
# Expert Panel

# Technical Assessment Report

# Wrocław

# European Green Capital Award 2020

April 2018

www.ec.europa.eu/europeangreencapital

**Acknowledgements**

The authors of this Technical Assessment Report are the European Green Capital Award Secretariat, RPS Group Limited (hereafter RPS) together with the contribution of the Expert Panel. We would like to thank the Expert Panel and the European Commission Directorate-General for Environment for their assistance in the preparation of this report.

RPS, an environmental and communications consultancy based in Ireland, is currently appointed as the European Green Capital Award Secretariat. The competition application process and the work of the Expert Panel and the Jury are facilitated by the Secretariat.

The Secretariat also assists with PR activities related to the European Green Capital Award through the European Green Capital Award website, Facebook, Twitter and LinkedIn pages, and through various communication channels such as brochures, press releases, newsflashes and film clips etc.

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# 1 INTRODUCTION

Europe's cities are recognised as the engines of the European economy, providing jobs and services, and serve as hubs that catalyse creativity and innovation. Cities are the living environment for 72% of all Europeans with this percentage expected to rise to 80% by 2050. They possess potential such as economic growth, innovation and employment opportunities[1]. However, they are facing ever increasing challenges, with regards to the environment, transport and social cohesion.

The European Green Capital and European Green Leaf Awards are underpinned by European Policy on sustainable urban planning and design. The Awards support the goals set out most recently in the Urban Agenda for the EU-Pact of Amsterdam, signed in 2016, and prior to this the 7th Environment Action Programme (EAP), as adopted in 2013.

**The Urban Agenda for the EU - Pact of Amsterdam**

Following a public consultation process in 2014, the Urban Agenda for the EU was launched in May 2016 with the EU Member States agreement on the Pact of Amsterdam. The Urban Agenda for the EU aims to address the challenges faced by cities and also to fully exploit the potential of cities by integrating the urban dimension into EU policies. The EU Urban Agenda also aims to promote cooperation and partnerships between member states, the European Commission, European institutions, cities and other stakeholders in order to stimulate growth, liveability and innovation in the cities of Europe through:

1. Better Regulation: Improving the development, implementation and evaluation of EU legislation;
2. Better Funding: Ensuring better access to and utilisation of European funds; and
3. Better Knowledge: Improving the EU urban knowledge base and stimulating the sharing of best practices and cooperation between cities.

The Urban Agenda for the EU outlines twelve priority themes, which are essential to achieve the smart, green, and inclusive growth of urban areas. Many of the themes outlined align with the indicators and topic areas assessed in the EGC and EGL Awards, including; Urban Mobility, Circular Economy, Climate Adaptation, Air Quality, Energy Transition and Sustainable Use of Land and Nature-Based Solutions.

Thematic Partnerships representing various governmental levels and stakeholders are the key delivery mechanism within the Urban Agenda for the EU. All the twelve Partnerships, which include cities from across Europe, have been set up in three phases between May 2016 and June 2017. The existing Partnerships have been launched in three steps:

- 'Amsterdam Partnerships': these pilot Partnerships deal with the inclusion of migrants and refugees, affordable housing, air quality, and urban poverty;
- The 'Bratislava Partnerships', launched during 2016, work on circular economy, digital transition, jobs and skills in the local economy, and urban mobility; and

[1] http://urbanagendaforthe.eu/wp-content/uploads/2015/12/EU-Urban-Agenda-factsheet.pdf

- 'Malta Partnerships': established in 2017 comprises Partnerships on climate adaptation, energy transition, responsible and innovative public procurement, and sustainable land use and nature-based solutions.

The Partnerships analyse challenges and bottlenecks to recommend implementable actions in the form of an Action Plan to be finalised within two years after the start of their work.

A European Commission report to the Council published in November 2017 presents the progress of the Urban Agenda for the EU and its Partnerships[2]. The work of the Partnerships is communicated through the 'Futurium' website[3] which enables all those interested to be informed and to give feedback (e.g. on the first drafts of Action Plans proposed by the Partnerships). In February 2018, the Urban Agenda Partnership on Circular Economy published the Draft Action Plan[4] which sets out a series of actions to support the efforts of European cities in the field of circular economy.

The Urban Agenda for the EU will contribute to the implementation of the UN 2030 Agenda for Sustainable Development, notably Goal 11 'Make cities inclusive, safe, resilient and sustainable' and the global 'New Urban Agenda' as part of the Habitat III process.

**7th Environment Action Programme (EAP)**

The Commission commenced the 7th Environment Action Programme (EAP) in 2013 which sets out a strategic agenda for environmental policy-making with nine priority objectives to be achieved by 2020. It establishes a common understanding of the main environmental challenges Europe faces and what needs to be done to tackle them effectively. This programme underpins the European Green Capital Award (EGCA) 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 safeguard 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 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, greenhouse gas (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.

