act contains a special cost-efficiency benchmark for energy-saving measures in public buildings.

Programmes such as "Lamp exchange 2:1 for the climate", "fifty/fifty" and boiler and refrigerator replacement have led to remarkable savings and climate protection successes. In 2003, Hamburg was designated a partner in the EU Commission's GreenLight Programme. Hamburg had replaced over 200,000 conventional lamps in more than 400 public buildings with energy-saving lights. This saves 22 million kilowatt hours of electric energy, some 14,000 tonnes of CO₂ and 3.4 million euros of energy costs per year. Hamburg systematically replaces outdated systems in public institutions with more efficient technology. One example: Over 600 boiler systems have been replaced with modern condensing boilers in recent years (an investment of 18 million euros). CO₂ emissions have been reduced by approximately 9,000 t per year, with annual energy savings of some 46,000 MWh.

Additionally, the following individual measures have been implemented since 2006:

- Conversion of traffic lights to LED technology, 700,000 euros
- Renovation of lighting, 300,000 euros
- Optimising of electric power systems and air conditioning systems, 300,000 euros
- Energetic optimising of heating systems (production, hydraulics, pumps, solar thermics, etc.) and heat insulation, 1,000,000 euros

In compliance with the requirements of EU Directive 2002/91/EC on the Energy Performance of Buildings of

16.12.2002, Hamburg has already issued so-called „Energy Passports“ for individual buildings, in order to initiate targeted renovation measures. However, the issue of these passports is not recorded centrally, so that no numbers can be reported. It is intended to generate these passports on time, with support from the City's Central Energy Management.

3. Please describe planned short- and long-term measures for improving environmental management of the municipality (max. 1,000 words):

As part of "Hamburg's Strategy for Climate Protection 2007-2012", the Senate passed a resolution regarding additional measures to increase the use of environment-friendly products and to improve the energy balance of municipal buildings, and provided the necessary funds.

The City wishes to be both a climate-friendly administration and thus a good role model, as well as to provide incentives to its citizens and companies to use environment-friendly products.

- Hamburg's municipal administration has some 30,000 workstations. This large quantity means that a reduction of just a few kWh per workstation can result in a significant overall potential for savings. The introduction of new technologies (such as Wake-on-LAN) will allow to make better use of the energy-saving potential for workstations. This would result in energy savings of 55,000 kWh. The measure requires approximately additional 60,000 euros in the current biennial budget 2007/2008.

- Hamburg's authorities consume approximately 400-450 million sheets of paper per year. It is planned to limit paper consumption thanks to the introduction of electronic archiving. Currently the percentage of recycled paper used is approximately 30%. A further increase of this percentage to at least 50% as of 2009 is aimed for.

- A cross-administrational motor pool management project shall create the preconditions for a more efficient and ecological operation of the motor pool. It shall inventory and analyse the vehicles owned by the City's authorities, excluding the police force and fire brigade, in a structured manner, according to performance, fuel consumption, emissions, usage, usage profile and other criteria, in order to provide the basis for purchase decisions.

- Environment- and climate-friendly products, services and production processes are often very expensive to purchase and are thus not sufficiently in demand. The

goal of the R&D (Research and Development) subsidy programme is to increase the economic feasibility of such climate- and environment-friendly products, services and production processes, in order to improve customer acceptance and thus also increase sales. Hamburg's Senate is clarifying whether an independent subsidy programme will be set up or whether a corresponding project call should be started within the scope of the existing R&D subsidy programmes for the development of new climate-friendly products and services.

Hamburg's Senate plans to significantly improve the energy balance of municipal buildings.

Exemplary projects are:

- Renovation programme for 30 buildings (police and fire stations). Thanks to energetic renovation, in particular of the buildings' shells, energy savings of up to 40% can be achieved. The renovation of two buildings can start in 2008. Funds of 3.8 million euros have been budgeted for the renovations.
- After completion of the introduction of modern condensing boiler technology as standard in public institutions, further potential energy savings will be achieved by hydraulic alignment of heating systems and use of high efficiency pumps. The renovation of 50 systems is planned until 2012.
- Many public buildings display a too high base load of electricity consumption outside of their main hours of use. By concerted technical measures and influencing of user behaviour, it should be possible to tap into these potential savings. Hamburg has budgeted 400,000 euros for this purpose in 2008. Funds to the same amount have been applied for the following years.
- Since the 2000/2001 academic year, the median specific heating energy consumption of Hamburg schools, adjusted to take the elements into consideration, has been reduced from over 160 kWh/m² to 146 kWh/m² in the 2005/2006 academic year. However, there are still approximately 30 schools with a specific consumption in excess of 200 kWh/m². The project "No school over 200" aims to renovate all schools by 2012 to such an extent that their specific heating energy consumption lies under 200 kWh/m² per year.
- It is planned to renovate and partially newly construct a "Gateway to the world" education centre with 21,000 m² gross floor space, complying to the KfW 40 standard. Its energy demands will be covered by a natural gas block heating power plant with solar thermic support. This will be complemented by a 100 m² photo-voltaic system.

- The model project "Climate protection at school" is intended to make a contribution towards tapping the potential for reducing CO2 emissions to the greatest extent possible when building schools. One focus will be the use of photo-voltaic systems on school roofs. There are currently some 60, mostly smaller, demonstration systems on the roofs of Hamburg's schools. In a public private partnership with local suppliers of photo-voltaic systems, it is planned to equip at least a further 40 schools with larger systems (> 2 to 10 kW). Up to 50% of the total costs will be covered by subsidies from public funds. The measure will be partly financed from budgetary means already allocated to the ministry in charge and will cause additional funding needs of 200,000 euros in Hamburg's biennial budget for 2007/2008.

- Showing energy-conscious behaviour at school is teaching climate protection by practical example. For this reason, Hamburg has developed and implemented the "fifty/fifty" concept more than 10 years ago. The fifty/fifty financial incentive principle is one of the most successful concepts of its kind in Germany. Merely by aware behaviour - only savings achieved through changes in behaviour receive an award - Hamburg's schools have reduced their CO2 emissions by some 120,000 t since 1994, and in turn have received over 12 million euros (in accordance with the fifty/fifty principle, half of the funds saved) to be used as they see fit. The potential savings are still far from exhausted. Today, almost 99% of Hamburg's schools participate in the programme and on average achieve savings of more than 10% per year, some 60 schools even manage to achieve over 20%. The ministry in charge will continue to support the schools by providing the participants with information and giving tips on ways to organise school life. There are plans to introduce the fifty/fifty project into municipal day-care facilities.

