



**Expert Panel –  
Synopsis Technical Assessment  
Report**

**European Green Capital Award  
2015**

March 2013

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# 1 INTRODUCTION

## 7<sup>th</sup> Environmental Action Programme (EAP)

The Commission proposed a new programme, the 7<sup>th</sup> Environmental Action Programme (EAP), which sets out a strategic agenda for environmental policy-making with 9 priority objectives to be achieved by 2020. It will help to establish a common understanding of the main environmental challenges Europe faces and what needs to be done to tackle them effectively. This programme will underpin the European Green Capital Award in relation to policies for sustainable urban planning and design.

Protecting and enhancing natural capital, encouraging more resource efficiency and accelerating the transition to the low-carbon economy are key features of the programme, which also seeks to tackle new and emerging environmental risks and to help safe guard health and welfare of EU citizens. The results should help stimulate sustainable growth and create new jobs to set the European Union on a path to becoming a better and healthier place to live.

Cities play a crucial role as engines of the economy, as places of connectivity, creativity and innovation, and as centres of services for their surrounding areas. Due to their density, cities offer a huge potential for energy savings and a move towards a carbon-neutral economy.

Most cities face a common core set of environmental problems and risks, including poor air quality, high levels of noise, GHG emissions, water scarcity, contaminated sites, brownfields and waste. At the same time, EU cities are standard setters in urban sustainability and often pioneer innovative solutions to environmental challenges. An ever-growing number of European cities are putting environmental sustainability at the core of their urban development strategies.

Thus, in order to enhance the sustainability of EU cities, the 7th EAP fixes the goals that by 2020 a majority of cities in the EU are implementing policies for sustainable urban planning and design.

## European Green Capital Award

The European Green Capital Award is the result of an initiative taken by 15 European cities (Tallinn, Helsinki, Riga, Vilnius, Berlin, Warsaw, Madrid, Ljubljana, Prague, Vienna, Kiel, Kotka, Dartford, Tartu & Glasgow) and the Association of Estonian cities on 15 May 2006 in Tallinn, Estonia. Their green vision was translated into a joint Memorandum of Understanding establishing an award to recognise cities that are leading the way with environmentally friendly urban living. The initiative was launched by the European Commission in 2008.

It is important to reward cities which are making efforts to improve the urban environment and move towards healthier and sustainable living areas. Progress is its own reward, but the satisfaction involved in winning a prestigious European award spurs cities to invest in further efforts and boosts awareness within the city as well as in other cities. The award enables cities to inspire each other and share examples of good practices in situ. The winning cities to date include: Stockholm in 2010, Hamburg in 2011, Vitoria-Gastiez in 2012, currently Nantes for 2013 and Copenhagen in 2014. All are recognised for their consistent record of achieving high environmental standards and commitment to ambitious goals.

### The objectives of the European Green Capital Award are to:

- a) Reward cities that have a consistent record of achieving high environmental standards;

- b) Encourage cities to commit to ongoing and ambitious goals for further environmental improvement and sustainable development;
- c) Provide a role model to inspire other cities and promote best practice and experiences in all other European cities.

The overarching message that the award scheme aims to communicate to the local level is that Europeans have a right to live in healthy urban areas. Cities should therefore strive to improve the quality of life of their citizens and reduce their impact on the global environment. This message is brought together in the Award's slogan “**Green cities – fit for life**”.

## 1.1 ANNUAL AWARD PROCESS

The first cycle of the European Green Capital award, a biennial process, led to the inaugural award for 2010 going to Stockholm and Hamburg as the 2011 European Green Capital. The second cycle, completed in 2010, resulted in the Spanish City Vitoria-Gasteiz becoming the 2012 European Green Capital and Nantes in France becoming European Green Capital in 2013. In 2011 the approach was modified to become an annual call and found the 2014 Award Winning City, Copenhagen. This annual cycle now continues to find the 2015 Winning City. The evaluation format was also modified in 2011 in order to streamline the entire process whilst giving the Jury a more significant role in the process.

This year the Expert Panel has evaluated each of the 12 indicator areas and provided a ranking together with qualitative comments on each cities application. This ranking is derived as a result of primary expert assessment, clarification from the cities and peer review from another expert (more details on this procedure in Section 2). This information is now presented to the Jury in the form of this report together with a number of proposed shortlisted cities. The number and list of shortlisted cities chosen to proceed to the next stage will be the ultimate decision of the Jury.

The shortlisted cities are invited to present their vision, action plans and communication strategy to the Jury.

The Jury will assess the shortlisted cities based on the following evaluation criteria:

1. The city's overall commitment, vision and enthusiasm as conveyed through the presentation.
2. The city's capacity to act as a role model to inspire other cities, promote best practices and spread the EGC model further – bearing in mind city size and location.
3. The city's communication actions including:
  - Citizen communication to date in relation to the 12 environmental Indicators, effectiveness via changes in citizen behaviour, lessons learned and proposed modifications for the future.
  - The extent of the city's local partnering to gain maximum social and economic leverage.
  - Outline of the city's EGC communication strategy should they win.

Based on the proposals from the Expert Panel & information presented to the Jury, the Jury will make the final decision and select the city to be awarded the title of European Green Capital 2015. The winner will be announced at an award ceremony in Nantes, France on the **14<sup>th</sup> June 2013**.

## **1.2 AIM OF THIS REPORT**

This Technical Assessment report provides an overview of the approach to this award. It presents the technical assessment of the Expert Panel for each of the 8 applicant cities, which forms the basis for shortlisting the cities. This is presented per indicator per city for transparency of the overall process.

A Supplementary Report presents examples of good practice across all 12 indicators via examples taken directly from the Cities applications. This report also serves to benchmark each of the applicant cities within indicator. Ideally both of these reports should be read in tandem.

Both of these reports are compiled and edited by RPS Group, Ireland, acting as Secretariat for the European Green Capital Award.

## 2 TECHNICAL ASSESSMENT PROCEDURE

### 2.1 APPLICANT CITIES FOR 2015 AWARD

Eight cities applied for the 2015 Award. A map and list, in alphabetical order, of these applicant cities are presented below.

Of the 8 cities to be evaluated 7 are signatories of the Covenant of Mayors and 7 European Countries are represented. The smallest city by population is Kutahya in Turkey with a population of 235,000, whereas Brussels in Belgium has a population of 1,048,491.

**Table 1: Details of applicant Cities (presented in alphabetical order)**

	City	Country	Population	Covenant of Mayors signatory
1	Bristol	UK	441,300	Yes
2	Brussels	Belgium	1,048,491	Yes
3	Bydgoszcz	Poland	363,020	Yes
4	Dublin	Ireland	506,211	Yes
5	Glasgow	UK	612,000	Yes
6	Kaunas	Lithuania	353,800	Yes
7	Kutahya	Turkey	235,000	No
8	Ljubljana	Slovenia	267,760	Yes



## 2.2 TWELVE INDICATOR AREAS

The selection of the European Green Capital 2015 is based on the following 12 environmental indicator areas:

1. Local contribution to global climate change
2. Local transport
3. Green urban areas incorporating sustainable land use
4. Nature and biodiversity
5. Quality of local ambient air
6. Quality of the acoustic environment\*
7. Waste production and management
8. Water consumption
9. Waste water treatment
10. Eco-innovation and sustainable employment
11. Environmental management of the local authority
12. Energy performance

\* Previously known as **Noise pollution**.

For this cycle we have retained the 12 indicators areas as they were for the previous cycle but have incorporated some minor changes to the text content. Please see **Section 2.3** for updates.

## 2.3 APPLICATION FORM

The format of the Application Form has been modified to ask cities to provide the following information for each of the 12 indicator areas. A copy of the 2015 Application Form is attached in **Appendix A**.

In the previous cycle cities were asked to provide the following information for 12 indicator areas based on the EMS principles: plan, do, check and act.

- Plan: Present details of the original and/or most recent Action Plan, including any relevant disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area negatively.

- Do & Check: Details of those targets achieved or not, to date (within the last 5 – 10 years). Provide a review of how both situations occurred and lessons learned.
- Act: Plans to meet or revise key targets for the future and proposed approach to achieve these.

For this award cycle some modifications have been made to the indicator structure, although the EMS principles do still form the underlying basis. The 2015 Award Application Form has 4 sections per indicator, with the exception of Indicator no. 3 which has 5 sections, as follows:

- A. Describe the present situation.
- B. Describe the measures implemented over the last five to ten years.
- C. Describe the short and long term objectives for the future and proposed approach to achieve these.
- D. List how the above information can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.

For all indicator areas, information should be provided on short and long term commitments in the form of adopted measures and approved budgets. These measures must be proven by references and links where possible to published reports, plans or strategies. Further information on these references and links may be requested by the Expert Panel during the clarification phase. The 'budgets' refer to approved budgets to be used for the implementation of these reports, plans or strategies.

Each section must be completed within the word limit given and can include graphs, diagrams and photos within reason.

## **2.4 EXPERT PANEL**

The Expert Panel consists of experts who bring internationally recognised expertise within each of the areas covered by the indicators to the process. Profiles for each of the experts can be found in **Appendix B**

### **1. Local contribution to global climate change**

Dr. Liz Mills, Independent Policy Analyst & Associate, Institute for European Environmental Policy.

### **2. Local transport**

Dr. Henrik Gudmundsson, Senior Researcher, Department of Transport, Technical University of Denmark.

### **3. Green urban areas incorporating Sustainable land use**

Ms Hedwig van Delden, Director, Research Institute for knowledge systems (RIKS), Maastricht, The Netherlands.

**4. Nature and biodiversity**

Dr. Jake Piper, Senior Research Fellow at Oxford Brookes University, Faculty of Technology, Design and Environment.

**5. Quality of local ambient air**

Dr. Steen Solvang Jensen, Senior Scientist, Department of Environmental Science, Aarhus University, Denmark.

**6. Noise pollution**

Mr. J. Luis Bento-Coelho, Professor, Instituto Superior Técnico, Lisbon, Portugal.

**7. Waste production and management**

Mr Larry O'Toole, Regional Director, Waste, Energy & Environment Division, RPS Consulting Engineers, Dublin, Ireland.

**8. Water consumption**

Mr. Shailendra Mudgal, Executive Director, BIO Intelligence Service (BIO), Paris, France.

**9. Waste water treatment**

Dr. Katharina Lenz, Project manager in the Dept. of Surface Water, Austrian Federal Environment Agency.

**10. Eco-innovation and sustainable employment**

Dr. Stefan Ulrich Speck, Project Manager environmental economics and policies, European Environment Agency (EEA), Denmark.

**11. Environmental management of the municipality**

Mr. Jan Dictus, Founder, GOJA Consulting for Environment and Sustainable Development, Austria.

**12. Energy performance**

Mr Per G Berg, Professor in Landscape planning with a special focus on Sustainable Community Development at the Swedish University of Agricultural Sciences in Uppsala.

## 2.5 TECHNICAL ASSESSMENT PROCEDURE

### 2.5.1 Primary Technical Review

The Experts were asked to assess each application based on its own merit and then benchmark all applications against each other within each indicator area. Each indicator area has three component parts: present, past and future. **Each part carries equal consideration by the expert.**

### 2.5.2 Clarifications

The Expert Panel members were given the opportunity to ask clarifications of the applicant cities on the basis that questions could only be asked on information already received i.e. no new information could be requested from the applicant cities.

### 2.5.3 Ranking Criteria

Experts use a defined ranking system. Under this ranking system a rank of 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> etc is applied to each city per indicator. Since there are 8 applications to be evaluated then each city must be ranked from 1<sup>st</sup> as the best to 8<sup>th</sup> the weakest. **Note: these are not quantitative scores but rankings.**

### 2.5.4 Peer Review

It is important to note that a peer review was carried out for the technical assessment round. All Expert Panel members assessed their respective primary indicator, and each indicator was also assessed by a second panel member (co-evaluator). This peer review exercise ensures a quality check of the assessment process. Where the two experts differ radically on a ranking, they must work together to reach a consensus. The final ranking is a combination of both reviewers assessments.

**Table 2: Indicators and corresponding Main Evaluators & Co-Evaluators**

<b>Indicator</b>	<b>Main Evaluator</b>	<b>Co-Evaluator</b>
<b>1. Local contribution to global climate change</b>	Dr. Liz Mills	Dr. Henrik Gudmundsson
<b>2. Local transport</b>	Dr. Henrik Gudmundsson	Dr. Liz Mills
<b>3. Green urban areas Incorporating Sustainable land use</b>	Ms Hedwig van Delden	Dr. Jake Piper
<b>4. Nature and biodiversity</b>	Dr. Jake Piper	Ms Hedwig van Delden
<b>5. Quality of local ambient air</b>	Dr. Steen Solvang Jensen	Prof J. Luis Bento Coelho
<b>6. Quality of the acoustic environment</b>	Prof J. Luis Bento Coelho	Dr. Steen Solvang Jensen
<b>7. Waste production and management</b>	Mr Larry O'Toole	Mr Jan Dictus
<b>8. Water consumption</b>	Mr. Shailendra Mudgal	Dr. Katharina Lenz
<b>9. Waste water treatment</b>	Dr. Katharina Lenz	Mr. Shailendra Mudgal
<b>10. Eco-innovation and sustainable employment</b>	Dr. Stefan Ulrich Speck	Mr. Per Berg
<b>11. Environmental management of the municipality</b>	Mr Jan Dictus	Mr Larry O'Toole
<b>12. Energy Performance</b>	Mr. Per Berg	Dr. Stefan Ulrich Speck

### 3 TECHNICAL ASSESSMENT RESULTS

Based on the technical assessment results, the Expert Panel has proposed to shortlist the following three cities (in alphabetical order) for the title of European Green Capital 2015:

Bristol - Brussels - Ljubljana

While these three cities are considered to be of sufficient merit to be shortlisted, it should be noted that Brussels appears to have a waste water treatment deficiency. The city currently fails to meet the requirements of the EU UWWTP Directive.

The Jury decided to add the city of Glasgow to the shortlist.

Therefore the shortlisted four cities (in alphabetical order) for the title of European Green Capital 2015 are:

Bristol - Brussels – Glasgow - Ljubljana

The Jury will invite these four cities to the next stage of the evaluation process.

The Expert Panel's detailed ranking for all indicator areas for all of the applicant cities is provided in **Appendix C**.

### 3.1.1 Bristol

Bristol, located in the South West of England, has a population of 441,300. It is England's sixth and the United Kingdom's eighth most populous city. Bristol recognises the need for strategic planning, leadership, and partnerships in all aspects of the city.

Over the last decade, Bristol has tackled the issue of sustainable land use with 98 % of business development and 94 % of new homes developed on brownfield sites. Much of this was achieved through inner city regeneration projects, creating high-density, mixed-use neighbourhoods such as Harbourside (high density apartments, shops, offices, bars, leisure facilities built around new green open spaces) and Temple Quay (a hub for national company headquarters and government agencies with excellent transport links). A number of project initiatives are in place to ensure such development continues.

Effective urban regeneration programmes require good transport links. Bristol has adopted a joint Local Transport Plan to 2026 in conjunction with four neighbouring local authorities. An initial 3 year Action Plan (2012 - 2015) includes targets to increase sustainability mobility alternatives: cycling by 76 % (by 2016), bus use by 11 % (by 2016) and rail use by 41 % (by 2019). Through good transport planning and management Bristol will also continue to improve air quality and contribute to noise reduction. The city is planning to extend a 20 mile per hour driving limit to all residential areas as recommended by the SILENCE study, 2012.

In Bristol domestic energy use has already been reduced by 16 % (2005 to 2010), and the energy efficiency of housing has improved by 25 % (2000/2001 to 2011). As a signatory to the Covenant of Mayors in 2009, the city has set ambitious targets to reduce energy use by 30 % and CO<sub>2</sub> emissions by 40 % by 2020 and 80 % by 2050 (from 2005 baseline). These targets have been incorporated in the city's Climate change and Energy Security Framework, a Sustainable Energy Action Plan updated in 2012. Although Bristol has no statutory responsibility for managing the energy mix of the city, it is working to increase renewable energy generation under this framework.

As one of only four City Councils in the UK to achieve EMAS registration, Bristol is a leader in environmental management. Under the 2009 Sustainable Procurement Strategy, Bristol led the UK South West Sustainable Procurement Network and set a metric to reduce the carbon footprint of corporate procurement by 3 % year on year.

### 3.1.2 Brussels

The City of Brussels is the largest municipality of the Brussels - Capital Region, and the capital of Belgium. With a population of 1,048,491, Brussels is a multinational city and home to a number of European institutions.