[2] https://ec.europa.eu/futurium/en/system/files/ged/celex3a52017dc06573aen3atxt.pdf
[3] https://ec.europa.eu/futurium/en
[4] https://ec.europa.eu/futurium/en/circular-economy/circular-economy-draft-action-plan

The 7th EAP sets the target of meeting local, regional and global challenges by enhancing the sustainability of cities throughout the European Union and 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. All winning cities 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 on-going 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 for 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 at that time, 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 of 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. Since then the 2014 European Green Capital, Copenhagen, 2015 European Green Capital, Bristol, 2016 European Green Capital, Ljubljana, 2017 European Green Capital, Essen, 2018 European Green Capital, Nijmegen, and 2019 European Green Capital, Oslo have all been annually awarded. This annual cycle continues on to find the 2020 European Green Capital. 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.

During the 2016 EGCA cycle, the competition was opened for the first time to applications from cities with a population of over 100,000 inhabitants, as the limit for previous cycles was over

200,000 inhabitants. In addition to this, the competition was opened for the first time to eligible cities from Switzerland. This remained the case for the 2017, 2018, 2019 and 2020 EGCA competition cycles. In June 2014, the 2017 EGCA call opened to over 500 cities from EU Member States and Candidate Countries (Albania, FYROM, Montenegro, Serbia, Turkey); Iceland, Liechtenstein, Norway and Switzerland.

As in previous years, the Expert Panel has carried out a technical assessment of each of the 12 environmental indicator areas (detailed in Section 2.3) and provided a ranking of applicant cities together with qualitative comments on each application. This ranking is derived as a result of primary expert assessment, and peer review from another expert (more details on this procedure in Section 2). This information is presented to the Jury in the form of this report to form part of their deliberation at the Jury Day.

The shortlisted cities are invited to present a communication strategy substantiated by action plans on how they intend to fulfil their green capital year, should they win.

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, inspiring other cities, promoting best practices and raising the awareness of the EGC model further - bearing in mind city size and location.
3. The city's communication strategy and actions, which should address:
   - Citizen communication and involvement 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, regional and national) partnering to gain maximum social and economic leverage.
   - How they intend to fulfil their role of EU Ambassador, inspiring other cities.

Based on the proposals from the Expert Panel and 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 2020. The winner will be announced at the EGCA Awards Ceremony in Nijmegen (Netherlands), European Green Capital 2018, on the 21st June 2018.

## 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 13 applicant cities, which forms the basis for shortlisting the cities. This is presented per indicator per city for transparency of the overall process.

This report is compiled and edited by RPS, Ireland, acting as Secretariat for the European Green Capital Award.

# 2 TECHNICAL ASSESSMENT PROCEDURE

## 2.1 RULES OF CONTEST

A financial incentive was introduced to the 2020 cycle of the EGCA competition. With the introduction of the financial incentive, Rules of Contest were developed which included rules to ensure a minimum quality standard and to facilitate the screening out of incomplete submissions. The formal requirements for the applicants to follow were set out in the EGCA 2020 Guidance Note and Section 3.1.1 of the Rules of Contest:

- The full application shall be written in one of the official languages of the European Union;
- Candidate cities shall answer all the questions and complete all sections of the Application Form. In the event that a question cannot be answered, reasons should be given;
- For the pre-selection stage, applications shall adhere to the word limits indicated per section of the Application Form. Any words above the specified limit will not be taken into account and may leave application responses incomplete. Text included in the captions, body and heading (titles) of graphics/images/tables will be included in the word count. These should not exceed 15 words;
- There is a limit of graphics/images/tables to be provided per Indicator Area and Good Practice section of the Application Form that should be adhered to;
- For the pre-selection stage, applicants shall submit their application in word document format and upload through the application portal on the European Green Capital Award website. An additional pdf file may be provided if desired.

## 2.2 APPLICANT CITIES FOR 2020 EGC AWARD

A total of 17 cities applied for the 2020 EGC Award, of these, 13 submitted valid applications. Details of the 2020 applicants who submitted valid applications are included in Table 2.1 and Figure 2.1.

All 13 cities evaluated by the Expert Panel are signatories of the Covenant of Mayors Office (CoMO) and 12 of the eligible countries from across Europe are represented. The smallest city by population is Lahti in Finland with a population of 118,743, whereas Budapest in Hungary has the largest population of 1,729,040.