The Coalition Agreement of Hamburg's governing parties includes, among others, the following measures:

- At suitable municipal office sites, municipal bicycles shall be added of the "motor pool".
- Municipal enterprises are to be certified.
- The collection of biowaste shall be extended in order to make better use of the energy this kind of waste can provide.

4. Please describe how the above issues can be documented should your city be short listed for participation in the second phase of the evaluation

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

- Legal groundwork: Climate Protection Act, see attachment "Climate Protection Act"; Hamburg Waste Management Act
http://hh.juris.de/hh/AbfWG_HA_2005_rahmen.htm;
Directive of the Senate Office to the Civil Service "Directive regarding tasks and division of tasks in the field of energy and water consumption" of 1970 - last amended 1998., see paper attachment 1
- Parliamentary printed material: Hamburg programme to save energy (Hamburg Parliament document 9/1404 of 30.10.1979), see paper attachment 2; Subsidies for district heating and oil substitution in public buildings (Hamburg Parliament document 9/3848 of 27.10.1981), see paper attachment 3; Energy saving and efficient energy use - a balance sheet for Hamburg's energy policies (Staatliche Pressestelle No. 793 of 07.02.1986), see paper attachment 4; Electricity costs in government buildings (Hamburg Parliament document 14/4692 of 17.08.1993), see paper attachment 5; Reduction of heating energy and electricity consumption (Hamburg Parliament document 16/5611 of 13.02.2001) see paper attachment 6; Notice from the Senate to the Parliament, 2007/2008 Budget, "Hamburg's Strategy for Climate Protection 2007-2012" (Hamburg Parliament document 18/6803), see attachment "Climate Protection Strategy"
- Environmental reports.: Annual Reports 1986/1991/1997/2003 Energy management for public buildings, see paper attachments 7 + 8; EMAS Register, http://ec.europa.eu/environment/emas/es_library/library_en.htm;
Environmental reports in accordance with EMAS; Ecoprofit reports, <http://www.emas-register.de/startseite.aspx>;
Guidelines for environment-friendly purchasing, see attachment "Guidelines";
Environmental statement Hamburg Wasser (Hamburg Water) <http://www.hamburgwasser.de/cms/website.php?id=/de/index/aktuell/2008-05-19.htm>;
Environmental statement Stadtreinigung Hamburg (Hamburg Municipal Sanitation Department), <http://www.stadtreinigung-hh.de/srhh/opencms/nachhaltigkeit/index.html>;
Ecoprofit, <http://www.hamburg.de/oekoprofit/start-service/>
- Coalition Agreement of Hamburg's governing parties for the current 19th legislature period, see attachment "Coalition Agreement"
- Brochures and miscellaneous: Lamp exchange 2:1 for the climate (Ministry for the Environment 2000), see

paper attachment 11; COOL - ice-cold electricity savings by replacing refrigerators (Ministry for the Environment 2000), see paper attachment 12; That has to boil - and save (Heating system exchange programme of the Ministry for the Environment), see paper attachment 8, page 22; Press statement on the boiler replacement programme (Spring 2008), see paper attachment 10

- Technical directive No. 1 - Instructions regarding economical and environment-friendly use of heating systems in the offices of the Free and Hanseatic City of Hamburg; Technical directive No. 6 - Energy- and water-saving building technologies in sports halls; Technical directive No. 8 - Use of condensing boiler technology in public areas of the Free and Hanseatic City of Hamburg; Technical directive No. 11 - Electro for businesses; Technical directive No. 12 - Climate protection by heat insulation of public buildings; InES - Internet database of energetic standards for planning, building and running of public buildings, www.energiestandards.de

- awards from other competitions:

- 08. März 2000
„Energy Globe 2000 Award“ - 2. place
The award for sustainable energy
- 21. April 2004
„GreenLight Partner Award 2004“
- 06. September 2005
„Motor Challenge Partner Award 2005“
- 29. Juni 2005
„Energiesparkommune 2005“ - 3. place
- 23. März 2006
„Innovation schafft Vorsprung 2006“ - 1. place
- 30.11.2006
„Bundeshauptstadt im Klimaschutz“ - 2. place
- 08. März 2007
„Innovation schafft Vorsprung 2007“ - 1. place

- Senate resolutions:

- o Paper resolution of 22.10.1985, see attachment "Paper Resolution"
- o Tropical woods resolution of 03.12.1996, see attachment "Tropical Woods"
- o PVC resolution of 20.04.1999, see attachment "Pvc Resolution"

10. Sustainable land use

1. Please describe the present situation and development over the last five to ten years in relation to (max. 1,000 words):

1.1. Proportion of new developments on brownfield sites

In 2007, land in Hamburg used for habitation and traffic purposes accounted for a 59.5% share of Hamburg's total area, whereby, according to national statistical calculation methods, port land, residential gardens, green areas and recreational space are also considered habitation and traffic areas. In terms of development land, however, a statistical distinction is made between the port area (90 km² / 12%) and the remaining urban area (665 km² / 88%).

1.1.1. Port

Expansion of Hamburg's port is intentionally not being pursued as an expansion into the surrounding area, but rather as an internal compaction through more intensive use of existing land and by generating new areas as a result of filling in expendable harbour basins.

As a consequence of the conversion of maritime traffic to container ships with higher tonnage, the current port zones to the east have become redundant and have therefore been designated as development land. Since 1997, 155 ha of the eastern port zone situated to the north of the River Elbe have been allocated for re-development as a residential and office area named "HafenCity" (Port City)(cf. section 1.2., 2.3. and 3.2.1.). The 45 ha large eastern port zone to the south of the Elbe in the "Kleine Grasbrook" district has also been designated as development land for residential and office use, within the scope of the "Leap across the Elbe" programme (cf. section 3.2.2.).