Brussels has had ambitious climate policies in place since 2004, aiming to reduce CO<sub>2</sub> emissions by 40 % per capita by 2025 (from 2005 baseline). The recently adopted (2013) Brussels Air, Climate and Energy code (COBRACE) aims to address energy, climate and air quality challenges simultaneously, defining a number of ambitious new standards for the future.

Brussels promotes eco-innovation and energy efficiency through an “Exemplary Buildings” programme which began as a project worth €24 million in 2007. Over the following four years, the programme had a turnover of €463 million and has created some 1,250 jobs and led to an annual reduction in CO<sub>2</sub> of 13,000 tons (2007 to 2009). As a result of the programme, all newly built public buildings must satisfy passive standards, and any major renovation works must meet the very low energy standard. As of 2015, the passive standard will prevail for all new buildings and any major renovations works will have to satisfy the very low energy standards.

Brussels has made good progress on reducing waste generation per capita (20 % reduction since 2000) and recycling levels have been improved by the compulsory sorting of household waste which was introduced in 2010 (16 % in 2000 to 31 % in 2010). A recycling target of 50 % is set for 2020. The city also had extended producer responsibility to cover oils and greases, tyres, medication and photographic waste, in addition to streams prescribed under EU Legislation.

To date Brussels has two consecutive urban transport plans (IRIS 1 and 2), the latest from 2010 which seeks to give priority to public transport, walking and cycling. There is an overall target to reduce car traffic by 20% from 2001 to 2018. A number of measures under this plan will also serve to improve the city air quality, including a rate charged per km for heavy vehicles in 2016.

### 3.1.3 Glasgow

Glasgow, on the river Clyde, is Scotland's largest city (population of 612,000). It uses its past “disadvantages” to create opportunities for the future.

Glasgow is emerging from a period of post-industrial decline, and is going to great lengths to restore the ecosystems that underpin city life. Glasgow is committed to protecting and enhancing its natural environment, with a Nature Conservation Policy Statement dating back to 1989. Some 22 % of the city's 18,000 ha are currently designated for nature protection and biodiversity.

Extreme flooding in 2002 (a month's rain fell in 10 hours) highlighted major problems with the drainage system, which was over 100 years old. This resulted in the Metropolitan Glasgow Strategic Drainage Partnership, an innovative multi-agency approach that takes a holistic approach to managing surface water, reducing flood risk and unlocking development potential, while also improving water quality.

Glasgow's green belt is protected under a Strategic Development Plan (SDP) drawn up with the region's eight local authorities. One of the main principles has been to guide urban expansion to sustainable locations. Major initiatives include the Stalled Spaces project, which promotes the temporary greening of sites where development has stalled due to the economic recession (15 ha to date), and long-term projects such as the Glasgow and Clyde Valley Green Network Partnership, which will promote the quantity, quality and distribution of the city's open spaces. This Integrated Green Infrastructure approach enhances biodiversity, creates opportunities for recreation and tourism, and develops local communities (4,300 new homes by 2025).

Launched in 2010, a “Sustainable Glasgow” initiative pairs the City Council with private and not-for-profit partners with a view to reducing carbon emissions by 30 % by 2020 and building a more sustainable future for Glaswegians. Green energy initiatives driven by Sustainable Glasgow should bring £1.5 billion (€1.75 billion) of new investment into the city during this decade.

In 2011, to develop sustainable employment, the city created a Business Portal that now includes 18,146 companies. The Portal aims to ensure the people of Glasgow are the major beneficiaries of investment. To be eligible for registration, a company must draw 10 % of its workforce from school leavers or the long-term unemployed. By April 2012, 255 jobs had gone to long-term unemployed. The portal has now facilitated the award of contracts worth £271 million (€317 million).

### 3.1.4 Ljubljana

The Slovenian capital Ljubljana is located in the centre of the country and has a population of 267,760. It is the cultural, educational, economic, political and administrative centre of Slovenia, independent since 1991.

Ljubljana demonstrates its commitment to good water management with household consumption at 125.76 l/day/capita (2011) which is very good in terms of the European average. The city has a long-term reduction target of 34 %. Water losses were reduced by 57 % between 1994 and 2004, and the city aims to reduce this figure to 5 % by 2050. Achieving these aims would make Ljubljana a very water efficient city.

The vast majority of the population is connected to the public sewerage system, while sparsely populated areas use small municipal treatment plants and septic tanks, with the sludge processed at a plant in Ljubljana.

Ljubljana has a strong focus on energy management, with the emphasis on renewable energy. By connecting buildings to district heating systems via combined heat and power, CO<sub>2</sub> emissions have been reduced by 420,812 tonnes since 1990. A Sustainable Energy Action Plan (2011 to 2020) aims to reduce CO<sub>2</sub> by 30 %, which exceeds the Covenant of Mayors commitment, with a view to achieving a 21 % Renewable Energy Share in final energy use and reducing the final energy consumption of buildings and transport by 16 %.

A Sustainable Mobility Plan was adopted in 2012, with objectives that are clear, ambitious and well tailored to the local area. The plan sets detailed targets for increases in journeys undertaken by walking, cycling and bus and for a 20 % reduction in car journeys between 2008 and 2015. By 2020, the modal split between these three modes should be equal. The plan will be complemented by future targets under an Environmental Protection Programme (2007–2013), which aims to improve the city's air quality. Future targets include 50 % of the bus fleet to be methane-powered by 2015, 1,400 charging stations for electric vehicles, and a possible vehicle congestion charge by 2020.

Citizens of Ljubljana enjoy the Path of Memories and Comradeship, a large continuous green space (32.5 km) popular for walking, sports and cycling, which also serves to connect green spaces in the city. It is also the longest tree-lined avenue in the city, with 7,000 trees and numerous memorials, rest points and other features.

## 4 DETAILED TECHNICAL ASSESSMENT OF APPLICATIONS

Final ranking in tabular form for current applicant cities can be found in **Appendix C**

### 4.1 BRISTOL

#### 4.1.1 Local contribution to global climate change

**Main evaluator:** Dr. Liz Mills

**Co-evaluator:** Dr. Henrik Gudmundsson

**Ranking:** 2<sup>nd</sup>

**Comments:** Bristol has had a relatively early start on climate protection work; ambitious targets going beyond national requirements and use of European projects to develop the city's approach are all commendable.

Bristol presents excellent information on the quantitative indicators, as revealed by national data. Useful additional reporting on emissions from the council's own operations takes place under EMAS.

The city presents actions across a broad front, with an impressive list of measures in place. Especially worth highlighting are excellent working with industrial and commercial concerns in the Bristol Green Capital Partnership (with demonstrable emissions reductions), an on-going programme of awareness-raising and practical projects with citizens (such as Bristol Green Doors), and use of land use planning competences to promote greener standards, renewable energy installations and district heating.

In preparing its application Bristol has not used opportunities to comment on constraints to CO<sub>2</sub> reduction or to show how adaptation to the impacts of climate change is being addressed.

For the future, there is a commendably ambitious programme capitalising on what has been achieved so far. Overall costings are provided for the most part. Investment in some large scale infrastructure is foreseen, especially for transport, with reasonable security of funding, and there is provision for assessing emissions reductions. However, there is no distinction between short and long term actions.

From the evidence presented the city may be over-optimistic in its expectations of what some measures might achieve (e.g. creation of 'thousands of jobs' in the low carbon enterprise zone).

#### 4.1.2 Local Transport

**Main evaluator:** Dr. Henrik Gudmundsson

**Co-evaluator:** Dr. Liz Mills

**Ranking:** 1<sup>st</sup>

**Comments:** Bristol demonstrates, on average, good performance for the local transport indicators, although less so for coverage with local public transport services and environmental standards of bus fleets. Bristol is working in partnership with private operators to develop the system, but sees its strategic planning abilities in the public transport area as constrained by the privatization regime in UK.

A broad range of measures have been adopted over the last decade ranging from infrastructure investments to travel culture initiatives, campaigns, collaborations, and partnerships. Bristol has developed an extensive cycle infrastructure network and other measures to stimulate bicycling. It has served as a cycling demonstration city in the UK and has won national awards.

Bristol's structured planning approach, following national requirements in the UK for adopting Local Transport Plans, seems superior to that of most other applicant cities, and also appears to pay off. The accompanying monitoring of performance on specified targets allows demonstration of positive quantified results in areas such as cycling, public transport use, and limitation in car travel.

Successful production of a joint Local Transport Plan for 2011-2026 with neighbouring local authorities in the region is an innovative step. Local Transport Plan 3 is accompanied by a three year delivery plan with committed funding.

Bristol recognises the need for strategic planning, leadership, and partnerships. Given the city's record of working in partnership with the private sector, one could expect more emphasis on engagement with private operators of public transport.

#### 4.1.3 Green Urban areas Incorporating Sustainable land use

**Main evaluator:** Ms. Hedwig van Delden

**Co-evaluator:** Dr. Jake Piper

**Ranking:** 1<sup>st</sup>

**Comments:** Bristol set strong land use policies to protect and enhance green areas in the Bristol Local Plan (1997). This protection was strengthened in 2011 when Bristol adopted a new land use policy document "The Core Strategy".

Bristol has a network of multifunctional, inter-connected green spaces and recognises the value of maintaining, enhancing and planning this connectivity for wildlife, recreation, active travel and adaptation to changes in the built and natural environment. A statutory land use planning policy relating to the Strategic Green Infrastructure Network shapes land use decisions and developments.

Over the last 10 years, 98% of business development and 94% of new homes were on brownfield sites. Much of this occurred through inner city regeneration projects, creating high-density, mixed-use neighbourhoods such as Harbourside (maintained traditional boat yards and recreational uses, while new high density apartments, shops, offices, bars, leisure facilities and an enhanced museum are built around new green open spaces) and Temple Quay (a hub for national company headquarters and government agencies with excellent transport links). Also for the future there is focus on rehabilitation of brown field sites where national government and Bristol assist by providing a framework of plans and funding key infrastructure.

An extensive survey of historic and current land use to identify all potential contaminated sites is maintained as a digital map resource, assisting planners to target sites for regeneration allowing the contaminated land team to provide fast and accurate advice to developers.

Cooperation with adjoining authorities has led to a Strategic Green Infrastructure Framework, to protect and enhance green corridors and green areas, where rivers, wildlife corridors and parks cross authority boundaries.

#### 4.1.4 Nature and biodiversity

**Main evaluator:** Dr. Jake Piper

**Co-evaluator:** Ms. Hedwig van Delden

**Ranking:** 1<sup>st</sup>

**Comments:** Bristol’s application acknowledges the pressures on its semi-natural and other green areas caused by population growth, fragmentation and pollution. Bristol is less well-endowed with biodiversity sites than some applicant cities and they are not equally distributed; there are internationally valuable wetlands and parks at its boundaries and other designated sites across the city. Nevertheless, Bristol has well defined and supported ambitions for the delivery of a wildlife network with benefits for both wildlife and people.

The submission shows a very broad range of work on different habitat types and species, using diverse activities and focusing on young people and partnerships and gives strong evidence of a particularly comprehensive and well-founded approach to promoting the city’s biodiversity, including consultation, survey, planning, action, and monitoring. There has been effective work in securing funds from other organisations and taking opportunities to compete for funds for action. There has been a focus is on community action, and there has been an increase of open wildlife spaces, despite the pressures in a busy city.

A range of targets have been set e.g. all Site of Nature Conservation Interest SNCI in positive conservation condition by 2026 (currently 58%). Targets are detailed by types of space and strong information is provided on funding e.g. Bristol’s SNCI budget is mentioned, together with other sources.

There is good evidence that species monitoring has been used to influence action, e.g. bird survey leading to emphasis on scrubland, and information on the spread of invasive weed species has underpinned active management of fragile areas. There has also been continuing monitoring of education work to inform action. Details are provided of how monitoring is used – e.g. the requirement upon developers to consult with Records office, and in the analysis of gaps.

Bristol shows high ambition with regards to objectives for the future, e.g. 27% of Bristol to be part of wildlife network, efforts are being made to identify gaps. Bristol is paying attention to EU policy objectives on Biodiversity Directive 2020, etc. The variety of measures used to achieve the objectives includes campaigns, partnerships and funding initiatives such as sponsorships.

Innovative work is underway; Bristol has an interest in “nature deficit disorder” amongst young people and is using this as a route to supporting biodiversity protection work: responding with 26 natural play areas in the last 5 years. The Bioblitz activities and Pictorial Meadows and schools grounds survey are other examples. There is also active restoration work on sites which have declined. Bristol appears to be very actively seeking to cover all feasible habitat types via a range of activities; this work

includes objectives for wildlife in non-natural habitats e.g. cemeteries and allotments and on previously developed land.

Bristol's bid is well-presented and meets almost all requirements well (maps, statistics, outline of future plans, etc.). It emphasizes what has been achieved as part of continuing plans.

#### **4.1.5 Quality of local ambient air**

**Main evaluator:** Dr. Steen Solvang Jensen

**Co-evaluator:** Prof J. Luis Bento Coelho

**Ranking:** 1<sup>st</sup>

**Comments:** Bristol has comprehensive air quality monitoring networks and also a network of over 100 diffusion tube sites monitoring NO<sub>2</sub>. A designed area of Bristol is declared an Air Quality Management Area. Only the limit value for annual mean NO<sub>2</sub> is exceeded at most traffic monitor sites and in a smaller number of locations exceedances of the hourly objective are observed or predicted. Although not stated, the climate of the region plays a major role in the relatively low levels of air pollutants due to the prevailing wind direction from south-southwest carrying relatively clean air from the Atlantic and with relatively high wind speeds.

Bristol has implemented a comprehensive programme of measures to improve air quality through a series of plans: Bristol Air Quality Action Plan (2004), Joint Local Transport Plan 2005-11 and 2011-26, Delivery plan 2012 – 2015 for Medium-term transport improvement plans. The plans aim to reduce traffic pollution by strategic management of the road network and encouraging residents and commuters to shift to more sustainable travel modes. A long list of measures is provided.

The City provides information about air quality in various ways: real time on the web, air quality data for stakeholders to develop applications, and engages the public in the Air Quality Plan, and awareness through photography competition.

Bristol has further plans to manage transportation to improve air quality. These are set out in the Joint Local Transport Plan 2011-2026. A 3 year Action Plan (2012-15) is being implemented aiming to increase: Cycling by 42%, Bus use by 15% and Rail use by 15%.

The future plans are supported by a City Centre Strategy to reduce traffic in the city centre and to reduce vehicle speed therefore rebalancing the space in favour of pedestrians and cyclists. Plans are underway for residents parking zones around the city centre to discourage commuting by car. This is also combined with an enlarged and more attractive public transport system; Citywide transport initiatives include park and ride, 20 mph zones etc. and promotion of less polluting technologies, fuels, and practices e.g. electric delivery service, Retrofitting 60 buses to Euro V standards, and hydrogen Ferry.

#### **4.1.6 Quality of acoustic environment**

**Main evaluator:** Prof J. Luis Bento Coelho

**Co-evaluator:** Dr. Steen Solvang Jensen

**Ranking:** 1<sup>st</sup>

**Comments:** Bristol recognises the quality of the acoustic environment as a key factor in ensuring a high quality of life for the citizens. The City actively engages with citizens on noise issues, recognizing the importance of their perception of noise, which is deemed very good practice.

Despite the fact that urban noise action plans are drawn at national level in the UK (by DEFRA), Bristol reports actively managing noise for over 10 years by land use planning, proactive pollution control, transport planning and management, and promoting improved soundscape areas (such as quiet areas). A number of potential quiet areas have been identified and recommended to the council for official designation. The noise management strategy is reportedly part of an integrated approach that improves many aspects of quality of life by directly involving the community.

Actions mentioned include education and enforcement which are crucial for the success of noise abatement and sound improvement measures. A figure of £500,000 is assigned to annual operational management of noise.

#### 4.1.7 Waste production and management

**Main evaluator:** Mr. Larry O'Toole

**Co-evaluator:** Mr. Jan Dictus

**Ranking:** 2<sup>nd</sup>

**Comments:** Bristol has a 'Core Strategy' and 'Headline Waste Strategy' in place which ties into the West of England Joint Waste Strategy. Very good progress has been made in recent years on recycling and also reduction of waste to landfill particularly with the commissioning of an MBT plant in 2011 which has further reduced the amount of residual and biodegradable waste going to landfill although there is limited data on commercial waste as Bristol does not operate a commercial waste service. A thermal plant is currently under construction which will further progress recovery rates and diversion from landfill.