**Table 2.1 - Details of Applicant Cities (presented in alphabetical order)**

| No. | City Name | Country | Population |
|---|---|---|---|
| 1 | Aberdeen | United Kingdom | 207,857 |
| 2 | Budapest | Hungary | 1,729,040 |
| 3 | Bursa | Turkey | 1,704,441 |
| 4 | Ghent | Belgium | 259,083 |
| 5 | Guimarães | Portugal | 158,124 |
| 6 | Lahti | Finland | 118,743 |

| No. | City Name | Country | Population |
|---|---|---|---|
| 7 | Lisbon | Portugal | 547,733 |
| 8 | Ostrava | Czech Republic | 301,942 |
| 9 | Prato | Italy | 185,456 |
| 10 | Reykjavík | Iceland | 123,246 |
| 11 | Seville | Spain | 698,042 |
| 12 | Tallinn | Estonia | 411,063 |
| 13 | Wrocław | Poland | 630,131 |

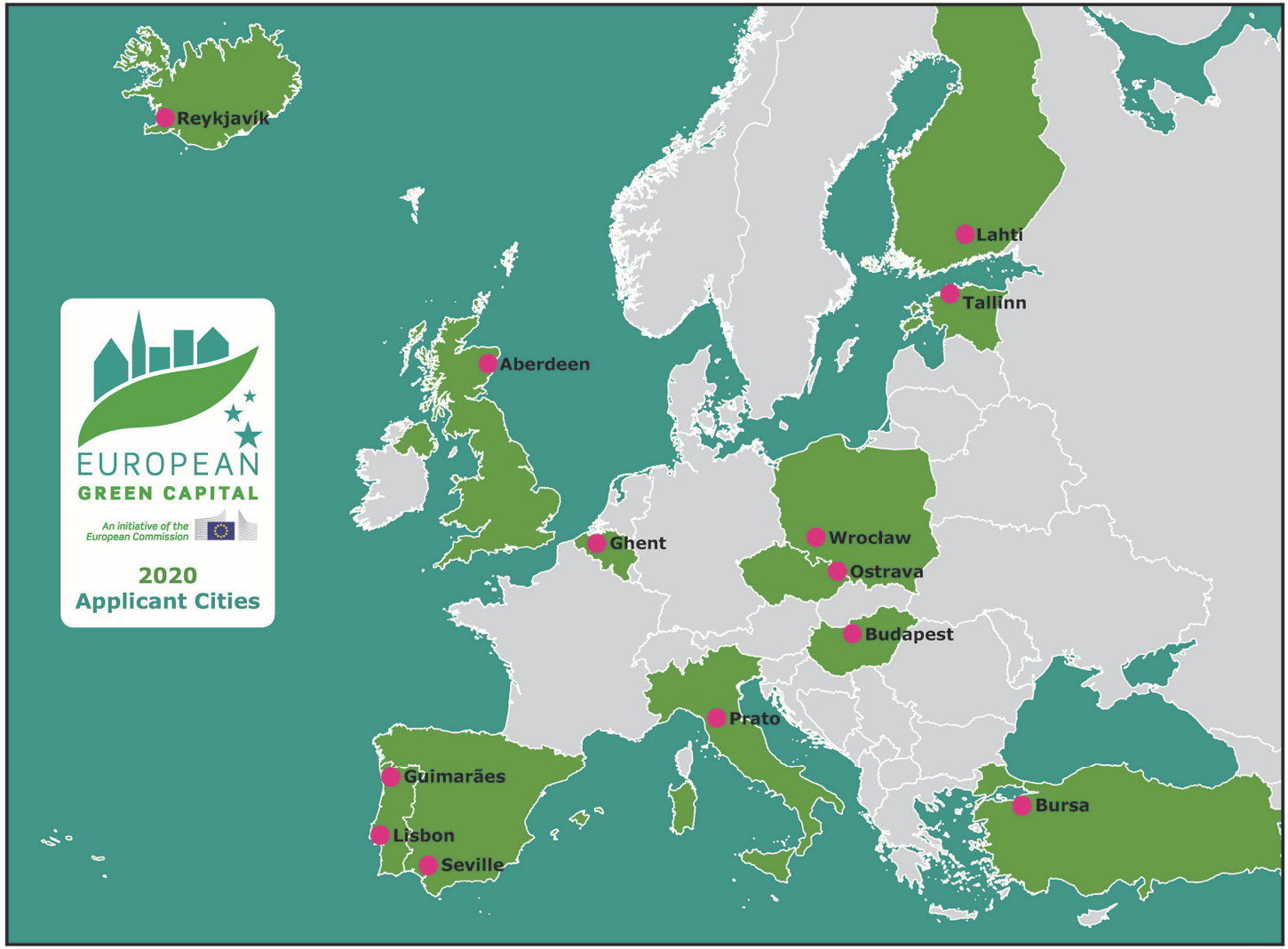


**Figure 2.1 - Map of European Green Capital 2020 Applicant Cities**

## 2.3 TWELVE ENVIRONMENTAL INDICATORS

The selection of the European Green Capital 2020 is based on the following 12 environmental indicators:

1. Climate Change: Mitigation
2. Climate Change: Adaptation
3. Sustainable Urban Mobility
4. Sustainable Land Use
5. Nature and Biodiversity
6. Air Quality
7. Noise
8. Waste
9. Water
10. Green Growth and Eco-innovation
11. Energy Performance
12. Governance

For the 2020 cycle, some of the 12 indicators have been changed from the previous cycle to incorporate changes to the text content as well as titles.