1.1.2. Urban area

During the period 2000 to 2007, according to statistics calculated using national standardised methods, land in Hamburg used for habitation and traffic purposes increased by 1,800 ha (= 0.25%). However, closer analysis of this figure reveals that of this land, around 400 ha result purely from statistical

reallocation, 200 ha relate to recreational areas, around 480 ha comprise port zones, and merely 720 ha relate to constructions incorporating open spaces and traffic land - only this is expansion of inhabited space within the true meaning of the term.

By contrast, since 2000 a number of projects on 197 ha of development land situated outside of the port area have already been realised.

Extensive additional development land has also been available in Hamburg for a number of years on areas formerly used by the German armed forces, German rail, the post office, industry and other institutions. Overall, this concerns a total of 616 ha (as at 1 January 2008), of which 197 ha (24%) have already been developed for alternative use, 123 ha (15%) are currently being redeveloped and 493 ha (61%) are under planning (cf. section 3.).

1.2. Population density for new developments

In Hamburg, 1,760,322 people live on an area of 75,524 ha (as at June 2007). Therefore, with 2,305 inhabitants per km² (as at 2007), Hamburg is one of the least populated conurbations in the world. This low figure is, however, primarily due to the fact that a 40.5% share of Hamburg's urban area is designated as non-settlement land devoted to important cultural landscapes and protected areas resp. areas worthy of protection (including Natura 2000 areas). Also, the distribution of population density varies greatly in the 59.5% devoted to habitation and traffic areas.

294,456 individuals commute into the regional boundaries, while 86,646 commute out. The ratio of outward commuters to Hamburg's total population is 4.9%, and 18% for inward commuters. In terms of climate protection, therefore, the number of inward commuters should be maintained at the lowest level possible, given that these commuters are synonymous with long journeys and high CO2 emissions.

The Hamburg urban area comprises the tightly packed historical heart of the city, the regional centres made up of towns and villages previously incorporated into the city district, areas of 4-5 storey blocks situated in the vicinity of the city centre, detached housing settlements located on the middle and external periphery and a number of rurally/agriculturally structured zones. As such, this structure gives rise to distinctive urban responses in terms of calculating population density.

The basis of Hamburg's urban planning is to avoid urban sprawl and - to the greatest extent possible - prevent utilisation of existing wooded and agricultural land,

green spaces and recreational areas. For this reason, significant reserve areas (30%) within the inner city consolidation are being targeted and progressively realised through the development of vacant sites and by adding floors. New developments are each determined according to geographical location.

As one example with a high population density, attention must be drawn at this point to "HafenCity", an exceptional Hamburg city development project. Approximately one third of the net HafenCity development area of 60 ha is being used to build 5,500 residential homes for around 12,000 new inhabitants, equating to a population density of ca. 69,000 inhabitants per km² (Hamburg as a whole: 2,305 per km²).

Hamburg's residential building policy of recent decades and, indeed, of the past ten years, also provides for new terraced and detached housing of a considerably lower population density in the peripheral urban regions, such as the new city district of Neu-Allermöhe (population density: 1,200 per km²). The high demand for such residential units - particularly by families with children - also needs to be addressed for reasons of climate protection, given that these families would otherwise locate to the environs and then be responsible for high CO₂ emissions as inward commuters. That such new-build projects must be linked to the local public transport system and comply with climate-protecting building regulations goes without saying.

2. Please describe the measures implemented in the last five to ten years in relation to (max. 1,000 words):

2.1. Minimising the total area of derelict and contaminated land

Since 1979, areas of Hamburg suspected of being contaminated have been systematically recorded, inspected and cleaned up as necessary. The contaminated land register contains information on around 2,150 sites for which evidence of pollution exists. Measures to remove hazards are undertaken in two stages - the first step being clarification of the need for action (inspection and assessment), followed by the second step of subsequent decontamination.

**Altlastverdächtige Flächen und
Altlasten in Hamburg**
Stand: Juli 2007



To date, around 94 urban measures have been concluded, for which a budget of over 300 million euros has been allocated. It is anticipated that this task will essentially be completed by 2010, with mid-term funding requirements currently amounting to 16 million euros per year.

Initially, the environmental-policy goal in terms of cleaning up contaminated land was to remove hazards; since 1990, land recycling has also been added as an additional goal. Overall, the objective is to afford priority to eliminating pollution in accordance with the German Federal Soil Protection Act (decontamination).

Technologically, there has been a leap in development since the mid-1980s, with a shift away from mere excavation and dumping towards ground management and water treatment techniques, whereby the objective is to recycle the decontaminated materials. To this end, Hamburg has made a major contribution to developing new technologies, for example, through both research and development projects and pilot facilities. New standards have also been set regarding the cleaning up of contaminated areas that are inhabited, together with the associated participation of residents.

Currently, around 3,200 areas displaying hazardous changes in the soil or contamination have been identified and recorded in a register. Given the fact that the industrial redevelopment of Hamburg has long since occurred, the discovery of new contaminated areas is not anticipated. Over the past 10 years, around 40 ha of land have been recycled each year, including an iron foundry, a boatyard, a rubber factory, two gasworks, two landfill sites and two industrial plants.

In the past, the known contaminated sites have been recycled through re-utilisation of the land, and this will continue to be the case in the future.

2.2. Renovating urban land

The major development projects over the past ten years relate to:

- the former Boehm barracks in Rahlstedt. This property is now the "Rahlstedter Höhe" residential area providing 1,700 residential units on 18.4 ha.
- the former Graf-Goltz barracks. They have been converted to the "Boltwiesen" residential area with 530 residential units on 13.8 ha.
- the "Höltigbaum" troop training ground. Following closure of the barracks in 1997, the site was transformed into a nature reserve (272 ha), with a small area also redeveloped as a commercial zone (24.2 ha).
- the German military central workshops in Langenhorn. Today the site is home to the "Heidberg Villages" residential area with 311 residential units on 2.8 ha.

2.3. Increasing the number of inhabitants per ha of urbanized land area

As elucidated in section 1.2, instead of opening up new development zones on the edge of residential areas, internal urban development continually centres on exploiting the inner-city potential. As such, subsequent concentration focuses on utilisation of vacant plots and urban consolidation by building on areas already in use.