The City has rolled out extensive separate collection systems with a wide range of materials accepted and full coverage to all residents including a separate food waste collection. All recyclables are processed in UK therefore promoting sustainability and encouraging participation by public through feedback. Future plans set clear and concise targets up to 2017/18 and are being monitored actively.

There is a strong community involvement focusing on waste reduction and recycling of various waste streams including WEEE, bikes, furniture etc.

Bristol are keen to share experiences and have been working in partnership with other municipalities through a Waste Partnership. Overall a very strong performance with significant progress continuing to be made.

#### 4.1.8 Water consumption

**Main evaluator:** Mr. Shailendra Mudgal

**Co-evaluator:** Dr. Katharina Lenz

**Ranking:** 1<sup>st</sup>

**Comments:** Bristol shows a constant improvement in terms of per capita consumption, (smart)-metering, leakage control, etc.

In addition, this indicator area makes links with other environmental dimensions such as biodiversity. Bristol has assessed the reduction in energy demand and CO<sub>2</sub> footprint of Bristol water, also showing improvement and takes into consideration the water-energy nexus, which is an important issue.

The city has considered resilience to climate change for future actions which is very important as climate change is an important challenge for water management in the long-term. Also, Bristol shows many initiatives about awareness raising with innovative approaches, such as water efficiency kits and converting waste bins into water butts.

A weaker point of the application is the lack of clarity around the fact that less water is put into the system, this is noted to be responsible for the reduction in energy demand and carbon footprint of Bristol water.

#### 4.1.9 Waste water treatment

**Main evaluator:** Dr. Katharina Lenz

**Co-evaluator:** Shailendra Mudgal

**Ranking:** 1<sup>st</sup>

**Comments:** An impressive 100% of the population of Bristol are connected to mains sewerage, which carries sewage to Bristol UWWTP

UWWTP Bristol provides secondary treatment and discharges waste water into the Severn Estuary, which is not classified as sensitive area according to the Urban Waste Water Treatment Directive (91/271/EEC, UWWTD). Therefore, nitrogen and/ or phosphorus removal is not required for UWWTP Bristol. Consequently, the UWWTP meets the treatment requirements of the UWWTD.

During the last ten years pollution incidents from waste water infrastructure have fallen steadily as a result of capacity investment and improved monitoring and maintenance. In addition, the management of the sewage treatment has been optimized to maintain UWWTD compliance. Bristol UWWTP is one of the most energy efficient UWWTPs in Europe and is self-sufficient for its electricity use.

Future investment is largely triggered by EU water regulation. Upcoming objectives focus on improvements and maintenance of waste water collecting systems, improvements at the UWWTP Bristol in order to further increase energy efficiency further, education of the public about waste water treatment and measures as regards urban water quality. Bristol will also co-deliver the Severn River Basin Plan, to achieve good ecological status for rivers.

#### 4.1.10 Eco-innovation and sustainable employment

**Main evaluator:** Dr. Stefan Ulrich Speck

**Co-evaluator:** Mr. Per Berg

**Ranking:** 1<sup>st</sup>

**Comments:** Bristol has developed strong partnerships with a whole range of stakeholders encompassing surrounding municipalities, universities, businesses and communities. The strategy is supported by awareness raising campaigns involving all stakeholders.

The flying factory construction system is an easily exportable model to build super-insulated, high-performance, low energy 'passive' building using renewable, locally sourced and carbon sequestering materials. It is a very good example of eco-innovation that could be a leading example in the field.

Bristol implemented a Sustainable Procurement Strategy which includes auditing the activities and mapping Carbon Dioxide emissions. Bristol trains staff under this strategy in effective procurement processes considering environmental and social issues, integrating EU procurement guidance into its own activities and promoting green procurement through conferences and a regional best practice network.

Bristol publishes an annual sustainability report as well as green accounts where it measures progress made against EU goals. Key city institutions are also publishing reports focusing on their environmental performance.

The city has less than 1% of CO<sub>2</sub> neutral fleet and some points for charging electric vehicles. However substantial investments have been made to improve this current situation.

Bristol application is overall very good, very well structured with clear intentions, programmes and ideas including approaches how to secure the funding of them

#### 4.1.11 Environmental management of the local authority

**Main evaluator:** Mr. Jan Dictus

**Co-evaluator:** Mr. Larry O'Toole

**Ranking:** 2<sup>nd</sup>

**Comments:** Environmental management is well embedded in the management structure of Bristol City. In 2002 Bristol commenced implementation and currently have a 4 person staff working on it. Almost all council departments have EMAS registration and all have a designated "Environmental Champion" to ensure continual improvements. The activities are based on a base line study and improvements are monitored and reported regularly to the politicians.

The environmental management of Bristol includes activities in the field of energy, travel, waste water, food, etc. and shows in all areas measurable targets and results.

Green Public Procurement is also a national policy in the UK, but Bristol is leading in implementing and further disseminating the activities. Bristol is starting a participation in a new URBACT project in relation to the GPP of food.

Specialist internal environmental advisors provide advice on tenders and next to the environmental performance of various products, also the performance of the suppliers is assessed. Bristol will assess the carbon footprint of future contracts and contractors are required to report their environmental performance. Environmental assessment is being used for major council decisions, corporate projects, procurement and commissioning. Also social impacts are being assessed.

#### 4.1.12 Energy performance

**Main evaluator:** Mr. Per Berg

**Co-evaluator:** Dr. Stefan Ulrich Speck

**Ranking:** 1<sup>st</sup>

**Comments:** Bristol launched an energy system transformation program which is more ambitious than any other in the UK, which makes it a genuine role model for the energy transition in Britain. Over the past 6 - 10 years Bristol has demonstrated an ambition to reduce energy and to introduce renewable energy.

The energy efficiency program in Bristol 2005 - 2010 has resulted in a modest but significant decrease in energy use in the transport sector of 11% and an impressive 21% reduction in the domestic and 26% reduction in the industry and commercial business sector. Given the target was an overall 10% saving the actual achievements are truly inspiring. Also municipal buildings in Bristol are the most efficient in UK cities (28%).

The electricity supply from the National Grid (2010) is mainly coal (32%), natural gas (44%), nuclear (17%) and 6% renewable. The total renewable energy in Bristol is at the moment only 1.5% but the growth rate is high. Almost half the energy for electricity comes from natural gas which is the cleanest of the fossil energy sources.

There is a rapid growth in renewable energy and the diversity of sources is promising (onshore wind, solar PV, waste biogas, sewage biogas, solar thermal). The number of renewable energy projects are growing exponentially over the last 6 years and has now reached 24 MWe installed capacity (2012) which has the capacity to produce in the range of 0.14 MWth or 2% of all energy required. This is a very fastest growth rate in a short space of time.

There is an ambitious energy savings program for the future 25% by 2020. Advanced land use policies for the introduction of renewable energy is also underway. The development of energy projects from current to consented to potential shows an exponential growth which together with regionally imported energy (off-shore wind, bioenergy and other renewable sources) may very well make it possible to meet energy targets beyond 2020.

## 4.2 BRUSSELS

### 4.2.1 Local contribution to global climate change

**Main evaluator:** Dr. Liz Mills

**Co-evaluator:** Dr. Henrik Gudmundsson

**Ranking:** 1<sup>st</sup>

**Comments:** An early participant in the Covenant of Mayors on Energy, Brussels has won an award for the quality of its emissions reporting. There is a robust baseline emissions inventory with a good sectoral breakdown, enabling the city effectively to focus its climate protection efforts. Emissions reductions so far achieved are relatively modest, but impressive given the constraints described.

With regard to efforts over the past 5-10 years, the package of measures for the building sector - a mix of regulatory, financial and awareness-raising tools - has been a particular success, winning a 2012 European Energy Award.

Effective use is made of the city's competences as a Region, especially in work with the public transport company, now obliged to use electricity solely generated from renewable sources. Although most electricity consumed in Brussels is imported, some 30% comes from renewable sources or 'good quality cogeneration'. The city finances renewable energy projects outside its own territory as a means of greening the city's electricity supplies.

Despite its participation in European and international networks, however, Brussels does not mention some climate protection actions often found in other cities, such as broad partnership working with local industries.

Integration of air, climate and energy policies via the new Brussels Air, Climate and Energy Code (COBRACE) is to be commended, as is the new Regional Plan for a sustainable city which confirms a strong commitment to integrated management.

For the future, the application does not distinguish short and long term objectives and actions; measures relate simply to the overall 2020 target for emissions reduction. Information on approved budgets is not presented. However, the ambitious programme of transport measures (including both infrastructure investment and local regulation) is financed and already well in hand.

A plan for adaptation to the impacts of climate change is foreseen for 2013.

### 4.2.2 Local Transport

**Main evaluator:** Dr. Henrik Gudmundsson

**Co-evaluator:** Dr. Liz Mills

**Ranking:** 2<sup>nd</sup>

**Comments:** Despite the fact that Brussels experiences strong traffic pressures arising from the city's functions as regional, national and European capital, and the city has to live with an historic narrow street layout, it manages to perform well in several local transport indicators, especially for dense public transport coverage, and efforts to achieve a cleaner urban transport fleet.

Dedicated bicycle infrastructure along most urban streets is difficult to fit into the Brussels urban design, resulting in a modest numerical performance on this indicator. However the city has adopted a comprehensive approach to bicycle promotion, including creation of 1000+ km of bike paths with regional routes to feed the city centre, which has supported a massive increase in actual cycling activity since 2000. Efforts to promote walking are less well described.

The public transport system is among the most dense and diverse in Europe, demonstrating, for example, successful integration of the historic tram system into the modernized public transport network. The network has managed to attract more travellers, even though, for example, ticketing systems have not been fully integrated, which is a target in the coming years.

A broad range of measures to improve the difficult transport situation has been introduced over the last several years, including infrastructure investments, adjustment of traffic signals to give priority to public transport, mobility management/company travel plans, support to car sharing systems, concentration of office development near rail stations, and initiatives to limit parking supply in some areas. However a comprehensive monitoring system to document actual effects of programmes is not yet in place.

Two consecutive urban transport plans (IRIS 1 and 2), the latest from 2010, seek to give priority to public transport, walking and cycling. There is an overall target to reduce car traffic by 20% from 2001-2018. In addition specific strategies are formulated for several other important areas, such as freight transport, parking, and road safety. Efforts to further limit excessive demand for car use are also planned, although these are not described in much detail.

### 4.2.3 Green Urban areas Incorporating Sustainable land use

**Main evaluator:** Ms. Hedwig van Delden

**Co-evaluator:** Dr. Jake Piper

**Ranking:** 3<sup>rd</sup>

**Comments:** 38% of the Sonian Forest, which extends over more than 5000 ha, is located in the Brussels region; this is an exceptional green heritage that extends into the city, where it is transformed into a park (the Bois de la Cambre) and contributes to the quality of life of Brussels residents.

The outer ring of the city has large green areas, which are interconnected by the Green Walk, an ecological network and sign-posted pedestrian and cycling route which extends over 63 km.

Since 1995 strategic planning is expressed mainly in the content of the Regional Sustainable Development Plan, which sets out major strategic and policy orientations for development of the Region. The latest version of this plan aims to orient all the regional policies towards the sustainable city and thus puts the environment at the heart of the regional development strategy by coordinating the various sectoral plans.

Since 1993, Brussels has chosen to renovate, make denser and strengthen its neighbourhoods through approaches targeted in time and space: Sustainable Neighbourhood contracts. An integrated

approach to combat poverty, reinforce social cohesion and ensure ecological transition of the existing neighbourhoods, which follows a bottom-up strategy by stressing local participants through participatory processes, co-decision on the programme and follow-up of the process by the residents. These programmes represent €60 million of investment annually.

The Brussels Region is creating new green areas in the neighbourhoods that are historically the most deficient. Examples of these are the creation of the largest urban park in Brussels since the 19<sup>th</sup> century on the former railway site of Tour & Taxis and along the canal, and the creation of Senne Park in a cleaned-up former bed of the Senne in the middle of a socioeconomically disadvantaged neighbourhood with few green areas.

#### 4.2.4 Nature and biodiversity

**Main evaluator:** Dr. Jake Piper

**Co-evaluator:** Ms. Hedwig van Delden

**Ranking:** 5<sup>th</sup>

**Comments:** The Brussels submission highlights the diverse biodiversity of the city and the abundance of green space, notably the Sonian forest. In particular, three Natura 2000 sites account for 14% of the territory of the city. The return of some species to the city's protected spaces is noted. The current status of Brussels' biodiversity is outlined in terms of species counts, though there is less detail on habitats and sites. There are some plans to increase space for biodiversity though there is little mention of strategic links beyond the city and the Sonian forest.

Overall the submission gives us a good idea of future planning and regulation in this area (including the Nature Conservation Ordinance, 2012) but less idea of how these aims might be implemented via design for biodiversity to achieve benefits for ecosystems and species, and what resources will be available. Future actions are generally described only in the broadest terms (e.g. "foster the integration of biodiversity in all urban development policies", without an indication of what this might mean on the ground, apart from a greenness coefficient, which is not detailed).

There is some reference to a blue network (plus a map which suggests it will remain outside the denser central area) but really no information on this, or its budget, staffing, or planning process. What are the aims that it will help to meet, what habitats exist or are to be restored, which species/species groups will benefit? It would be helpful to have an indication from monitoring work on the success of aquatic mammals or amphibians within the blue network. There seems to have been good work to monitor existence of flora and fauna and there are figures for rare and protected species, but no indication of trends over time – what is most at risk?

There is some reference to education/awareness raising – principally for school-children, plus the website. There is less information on more pro-active campaigns which bring in and involve the public.

The achievement of the green and blue network quoted here is a Green Walk for pedestrians and cyclists – any measures for the protection of or design for biodiversity within this should have been mentioned. Whilst there was a sharp increase in protected area 10-12 years ago, this has been followed by little change – what is needed to re-activate this programme?

Information was provided in the clarifications about Tour et Taxis, mentioned in the application as important for biodiversity. However there seems to be only rudimentary provision for biodiversity in this development (an ecology/wildlife walk), but again there is no mention of designing for wildlife

species with regards to the choice of food plants, the provision of shelter and breeding areas, so this walk appears to be principally about green spaces for recreation.

#### 4.2.5 Quality of local ambient air

**Main evaluator:** Dr. Steen Solvang Jensen

**Co-evaluator:** Prof J. Luis Bento Coelho

**Ranking:** 2<sup>nd</sup>

**Comments:** The limit value for annual mean of NO<sub>2</sub> is exceeded at several monitor stations but no exceedances of the hourly NO<sub>2</sub> objective were observed. Limit values for daily PM<sub>10</sub> were exceeded at half of stations. The long-range component (regional) to NO<sub>2</sub> is about 15%, to PM<sub>10</sub> about 40% and to PM<sub>2.5</sub> about 35%. The regional and trans-regional contribution to NO<sub>2</sub> is about 40%, to PM<sub>10</sub> about 65% and to PM<sub>2.5</sub> about 60%. Brussels has a high share of diesel vehicles (80%) contributing to NO<sub>x</sub> and PM emissions. Brussels has a relatively high contribution from regional and trans-regional air pollution especially for NO<sub>2</sub>.

Brussels has an integrated Air-Climate Plan comprising 81 measures within transport, building and waste/incineration and supported by a number of action plans. Within transport the plan focuses on technical improvements of the vehicle fleet and policies to reduce volume of motorised traffic. The objective is to reduce traffic load by 20% in 2018 in relation to 2001. Between 2004 and 2010 energy consumption has decreased 18% and there has also been a general decline in air pollution according to air quality monitoring. However, the effect of the plan to air emissions is not quantified.

Concerning information to the public, Brussels provides an air pollution index that is communicated various medias. An emergency plan in the event of pollution peaks has been implemented that allows different actions depending on different thresholds of air pollution.

A new Regional Sustainable Development Plan aims to structure all regional policies towards a sustainable city. Furthermore, a new Air-Climate-Energy Integrated Plan will be adopted in 2013 that aims to simultaneously address energy, climate and air quality. Policies towards energy reduction are listed but are likely to have minor impacts on air quality.

Objectives that are likely to improve air quality include the objective to reduce motorised traffic by 20% in 2018 in relation to 2001 and supporting measures like road pricing on heavy-duty vehicles from 2016 and later light-duty vehicles, new environmental objectives for taxis, public transport vehicles, parking restrictions etc.