## 2.4 APPLICATION FORM

The format of the Application Form was modified for the 2015 award cycle to ask cities to provide information for each of the 12 indicator areas in the format of 'Present Situation, Past Performance and Future Plans' underpinned by the EMS principles of 'Plan, Do & Check and Act'. This was found to be successful and was retained for the succeeding award cycles. The format of the Application Form was modified for the 2018 cycle to ask cities to provide environmental data in table format for each indicator. This facilitated the extraction of data to be used for benchmarking of the cities and was retained for the 2019 and 2020 cycles. Also, Section E of each indicator, Good Practices, was removed from the Indicator sections and a new section called the Good Practices section was added to the end of the Application Form asking cities to provide six examples of Good Practices in their city. This was retained for the 2020 cycle. A copy of the 2020 EGCA Application Form is attached in Appendix A.

For this award cycle some modifications have been made to the indicator structure, allowing for a more consistent document across the 12 indicators. The Guidance Note was also revised for the 2018 award cycle to provide a policy background and further relevant information to shape applicant cities responses. These revisions were retained for the 2020 cycle. The 2020 Award Application Form has four sections per indicator 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. The 'budgets' refer to approved budgets to be used for the implementation of these reports, plans or strategies.

The 2016 EGCA Application Form introduced a new section at the start of the application form 'City Introduction & Context'. This section was retained for the 2017, 2018, 2019 and 2020 EGCA cycles as it is considered to provide valuable insight and context to the Expert Panel. A legislative non-compliance background check of shortlisted cities was also conducted as part of the 2020 award technical assessment.

## 2.5 EXPERT TECHNICAL ASSESSMENT PANEL

The Technical Assessment Panel consists of 12 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.

**Table 2.2 - Expert Technical Assessment Panel**

| | Indicator | Expert | Title |
|---|---|---|---|
| **1** | Climate Change: Mitigation | Dr. Matthew Kennedy | Head of Strategy and Business (International Energy Research Centre), Ireland |
| **2** | Climate Change: Adaptation | Ms. Birgit Georgi | Urban and Adaptation Expert, Founder of 'Strong Cities in a Changing Climate', Germany |
| **3** | Sustainable Urban Mobility | Dr. Ian Skinner | Director, Transport and Environmental Policy Research, Crowborough, United Kingdom |
| **4** | Sustainable Land Use | Dr. Annemieke Smit | Secretary to the Board of Wageningen Environmental Research (part of Wageningen University and Research), The Netherlands |
| **5** | Nature and Biodiversity | Mr. David Jamieson | Parks & Green Space Manager, City of Edinburgh Council, and Director, Greenspace Scotland, United Kingdom |
| **6** | Air Quality | Mr. Joan Marc Craviotto Arnau | Air Quality Project Manager at Barcelona City Council, Spain |
| **7** | Noise | Prof. Dr. Diogo Alarcão | Specialist in Acoustic Engineering. Principal Researcher and Professor at Instituto Superior Técnico University of Lisbon, Portugal & the Polytechnic Institute of Lisbon, Portugal |
| **8** | Waste | Mr. Warren Phelan | Technical Director, Waste, Energy & Environment, RPS, Ireland |
| **9** | Water | Mr. Christof Mainz | Senior/First Officer at the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Bonn, Germany |
| **10** | Green Growth and Eco-innovation | Mr. Marc Okhuijsen | Co-founder and owner Zonnova BV, Director at RéciproCité, The Netherlands |
| **11** | Energy Performance | Prof. Dr. Manfred Fischedick | Vice President of the Wuppertal Institute and Professor at the Schumpeter School of Business and Economics, Wuppertal, Germany |
| **12** | Governance | Mr. Alex Minshull | Innovation and Sustainability Service Manager, Bristol City Council, United Kingdom |

## 2.6 TECHNICAL ASSESSMENT PROCEDURE

### 2.6.1 Pre-selection Screening

In accordance with Section 4.3: Pre-selection of the Rules of Contest, the Secretariat validated the applications for compliance with the criteria set out in Section 3 of the Rules of Contest. Applications which did not comply with the Rules of Contest were issued to the Commission for confirmation on the findings of the Secretariat regarding their validity. Compliant applications were issued to the Expert panel for technical evaluation.

### 2.6.2 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 is considered on an equal basis by the Expert**.

### 2.6.3 Clarifications & Benchmarking

Due to the introduction of the Rules of Contest and Financial Incentive (see Section 2.1), to ensure a fair and transparent competition process, a clarifications procedure was not undertaken for the 2020 cycle of the competition.