Overall, the HafenCity development is the most effective project in terms of increasing the population density of Hamburg. The area of 155 ha is being transformed into a lively inner-city district, incorporating a finely-honed utilisation mix comprising residential units, offices, recreational facilities, retail businesses and cultural facilities. Yet its size is not the only impressive aspect of HafenCity; what really sets it apart from similar urban development projects is the inner-city location and the excellent qualitative standard reflected, amongst other things, in the architectural and recreational quality, the high proportion of residential units, the patent water features and the sustainable development concept. HafenCity will expand the present city centre of

Hamburg by 40 percent within a period of approximately 20 years. The plan envisages around 5,500 residential units for up to 12,000 inhabitants and services zones creating approximately 40,000 jobs. By the end of 2007, Hafencity had already become home to 800 people, with around 1,500 working in the district and the number of those flocking to Hafencity increasing by the day. Currently, construction is making the most intensive progress in the "Dalmannkai" sub-district, where all 16 building projects involving around 125,000 m² of gross floor space are meanwhile either in progress or have been completed or occupied.

3. Please describe planned short- and long-term measures on sustainable land use (max. 1,000 words):

3.1. In line with current debate, anticipated demographic development in Hamburg and the normal requirement for renewal gives rise to a target volume of 75,000 to 90,000 residential units by 2020.

It is intended that these 75,000-90,000 residential units will be built

- on currently vacant residential development zones incorporated within land use planning (30%),
- on development locations suited to residential use and for which a commensurate policy position is in place (40%), and
- through the utilisation of urban consolidation potential within existing zones (30%)

For the period of 2009 to 2011, Hamburg's Senate has designated the following prospective areas (F-Plan/Senate) for residential building development: 246 ha of development land and brownfield sites, 160 ha of primarily agricultural land and a small proportion of green areas / allotments. As such, the proportionate utilisation of land already currently being used for residential and traffic purposes (development/brownfield) will be considerably greater than the proportionate utilisation of non-residential land.

In terms of commercial sites, the following prospective areas have been designated (F-Plan/Senate) for development during the period of 2009 to 2011: 43 ha of development/brownfield land, 50 ha of primarily agricultural land and a small proportion of green areas / allotments. As such, the proportionate utilisation of land already currently being used for residential and traffic purposes will roughly equate to that of non-residential land.

3.2. With respect to the future of Hamburg, three major projects being undertaken by Hamburg city planning deserve separate mention: namely, the 'HafenCity', the 'Leap across the Elbe' and the 'IBA' International Building Exhibition 2013 that will be held in conjunction with the igs International Garden Show.

3.2.1. HafenCity (cf. sections 1.1.1. and 2.3.)

HafenCity has moved from the project planning stage to the phase of intensive realisation. Around 90% of the development sites are publicly owned (special assets "City and Port") and the investment volume is approximately 6.3 to 6.8 billion euros (of which around 1.3 billion euros is public investment).

Following the gutting of the historical "Kaispeicher A" (Quay-warehouse A), work on the two concert halls of the Elbe Philharmonic Hamburg, a five-star hotel and 45 residential apartments will begin in the autumn of 2008. Construction of the heart of HafenCity, the "Überseequartier", commenced with the breaking ground ceremony in September 2007. It is anticipated that the quarter, comprising approximately 275,000 m² of gross floor space, will be completed by the end of 2011. The start of 2009 will see construction commence on the southern district of the Überseequartier, following completion of the shell work for the Überseequartier station on the new U4 underground line.

3.2.2. Leap across the Elbe project

The districts situated between Hamburg and Harburg were originally islands of an inland river delta and for many years have primarily been used for industrial purposes. The "Leap across the Elbe", from the city centre, across HafenCity, Grasbrook, Veddel and Wilhelmsburg to Harburg, forms the core of Hamburg's urban development objectives. This opportunity to expand on centrally located land in the heart of the city is unique for a modern metropolis of millions.

Focal points of the overall project development are the HafenCity, the project for new employment milieus in the Reiherstieg area, the regeneration of Wilhelmsburg centre and the Harburg inland port (a leap across the Southern Elbe). The IBA 2013 International Building Exhibition is also one of the core projects through which the leap across the Elbe will be transformed from an urban planning draft into reality.

3.2.3. IBA 2013

The IBA 2013 breathes life into the overall concept of the leap across the Elbe. In conjunction with the IGA 2013 International Garden Show, the future of the metropolis, with all its numerous facets, will be deliberated for the first time. The central issue will concern the nature of facilities that a major city should specifically offer its citizens, businesses and visitors in relation to life in the 21st century, in order to ensure that performance and quality of life become pre-eminent locational factors.

In particular, the IBA endeavours to tackle the questions of:

- how an internationally aligned urban society should present itself
- how 'inner' city suburbs can be upgraded as valuable areas of internal development
- how the challenges of climate change being faced by cities can be confronted.

Specific projects to be completed between 2008 and 2013 within the scope of preparations for IBA 2013 include:

- the "Energieberg Georgswerder" (Georgswerder Energy Hill); where a landfill site is being transformed into an energy supply site.
- the "Kirchdorfer Wiesen" meadows; where natural living space avoiding any destruction of the natural environment will be field-tested.
- the "Energiebunker Wilhelmsburg" (Wilhelmsburg Energy Bunker); where a World War II bunker is being transformed to provide roof space for photovoltaic installations.
- climate-friendly houses at Haulander Weg; here climate-friendly houses are being field-tested as a model of future urban infrastructure. Equipping the houses with a water-saving pollutant disposal system is currently being considered. This would mean that the sewage treatment plants would no longer need to purify clean water, but could be used more efficiently to dispose of harmful substances.
- "Neue Hamburger Terrassen" (New Hamburg Terraces); "terraces" are traditional backyard structures in Hamburg. The goal here is to lend old-building flair to apartments with up to 160 m² of area and unite residential and working space under one roof.