#### 4.2.6 Quality of acoustic environment

**Main evaluator:** Prof J. Luis Bento Coelho

**Co-evaluator:** Dr. Steen Solvang Jensen

**Ranking:** 2<sup>nd</sup>

**Comments:** Brussels reports efforts to include noise in a comprehensive approach to urban management since 1997, which includes an ordinance on noise control passed in 1997, acoustic standards on neighborhood noise established in 1998 and the first urban noise map drawn in 2000.

The city has a network of 17 noise measurement stations whose results are made available to the population through their website.

Noise abatement measures were designed with well defined benefits of noise reduction, which may be monitored through the measuring network.

The city has produced a number of technical publications on noise for the general public and professionals and set up a campaign ("Young people and noise") in 2009 to raise awareness on noise and its effects.

The current (2008-2013) noise action plan comprises a number of integrated measures designed to involve different stakeholders for which €5.5 million were allocated over a period of 5 years targeting to achieve a noise reduction of 3 to 5 dB(A).

#### 4.2.7 Waste production and management

**Main evaluator:** Mr. Larry O'Toole

**Co-evaluator:** Mr. Jan Dictus

**Ranking:** 1<sup>st</sup>

**Comments:** Brussels' 4th Waste Prevention and Waste Management Plan has a focus on the waste hierarchy centering on waste prevention and sets very clear objectives for various sectors and waste streams - the Plan is also linked to a wider Regional Sustainable Development Plan.

They have in place a very extensive range of awareness, prevention and reuse programmes aimed at schools, businesses and households which are proving successful in reducing waste generation, increasing recycling and increasing participation rates.

Good progress has been made on reducing waste generation per capita and reasonably good recycling levels have been improved by the compulsory sorting of household waste which was introduced in 2010 with a higher target set going forward although not perhaps as ambitious as it could be.

They have in place an extensive collection system for recyclables through a combination of door to door collections, recycling centres and bring banks although it would be good to see a stronger commitment to separate food waste collection.

Overall a very strong performance with excellent diversion from landfill, high energy recovery levels of residuals and a strong focus on waste prevention and awareness programmes.

#### 4.2.8 Water consumption

**Main evaluator:** Mr. Shailendra Mudgal

**Co-evaluator:** Dr. Katharina Lenz

**Ranking:** 4<sup>th</sup>

**Comments:** The application provides multi-annual statistics and a breakdown; however the sectoral breakdown and total are not in line. Although clarifications were provided, i.e. this difference relates to the methods used, they are not fully satisfactory.

In spite of 100% metering, it is unclear why 12% of the water consumption is unaccounted for. The explanation provided noted that the losses caused by leaks in the distribution network are estimated to 5%; and the remaining 7% represent the non-registered volumes consumed by fire and municipal services, road cleaning, watering/spraying, etc. If 100% metering is achieved, more certainty should be available.

Weaker points of the application are that the information provided regarding reducing soil sealing is interesting and may have benefits for water issues, but no links to what benefits these are expected to have, or no assessment of their benefits is provided. In particular, reducing soil sealing will have impact on groundwater aquifers but no information on their status is provided.

Future plans are not well elaborated on water consumption aspect. Stormwater flood management, though important, is not necessarily related to water consumption and again no explanation as to why this information is provided.

#### 4.2.9 Waste water treatment

**Main evaluator:** Dr. Katharina Lenz

**Co-evaluator:** Mr. Shailendra Mudgal

**Ranking:** 6<sup>th</sup>

**Comments:** 99% of the population are connected to collecting systems and UWWTPs. For the 1% remaining, the region either has work in progress or planned projects to connect them. For 2013 it is planned that 100% of the population are treated in UWWTPs.

A total of 82% of the population are connected to UWWTP Brussels North (tertiary treatment), 17% of the population are connected to UWWTP Brussels South (secondary treatment). The UWWTPs, which require more stringent treatment, discharge into the river Senne. **Therefore, not all UWWTPs in Brussels meet the treatment requirements of the UWWTD.**

In the operation phase UWWTP Brussels North generates 18% of its own electricity needs.

It was not explicitly indicated in the application which treatment level is required for the UWWTPs of Brussels, national requirements or requirements from the UWWTD. It was also not explicitly noted whether the UWWTPs comply with the UWWTD or not.

Future measures include the definition of water quality objectives to be achieved and actions on pollutants in surface water (e.g. establish more stringent treatment at UWWTP Brussels South). However, the measures are described rather general (only for two explicit measures timelines and/ or costs were provided).

#### 4.2.10 Eco-innovation and sustainable employment

**Main evaluator:** Dr. Stefan Ulrich Speck

**Co-evaluator:** Mr. Per Berg

**Ranking:** 3<sup>rd</sup>

**Comments:** The city has an Employment - Environment Alliance, a flagship policy, running from 2011 to 2014. It promotes eco-innovation and sustainable employment within the Brussels economy and includes initiatives regarding sustainable construction. It also aims to create a large number of green jobs also in the waste and water sector as well as in sustainable food.

Brussels is very active in the field of training/consultancy for eco innovation. For example, the sustainable neighbourhood project supported 15 neighbourhoods with over €1.5 million to facilitate the incorporation of sustainable development in the dynamics of neighbourhoods. Further funds are available.

Since 2007 Brussels promotes eco-innovation in the area of construction via the 'exemplary buildings' programme. A budget of € 24 million has been spent promoting passive or energy efficient buildings and thereby reducing annual emission of CO<sub>2</sub> by 13k tons. This programme led to further private funds so that a total turnover of € 463 million in 4 years was used and thereby 1250 new jobs were created.

Brussels adopted policies in the field of green public procurement ensuring that ecological and sustainable criteria are considered. The Brussels Region publishes a public report on the state of the environment every 4 years and it is foreseen that other periodical reports will be published in due course.

Brussels sustainable economy is a good platform to lead small business towards a green economy. Brussels adopted the Regional Sustainable Development Plan in 2012 structuring and encompassing different sector related policies with the aim to move the Brussels Region towards a sustainable city.

#### 4.2.11 Environmental management of the local authority

**Main evaluator:** Mr. Jan Dictus

**Co-evaluator:** Mr. Larry O'Toole

**Ranking:** 1<sup>st</sup>

**Comments:** The Brussels Region is supporting 19 individual municipalities and uses different tools to motivate them and stimulate activities. Some stimulating activities are specifically targeted towards public authorities (Sustainable Procurement office), others are used both by private companies as public institutes (Enterprise écodynamique, EMAS). Tools that have proved to be effective for public authorities are being scaled for use in private enterprises.

In order to encourage different municipalities to subscribe to a sustainable development approach, the Brussels Region government has committed to supporting the local Agenda 21s, through the "Iris 21 Agenda" programme.

The EMS activities cover many areas of the public authority, like energy in building, procurement, food, green spaces, fuel use and green the own fleet and of public transport, training of staff, sustainable events, etc. Brussels monitors the progress of the different activities. Between 2009 and 2011, the number of public procurement contracts featuring ecological criteria rose from 45 to 55%. 14 (out of 57) administrations are using the services of the central sustainable procurement office.

Brussels Region is leading by example in energy efficient building. The new administration building will be passive house level. The calls for Exemplary Buildings, and the own regulation for all public buildings, have shown that passive standard for new housing, schools and offices is well manageable at no major extra costs. The Brussels Government wants to make passive standard obligatory for all new buildings in 2015.

Brussels has an active policy, setting ambitious targets, for the promotion of organic food. Both campaigns and targetted actions are included.

#### 4.2.12 Energy performance

**Main evaluator:** Mr. Per Berg

**Co-evaluator:** Dr. Stefan Ulrich Speck

**Ranking:** 3<sup>rd</sup>

**Comments:** Brussels has implemented an ambitious energy efficiency program – saving up to 18% energy over 6 years (2004 – 2010). The Co-generation capacity for electricity production will be increased six-fold to 24% of all electricity production 2025. A well established gas network has also caused an (understandable) delay in the development of a city-wide CHP district heating network.

Renewable electricity is today at 37% (renewable own or imported sources) + 10% (investments in windfarms outside the Brussels region = 47%). Even if most of the electricity is “imported”, it is now quite clear that there is limited potential of both windfarms and bioenergy production for CHP within the Brussels region. Thus it is highly justifiable to go for a “renewable import” from the coastal on-shore and off-shore wind production and from agricultural areas outside Brussels city-region.

Renewable energy and insulation demands to make energy use much more efficient, is slowly but clearly growing as there is a demand that *new buildings* should have passive standard – at the same time these buildings are eligible for substantial subsidies for installing photovoltaic (PV) or other renewable energy producing equipment. A strategy for energy retrofitting is however not clearly stated in the application, something which will be needed for a more substantial energy transformation to renewable and efficient energy situation.

Brussels have demonstrated a whole range of innovative incentives for stimulating energy efficiency solutions and new renewable energy. Looking at absolute investments the future development in the energy field is promising.

All the small initiatives, including forcing electricity suppliers to label the origin, making sure the renewable energy share is displayed for the calculation of energy in new buildings, subsidy plans for energy efficiency measures, support for local authorities, guidance and training, may very well be the beginning of an exponential development.

## 4.3 GLASGOW

### 4.3.1 Local contribution to global climate change

**Main evaluator:** Dr. Liz Mills

**Co-evaluator:** Dr. Henrik Gudmundsson

**Ranking:** 4<sup>th</sup>

**Comments:** Glasgow presents a strong strategic position, including an integrated climate change strategy for both mitigation and adaptation and supporting strategies which appear sound.

However, explanation of the baseline emissions inventory could be clearer (there have been several different exercises), several emissions reduction targets have yet to be aligned, and there seem relatively few implemented measures, with little detail on those mentioned. It is hard to work out which measures undertaken over the last 5 - 10 years have been most effective. The modest fall in emissions is largely attributed to socio-economic conditions rather than to efforts of the City Council. No local factors are suggested to explain a recent emissions upturn.

In fact there is further detail on various measures on other indicators (especially Indicator 12) so some cross referencing would have been appropriate.

Some measures which are routine in other leading green cities seem not very well advanced in Glasgow. For example, for energy retrofit of street lighting there has so far only been a pilot scheme.

On the positive side, the Sustainable Glasgow Partnership comes across as an effective mechanism for engagement of the whole city and integration of action across several key themes. Through this partnership the city looks set to improve its overall approach to energy planning. For climate change more broadly the Climate Change Partnership seems especially relevant, so more explanation of its function would have been helpful.

For the future, much effort has gone into creating a commendably ambitious shared vision of a low carbon Glasgow. Relevant measures in line with good practice are proposed, although there is not much on the rationale for selection and timing of the various actions or on approved budgets. From the evidence presented it is not certain whether the planned measures will be achieved in practice, nor what emissions reductions are likely to result.

### 4.3.2 Local Transport

**Main evaluator:** Dr. Henrik Gudmundsson

**Co-evaluator:** Dr. Liz Mills

**Ranking:** 5<sup>th</sup>

**Comments:** Glasgow demonstrates moderate present day performance on most of the local transport indicators compared to other applicant cities. The city has an expanding but still limited cycling

network, while public transport coverage is good, as Glasgow has a large and diverse public transport system, including urban rail services.

A broad range of projects have been completed, particularly within cycling infrastructure contributing to a significant increase in cycling over 5 years, and public transport including Bus Quality Partnership establishing eight bus corridors with better shelters, access, information, etc. There has also been major investment in rail infrastructure. The city has won awards in the UK for its work to promote sustainable transport, and particularly in cycling.

In the area of car traffic, some restrictions have been introduced (e.g. several 20 mph zones) and some car sharing schemes are supported; although the city application as less emphasis on reducing demand for and use of cars than on promoting other modes.

Glasgow's Local Transport Strategy of 2007 includes annual targets for bicycle facility improvements, and a series of budgeted projects will be implemented. The Bus Quality Partnership includes a target for operators to supply 20% of travel with lower emission buses by 2015; also considerable improvements to the rail systems are planned, including secured funding for renewals to all 15 existing (old) subway stations.

There is a sustainable transport plan for the 2013 Commonwealth Games to be held in Glasgow, with broader benefits for the city's transport systems (e.g. bicycle facilities). All in all future plans include broad sets of sound but mostly somewhat conventional types of measures, with a focus on projects to further improve public transport and cycling, presented with a good level of detail.

### 4.3.3 Green Urban areas Incorporating Sustainable land use

**Main evaluator:** Ms. Hedwig van Delden

**Co-evaluator:** Dr. Jake Piper

**Ranking:** 2<sup>nd</sup>

**Comments:** The city has an extensive network of Victorian era green spaces and major parks, three main rivers (the Clyde, Kelvin and White Cart), a number of inland water areas (e.g. Possil Loch and Bishop Loch) and a large number of local parks and amenity spaces which are managed by the Council.

The relationship between population density, protection of existing green space and standards for the creation of new or enhanced green space is developed through City Plan policies on density and the environment. The objective of these policies has been to encourage the re-use of brownfield land, and to re-densify, while maintaining the quality and distribution of Glasgow's green areas and residential environments.

Successive strategic plans in the Glasgow and Clyde Valley (GCV) region have been developed collaboratively by the region's eight local authorities. The green belt is identified as a strategic resource in the Strategic Development Plan (SDP), and is protected by City Plan policy. One of the key principles of the strategic plan has been to guide urban expansion to locations which were sustainable in terms of environment and public transport issues.

Key initiatives to deliver short term objectives (until 2017) include the Metropolitan Glasgow Strategic Drainage Partnership (MGSDP) to address flooding and drainage issues in metropolitan Glasgow; the Stalled Spaces project which is designed to promote temporary greening of sites where development

has stalled due to the economic recession; and a Multifunctional Greenspace Project (MGP) to create, restore and enhance priority habitats and marry this up with the creation of major new water management assets.

A key initiative to deliver long term objectives (25 years) is the Glasgow and Clyde Valley Green Network Partnership which will continue to develop an understanding of the City's open space resource in terms of its quantity, quality and distribution. The longer term work and focus on resource development, Integrated Green Infrastructure and the development of the green network project Seven Lochs Wetland Park at Gartloch / Gartcosh, which has the objective to enhance biodiversity, create opportunities for recreation and tourism, and develop local communities. This project is a key part of a community growth area (CGA), which will deliver 4,300 new homes up to 2025.

#### 4.3.4 Nature and biodiversity

**Main evaluator:** Dr. Jake Piper

**Co-evaluator:** Ms. Hedwig van Delden

**Ranking:** 2<sup>nd</sup>

**Comments:** Glasgow's application points to the detrimental impact of heavy industrial development along its riversides, and of later changes in economic activities. Nevertheless city residents generally have good access to biodiversity. Over the last ten or so years there has been work to restore these damaged ecosystems and protect wildlife areas, leading to a position where 22% of the city's area is designated for nature protection and biodiversity.

Glasgow's bid sets out a commitment to a biodiversity target for public access to nature, 0.75ha of Local Nature Reserves (LNR) per 1000 people by 2013, and realistic means are in place to achieve this soon; greater equality of access is a complementary aim. A forward-looking planning measure, involving a pilot project on ecosystems approach based land use and green infrastructure planning is underway, with results expected in summer 2013.

There are interesting plans for naturally regenerating post-industrial sites and there is an emphasis on woodland within the city. Glasgow's application shows good clarity on Habitat Areas of Particular concern (HAPs) and Special Areas of Protection (SAPs) for future development. There is some evidence of monitoring process in place, providing the data needed to make progress and publicize the results of the city's efforts.

The application also demonstrates that planning for management of sites, whether park, woodland, wetland or grassland, is thought through, often involving partnerships. Successful outcomes from past work (on restored bogs, naturalized ponds, etc.) are noted.

The wider and landscape level approaches are apparent: links to Central Scotland Green networks are mentioned as is the use of a "multi-scalar" approach. Work on an integrated habitat network and other initiatives show ambition for improving biodiversity and Glasgow's active efforts on obtaining funding means that ambition may be achieved.

A good array of awareness raising, enthusiasm-boosting and training days are in progress, the calculation of work input by volunteers (work in kind) could be useful to other cities. Innovative work is being undertaken linking parks to the Commonwealth Games to be held in the city in 2014, working with commonwealth countries and achieving partnerships with schools (eco-schools) as well as the creation of new wetland sites, eco and bird-friendly schools, and establishing the links to the health of citizens.

Glasgow has provided a helpful exposition of the current situation and how it developed, with a good level of detail on the means of development of biodiversity now being used via for example an integrated habitat network and recognition of the role of waterways.