Benchmarking was undertaken by the EGCA Secretariat; key performance data provided by the cities was extracted from their application forms and synthesised into a presentation for the Expert Panel to help inform their evaluation of the applicant cities. The benchmarking data was made available to the Experts for the duration of the technical evaluation process. This data will be further utilised in EGCA publications prepared by the Secretariat.

### 2.6.4 Ranking Criteria

Experts use a defined ranking system. Under this ranking system a position of $1^{st}$, $2^{nd}$, $3^{rd}$ etc. is applied to each city per indicator. Since there are 13 applications to be evaluated then each city must be ranked from $1^{st}$ as the best to $13^{th}$ as the weakest. Note: these are not quantitative scores but rankings.

### 2.6.5 Peer Review

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

**Table 2.3 - Indicators and corresponding Primary Expert & Peer Reviewers**

| | Indicator | Primary Expert | Peer Reviewer |
|---|---|---|---|
| **1** | Climate Change: Mitigation | Dr. Matthew Kennedy | Prof. Dr. Manfred Fischedick |
| **2** | Climate Change: Adaptation | Ms. Birgit Georgi | Mr. Christof Mainz |
| **3** | Sustainable Urban Mobility | Dr. Ian Skinner | Mr. Alex Minshull |
| **4** | Sustainable Land Use | Dr. Annemieke Smit | Mr. David Jamieson |
| **5** | Nature and Biodiversity | Mr. David Jamieson | Dr. Annemieke Smit |
| **6** | Air Quality | Mr. Joan Marc Craviotto Arnau | Prof. Dr. Diogo Alarcão |
| **7** | Noise | Prof. Dr. Diogo Alarcão | Mr. Joan Marc Craviotto Arnau |
| **8** | Waste | Mr. Warren Phelan | Mr. Marc Okhuijsen |
| **9** | Water | Mr. Christof Mainz | Ms. Birgit Georgi |
| **10** | Green Growth and Eco-innovation | Mr. Marc Okhuijsen | Mr. Warren Phelan |
| **11** | Energy Performance | Prof. Dr. Manfred Fischedick | Dr. Matthew Kennedy |
| **12** | Governance | Mr. Alex Minshull | Dr. Ian Skinner |

### 2.6.6 Conflicted Application

In the event of a conflicted application, where an Expert cannot complete an unbiased assessment of an application for personal or professional reasons, a suitable external expert is identified by the EGCA Secretariat to complete both the primary technical review and the peer review of the conflicted application. The review carried out by the external expert is discussed with the main evaluator for the indicator and the peer reviewer, and the overall rank is agreed amongst the three experts involved. There was no conflict of interest raised in the 2020 EGCA cycle.

### 2.6.7 Background Check

As part of the EGCA process a high level background check is carried out by the European Commission on all shortlisted cities to identify if any of those shortlisted are in breach of environmental legislation or do not meet European reporting requirements. This background check is not presented to the Expert Panel during the technical assessment process. It is provided to the Jury in advance of the Jury Meeting and their deliberations.

# 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 2020:

**Ghent-Lahti-Lisbon**

The Commission will invite these three cities to the next stage of the evaluation process.

The Expert Panel's detailed ranking for the shortlisted cities in all indicator areas is detailed in Table 3.1.

**Table 3.1 - Technical Ranking of Shortlisted Cities for European Green Capital Award 2020**

| Indicator / Applicant City | Climate Change: Mitigation | Climate Change: Adaptation | Sustainable Urban Mobility | Sustainable Land Use | Nature & Biodiversity | Air Quality | Noise | Waste | Water | Green Growth and Eco-innovation | Energy Performance | Governance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ghent** | 1 | 1 | 2 | 3 | 4 | 5 | 2 | 1 | 2 | 4 | 1 | 5 |
| **Lahti** | 10 | 4 | 4 | 6 | 1 | 1 | 1 | 2 | 1 | 2 | 6 | 1 |
| **Lisbon** | 6 | 3 | 1 | 1 | 7 | 8 | 6 | 3 | 5 | 1 | 4 | 4 |

## 3.1 WROCŁAW TECHNICAL ASSESSMENT

Following the technical assessment process, the overall combined ranking of the City of Wrocław is 6. Please find below a detailed ranking per individual indicator.

### 3.1.1 Climate Change: Mitigation

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Dr. Matthew Kennedy | Prof. Dr. Manfred Fischedick | 11 |

Wrocław has made some energy and $CO_2$ improvements across industry and the renewable energy share (RES) but much of this progress has been offset by a doubling of $CO_2$ emissions in transport and public buildings. It is very positive that the City is quantifying expected achievements in terms of energy efficiency savings and $CO_2$ reductions but built environment measures (including lighting, deep retrofit and RES-H) need to be implemented to tackle the public building stock.