4. Please describe how the above issues can be documented in case your city is short listed to participate in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max. 600 words):

- Development land database compiled by Hamburg's Ministry for Urban Development and the Environment
 - Potential development land database for residential and commercial premises
 - Analysis of the HALB (Hamburg automated land registry)
 - Green space database compiled by Hamburg's Ministry for Urban Development and the Environment
 - Special Investment Programme „Hamburg 2010“, concept of the leap across the Elbe, IBA GmbH (Hamburg Parliament document 18/3023 of 18.10.2005), see attachment "IBA Drs. 18-3023"
 - igs 2013 International Garden Show (Hamburg Parliament document 17/4720), see attachment "igs Drs. 18-4720"
 - Data and business reports on individual projects, such as Hafencity (<http://www.hafencity.com/>), IBA (http://www.iba-hamburg.org/de/00_start/start.php), igs (www.igs-hamburg.de)
 - Map of new developments on brownfield sites (under planning / currently being redeveloped / developed for alternative use since 2000), s. attachment brownfield areas
 - derelict and contaminated land (Hamburg Parliament document 18/3628 of 31.01.2006), s. attachment mobilisation of sites Drs. 18-3628; budget, see attachment "budget 2008"
- <http://www.hamburg.de/altlasten/135322/altlasten-allgemein.html>,
- <http://www.hamburg.de/altlasten/140900/gefaehrdung-start.html>
- <http://www.hamburg.de/altlasten/135322/altlasten-allgemein.html>
- <http://www.hamburg.de/altlasten/140898/kataster.html>
- renovating urban land,
<http://www.hamburg.de/flaechenrecycling/142836/best-practice.html>
- <http://www.hamburg.de/contentblob/142166/data/veroeff-hafencity-engl.pdf>

11. Other measures

Please describe any effective and interesting measures taken to improve the urban environment of your city not covered by the above indicators (max. 2,000 words):

1. Hamburg's international environment protection activities

1.1. Civic alliances and networks (Climate Alliance, ICLEI, METREX, Covenant of Mayors)

Hamburg is an active member in international civic alliances and networks. Especially noteworthy are the Climate Alliance of European Cities (Climate Alliance), ICLEI and METREX. Within the framework of the European Commission Hamburg is a partner in the Sustainable Energy Europe Campaign the European GreenLight Programme, the European Motor Challenge Award and the European Mobility Week.

In 2009, preliminary to the United Nations Climate Change Conference COP15 in Copenhagen, Hamburg will host an own cities conference on climate protection, the „Pre-Copenhagen-Conference“. The Pre-Copenhagen-Conference aims to globally promote the exchange on climate protection issues between cities, to initiate own, municipal impulses for the post-Kyoto process and to develop common targets resp. strategical action concepts. Its close conjunction with the UN climate summit in Copenhagen as regards subject and date boosts public impact of this initiative and highlights the increasing importance of cities for climate protection. It is intended to organise the conference within the framework of the EU Covenant of Mayors, with active involvement, as cooperation partners, of those civic networks in which Hamburg is member (e.g. Climate Alliance, ICLEI, METREX).

1.2. Ecological twin city projects

1.2.1. St. Petersburg, Russia

Hamburg and St. Petersburg have jointly developed an environmental centre in St. Petersburg with the support of the EU Commission and its LIFE programme. Numerous

joint projects have resulted from this cooperation, e.g. in the field of water pollution control, combating oil spills, waste management, soil protection, energy efficiency, and environmental education and information.

The current project REVVIN "Revitalisation of derelict areas in St. Petersburg 2005-2008" aims to develop a methodology for remediation of hazardous sites and for the recycling and management of areas in St. Petersburg, demonstrated at a derelict industrial site as pilot example. Over and above this, Hamburg is providing a transfer of know-how as regards development of financing concepts for the energy-efficient renovation of municipal housing.

1.2.2. Prague, Czech Republic

Hamburg has seconded personnel within the scope of the EU Twinning Programmes in the field of water pollution control and environmental information. There has been an eco-partnership between a children's day-care centre in Hamburg and one in Prague since 2004. The goal is to provide an exchange of information between ecologically oriented children's day-care centres (reciprocal visits, etc.) in the field of environmental training and education. Over and above this,

1.2.3. León, Nicaragua

Every month over 26,000 employees of the City of Hamburg donate the figures after the decimal point of their salaries for projects in León, to e.g. finance the connection of households in the poorer districts of the city to the sanitation system ("remaining cents" project). Two employees from Hamburg have each spent 3 years consecutively advising the municipal administration of León on site e.g. in the field of waste management. A consultant financed by Hamburg is currently providing advice on the development of an environmental education project connected with a nature reserve on León's Pacific coast.

1.2.4. Shanghai, China

The main focus of cooperation with Shanghai lies in the field of energy-efficient building. Within the scope of the "Ecobuild" cooperation project, show houses which achieve a particularly high standard of energy

efficiency were built in Shanghai. Ecobuild generated a new network of over 40 companies under the aegis of the Shanghai Chamber of Foreign Trade ("econet china").

The 2010 EXPO will be taking place in Shanghai under the motto "Better City, Better Life". Hamburg will be taking part with a sustainable new building to demonstrate the highest possible environmental standards. In addition to a permanent exhibition, cross-disciplinary workshops, inter-disciplinary panel discussions and a lively cultural programme will be organised.

1.2.5. Auckland, New Zealand

Hamburg and Auckland are working together in the fields of climate protection, energy efficiency and sustainable energy sources. Experience is primarily exchanged by means of video conferences.

2. International Building Exhibition and International Garden Show 2013

In 2013, the City of Hamburg will be organising both an International Building Exhibition - IBA Hamburg 2013 - as well as an International Garden Show - igs Hamburg 2013. The common central theme will be "The city and climate change".

With its climate protection strategy "Sustainable Wilhelmsburg", the IBA Hamburg will be focusing on the exploitation of local energy sources. The goal is to achieve CO₂-neutral energy supply by using energy-efficient technologies and a gradual changeover to renewable energy sources.

The "climate houses" in Haulander Weg will be constructed using 21st century climate-friendly and resource-saving technologies. The goal is to create a housing development with closed circuit energy and material flows, built to a high energetic building standard and able to produce its own energy using solar thermics, photo-voltaic systems, biomass energy and geothermal energy, thus ensuring a CO₂-neutral supply.

The "Energiebunker Wilhelmsburg" (Wilhelmsburg Energy Bunker) is a further lead project demonstrating sustainable energy applications. The former bunker will be equipped with the largest continuous solar system installed on a building in Europe to date, with an area of 3,500 m², as well as a biomass cogeneration plant. The energy generated will be used to supply the

neighbouring "Weltquartier" residential area with 850 residential units.