The application would have been improved with more information on resources for biodiversity work, especially staff available, as well as more discussion of monitoring work (of species and habitats, of training work) and an indication of how monitoring results are being used to frame future work.

#### 4.3.5 Quality of local ambient air

**Main evaluator:** Dr. Steen Solvang Jensen

**Co-evaluator:** Prof J. Luis Bento Coelho

**Ranking:** 4<sup>th</sup>

**Comments:** Monitoring is supplemented by the use of around 100 NO<sub>2</sub> diffusion tubes. Only the annual NO<sub>2</sub> limit value is exceeded at two street stations out of six. Scotland has much more stringent air quality objectives than the EU for Daily PM<sub>10</sub> and annual PM<sub>10</sub> and annual PM<sub>2.5</sub> which are exceeded at selected stations. The city is declared an Air Quality Management Area based on exceedances of the Scottish air quality objectives since 2004. About 40% of NO<sub>x</sub> originates from regional air pollution and about 65% for PM<sub>10</sub>.

Although not stated, the climate of the region plays a major role in the relatively low levels of air pollutants due to the prevailing wind direction is from South–Southwest carrying relatively clean air from the Atlantic and with relatively high wind speeds.

An Air Quality Plan was established in 2004 with the aim to reduce NO<sub>2</sub> and was extended in 2009. Main local source is traffic. Measures include on-road vehicle emissions texting with penalty to drivers, penalty for idling vehicles, on-road parking spaces for car club vehicles, and workplace travel plan for City Council employees, and planning guidance for development planning to take into consideration air quality assessment and mitigation. The potential reduction of measures on air pollution has been assessed.

Information to the public about air pollution is provided on the web and a service for air pollution text alerts to the public is available informing them of high monitored or predicted pollution episodes. Media campaign has been undertaken to raise awareness of the Council's vehicle emissions and idling initiatives.

In 2012 the City Council declared a city-wide Air Quality Management Area in respect of the Scottish objectives for daily and annual mean PM<sub>10</sub> and it is the intention to produce a new Air Quality Action Plan before September 2013 with the aim to identify measures to comply with the Scottish air quality objectives. A detailed assessment for NO<sub>2</sub> is planned to be completed by May 2013. Current activities include: 50% funding to support retrofit of emissions reduction systems to older buses but bus companies have been reluctant to match funding, further testing of potential Low Emission Zone through automatic number plate recognition cameras and environmental monitoring instruments in a pilot study. The City Council has to date installed 20 charging points for electrical vehicles and has adopted electric vehicles, and the city participates in a research project that aims to deliver on-line recommendations for alternative adaptive traffic management options.

### 4.3.6 Quality of acoustic environment

**Main evaluator:** Prof J. Luis Bento Coelho

**Co-evaluator:** Dr. Steen Solvang Jensen

**Ranking:** 4<sup>th</sup>

**Comments:** Although transportation noise management is reported to have started in earnest in 2006, for Environmental Noise Directive (END) purposes, the Council also reports addressing noise issues in the city, regarding for example neighbour noise, construction noise, and even transportation noise, for the past 10 years, through a wide partnership approach with public and private bodies.

Most acoustic concerns regard noise from road traffic

Following the first round of strategic noise mapping, the Council defined a number of hot spots that they designate as "Noise Management Areas" which were prioritised for noise abatement purposes. The submission fails to show clear evidence of an overall and integrated noise management strategy for the whole municipality.

Glasgow City Council reports having participated in national and local campaigns on noise and used a number of initiatives to raise public awareness of noise, including actions in schools, information on the Council's webpage, on TV and other media, and leaflets distributed in public libraries and other organizations.

A number of interesting noise actions are presented for the short and long term, mostly addressing traffic issues. However, allocated budgets are not presented raising doubts whether they are real plans or just good intentions.

### 4.3.7 Waste production and management

**Main evaluator:** Mr. Larry O'Toole

**Co-evaluator:** Mr. Jan Dictus

**Ranking:** 5<sup>th</sup>

**Comments:** A Waste Strategy has been in place since 2009 for the long-term sustainable management of waste. A reasonable recycling level has been achieved with significant progress made since 2003 particularly in light of historical challenges and constraints relating to housing stock and deprivation. Limited data is available for commercial waste.

Good progress has been made in the last 10 years with good collection and sorting systems and infrastructure put in place including the progressive rollout of kerbside collection, bring banks, bulky waste collection, Materials Recovery Facilities, development of in-vessel composting, upgrading of Waste Recycling Centres etc.

Good awareness-raising initiatives have been implemented focussing on the public and schools and these initiatives also tie in to national initiatives. There is still a significant reliance on landfill however and there is currently little pre-treatment of waste.

Strong focus on improving segregated waste collection systems and plans to collect household food waste are currently being prepared. A contract has been signed for the construction of a new residual waste treatment plant to manage residual waste and will include Materials Recovery, Anaerobic Digestion and Gasification.

Overall a good performance and it is anticipated that progress in the sustainable management of waste in Glasgow will accelerate in the near future with the implementation of the various initiatives proposed.

#### **4.3.8 Water consumption**

**Main evaluator:** Mr. Shailendra Mudgal

**Co-evaluator:** Dr. Katharina Lenz

**Ranking:** 6<sup>th</sup>

**Comments:** Multi-annual statistics are not provided and sector-wise breakdown is not available.

Although there are very high leakage losses, explanations of leakage management and investment are provided, with proactive leak management, network rehabilitation, and metering. Economic Leakage Level should be achieved for Scotland in 2012/2013. Budget is also foreseen for future actions to reduce that important issue.

Some information on awareness-raising is provided (including in the Scottish Water's water efficiency trial), but is considered insufficient in the future.

The application provides much information on R&D activities within Scottish water, which is not really the focus of this application, or it should be explained why this is relevant to the application.

#### **4.3.9 Waste water treatment**

**Main evaluator:** Dr. Katharina Lenz

**Co-evaluator:** Mr. Shailendra Mudgal

**Ranking:** 3<sup>rd</sup>

**Comments:** 100% of the population are connected to waste water collecting system and secondary treatment.

Glasgow is served by three urban waste water treatment plants (UWWTPs), Shieldhall, Dalmarnock and Dalmuir, which provide secondary treatment and which discharge the treated waste water into the River Clyde. Tertiary treatment is not required for these UWWTPs and consequently, the UWWTPs meet the treatment requirements of the UWWTD.

Incoming and discharged loads of BOD<sub>5</sub> and COD of the UWWTPs were not provided in the application, but only the discharge consent parameters and whether these parameters are met.

In the last ten years the measures to improve the UWWTPs and associated sewerage networks focused on the refurbishment of technical equipment at the UWWTPs and the sewerage network and odour mitigation projects. In addition, the Metropolitan Glasgow Strategic Drainage Partnership (MGSDP) was founded after major problems with the aged drainage system became apparent after a flooding in 2002. Main achievements include the replacement of significant lengths of aging sewers or improvements at over 60 combined sewer overflows. All measures were explicitly and comprehensively described and costs were explained.

Scottish Water has developed a Glasgow Wastewater Strategy to upgrade the system to meet the needs of the 21st century. It also supports the Scottish Government's objectives to achieve 'Good Ecological Status' or 'Good Ecological Potential' according to the Water Framework Directive for the River Clyde and its tributaries.

#### **4.3.10 Eco-innovation and sustainable employment**

**Main evaluator:** Dr. Stefan Ulrich Speck

**Co-evaluator:** Mr. Per Berg

**Ranking:** 2<sup>nd</sup>

**Comments:** Sustainable Glasgow initiative is a partnership of Glasgow city council and private and not-for-private partners. The primary aim is to reduce carbon emissions by 30% by 2020, but it also supports other schemes, such as a Green Jobs fair and investment into Glasgow's infrastructure so that the Glasgow will move towards a more sustainable future. Business Portal is a website that allows companies to register in order to tender to contracts with the city. In order to be eligible to registration the companies must meet set criteria in relation to sustainable employment.

Glasgow uses "disadvantages" to create opportunities: vacant or unlikely to be developed lands are encouraged to be used for green activities. Unemployed people are trained to access sustainable employment.

The city has a fleet of 40 electric vehicles, 25 are leased from Volkswagen, plus a large net of charging points which will be increased thanks to a £200.000 award.

The only city that gave a context to its growth, Glasgow shows that it is using eco innovation to step away from a crisis period; this may be a very good example for other cities.

Glasgow is reinventing itself to become one of the most sustainable cities in Europe, the city is very present at citizen level, and most of its initiatives are aimed to favour the local community.

#### **4.3.11 Environmental management of the local authority**

**Main evaluator:** Mr. Jan Dictus

**Co-evaluator:** Mr. Larry O'Toole

**Ranking:** 3<sup>rd</sup>

**Comments:** Environmental management in Glasgow is well embedded in all municipal organisations. Certification and auditing is well implemented.

There are several organisational arrangements within the city administration that support implementation and further development of the environmental performance of the City; Corporate Procurement Team, Fairtrade Steering Group, Community Benefits officer, etc.

Issues covered by environmental management are energy efficiency, renewable energy (100%), car fleet, facility management, procurement.

Regarding social aspects in tendering procedures, the emphasis is put on employment and local business opportunities. The council operates a Community Benefits Policy, with its own dedicated Community Benefits Officer, to safeguard the Community Benefit Policy.

Sustainable Public Procurement is one of the key themes of the Climate Change Strategy and Action Plan.

Systematic monitoring and benchmarking of the environmental performance is being prepared, but not in place yet. Although Fair Trade is well implemented in all parts of the organisation, there are no data described on savings or goals in other areas, like energy use, waste reduction, etc.

Glasgow seems to be leading in the policy regarding environmentally friendly events. Development of ISO20122 on Sustainable Event Management is strongly supported and policy is tested in big events in Glasgow.

#### **4.3.12 Energy performance**

**Main evaluator:** Mr. Per Berg

**Co-evaluator:** Dr. Stefan Ulrich Speck

**Ranking:** 4<sup>th</sup>

**Comments:** Glasgow showed a decrease in electricity use by 14.5%, while efficiency has decreased a modest 3% when measured as KWh/m<sup>2</sup>. The decrease can mainly be attributed to decreasing office space, and to a smaller extent through electricity use efficiency measures: variable speed drivers, optimisation of voltage technology, high efficiency lighting.

For natural gas the energy use as KWh/m<sup>2</sup> actually increased slightly (1%) while saving of energy has been successful through the office space reduction program, 10.4% less total gas energy use. Fewer municipal office buildings, from 19 to 5 and adaptation of offices to modern pre-requisites, “office of tomorrow” were some of the achievements.

Glasgow’s development of “low-carb technology” including ground Heat pumps which have started to be installed. District heating is developing in the “athletes’ village” with CHP and also in new development areas in South-East Glasgow. Housing companies in Glasgow have implemented good measures with PV- installations, heat pumps, cladding upgrading of facades, introducing CHP and biomass as energy source in micro-district-heating-networks between adjacent real estates.

Recently Glasgow adopted a range of measures to inspire better energy behaviour: electricity consumption meters on different floors which may increase competition between office floors, energy dashboards displaying the measurements from smart meters in schools, energy saving rewards for schools. Energy champions networks in which information of success stories can be disseminated. On-line and face-to-face training courses, at home and in offices. A newsletter for energy champions and an energy champion award has been put into practice.

Glasgow's potential for energy efficiency and renewable transformation has been estimated modestly at 9% combined heat and power (CHP) District heating with partly known sources (biomass, energy from waste) partly undefined at this stage; 2% biomass; biogas and energy from waste 6%; other renewable systems 3%; sustainable transport systems 3%; fuel switching 3%; Energy management systems 6% = totally amounting to 32%.

## 4.4 LJUBLJANA

### 4.4.1 Local contribution to global climate change

**Main evaluator:** Dr. Liz Mills

**Co-evaluator:** Dr. Henrik Gudmundsson

**Ranking:** 3<sup>rd</sup>

**Comments:** In Ljubljana, record keeping on energy and emissions is long-established, reflecting the city's well-organised approach to environmental protection. Although data were not available on all the required indicators, the city's evidence base for climate protection looks reasonable. For existing measures described, the city has some information on CO<sub>2</sub> reductions achieved. In general, however, emissions continue to be relatively high, with geographical factors providing only part of the explanation.

Ljubljana has put considerable effort into preparing strategies, target-setting and use of scenarios. Some innovative action is in progress, especially in urban design/planning, public transport, communication with citizens (such as through the TE-TOL mobile portal) and energy generation and supply using renewable sources or cleaner fuels. Creative use is made of EU funded projects. There is significant investment in infrastructure, for example for district heating. However, in describing existing measures there is not much emphasis on 'routine' actions such as energy efficiency in all building types, public lighting, waste management and water management. The application focuses more on 'eye-catching' but small scale projects.

For the future there are several relevant strategies. The basis for choosing priority action areas (use of heat in buildings and fuels in transport) looks convincing. Ambitious short and longer term objectives are in place, although timetabling of various actions is not always clear. There are few practical details of planned measures and not all have budgets. The city appears confident that it can deliver the schemes described, but the ambitious 80% emissions reduction target seems unlikely to be achieved without close partnership with local industry, not only with energy suppliers.

Ljubljana is one of the few candidate cities to present measures for both mitigation of and adaptation to climate change and is to be commended for its relatively integrated approach, informed by knowledge of good practice elsewhere.

### 4.4.2 Local Transport

**Main evaluator:** Dr. Henrik Gudmundsson

**Co-evaluator:** Dr. Liz Mills

**Ranking:** 3<sup>rd</sup>

**Comments:** Ljubljana's recent efforts to develop a sustainable transport system are challenged by the general switch to car traffic following Slovenia's transition to a market economy, and the early tendency to put more emphasis on development of roads than of other infrastructure. A major challenge of which the city is well aware is reduction in the use of private cars.

Despite this legacy Ljubljana demonstrates comparatively good and improving performance for several of the local transport indicators. Although precise data for indicators like car share for short urban trips are partly missing, Ljubljana's data on the indicators for bicycle lanes and the share of clean fuel buses are relatively similar when compared with other applicants.

Cycling has been successfully promoted through a broad spectrum of initiatives, notably including expansion of a cycle network where 25 km of lanes have been created between 2006 - 2012, a bike share system with so far 300 bikes, areas with traffic calming and safe routes to schools.

Regarding clean buses, a renewal has been initiated including, to date, 5 hybrid and 20 CNG gas driven buses in the fleet, there are plans to purchase several methane buses in 2014 - 2015. Use of alternative fuel vehicles for the city administration and public companies is promoted and monitored in impressive detail. Although freight traffic is flagged as an important issue the city has not reported more substantial measures to deal with it.

In 2012 Ljubljana adopted a Sustainable Mobility Plan. The objectives are clear and ambitious, well tailored to local circumstances and represent a logical progression from what has already been achieved. The plan sets detailed quantitative targets for increases in journeys undertaken by walking, cycling and bus and also for a reduction in car journeys (by 20%) between 2008 and 2015. By 2020 the modal split aims for 1/3 to each major mode. Several other relevant supporting plans are in place. The urban mobility targets are very ambitious and challenging; concerns may arise as to whether the city can secure the powers and financial resources to fulfil them. All in all Ljubljana impresses with regard to ambitions, plans and goals for the coming years, more so than with regard to demonstration of performance for the local transport indicators at the present time.

#### **4.4.3 Green Urban areas Incorporating Sustainable land use**

**Main evaluator:** Ms. Hedwig van Delden

**Co-evaluator:** Dr. Jake Piper

**Ranking:** 4<sup>th</sup>

**Comments:** Under the Municipal Spatial Plan, green areas represent almost three quarters of all the City's territory. The backbone of all the larger green urban areas is The Path of Memories and Comradeship, the largest continuous green space in Ljubljana (32.5 km), extremely popular for walking, sports and cycling, while also serving as a route connecting various green spaces in the city and between the green city wedges. It is also the longest avenue of trees in the city, with 7,000 trees and numerous memorials, rest points and other features.

The Municipal plan includes the following objectives Ljubljana is pursuing for green areas: arrange and preserve the five green wedges linking the city centre with the hinterland; link individual arrangements, areas and networks of green spaces into an integrated system of green areas; ensure good accessibility and even distribution of green areas for all residents; establish and arrange waterside features as a special element of the system of green areas; ensure adequate climate residential and ecological quality in the urban environment; re-establish green areas that have become blighted through past construction.