The City has not presented ongoing improvements in terms of emissions reductions resulting from actions. This may be because the monitoring indicators lack baseline (and targets). This provides a policy challenge for unlocking public investment to provide deeper energy programmes. The proposal needs quantifiable metrics to assess success of past and ongoing programmes.

The proposal, like many city proposals, would benefit from concrete future plans and demonstrable goals in areas including modernisation of buildings, heat networks and public transport.

### 3.1.2 Climate Change: Adaptation

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Ms. Birgit Georgi | Mr. Christof Mainz | 6 |

Wrocław has a clear vision on climate change adaptation, and is very active and committed to adaptation action, despite being in the first steps of an adaptation planning process. The finalisation of the Urban Adaptation Plan is foreseen for 2019. The City is involved in climate activities at local, national and international level. Wrocław joined the new Covenant of Mayors for Climate and Energy in 2016, the Compact of Mayors, NAZCA and many other networks. It was the first Polish city to create a specialised climate unit - the Office of Nature and Climate Protection and participates actively in the interest of other European cities in the 'Adaptation to Climate Change' Partnership within the EU Urban Agenda initiative.

Wrocław has implemented a significant number of measures on flood protection over the past years. The current flood protection system protects Wrocław against floods, such as the high one recorded in 1997. The historically developed areas are protected mainly by technical activities. The use of areas at risk of flooding is restricted. Many measures that have been implemented include the modernisation of the Oder river embankments and boulevards, and increasing the capacity of the river bed; reconstruction of hydro-technical constructions; development of beaches; development of flood polders. The new green settlement area WuWA includes retention areas, uses rain water, a

'Grey into Green' programme for kindergartens and schools was developed, with 3,316 trees planted in the Oder valley and nearly 400,000 forest-tree seedlings.

The City considers adaptation as an integrated part of urban development. Adaptation to climate change has been integrated into Wrocław's other strategic documents. This includes the Environmental Protection Programme and the City Masterplan. In terms of concrete measures, the new WuWA housing complex demonstrates the win-win-solutions from the combination of climate change mitigation, adaptation, green infrastructure and water management. Going forward, the City needs to further strengthen environmental integration. Measures need to be planned more systematically according to risks, and monitored to understand their effectiveness.

Following the current planning phase, Wrocław needs to develop comprehensive and systematic measures for adaptation to climate change impacts beyond flood management, such as impacts related to heat effects. Consideration needs to be given to all steps of the adaptation planning cycle, including implementation planning, funding sources and effective monitoring. Wrocław has recognised the importance of participatory approaches, but this needs further development. Work is underway to determine the adaptive capacity of the city, and potential actions for raising the level of awareness and understanding are mentioned but not further specified.

### 3.1.3 Sustainable Urban Mobility

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Dr. Ian Skinner | Mr. Alex Minshull | 5 |

Wrocław's mobility policy focuses on the development of public transport, cycling and walking as the primary means of mobility. It is mentioned that 'integration' is important; it would be good to understand better what this means in practice in relation to using land use planning to encourage the use of public transport, walking and cycling. Each mode has a separate programme.

A SUMP is being developed. There is a consultative body - involving citizens and stakeholders - to help develop cycling. It would be good to know whether there are similar bodies for other modes.

Many measures have been implemented to support public transport, cycling and walking. There is a Bicycle Officer and a Pedestrian Officer, who look after the interests of cyclists and pedestrians respectively, and who are responsible for implementing the respective programmes. It would be good to have more information on the city's planned measures for walking.

There is some mention of measures to restrict car use; more information on these would have been useful.

There are also various measures to encourage shared mobility, the use of alternative fuels and to improve the environmental performance of freight, including consolidation centres. It would be good to have more information on the city's plans in these areas.

### 3.1.4 Sustainable Land Use

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Dr. Annemieke Smit | Mr. David Jamieson | 5 |

Wrocław has a strategic spatial development plan that provides a clear vision on green (and blue) infrastructure, which ensures the connectivity of green elements along both the green circular belts and the green wedges, and also decreases the sharp boundary between urban and rural or natural areas.

The system, that assesses accessibility, absorptivity, structure, and function is very interesting and allows the City to evaluate where green areas should be added or improved. Unfortunately, no information on the actual quality (as assessed by this system) was provided in the application. Spatial presentation or interactive maps could be explored as option to improve public engagement (e.g. to inform citizens or even give the citizens the opportunity to comment on certain variables).

The 'Green without borders' proposal may be the key to high accessibility levels, but it is not explained within the application and objectives and results are not clearly stated. The plans for improvement of green areas, and ensuring greater access for citizens are not elaborated upon.

The participatory budget is interesting, but unfortunately only mentioned in passing, and never explained in detail. The financial details lack clarity, whether it is backed by the municipality/council, or if there are other financial supporters. There is some further detail in the 'Good Practices' section; however the question of how the budget is financed still remains.