The project "Energieberg Georgswerder" (Georgswerder Energy Hill) aims to develop a regenerative energy source in Wilhelmsburg/Georgswerder on a particularly prominent site: The intelligent combination of electricity generation using wind power and solar energy (photo-voltaics) in combination with the thermal usage of sewage water from the landfill and of groundwater will produce electricity for at least 2,000 private households. A viewing platform will give the public an impressive view across the Elbe islands and an information centre will disseminate knowledge on the potential of sustainable energies and the handling of waste and contaminated land.

The "International Garden Show Hamburg 2013" will combine nature conservation with horticulture. The particular attraction of the garden show will lie in the contrast between untouched natural areas and landscaped exhibition areas. Guests will stroll through landscaped parks and "garden areas" which display the influence of climate, vegetation, religion and culture on the world's gardens. International sport and play events will encourage visitors, in particular children and adolescents, to become active and participate.

3. Water pollution control

The "Concept for sustainable development of the tidal Elbe river as a key artery for the Metropolitan Region of Hamburg", developed in 2006, consists of three cornerstones:

- Buffering of tidal energy by means of river engineering measures
- Creation of flood areas
- Optimising of sediment management.

With this concept, valuable tidal habitats will be preserved and/or fostered which are crucial for water pollution control and nature conservation (spawning areas, oxygen conditions). The creation of tidal potential will also make a contribution to flood protection measures.

Against the background of an increasing number of torrential rain storms due to climate change and the increasing sealing of soil, an increased volume of rainwater must be channelled back to nature and not into the sewer system. A concept is being implemented, consisting of: improving the effluent characteristics of a body of water, creating storage areas for

rainwater, reducing the effluent into the sewer system via rainwater management, and expanding sewer capacity.

Hamburg is a participant in the EU projects "Urban Water Cycle" (www.urbanwatercycle.org) and "Water Sensitive Urban Design - SWITCH" (www.switchurbanwater.eu).

Hamburg is lead partner in an "Strategic Alliance for integrated Water management Actions" (SAWA - INTERREG), for innovative solutions in flood risk management by adaptive flood protection measures.

The "Gesunde Gewässer für Hamburg" (Healthy bodies of water for Hamburg) project, run by environmental institutions in Hamburg, supports renaturalisation measures for bodies of water and far-sighted urban development. Public relations activities and the "Gewässernachbarschaftstage" action alliance, funded by a number of charitable institutions in Hamburg, are aimed at city residents to promote participation in voluntary activities that improve the structure of Hamburg's bodies of water.

The designation of five water protection areas safeguards such drinking water supply areas, where natural protection of the groundwater reserves is insufficient. The water protection areas cover a total area of 88 km² (11.6% of Hamburg's total area).

4. Environmental education / Sustainable technology education

Hamburg has a special municipal department for the field of extracurricular environmental education. In support of the "United Nations Decade of Education for Sustainable Development (2005-2014, DESD)", Hamburg has initiated the "Hamburg learns sustainability" project. Together with the Chamber of Skilled Crafts and Small Businesses, the City is running a national model project for the integration of the sustainability concept in vocational training. In recognition of these activities and as the first city in Germany, Hamburg has been awarded the title "City of the UN Decade".

Hamburg supports 30 environmental education institutions operated by clubs and associations, e.g. several nature conservation information centres in nature reserves or the visitor centre in the "Nationalpark Hamburgisches Wattenmeer" (Hamburg Wadden Sea National Park). The "Hamburg Environmental Centre Karlshöhe" is a particularly important project: This former state farm offers numerous options for education and hands-on experience relating to nature conservation, environment and climate protection in its approximately 9 ha of grounds. These include diverse near-natural biotopes, environmental technology

institutions and a solar garden. The centre is managed by the "Hamburg Climate Protection Trust" which has received over 5 million euros from the Hamburg Senate for the conversion of a stable block into a modern exhibition and training centre, in addition to annual funding for its operation.

The "Science Centre (NWZ)" and the "Centre for School Biology and Environmental Education (ZSU)" offer work experience programmes on energy- and climate-related topics and lend out subject-related teaching materials. To date, twelve schools have successfully participated in the "Transfer-21 sustainability audit". A further 25 schools have been certified as "Eco Schools" by the "Foundation for Environmental Education (FEE)".

With funding from the "Federal Institute for Vocational Education and Training (BIBB)" and the Hamburg Senate, the national pilot project "Energy efficiency in building management as an example for technical training for sustainability" will develop modules for the further training of vocational instructors by 2009 and formulate proposals for the integration of the sustainability topic in curricula and examination regulations. The numerous profession-specific activities include e.g. a "Climate protection advice for estate agents" qualification module as well as the development of guidelines on sustainable, climate-friendly building for builders and architects.

The focus of the tasks available to participants in the "Voluntary Ecological Year" (FÖJ) in Hamburg lies in the fields of nature and environment protection: education work with children and adolescents, development of teaching materials, planting programmes, mobility education and public relations activities. Within the scope of Hamburg's "Climate Protection Programme", the FÖJ has been expanded to include the topic of climate protection.

5. Environmental prize for logistics

In 2008, Hamburg will be awarding the "Hanse Globe" for the second time. Hamburg's prize for sustainable logistics rewards concepts which are environment-friendly and live up to the logistics industry's social responsibility: solar roofs, telematic systems to improve traffic flows, and concepts which aim to achieve intelligent bundling of traffic flows.

12. Programme for dissemination of experiences and best practises

The European Green Capital will act as a role model to inspire other cities and will therefore have to disseminate and promote its best practices and experiences in all other European cities.

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

12.1. Programme goals

Hamburg is aware that cities in general, and Hamburg in particular, can make an important contribution towards achieving the climate protection targets specified by the European Council in March 2007.

During the Green Capital year Hamburg would like to demonstrate that it has successful concepts to offer, in particular in the fields of sustainable and energy-saving urban development, water, green and public open spaces, local public transport, the saving of resources, climate management and management of climate change effects, which can perform a role model function for other cities and regions. In this regard Hamburg is thinking beyond its municipal boundaries and will also include the Metropolitan Region of Hamburg in its preparations and implementation.

Active public relations measures in advance of and during the Green Year will publicise the climate protection activities taking place in the Metropolitan Region of Hamburg, on a Europe-wide as well as international scale. With a well-conceived strategy and an attractive programme of events, the Hanseatic city wishes to become a role model canvassing for more commitment on the part of key players in industry, the sciences, politics and civil society.