In the new millennium there has been a major increase in the number of new constructions in the city. For this reason, since 2005 Ljubljana has devoted special attention to the creation of green areas in the city centre to provide healthy and pleasant surroundings and thus a good quality of life in the city.

City development is directed mainly to regeneration and renewal of existing developed areas. Examples are the Smartinska Partnership, which is a public-private partnership formed in 2008 for the

long-term transformation of a former industrial zone, and the area of the former Rog Factory where a new urban centre is being established, with residential and commercial purposes along with cultural activities in a former factory building.

Ljubljana has carried out several projects to linking together green space and improving its green areas. Examples are the refurbishment of the banks and bridges of the River Ljubljanica, revitalising the embankments of the River Sava, and the creation of several new parks. Green areas and land use also have an important function for ecosystems and mitigating climate change, e.g. in 2010 the City of Ljubljana declared 1,400 ha in its territory as forests with special importance, being enormously valuable as a CO<sub>2</sub> sink, and in 2012 it has already adopted an independent action plan for flood protection and preventive measures.

#### 4.4.4 Nature and biodiversity

**Main evaluator:** Dr. Jake Piper

**Co-evaluator:** Ms. Hedwig van Delden

**Ranking:** 3<sup>rd</sup>

**Comments:** Ljubljana is unusually fortunate in terms of green areas as it has extensive areas of forest within the city and a very large and important (Natura 2000) biodiversity-rich, seasonally-flooded site at its southern boundary. The city is not complacent about this heritage and is active in its protection.

There is an adequate exposition of the current status of nature-related land use types and species and habitats in Ljubljana – parks, designated sites, landscape types, etc. A reasonable outline is given of the environmental context (though more on local hydrology/water bodies would have been useful). There is relatively little information provided on plans and budgets that appear secure over the medium term.

A good variety of measures are aimed at many species/categories of species, with a strong focus on information/education work. There is a good array of on-going activities for raising awareness, educating schoolchildren, informing the public, etc. However, there is not much detail on the staffing or funding of these measures, or their long-term security.

It is very good to know that the “Protection of natural green a strategic objective with binding measures”. There is a necessary sequence for activities, from planning to monitoring, and there is evidence here that some of these are indeed already being planned or carried out.

Ljubljana’s on-going tree-related work appears to be well designed and strong: there are interesting plans for study of the urban forest and its role under the EMoNFUr project. There are also important plans for purchase of “special purpose” forest with its multiple objectives (recreation, biodiversity, climate adaptation, etc.) including the arrangements for compensation of private owners where special measures are put in place – much of this is to be funded when funds are available – this may be realistic, but evidence of more financial commitment would be welcomed.

Whilst there seems to be a good deal of work in progress and some preliminary plans for the future, and there are important aims (e.g. TRPSHNP manager and plan) it’s not clear that these things are necessarily going to happen: plans are not apparently formalized, budgets are not mentioned and current levels of staffing for biodiversity not indicated. Work on invasive species is on-going.

#### 4.4.5 Quality of local ambient air

**Main evaluator:** Dr. Steen Solvang Jensen

**Co-evaluator:** Prof J. Luis Bento Coelho

**Ranking:** 3<sup>rd</sup>

**Comments:** Annual NO<sub>2</sub> was exceeded at the traffic station and the ozone target limit was exceeded. Daily PM<sub>10</sub> was exceeded at all three stations and annual PM<sub>10</sub> was exceeded at the traffic station in 2011 but has shown a downward trend since 2006. Annual PM<sub>2.5</sub> is not exceeded but the limit value is tangent. Preliminary assessments indicate that the contribution from long-rang transport to PM<sub>10</sub> is 20-25%. The largest local sources are individual furnaces and traffic.

The city is located in a basin with frequent weak winds and inversions leading to lack of ventilation and hence higher concentrations than would otherwise be the case. Heat island effects provide some circulation.

The Environmental Protection Programme 2007–2013 has goals directly linked to improvement of the air: sustainable mobility system and energy efficiency and the use of renewables. In 2009, the Operational Programme for PM<sub>10</sub> Pollution was adopted, which focused on prohibition of the use of solid fuels for individual furnaces for heating when district heating or natural gas network are available, and improving public transport, promoting green vehicles, establishing urban ecological zones (non-motorised areas, won European Urban Space Prize in 2012) etc. Measures are defined in greater detail in the Sustainable Energy Action Plan (2011–2020) from 2011, and Sustainable Mobility Plan (2012–2020) from 2012.

Information is provided to the public on the web, mobile portal and awareness campaigns have been conducted e.g. 'Breathe in Ljubljana - 40 years of air pollution measurements in our city', 'Traffic jam again' about congestion charging, and participation in the European Mobility Week.

An action plan to reduce air pollution in Ljubljana by 2015 is expected in late 2012. It will establish a computer-based pollution assessment model, the evaluation of individual sources of pollutants, and short-term air pollution forecasting. The city expects to be in compliance with the air quality limit values in 2015 based on the measures proposed but quantitative justification is not provided.

Objectives of the Sustainable Mobility Plan is to double the share of cycling and walking, half car transport, and more than double public transport from 2011 to 2020. Planned measures include e.g. expansion of the urban ecological zone, expansion of city bike system, half of city buses will be gas buses in 2015, charging stations for electric vehicles, gas filling stations for private cars, and investments in public transport in the Ljubljana Urban Region (LUR). Congestion charging is considered if mobility objectives are not achieved. Measures within energy are further expansion of district heating and gasification.

#### 4.4.6 Quality of acoustic environment

**Main evaluator:** Prof J. Luis Bento Coelho

**Co-evaluator:** Dr. Steen Solvang Jensen

**Ranking:** 3<sup>rd</sup>

**Comments:** Road traffic is reported as the only source of urban noise. However, the city has implemented, apparently with great success, an interesting permit policy for outdoor events to minimize negative effects of amplified sound on the population.

The acoustic ambient has benefited from the implementation of an "ecological zone" in the city centre area, with a noise reduction of 6 dB(A) since its creation.

The city reports an interaction with the population, valuing the opinion of the citizens, through surveys on quality of life, though it is not clear to what extent the quality of the acoustic environment is included.

Measures reported include noise abatement solutions, though mostly directed to traffic, interesting general noise awareness initiatives, and a strategy for preserving quiet zones or good acoustic environment areas in new developments.

Although the city action plan is a responsibility of the State, the city is committed to a number of actions, mostly addressed to mobility (Sustainable Mobility Plan) that will result in less noise and thus an improved acoustic environment. Budgetary information is provided for such actions.

#### 4.4.7 Waste production and management

**Main evaluator:** Mr. Larry O'Toole

**Co-evaluator:** Mr. Jan Dictus

**Ranking:** 3<sup>rd</sup>

**Comments:** An Operational Programme and Strategic Plan are both in place with the Programme based on the waste hierarchy focussing on waste reduction, reuse and recycling.

There is a strong commitment to the collection of segregated waste with the extensive roll-out of bins for the separate collection of packaging and biological waste with 94% of residents covered by an organic waste collection service and with a proposed further expansion of separate collection systems and sites.

Clear and ambitious objectives are set out which include for a long-term reduction in waste to landfill to 1%. A Mechanical-Biological Treatment (MBT) plant with separate treatment of organic waste is under construction and it is proposed to develop a Waste to Energy plant to take the output from the MBT plant although this is the responsibility of the State to progress. It is intended that heat from the WTE plant will feed into the district heating system.

There is a commitment to ongoing awareness programmes although only limited specific examples are provided.

Overall a very good performance with significant progress made in the past few years. Very clear objectives are set for the future and significant infrastructure is planned or being developed to achieve high recycling levels, high diversion of BMW from landfill and high energy recovery of residuals.

#### 4.4.8 Water consumption

**Main evaluator:** Mr. Shailendra Mudgal

**Co-evaluator:** Dr. Katharina Lenz

**Ranking:** 2<sup>nd</sup>

**Comments:** The application shows many initiatives in the field of improving water consumption issues in the city. It underlines many good awareness raising activities, in particular directed at school children.

A constant improvement is visible in terms of per capita consumption, although no statistics of total water consumption or sectoral breakdown is available, which would have been desirable.

Although the vulnerability of groundwater resources is not analysed, the application does refer to the climate change adaptation aspect, which shows maturity in the assessment of water resources. The application also shows application of water pricing instruments which is useful.

A weaker point of the application is that in the final section, the objectives are well defined but the means to achieve them are not elaborated, which would have improved the application.

#### 4.4.9 Waste water treatment

**Main evaluator:** Dr. Katharina Lenz

**Co-evaluator:** Mr. Shailendra Mudgal

**Ranking:** 2<sup>nd</sup>

**Comments:** Across the entire area of Ljubljana 87.6% of inhabitants are connected to the public sewerage system, while in the area of greatest agglomeration (compact settlement of urban character) up to 93.3% of inhabitants are connected. For the non-connected population, Ljubljana provides good information on the waste water treatment applied (in sparsely settled areas where construction of sewerage systems is not planned, small municipal treatment plants (SMTP) are installed. For existing septic tanks and SMTP all quantities of sludge are received and processed at the UWWTP Ljubljana)

Ljubljana is served by four waste water treatment plants: UWWTP Ljubljana (secondary treatment) serves 82% of inhabitants, UWWTP Brod and UWWTP Gameljne (secondary treatment) serve 3% of inhabitants and UWWTP Crnuce (tertiary treatment) serves 3% of inhabitants. The UWWTPs are compliant with the UWWTD.

Measures established in the last decade focused on the construction of secondary treatment at the UWWTP Ljubljana, the renovation of UWWTP Gameljne, which had insufficient capacity, the construction of three retention basins within the sewer network, the optimisation of electricity consumption and the completion of sewerage network in inhabited areas. These measures are clearly explained in terms of concrete figures, timelines and costs and cover all relevant aspects of waste water treatment.

From 31<sup>st</sup> December 2015, legislation in the Danube river basin district requires the removal of nitrogen and phosphorus at UWWTPs with a capacity above 10,000 p.e.. Therefore, future measures

will include the upgrade of the UWWTP Ljubljana to nutrient removal by the end of 2015. This measure, which is supported by information on cost and timelines, is tailor-made to fulfill future demands originating from the UWWTD.

Further future measures focus on the construction of a sewage connection channel in Ljubljana, which will enable the connection of several settlements to the central sewage system, and which will reduce the operating costs. Information on costs, timetable and funding is given in the application.

#### **4.4.10 Eco-innovation and sustainable employment**

**Main evaluator:** Dr. Stefan Ulrich Speck

**Co-evaluator:** Mr. Per Berg

**Ranking:** 4<sup>th</sup>

**Comments:** Ljubljana's sustainable development plan commenced in 2007 and will run until 2025 with the goal of improving the environment and the quality of life in the city. The plan has 93 infrastructure projects and has won a large number of awards to date.

The city has 30 charging stations for electric vehicles, quite a large amount considering the size of the city. By 2020, 5% of all the cars should be eco-friendly. The city aims to substitute the entire vehicle fleet with methane-driven or electric vehicles.

Ljubljana is active in increasing the ecological awareness; in particular they have an energy advice office to offer free advice on using energy more efficiently to the residents of the city.

Ljubljana has 115 public institution linked in a single network to reduce operating costs and travelling within the city.

The city has an automated underground waste collector, where the citizen can deploy its waste just through automatic station disseminated in the city. This helps to monitor better the collecting and sorting during the waste process. The system has been implemented also by other cities.

#### **4.4.11 Environmental management of the local authority**

**Main evaluator:** Mr. Jan Dictus

**Co-evaluator:** Mr. Larry O'Toole

**Ranking:** 4<sup>th</sup>

**Comments:** Ljubljana is implementing environmental management in all city administration departments in combination with the "City Administration under One Roof" project. There is also an EMS project in primary schools and kindergardens, almost 50% of which are now EMS certified.

The cities Environment Department is EMAS/ISO 14001 accredited. Other city related companies have ISO 14001 certification.

Energy management is put in place in a systematic way. It is based on a solid political commitment and dedicated staff for its implementation. Training and awareness raising of staff has an important role.

Clean transport is stimulated in the city and supported by a systematic improvement of the administration's own fleet, and with transport plans for own staff.

Energy efficiency plays an important role in new buildings of the city, like in the new sport facility Arena Stožice. It is not reported what the sustainability criteria are for the planned City administration office, where the city wants to demonstrate sustainable building.

Activities are generally limited to energy saving and water saving. Other environmental aspects seem not to be regarded yet.

#### 4.4.12 Energy performance

**Main evaluator:** Mr. Per Berg

**Co-evaluator:** Dr. Stefan Ulrich Speck

**Ranking:** 2<sup>nd</sup>

**Comments:** Ljubljana is working according to its Sustainable Energy (SE) plan and as with other cities it is the 10 – 15% reduction of energy use which has been the most prominent result of the SE plan so far. There is a high ambition to renovate hot water networks which will reduce heat losses. Several new individual housing projects for producing cooling from district heating and reduction of use of energy by up to 36% in new multi-family house buildings, in most nurseries and schools also. Another clear action has been to change fossil fuels from oil and dirty coal to natural gas and low-sulphur coal.

Ljubljana also has committed to introduce renewable energy, to date mostly realised through the introduction of bioenergy (3%) in the CHP program run by the TE-TOL and Energetia Ljubljana energy companies. The Combined heat and Power program introduction has been simplified through the centralised city heat and electricity network.

Quite ambitious is also the economic direct and indirect commitments for the sustainable energy program: €1.5 Billion (€150 million/year for 10 years). Many of these energy efficiency measures are highly profitable. Other investments are credible by the power of its diversity: use of LED lighting in single buildings has been shown to save 90%. Biogas from waste water is rapidly developing. 30 electricity mobility charging places and the first CNG filling station have been implemented. Indirect measures saving energy include closing of the major road through Ljubljana, increase of the pedestrian zone by 550%, an eco-zone in the city centre. Good results are also shown in the increasing of biking trips = 1600 trips/day which is about 5% of all trips per day.

The potential of renewable energy has been inventoried by Ljubljana, for many of the new renewable sources the estimations are both credible and ambitious. There is some doubt in relation to the potential solar energy (heat and electricity) as presented.

The long-term sustainability goals are formulated as 80% reduction of energy related CO<sub>2</sub> emissions, which are accompanied by a credible "combination" strategy (high rate energy efficiency, new renewable energy, vehicle fleet renewal, developed waste-to-energy processes).