Wrocław is advised to thoroughly read the application form and guidance note to help structure answers, to ensure the great work Wrocław is doing is fully conveyed in the assessment. Addressing all topics asked for in the application form and relating the answers to the line of questioning in all three sections would significantly improve any future application.

### 3.1.5 Nature & Biodiversity

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Mr. David Jamieson | Dr. Annemieke Smit | 3 |

The authors of this submission are to be congratulated for presenting clear, specific, and concise responses to each of the subject sections.

Wrocław is protecting a significant amount of its city for nature through designations and positive management, as well as actively seeking to increase the number of sites it protects. However, there would appear to be further scope for linking these areas of high biodiversity through the creation and extension of an urban bio-network; perhaps via development of the rudimentary ecological connections system and the acceleration of the green arteries programme.

The tax relief system for projects that contribute to green infrastructure and ecological enhancement is very innovative. It is an excellent way of incentivising property owners to create valuable wildlife habitat in biodiversity-depleted locations.

The City has a varied and active range of educational programmes and initiatives raising awareness of biodiversity and giving residents opportunities to engage in nature conservation. Access to the Wrocław Citizens budget is a particularly practical way of resourcing biodiversity action. However, perhaps rather than simply selecting projects for municipal delivery, communities can possibly become better engaged with nature if encouraged to undertake local biodiversity projects themselves with the funding.

The current and planned identification and monitoring of Giant Hogweed by the City Guard unit is important in ascertaining the spread and impact of this invasive non-native plant. It would be interesting to see how it is treated, are herbicides deployed, and if the control programme is effective. If so, is eradication feasible?

### 3.1.6 Air Quality

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Mr. Joan Marc Craviotto Arnau | Prof. Dr. Diogo Alarcão | 3 |

The air quality data presented by Wrocław is complete and up to date. There is one exceedance of the annual limit value for $NO_2$. In the case of PM, annual levels of $PM_{10}$ are in compliance with the EU legislation but there is one station that exceeds the limit of daily exceedances. Referring to $PM_{2.5}$, there is an exceedance at the same station mentioned for $NO_2$.

The application explains that the long winters, poor ventilation and the occurrence of fog and mists directly impact air quality. The common use of old and low efficient domestic heaters are linked to the pollution peaks of $PM_{10}$. The network is not completely explained, but it is adequately sized for the city. Trend charts of annual mean of $NO_2$, $PM_{10}$ and $PM_{2.5}$ are shown which help to describe the local situation.

The application shows source apportionment information for $PM_{10}$, $PM_{2.5}$ and $NO_2$. The main contributor to PM is household heating. The main contributors to $NO_2$ are road transport and industry. No information regarding long-range pollution is presented, but the local sources are well known.

In terms of past planning, a regional plan is being implemented since 2014. The municipal Low Carbon Plan also has impacts on air quality. Powerful local measures are being implemented, like a DH system and a coaled-oven substitution programme, which will enable important reduction from household emissions. A street cleaning measure aims to reduce non-exhaust emissions of PM. With respect to $NO_2$, a measure oriented around the improvement of public transport fleet is presented. To demonstrate the effectiveness of the current planning, a chart of annual mean concentration of PM is shown, although it is not possible to link the reduction to the municipal planning. Public awareness measures are presented which is positive.

When it comes to future planning, several general measures are presented. The measure to substitute 30,000 coal-fired heating systems and introduce district heating will make a valuable contribution to PM reduction. The presentation of budgetary data and a simple future scenario forecast are beneficial.

Wrocław has presented a very complete application, providing almost all of the required information in a well-ordered and easily understandable way. The air quality assessment is complete and the pollution abatement strategy correlates well with it. Ambitious measures are planned and budgetary information is provided. As such, it is clear that the City is focused and committed to their planned objectives. It is evident that the City optimised their responses and made good use of the application form to showcase their plans for air quality.

### 3.1.7 Noise

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Prof. Dr. Diogo Alarcão | Mr. Joan Marc Craviotto Arnau | 5 |

Data from the strategic noise mapping (2017) show that the major noise source is derived from road traffic, and that the population is exposed to moderately low share values and thus the present situation seems to portray an overall good acoustic environment in the city. Of the population, 48.9% and 10.3% is exposed respectively to $L_{den}$ levels for total noise over 55 dB(A) and to $L_{den}$ levels for total noise over 65 dB(A). Concerning the indicator $L_n$, 50.4% and 12.7% of the population is exposed respectively to levels for total noise above 45 dB(A) and to levels for total noise above 55 dB(A).

Trends are provided, indicating that, from 2013 to 2017, the population exposed to road noise $L_{den}$ > 55 dB increased slightly (1.3%) but that for railway and tramway noise the share of population decreased slightly (1.3% and 2% decrease, respectively). Concerning the $L_n$ indicator, trends show that the population exposed to values > 50 dB decreased for all noise types, which is positive.