Hamburg will in particular:

- raise the visibility of successful concepts, projects and research results in the public and private sectors which could have a role model character for other European cities and regions,
- provide a platform for a Europe-wide dialogue on the part of experts and citizens, regarding environmental issues in the Hanseatic city as well as at European level, thus supporting the initiation of joint projects,

- include the Metropolitan Region of Hamburg in the Green Capital activities in order to demonstrate that successful solutions for an intact environment can only be achieved through cooperation of major cities with their surrounding hinterland,
- make use of international contacts to create a global awareness of the European commitment for a liveable environment,
- recognise the contributions of civil society and make its activities visible in order to keep up its motivation for the future,
- win the attention of young people for the conservation and improvement of the environment,
- gather its own proposals for further, trendsetting best-practice projects,
- support a change in public awareness so that environment and climate protection measures are no longer perceived as being restrictions but rather improvements to quality of life and as an economic opportunity.

12.2. Programme strategy

The focus of the programme will be on the five core issues of sustainable and energy-saving urban planning, water, green and public open spaces, local public transport, the saving of resources, climate management and management of climate change effects, in order to emphasise Hamburg's strengths in these fields.

The programme will be designed for specific target groups. The addressees will be experts, associations, enterprises and civil society at European and international level. Participation of Hamburg's citizens will be a particularly important cornerstone of public relations activities in this regard. The aim is to sharpen the awareness of all age groups, however especially young people, for environmental issues and to motivate them to become involved with own activities. Citizens will receive comprehensive information regarding existing activities and ways to participate and will be actively involved in the realisation of the Green Year.

Communication will be personalised with visual and emotional appeal. Hamburg's First Mayor will act as patron. All activities will be bundled under the brand "Hamburg - Green Capital 2010", combined with the slogan "Green cities ... fit for life".

Hamburg will use its European networks (e.g. ICLEI, METREX, Climate Alliance, Covenant of Mayors) as well

as its actively pursued relationships to its twin cities Shanghai, Osaka, Chicago, St. Petersburg, León, Prague, Marseilles and Dresden to disseminate the message of the Green Capital Hamburg at international level. Individuals with an international reputation, such as the globally active "Hamburg Ambassadors", can take on the function of climate ambassadors and carry Hamburg's environmental commitment to other cities, regions and countries.

In the exhibition year 2013, the City of Hamburg is organising both an International Building Exhibition - the IBA Hamburg 2013 - as well as an International Garden Show - the igs Hamburg 2013. The public relations activities for the IBA and igs will be an important cornerstone of the annual programme. Public relations activities and a dialogue with the city's residents are the key pillars of the IBA process. The IBA will be organising expert platforms, so-called IBA laboratories, on important issues and aspects of the key topics urban culture, urban development and ecology. These workshops, running over several days, will be held on the Elbe island of Wilhelmsburg. They will interlink the IBA national and international professional circles and enable an exchange of ideas and experience with leading experts.

The City will incorporate existing activities and projects in the Green Capital programme, such as European Commission's "mobility week" and events which take place annually in Hamburg, such as the Hamburg Future Weeks, Cruise Days, China Time or European Week. Over and above this, Hamburg will offer a participation platform for the numerous individual events put on by various groups in the Hanseatic city.

Phased programme management will ensure that the key topics are dealt with comprehensively and considered from various perspectives. An agency will be set up to plan and implement the Green Capital programme as well as to ensure the interlinking of and communication between all parties involved.

12.3. Programme of events

Hamburg will organise a programme which is based upon the cornerstones described below. The existing ideas relating to these cornerstones can be described in more detail in a second phase of the bid to become European Green Capital.

12.3.1. Official inaugural ceremony with Hamburg Environmental Days

The starting signal will be an official inaugural ceremony in early 2010, which will be supplemented by the "European Environmental Days in Hamburg" with various technical focuses and best practice examples. Target groups are the regional and supraregional opinion leaders in the fields of environment, business, politics, education, science and culture as well as civil society.

Ideas:

- Symposium with European experts
- Dialogue with children and adolescents from Europe
- Open day for best practice ideas
- Pop-Event organised by Frank Otto focussing on climate change and environment

12.3.2. Conferences / Workshops

Hamburg will organise at least one further, larger conference and four workshops for experts, aimed at European and international professional circles and providing experts with an opportunity to exchange ideas and experiences.

Ideas:

- ICLEI conference
- Annual conference of the Covenant of Mayors
- IBA/igs conference, presentation of the guiding issues and the current status of the projects, planning and building (interim statement - 2010)
- Climate change effects and extreme weather conference (Max Planck Institute for Meteorology, GKSS research centre)
- Climate and logistics (Hamburger Logistikinitiative e.V.)
- Future workshop: development of new ideas and solutions on the topic "Green city of the future - visions and concepts for post-fossil urban development" (HafenCity University)
- EUCO2 80/50 conference (Hamburg is Lead Partner of the INTERREG project)
- Interdisciplinary workshop with environmental experts, sociologists, philosophers and urban planners on the topic "Urban society - where are we developing"
- Congress on environmental technologies: exchange of experience on the topics cold, mobility, energy, building technology (Hamburg University of Technology)

TUHH, Chamber of Skilled Crafts and Small Businesses and municipal enterprises)

- Presentation of Hamburg's sustainability strategy

12.3.3. Events and network events

Hamburg will include various events and network events in its programme as Green Capital.

Ideas:

- Organisation of the "EU Sustainable Energy Week"
- Participation in the EU Commission's "mobility week" in September 2010: Hamburg presents itself as a mostly car-free city and makes more use of other methods of transport and traffic routes, such as waterways
- Animation of all stakeholders from industry, science and research as well as from civil society and associations to run their own events under the umbrella of the "Green Capital". The partners would be provided with guidelines covering the options for taking part and the usage of the communication template.
- Information events at the City's representation in Berlin and at the Hanse-Office in Brussels

12.3.4. Exhibitions

Hamburg will campaign for the issues of Hamburg as Green Capital by means of exhibitions in Europe and world-wide.