## **APPENDIX A**

### **Application Form for EGC 2015 Title**

## Application form for the European Green Capital Award 2015

<p><b>1. Climate change</b></p>	<p>1A. Describe the present situation:</p> <ol style="list-style-type: none"> <li>1. Total CO<sub>2</sub> equivalent per capita (tonnes), including emissions resulting from use of electricity;</li> <li>2. CO<sub>2</sub> equivalent per capita (tonnes) resulting from use of fossil fuels for activities other than transport;</li> <li>3. CO<sub>2</sub> per capita (tonnes) resulting from transport;</li> <li>4. Kg CO<sub>2</sub> per kWh used.</li> </ol> <p>Provide details on any Baseline Emission Inventory prepared by the city following international methodological principles.</p> <p>Does your city claim CO<sub>2</sub> emission reductions? Please provide details including scientific grounds.</p> <p>List any relevant disadvantages or constraints resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1,000 words)</b></p> <p>1B. Describe the measures implemented over the last five to ten years to reduce greenhouse gas emissions, including resources allocated to implementing these measures.</p> <p><b>(max. 800 words)</b></p> <p>1C. Describe the short and long term objectives for reduction of GHG emissions, including measures adopted, but not yet implemented, and budgets for future measures already adopted.</p> <p>Please make reference to any long-term strategy employed, such as a Sustainable Energy Action Plan associated with the Covenant of Mayors on Energy.</p> <p><b>(max. 800 words)</b></p> <p>1D. List how the information provided above can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>2. Local transport</b></p>	<p>2A. Describe the present general features of the current transport systems (e.g. structural features, transport networks, modal shares, energy use) and key operative transport plans.</p> <p>Include data for the following specific indicators:</p> <ol style="list-style-type: none"> <li>1. Length in meters of designated cycle lanes (along roads, but physically separated from other traffic) in relation to total number of inhabitants in the city (per capita);</li> <li>2. Proportion (%) of population living within 300 metres of an hourly (or more frequent) public transport service;</li> <li>3. Proportion (%) of all journeys under 5 km undertaken by private car;</li> <li>4. Proportion (%) of public transport vehicles classified as low emission, meaning share of buses in the publicly or privately owned and operated bus fleets having certified <i>lower</i> emissions than EURO V emissions standards.</li> </ol>

	<p>List any relevant disadvantages or constraints resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1000 words)</b></p> <p>2B. Describe the measures implemented over the last five to ten years. Particular reference should be given to achievements with regard to reduction of total transport volume, encouraging a shift away from transport by car, and improving environmental performance of transport.</p> <p><b>(max. 800 words)</b></p> <p>2C. Describe the short and long term objectives for the future and proposed approach to achieve these.</p> <p>Refer to:</p> <ol style="list-style-type: none"> <li>1. Reduction of overall demand for transport;</li> <li>2. Reduction of individual motorised transport (passenger and freight);</li> <li>3. Promotion of rail, bus, cycling, walking</li> <li>4. Promotion of less polluting technologies, fuels (including renewable energy), and practices</li> </ol> <p>Emphasize to what extent plans are consolidated by commitments, budget allocations, and monitoring and performance evaluation schemes.</p> <p><b>(max. 800 words)</b></p> <p>2D. List how the information provided above can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>3. Green urban areas incorporating Sustainable Land Use</b></p>	<p>3A. Provide a land use map that indicates 1) the municipality boundaries delineating the overall city area and 2) the inner city area.</p> <p>Provide the percentage of green and blue areas (public and private) and soil sealing in relation to a) the overall city area and b) the inner city area, including trends over the past five to ten years.</p> <p>Provide additional maps showing city parks, scale of green in the city, and connectivity of green in the city.</p> <p><b>(max. 500 words plus maps)</b></p> <p>3B. Describe the present situation, including any relevant disadvantages or constraints resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p>Include information on the indicators mentioned below for both the inner city area and the overall city area:</p> <ul style="list-style-type: none"> <li>• The percentage of citizens living within 300m of public green urban areas &gt; 5000m<sup>2</sup> and public green urban areas of any size.</li> <li>• Percentage of green areas, water areas, residential areas, industrial / economic areas, mixed areas, brownfields (this will provide important background information on the character of the city and is not an evaluation criterion in itself);</li> <li>• New developments: proportion of brownfield sites, densification in the inner-city or urban cores, on greenfields;</li> </ul>

	<ul style="list-style-type: none"> <li>• Population density in built-up areas in inhabitants per hectare (city area minus green and blue areas);</li> <li>• Population density for new developments in inhabitants per hectare.</li> </ul> <p><b>(max. 1000 words)</b></p> <p>3C. Describe the measures implemented over the last five to ten years.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Minimising the total area of derelict and contaminated land;</li> <li>2. Increasing or sustaining population density in built-up areas while protecting green areas and providing a high quality of life within densely populated areas;</li> <li>3. Renovating urban land and renewing urban design to make city living attractive and enable a more sustainable lifestyle (e.g. short distances to services and facilities reduce the transport demand and promote walking and cycling; multi-apartment houses save energy for heating, cooling, reduce infrastructural needs);</li> <li>4. Limiting urban sprawl by cooperating with the neighbouring municipalities;</li> <li>5. Integrating current and future changes such as economic growth, demographic or climate change through sustainable land use planning.</li> </ol> <p><b>(max. 800 words)</b></p> <p>3D. Describe the short and long term objectives for the future and proposed approach to achieve these. With particular reference on the establishment and management of green urban areas (public and privately owned) taking into consideration their function:</p> <ul style="list-style-type: none"> <li>• People's quality of life and recreation;</li> <li>• Additional ecosystem functions and services such as regulating water balance, balancing climate extremes, filtering air pollution, education, etc.</li> <li>• Rehabilitation of brown field sites, derelict and/ or contaminated land.</li> </ul> <p>Emphasize to what extent plans are consolidated by commitments, budget allocations, and monitoring and performance schemes.</p> <p><b>(max. 800 words)</b></p> <p>3E. List how the information provided above can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>4. Nature and biodiversity</b></p>	<p>4A. Describe the present situation, including any relevant disadvantages or constraints resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p>Emphasize to what extent plans are consolidated by commitments, budget allocations, and monitoring and performance schemes.</p> <p><b>(max. 1000 words)</b></p> <p>4B. Describe the measures implemented over the last five to ten years.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Managing and increasing areas designated for nature protection and biodiversity as described above;</li> <li>2. Protecting nature in other open spaces;</li> <li>3. Promotion of public knowledge and understanding of nature and</li> </ol>

	<p>biodiversity, particularly among young people.</p> <p>4. Monitoring the effectiveness of management measures</p> <p><b>(max. 800 words)</b></p> <p>4C. Describe the short and long term objectives for the future and proposed approach to achieve these.</p> <p>Note that: target 2 of the EU Biodiversity Strategy 2011 is to ensure that, by 2020, <i>“ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15 % of degraded ecosystems.”</i></p> <p><b>(max. 800 words)</b></p> <p>4D. List how the information provided above can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>5. Quality of local ambient air</b></p>	<p>5A. Describe the present situation.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Number of days per year on which EU limit values were exceeded for PM10 (daily mean of 50µg/m<sup>3</sup>);</li> <li>2. Number of days per year on which EU target value for ozone was exceeded (8h mean of 120 µg/m<sup>3</sup>);</li> <li>3. Annual mean concentration of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>, and assess the contribution from local sources and for long-range transport for these pollutants.</li> </ol> <p>List any relevant disadvantages or constraints resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1000 words)</b></p> <p>5B. Describe the measures implemented over the last five to ten years.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Existence and implementation status of an air quality management plan;</li> <li>2. Local measures taken to improve air quality and quantify their effect on air quality</li> <li>3. Information to the public (both inhabitants and tourists) on air quality levels (e.g. web pages, information screens) in order to increase public awareness and change behaviour.</li> </ol> <p><b>(max. 800 words)</b></p> <p>5C. Describe the short and long term objectives for the future and proposed approach to achieve these. Quantify the effects of proposed measures on air quality.</p> <p>Please provide details on assigned budgets</p> <p><b>(max. 800 words)</b></p> <p>5D. List how the above information can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p>

	<p><b>(max. 400 words)</b></p>
<p><b>6. Quality of the Acoustic Environment</b></p>	<p>6A. Describe the present situation, provide details on:</p> <ol style="list-style-type: none"> <li>1. Share of population exposed to noise values of Lden (day-evening-night) above 55 dB(A);</li> <li>2. Share of population exposed to noise values of Ln (night) above 45 dB(A);</li> <li>3. Existing or planned quiet areas.</li> </ol> <p>List any relevant disadvantages or constraints resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1000 words)</b></p> <p>6B. Describe the measures implemented over the last five to ten years for improving the urban sound quality and increasing awareness to noise.</p> <p><b>(max. 800 words)</b></p> <p>6C. Describe the short and long term objectives for the future and proposed approach to achieve these.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Stakeholder involvement,</li> <li>2. Communication with the population,</li> <li>3. Actions to extend, maintain or improve quality of urban quiet areas.</li> <li>4. Assigned budgets.</li> </ol> <p><b>(max. 800 words)</b></p> <p>6D. List how the above information can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>7. Waste production and management</b></p>	<p>7A. Describe the present situation in relation to waste production and management, including any relevant disadvantages or constraints resulting from historical and/or geographical factors which may have influenced this indicator area. Where available information should be provided from previous years (5 – 10) to show trends.</p> <p>Include details on:</p> <ol style="list-style-type: none"> <li>1. Waste Strategies or Plans in place;</li> <li>2. Amount of waste generated per capita; Household, Municipal;</li> <li>3. Proportion of total waste sent to landfill;</li> <li>4. Proportion of biodegradable waste sent to landfill;</li> <li>5. Percentage of recycled municipal waste;</li> <li>6. Types of waste collected separately and extent of roll-out (% coverage) of source separated collection systems;</li> <li>7. How separately collected waste is treated.</li> </ol> <p><b>(max. 1000 words)</b></p> <p>7B. Describe the measures implemented over the last five to ten years for improving waste management.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Reduction of the amount of waste produced;</li> </ol>

	<ol style="list-style-type: none"> <li>2. Type and scale of infrastructure put in place to manage waste</li> <li>3. How residual waste is managed including the amount of waste sent to landfills, particularly biodegradable waste;</li> <li>4. Measures which have promoted awareness raising programmes;</li> </ol> <p><b>(max. 800 words)</b></p> <p>7C. Describe the short and long term objectives for the future and proposed approach to achieve these. Give details of allocated budgets.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Constraints – economic, scale, institutional</li> <li>2. Measures to improve statistical data on waste collection &amp; treatment</li> <li>3. Waste prevention and awareness initiatives</li> <li>4. Quality of recycling, and by type i.e. glass, paper etc</li> <li>5. Waste collection charges</li> <li>6. Measures to promote public participation</li> <li>7. Measures to meet EU legislation</li> </ol> <p><b>(max. 800 words)</b></p> <p>7D. List how the above information can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>8. Water consumption</b></p>	<p>8A. Describe the present situation regarding water demand of different sectors and describe plans currently in place to reduce water consumption.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Total water consumption (in cubic meter/year and liter/capita/year) for different sectors (households, industry, energy, agriculture, small business, tourism, public sector).</li> <li>2. Proportion of urban water supply subject to water metering, both for domestic and non-domestic metering;</li> <li>3. Source of water;</li> <li>4. Water loss in pipelines, leakage management and network rehabilitation;</li> <li>5. Use of water saving devices (efficient showerheads, taps, etc.)</li> <li>6. Water recycling initiatives (greywater)</li> <li>7. Compliance with the EU Water Framework Directive and related Directives.</li> </ol> <p>List any relevant disadvantages or constraints resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1000 words)</b></p> <p>8B. Describe the measures implemented over the last five to ten years for improving water consumption.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Technical, economic and institutional measures adopted and their effectiveness in achieving reduction of total water consumption;</li> <li>2. Byelaw implementation in relation to efficiency in water usage, tariff and metering systems;</li> <li>3. Awareness raising campaigns.</li> </ol>

	<p><b>(max. 800 words)</b></p> <p>8C. Describe the short and long term objectives with particular emphasis on key water saving and reuse targets for the future and proposed approach to achieve these, including measures incorporating water infrastructure to deal with future impacts of climate change. Give details of allocated budgets.</p> <p><b>(max. 800 words)</b></p> <p>8D. List how the above information can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>9. Waste water management</b></p>	<p>9A. Describe the present general features of waste water management according to national requirements and the requirements of the Urban Waste Water Treatment Directive (UWWTD, 91/271/EEC).</p> <p>Include data for the following specific indicators:</p> <ol style="list-style-type: none"> <li>1. Proportion of population (%) connected to a) waste water collecting systems and b) urban waste water treatment plants (UWWTPs), differentiated into primary treatment, secondary treatment, more stringent treatment</li> <li>2. Proportion of population (%) not connected to waste water collecting systems and explanation of the type of waste water treatment applied to this fraction</li> <li>3. Total annual generated waste water load of the city (in p.e.) and indication of the fraction (%) coming from population and from industry</li> <li>4. Waste water collecting systems: main type of collecting system (combined/separated) and annual proportion (%) of COD-loads discharged via storm water overflows</li> <li>5. UWWTPs: Organic design capacity (p.e.), treatment level, annual incoming and discharged loads (t/a) of BOD<sub>5</sub>, COD, N<sub>tot</sub> and P<sub>tot</sub> and treated waste water amounts (m<sup>3</sup>/a) of all UWWTPs serving the city</li> <li>6. Annual amounts of generated sewage sludge (t/a) and description of treatment/disposal pathways (% of total amount)</li> </ol> <p>Further information (e.g. on energy efficiency at UWWTPs, treated waste water use, economic sustainability) is highly appreciated.</p> <p>List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1000 words)</b></p> <p>9B. Describe the measures implemented over the past five to ten years to improve waste water treatment. Particular reference should be given to capacity building, measures for maintenance, management and restoration of waste water collecting systems and UWWTPs.</p> <p>A description of further measures for improving waste water treatment (e.g. pollution prevention efficiency, improvement of energy efficiency) is highly appreciated.</p> <p><b>(max. 800 words)</b></p> <p>9C. Describe the short and long term objectives for the future and proposed approach to achieve these.</p>

	<p>Refer to:</p> <ul style="list-style-type: none"> <li>• Improvement / maintenance / management of collecting systems</li> <li>• Improvement of access to collecting systems</li> <li>• Improvement of design capacity, treatment level and removal efficiencies at UWWTPs and maintenance of UWWTPs</li> <li>• Improvement of access to UWWTPs</li> <li>• Improvements of further environmental and economic aspects of waste water treatment (e.g. removal of micropollutants, energy efficiency at UWWTPs, sludge treatment and disposal, treated waste water use)</li> </ul> <p>Emphasize to what extent plans are triggered by the demands of EU regulations and national regulations.</p> <p>Emphasize also, to what extent plans are consolidated by commitments, budget allocations, and monitoring and performance evaluation schemes.</p> <p><b>(max. 800 words)</b></p> <p>9D. List how the above information can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>10. Eco-innovation and sustainable employment</b></p>	<p>10A. Describe the present situation, make reference to:</p> <ol style="list-style-type: none"> <li>1. Innovations that address material security and/or resource efficiency (substitution, minimisation of material use, closing loops, etc) and reduce environmental impacts;</li> <li>2. Awareness raising and training to encourage the development and take-up of environmentally friendly technologies, particularly through training in industrial and business settings.</li> <li>3. Social innovation/stakeholder participation, including for example community programmes, that shows entrepreneurship and new ways of organisation in order to promote sustainable development and protect the environment locally and globally</li> <li>4. Does the city budget identify funds dedicated to support environmental R&amp;D (with particular reference to eco-innovation) by public and private entities?</li> <li>5. Number of jobs created in green sectors in total and as share of total jobs in the city and total jobs created during a period of one year.</li> <li>6. Share of hybrid or fully electric cars sold in total stock of vehicles owned by the city</li> </ol> <p>List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1000 words)</b></p> <p>10B. Describe the measures implemented over the last five to ten years concerning eco-innovation and sustainable employment.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Initiatives aimed at increasing eco-innovation and sustainable employment. E.g. projects under Cohesion Policy funds, LIFE, Environmental Technologies Action Plan (ETAP), Green Public Procurement (GPP), as well as national policy initiatives</li> <li>2. How have national policies been transferred into policy action at the city level</li> <li>3. The publication of reports, such as green accounts, revealing the timely implementation of planned initiatives.</li> </ol> <p><b>(max. 800 words)</b></p>

	<p>10C. Describe the short and long term objectives to promote eco-innovation and sustainable employment in the future and proposed approach to achieve these.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Plans to establish eco-innovation clusters or strategies to attract public-private partnerships for further developing eco-innovation and sustainable employment</li> <li>2. Future targets of how eco-innovations can be applied by the city, for example make reference to share of hybrid or fully electric cars in total stock of the public fleet or plans to support the infrastructure for electric cars on public area, i.e. increase the number of charging points for electric cars in public car parks.</li> <li>3. Participation at green business networks or partnerships and covenants and cooperation with knowledge institutions, such as universities.</li> </ol> <p><b>(max. 800 words)</b></p> <p>10D. List how the above information can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>11. Environmental management of the local authority</b></p>	<p>11A. Describe the present situation concerning the environmental management system in your city.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Number of municipal departments with certified environmental management systems (ISO 14001/EMAS);</li> <li>2. Percentage of consumed eco-labelled and organic products by municipalities, measured as a share of the total product consumption within similar category;</li> </ol> <p>List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1000 words)</b></p> <p>11B. Describe the measures implemented over the last five to ten years concerning the environmental management of the local authority.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Developing an overall policy for environmental management of municipal activities;</li> <li>2. Increasing the share of the total consumption of eco-labelled, organic and energy-efficient products;</li> <li>3. Implementation of Green Procurement.</li> </ol> <p><b>(max. 800 words)</b></p> <p>11C. Describe the short and long term objectives for the future and proposed approach to achieve these.</p> <p>Make reference to:</p> <ul style="list-style-type: none"> <li>• If a base line study has been made and quantitative targets have been formulated.</li> <li>• The iterative process for continuous improvement (reporting, involvement of own staff, suppliers and contractors)</li> <li>• involving social aspects</li> </ul> <p><b>(max. 800 words)</b></p> <p>11D. List how the above information can be documented, add links where possible.</p>

	<p>Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>
<p><b>12. Energy performance</b></p>	<p>12A. Describe the present situation and developments in relation to housing over the last five to ten years. (Units to be in KWh/m<sup>2</sup>)</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Energy consumption &amp; performance of municipal buildings per square meter according to your <i>working</i> Development or Action Plan.</li> <li>2. The development so far and the <i>working</i> strategy of the renewable vs non-renewable <i>mix</i> of energy sources during the past 10 years (for both heat and electricity).</li> <li>3. The <i>working</i> plan for integration and performance of renewable energy technology in municipal buildings and homes.</li> <li>4. The <i>working</i> plan of compatible and integrated district systems and the facilitation of a more sophisticated city-wide control.</li> <li>5. The <i>working</i> plan for increasing energy efficiency and decreasing the use of energy.</li> </ol> <p>List any disadvantages resulting from historical and/or geographical factors which may have influenced this indicator area.</p> <p><b>(max. 1000 words)</b></p> <p>12B. Describe the measures implemented over the last five to ten years concerning energy.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. Attempts to improving the energy performance of municipal buildings.</li> <li>2. Maximising and prioritising the use of renewable energy technology in municipal buildings and homes.</li> <li>3. Measures to improve the City's overall energy demand performance preferably including both local government institutions, local market actors and citizens.</li> </ol> <p><b>(max. 800 words)</b></p> <p>12C. Describe the short and long term objectives for energy plans in the future (at least +10 years) and proposed approach to achieve these.</p> <p>Make reference to:</p> <ol style="list-style-type: none"> <li>1. The need to achieve 80% renewable energy supply</li> <li>2. Your Factor 5 commitment (when and how renewable energy has increased five times of its present <i>share</i>) and when and how the <i>absolute amount has become 80% renewables of all energy use</i>.</li> </ol> <p>The strategy of your renewable vs non-renewable <i>energy mix</i> as well as of the renewable energy <i>mix per se</i> (the percentage of different renewable energy sources). Thus please describe the <i>dynamics</i> of energy mixes for at least the coming two decades. Preferably add diagrams to describe this future development.</p> <p><b>(max. 800 words)</b></p> <p>12D. List how the above information can be documented, add links where possible. Further detail may be requested during the clarification phase. Documentation should not be forwarded at this stage.</p> <p><b>(max. 400 words)</b></p>

## **APPENDIX B**

### **Experts Pen Profiles**

## **Indicator No. 1 - Local contribution to global climate change.**

Expert: Dr. Liz Mills, Independent Policy Analyst & Associate, Institute for European Environmental Policy.

A freelance policy analyst since 1994, Liz Mills specialises in policy for sustainability, planning and the urban environment in Europe, EU funding programmes, comparative research and good practice. Originally an urban geographer with a PhD from Bristol University, she previously spent 16 years in university teaching and research in public policy, specialising in local government.



Liz has had a longstanding involvement with policy development for the urban environment at European level, having been a consultant to the Commission's Expert Group on the Urban Environment from 1993 and desk officer in DG Environment 1997-8. She co-drafted the first *European Sustainable Cities* report, the Aalborg Charter and the Commission's 1998 Communication *Sustainable Urban Development in the EU: A Framework for Action*.

Liz often works with individual cities and networks in EU-funded projects. She was UK Contact Point for INTERREG IIIC. She is a thematic expert for URBACT II and experienced as an evaluator in LIFE, Intelligent Energy Europe and FP7.

Liz has a portfolio of policy and advisory work in the UK, mostly in Wales, relating to the built environment, land use planning, energy and adaptation to climate change.

## **Indicator No. 2 - Local transport.**

Expert: Dr. Henrik Gudmundsson, Senior Researcher, Department of Transport, Technical University of Denmark.

Henrik Gudmundsson has been a Senior Researcher in Sustainable Transport at the Technical University of Denmark since 2006. He is educated as an Environmental planner and has a PhD from Copenhagen Business School. His main area of research is sustainable transport governance and policy analysis, including the use of knowledge and indicators in the design, implementation and monitoring of transport plans. Henrik is the National Principle Contact Point (PCP) on transport indicators in Denmark for the European Environment Agency (EEA), and a member of the scientific advisory board for the Swedish Government's Transport Analysis agency. Henrik is currently involved in four major research projects on transport policy and planning. He is a member the Committees on 'Performance Measurement' and 'Transportation and Sustainability' of the US Transportation Research Board.



Before assuming his current position Henrik has been involved in State of the Environment Reporting for Denmark at the National Environmental Research Institute (1993- 2006) and prior to that he was a Head of Section in the Danish Environmental Protection Agency (1988-2003).

### **Indicator No. 3 - Green Urban areas Incorporating Sustainable land use.**

Expert: Ms Ir. Hedwig van Delden, Director, Research Institute for Knowledge Systems (RIKS), Maastricht, The Netherlands.



Hedwig van Delden is the General Director of the Research Institute for Knowledge Systems (RIKS) in Maastricht, the Netherlands. After graduating from the University of Twente as a Civil Engineer in Water Engineering and Management, she started working at RIKS as a Policy Analyst and in the following years gradually rose to the position of General Director. Over the years she has taken on many roles ranging from Researcher to Project Manager and Project Leader working on integrating models and modeling tools from a broad range of fields such as land use change, hydrology, economics and transport.

Her academic work focuses on issues relating to model integration on the conceptual level and process management in integrated modeling system implementations. In this capacity she has authored or co-authored a long list of peer-reviewed journal articles and book chapters. Her most recent conference presentations were at the International Environmental Modelling and Software Societies Fifth Biennial Meeting in Ottawa, Canada and the International Conference on managing the Urban Rural interface in Copenhagen, Denmark.

### **Indicator No. 4 - Nature and biodiversity.**

Expert: Dr. Jake Piper, Associate and Senior Research Fellow, Faculty of Technology, Design and Environment, Oxford Brookes University, United Kingdom.

Jake Piper has worked as a researcher and lecturer at Oxford Brookes University for the past twelve years, following on from an earlier career in environmental consultancy. Her academic background includes forestry and land management, and environmental assessment.



In recent years she has contributed to and managed studies of policy development and spatial planning, frequently as related to biodiversity protection and enhancement in circumstances of climate change, as part of EU programmes (MACIS, BRANCH), and she has been a peer reviewer of the C-Change project which promotes community engagement and behaviour change as well as creating multi-functional spaces. She has also worked on studies preparing guidance for projects affecting Natura 2000 sites, and projects concerned with rural development.

Issues around biodiversity, water resources, flooding and sustainable drainage have been a particular interest – as demonstrated in her recent book *Spatial Planning and Climate Change* (with Elizabeth Wilson). Other project work has involved the economic and environmental assessment of many forms of development, including offshore wind, water resources, railway infrastructure, forestry and leisure.

#### **Indicator No. 5 - Quality of local ambient air.**

Expert: Dr. Steen Solvang Jensen, Department of Environmental Science, Aarhus University, Denmark.

Steen Solvang Jensen is Senior Scientist, PhD at the Department of Environmental Science, Aarhus University in Denmark. He is a civil engineer with a specialization in planning with 22 years of experience within traffic planning and urban air quality assessment and management. He has worked as project manager within research, consultancy and administration, and has acted as an advisor for the Danish Environmental Protection Agency and international development agencies. His main experience is within research and development of integrated modelling systems for air pollution and human exposures for application in decision-support systems in urban air quality management and in air pollution epidemiological studies. These studies include mapping, impact assessment, scenario analysis, and policy options within emission, air quality, human exposures, health and external costs of air pollution as well as environmental impacts of renewable energy systems and technologies (hydrogen, biofuels, biomass).



#### **Indicator No. 6 – Quality of the Acoustic Environment.**

Expert: Prof. J. Luis Bento-Coelho, Professor, Instituto Superior Técnico, Lisbon, Portugal.

J. Luis Bento Coelho is an Electrical Engineer with a MSc. and a PhD. in Acoustics and is a Fellow of the International Institute of Acoustics and Vibration (IIAV). He is a Professor of Acoustics at Instituto Superior Técnico (IST), TULisbon, Portugal, where he is the Head of the Group of Acoustics and Noise Control and the Director of the Diploma on Advances Studies on Acoustical Engineering post-graduate course. He is the Immediate Past President of the IIAV, is a member of the Expert Panel on Noise (EpoN) of the European Environmental Agency and a member of the EU-CNOSSOS Technical Committee. He is a Chartered Acoustical Engineer with a large experience on environmental noise, transportation noise and urban acoustics. He has been involved with noise mapping and action plans, being responsible for projects in large cities in Portugal and in Brazil, and for many transport infra-structures. He has published more than 200 technical and scientific papers, is the author of a chapter in the “Handbook of Acoustics & Vibration Control” (John Wiley & Sons, 2007) and is the co-author of a number of recent international technical reports.



## **Indicator No. 7 - Waste Production and management.**

Expert: Mr. Larry O'Toole, Director, Waste and Energy Division, RPS Consulting Engineers, Dublin, Ireland.

Larry O'Toole is Director of the Waste and Energy Division at RPS Consulting Engineers. He is a Chartered Civil Engineer with 24 years experience of civil and environmental engineering and waste strategy and planning in Ireland and in the UK. He has been Project Manager for a broad range of waste and energy projects and is currently responsible for a team of engineers, scientists and waste planners providing a wide range of services to both the public and private sectors in UK and Ireland. These include national strategic studies, regional waste plans, siting studies, feasibility, design and procurement of recycling, recovery and disposal facilities and renewable energy projects including wind energy, anaerobic digestion and biofuels.



He is a chartered member of Engineers Ireland and was invited to presented on “Integrated Waste Management and Climate Change” at International Conference on Cities and Climate Change, New Delhi, India, Feb 2011.

## **Indicator No. 8 - Water consumption**

Expert: Mr. Shailendra Mudgal, Executive Director, Bio Intelligence Service, France.

Shailendra Mudgal is a civil-environmental engineer with 19 years of experience in environmental consulting and has a specific expertise in water management.

He has worked on a range of projects in India dealing with leak detection in water supply networks, river basin action plan, stormwater management, and water quality and quantity modeling.



During last 10 years, he has worked on water policy sector in France and Europe. He led several studies for the European Commission on Water Efficiency Standards and the Water Performance of Buildings (<http://www.waterefficiency.eu>) and also contributed to studies for the European Parliament. He contributed to the 2011 UNEP Green Economy Report and also supported the EEA on two chapters dealing with social and technological megatrends of the European Environment State and Outlook Report (SOER) 2010. Recently, he advised the UNFCCC on the methodology for evaluating the water saving devices in the context of the clean development mechanism.

## Indicator No. 9 - Waste water treatment

Expert: Dr. Katharina Lenz, Surface Water Unit, Environment Agency Austria

Katharina Lenz is a specialist in waste water management and water statistics, who holds a PhD in Land and Water Management and Engineering. Since 2006 Katharina has been involved in DG ENV service contracts for technical and administrative assistance for implementation of the Urban Waste Water Treatment Directive (91/271/EEC). She was furthermore involved as expert in the 2004 Transition Facility Multi-Country Statistical Integration Programme and the Multi-Beneficiary Statistical Co-operation Programme for Bulgaria, Croatia, Romania and Turkey 2005 – Lot 2, dealing with the implementation of EUROSTAT waste water statistics in new Member States and Accession Countries. Katharina is also a co-author of the EUROSTAT “Data Collection Manual for the OECD/EUROSTAT Joint Questionnaire on Inland Waters (version 2.2).



Katharina has profound and thorough experience and knowledge with the situation of waste water treatment in Europe, the process of the implementation of the Urban Waste Water Treatment Directive and the availability and quality of data describing this situation.

## Indicator No. 10 - Eco-innovation and sustainable employment

Expert: Dr. Stefan Speck, Project Manager environmental economics and policies at the Integrated Environmental Assessments Programme at the European Environment Agency.

Stefan Speck is an environmental economist with a PhD in economics. His main area of research is the application of market-based instruments for environmental policy, environmental fiscal reform, and green economy.

Prior to his current position, he was employed as a senior consultant at Kommunalkredit Public Consulting in Austria and as a senior project scientist at the National Environmental Research Institute/University of Aarhus in Denmark within the EU-funded project ‘Competitiveness effects of environmental tax reforms’ (COMETR). He also contributed to the research project ‘Resource Productivity, Environmental Tax Reform and Sustainable Growth in Europe’ funded by the Anglo-German Foundation.



He has implemented projects for a range of clients including the Danish Environmental Protection Agency (DEPA), European Commission (EC), Organisation of Economic Co-operation and Development (OECD), United Nations Development Programme (UNDP), United Nations Environmental Programme (UNEP), German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, and the UK Department for International Development (DFID). He has carried out research projects in Africa and Asia, and has published widely on economic instruments and environmental financing and recently co-edited the book *Environmental Tax Reform (ETR) A Policy for Green Growth* (Oxford University Press, 2011).

## Indicator No. 11 - Environmental management of the local authority

Expert: Mr Jan Dictus, Founder of GOJA Consulting for Environment and Sustainable Development, Vienna, Austria

Jan Dictus is an independent consultant and founder of GOJA Consulting. Jan has Dutch nationality and has been living and working in Austria since 2000. He has provided services to a wide range of clients at international, European, regional and local levels on environmental and sustainable development issues.

For the City of Vienna Jan has lead the development of the Environmental Vision of Vienna. He also represented Vienna as Technical Chair of the Environment Forum of EUROCITIES in 2009 and 2010.



As a UNIDO expert Jan has been involved in the organisation and reporting of conferences in Jordan and Bahrain on urban sustainability and green business and in the promotion of Eco-business projects in India and Thailand. At the moment Jan is working on the development of Green Award mechanisms in Cambodia.

In Europe Jan works presently as urban expert for several EU funded projects, e.g. on energy efficiency, on social housing and on public lighting. In some of these projects Jan is using Deep Dives and Peer Reviews to structure the systematic exchange between cities.

Jan is a Lead Expert for URBACT-II and a member of the expert group for the “UNEP-JCEP Sustainable Urban Development and Liveable Garden Community - China Programme“ in China.

## Indicator No. 12 - Energy performance.

Expert: Prof. Per G. Berg, Professor in Landscape planning with a special focus on Sustainable Community Development at the Swedish University of Agricultural Sciences, Uppsala.

Per G. Berg is professor in Landscape Planning with a special focus on Sustainable Community Development in Urban and Rural settings. He has been Research Director for local community studies in 11 cities in the Baltic Sea region for 20 years and is at present investigating functional densification in Swedish townscapes in three cities. He has recently taken the initiative to study Sustainable Cities in a Research consortium including 12 European cities from north-Eastern St Petersburg to Southern Milan as a lead partner in a FP7 EU application currently under revision for a new application. The Research of sustainable cities and local communities is done theoretically drawing from the cutting-edge policy documents of the UN Habitat agenda, in practical case studies and in leading a practical implementation project in Uppsala Sweden: *Hågaby resilient cityland*. With a background in Biology and Chemistry he has for 30 years had a particular interest in renewable energy issues.



Per G. Berg is member of the ICE Engineering Sustainability Journal and Journal of Environmental Quality Editorial Advisory Board and has been invited to join the expert panel of *Sustainability* and currently is organiser of the 6<sup>th</sup> international landscape architecture conference in St. Petersburg, Helsinki, Stockholm and Uppsala in June 2012.

## **APPENDIX C**

Technical Ranking of 8 Applicant Cities for the European Green  
Capital Award 2015 Title

## Technical Ranking of 8 Applicant Cities for the European Green Capital Award 2015 Title

City	Local contribution to global	Local transport	Green Urban areas Incorporating Sustainable land use	Nature and biodiversity	Quality of local ambient air	Quality of acoustic environment	Waste Production and management	Water consumption	Waste water treatment	Eco-innovation and sustainable employment	Env mgt of the local authority	Energy performance
Bristol	2	1	1	1	1	1	2	1	1	1	2	1
Brussels	1	2	3	5	2	2	1	3	6	3	1	3
Bydgoszcz	5	7	6	6	6	7	6	6	5	7	8	5
Dublin	6	5	5	4	5	5	4	5	7	5	5	6
Glasgow	4	4	2	2	4	4	5	4	3	2	3	4
Kaunas	7	6	7	7	7	6	8	7	4	6	8	7
Kutahya	8	8	8	8	8	8	7	8	8	8	8	8
Ljubljana	3	3	4	3	3	3	3	2	2	4	4	2

**Final Combined ranking by the EGC Secretariat**

<b>Final Technical Ranking</b>	
Bristol	1
Brussels	2
Ljubljana	3
Glasgow	4
Dublin	5
Bydgoszcz	6
Kaunas	7
Kutahya	8