Ideas:

- Touring exhibition: "Hamburg Green City - EU Green Capital 2010" (Hamburg, Brussels, Hamburg House EXPO Shanghai, etc.)
- Hybrid bus tour (diesel hybrid) around Europe, promoting the issues of Green Capital and electromobility in various cities
- Exhibition in the Hamburg House, exhibit at the 2010 EXPO in Shanghai
- Exhibition "The world's 20 best climate ideas"

12.3.5. Visitor programme

Over the course of one year Hamburg will provide an exciting visitor programme for Hamburg locals and tourists visiting our city.

Ideas:

- Walking and/or cycling tours led by students and NGO representatives on various topics, e.g.: innovative technical solutions, green urban development, nature conservation areas in Hamburg and its environs, Hamburg's Landscape Architecture - Parks and Squares for the Developing City
- Performing art in public parks and in nature; "a wall is a screen" - projection of environmental projects on building walls
- The environment as key topic during Hamburg's "Long Night of the Museums"
- Integration into the tourist industry: Green all-inclusive visitor package and tickets for events in the Green Capital
- Vote to find the most environment-friendly hotel in Hamburg
- Accompanying of and programme for delegations of experts

12.3.6. Educational work

Hamburg will closely involve schools and institutions of higher education in the Year of the Green Capital.

Ideas:

- Creative competition on the topic Green Capital in schools
- School children develop environmental projects for their own daily life
- International youth meeting on a cruise ship in Hamburg's port (adolescents as environmental ambassadors)
- The environment as core subject during Hamburg's "Long Night of the Sciences"

12.3.7. Competitions

Hamburg would like to actively involve its residents by means of competitions.

Ideas:

- Creative competition: design of a commemorative coin (Hamburg coin)
- Short film competition with public presentation and internet presentation (Hamburg Film Foundation)
- Poster competition (Hamburg University of the Visual Arts)
- International architectural competition on the topic climate-friendly building (HafenCity University, Ministry for Urban Development and the Environment)

12.3.8. Closing ceremony

A large closing event will be the highlight of the Green Capital Year as well as mark its end in a manner which attracts broad media attention and emphasises that the process will continue to be actively promoted.

Ideas:

- Closing ceremony in the City Hall with prominent Europeans
- Adoption of a "Hamburg Environmental Statement"
- An additional festival with a gala concert (Hamburg bands play for the environment) and/or a charity event to provide financial support for a climate protection project outside of Hamburg

12.4. Public relations activities

Hamburg will carry out public relations activities on a Europe-wide scale.

12.4.1. Internet-based information and dialogue platform

Based on "graphic identity", a "communications toolbox" which has already been developed, Hamburg will present a bilingual internet website (English, German) which offers information, interactivity and citizen-friendliness in connection with the Green Capital and provides links to best practice pilot projects as well as tips on environment-friendly behaviour and environmental support programmes.

12.4.2. Publications

Hamburg will design a programme booklet which not only lists the main programme of events but also provides all groups in the city with the possibility of taking part in the Green Capital programme with their own activities.

There will be an "Green Capital Hamburg" promotion flyer presenting highlights from the programme of events and a map of Hamburg showing Green Capital highlights for an alternative exploration of the city.

In 2008, Hamburg published a pocket guide "Parks and Squares for the Developing City - A Guide to Landscape Architecture" in German, English and French. This new architectural guide, on sale world-wide, presents Hamburg's current landscape planning and thus the most interesting public open spaces of the past five years as well as provides an outlook on the development of the green metropolis by the water. 60 projects, selected by an independent jury, are presented with photos, texts and location maps. The practical pocket format (7.5 x 10.4 cm) contains a large amount of information while remaining environment-friendly by minimising the amount of paper used. It also includes an integrated route plan of local public transport which makes it possible to visit all projects in an environment-friendly manner.

Another pocket guide "Hamburg: Building for the Growing City", published in 2006, is also available and includes information on architectural and urban development projects in Hamburg. This guide will be re-published in a revised and updated edition in three languages in 2009, with a main focus on climate protection. It will be on sale world-wide.

It is also planned to disseminate the issues of the Green Capital by means of scientific contributions to specialist journals, thus facilitating discussion in professional circles.

12.4.3. Branding

Hamburg will make use of the experience it has already gained in the branding of various objects.

Ideas:

- Decoration of the exterior surfaces of public transport vehicles by school children to present environmental topics

- Rental bicycles belonging to the Free and Hanseatic City of Hamburg
- HighFlyer Hamburg (captive balloon)
- Banners/Flags on public buildings and, if appropriate, on tourist information centres, the Hamburg Welcome Centre, at the airport and at railway stations
- CityLight campaign (SIA) and advertising pillars
- Exhibitions (Du & Deine Welt, MIPIM, Expo, etc.)
- Representations of the city-state of Hamburg

12.4.4. Slogan and key visual

Hamburg will use a slogan which has been expanded to relate to the city: "Green cities ... fit for life: Hamburg - Green Capital 2010".

Additional idea:

- Creation of a "key visual" to attract media attention and which could be used for publications and public relations activities; a work of art would be suitable as landmark and symbol of the Green Year and would have a high recognition value

12.4.5. Advertising

Hamburg will produce a promotional film to accompany the campaign.

Idea:

- Trailer created by pupils from the graduating class of the Hamburg Media School
- Promotional ads on commencement of the Green Capital Year in selected media

12.4.5. Media relations

Hamburg will maintain internationally focused media relations in advance of and during the Green Capital Year and employ an agency to this end.

Ideas:

- Multilingual press pack with background information on Hamburg as the Green Capital
- Regular event tips for local media
- Media cooperations / lottery / free advertising campaign for innovative Hamburg companies in the environmental field
- Invitation to a press trip to Hamburg with Green Capital programme
- International media contacts
- Editorial road show - information meetings with selected media to sensitise them to the issue: what is Green Capital, what is the objective, what are Hamburg's activities
- Expert forum for journalists - experts from the fields of business, science and politics are available to the media to answer questions relating to the Green Capital

12.5.6. Information mailing shot to:

- Embassies / Consulates
- Representations of federal states
- Chambers of Commerce

12.5.7. Merchandising

- Pins
- Stickers
- Jute bags
- Bicycle seat protectors
- Windmills for bicycles
- Euro coin or commemorative coin embossed with environmental logo
- Eco-stamps
- Use of special eco-paper
- Fabric carrier bags, lighters, pens with printed logo
- Car stickers