Fourteen candidate quiet areas were identified during the 2017 noise mapping process ($L_{den}$ < 55 dB; area > 1 ha), these areas serving for recreation and leisure purposes and being located outside the inner city zone. It is reported that 2% of the population is living within 300 m of these candidate quiet areas and the City wants to protect them in the future.

Many good noise reduction measures already implemented are mentioned in the application, specific projects on acoustic barriers, railways and tramways improvement, traffic calming, parking schemes (paid parking in the city centre and P&R) and the promotion of soft modes of transportation including extension of cycle tracks are reported, and associated budgets are provided for some of them. Overall, stakeholder interaction and involvement by the City as well as communication with the citizens are considered good.

The current Noise Action Plan (2013-2018) will be revised in 2018. It establishes the strategic target of reducing noise exposure, its actions being directed to reducing areas of high noise exposure (hot spots - $L_{den}$ > 65 dB and $L_n$ > 60 dB). In addition, the City also provides a comprehensive record of the percentage of the current Action Plan that has been effectively implemented, which is commendable.

### 3.1.8 Waste

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Mr. Warren Phelan | Mr. Marc Okhuijsen | 8 |

The application structure was good and the City provided a response to address all of the questions. However there was an over reliance on reference materials and some case studies would have benefited from more explanation. Overall the system is not as high as other cities but the management system is progressing.

The waste collection system has progressed and the level of source separation and segregated materials is increasing. However compared to other applicants the collection system is not as developed for example the lack of food waste collections.

The City's waste Infrastructure is progressing and there is a good mix of solutions already in place - mechanical biological treatment, composting, landfill, transfer stations and sorting facilities. However the response would have benefited from clarity on the management of residual materials sent for treatment to cement kilns as alternative fuels.

The transformation of the waste collection market in the city is well described and the benefits of this transition are well laid out. The City has made a good decision and is benefiting from it.

The City has demonstrated a good selection of prevention (including reuse) and recycling awareness projects and campaigns. The effectiveness of these is not clear however and the examples would have benefited from better descriptions on the outcome and value of such measures.

### 3.1.9 Water

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Mr. Christof Mainz | Ms. Birgit Georgi | 6 |

The present situation is well described, providing the majority of the information requested and focusing on drinking water and waste water by answering the questions in brief. Some information is missing, e.g. surface water quality, groundwater, floods and water reuse. Addressing these gaps and describing those mentioned in more detail would improve the application.

Past performance is described for measures taken regarding waste water, drinking water. The City provides quite technical descriptions of projects and improved situation. It would have been good to see some innovative solutions. However general success/achievements are quite visible (improved connection, monitoring, energy reduction). Some environmental awareness raising actions are detailed but unfortunately very little detail is provided with respect to the WFD. Similarly, no detail is given on flooding or groundwater.

Future plans focus on urban waste water treatment plants and the development of water supply. These are quite technical and align with the questions asked in the application form. A brief

description of green roofing, grey water and the network management is given however it would have been interesting to learn more about these initiatives. As a member of the core group of the Urban Water Agenda 2030, it was anticipated that more information would be given to describe future actions.

Some information in the context of EU water legislation is provided but, unfortunately, there is no information on initiatives that go beyond legal requirements. Water efficiency action and bathing water actions are under way which is positive.

Overall, some activities in the water sector are carried out, but only at a general/medium level. Future activities are interesting but less visible and focus mainly on water supply and waste water. As a core group of the Urban Water Agenda 2030, a stronger application is expected.

### 3.1.10 Green Growth & Eco-innovation

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Mr. Marc Okhuijsen | Mr. Warren Phelan | 6 |

Wrocław's application is easy to follow and well laid out for Green Growth and Eco-Innovation; all questions were addressed; it is easy to evaluate and there is good use of figures etc., but can sometimes be too reliant on figures. Some of the case studies would have benefited from further explanation. Circular economy themes and partnering with the business sector are not mentioned in the past and present sections of the application. Awareness building and circular economy for the citizens are both strong themes within the Ekocentrum and the Climate-KIC. Wrocław's application is based around Local Agenda 21.

A lot has been done to improve the tissue of the city, from closing the water circle, to the 'Grey for green project' and working on transport issues. The transformation of the collection markets detailed is well described and the benefits of this transition are well laid out within the application. The 'Do not throw away - Wrocław is sharing' website with monthly exchange events is commendable. Green procurement is currently just beginning, but should be another positive programme when in effect.

Future planned measures include rectifying the missing cooperation with the business sector, however more quantitative targets should be given. Cooperation with the universities as eco-innovation incubators, car sharing, E-cars and charging points, E-buses, PV and biogas programmes are on the future agenda.

### 3.1.11 Energy Performance

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Prof. Dr. Manfred Fischedick | Dr. Matthew Kennedy | 9 |

The City of Wrocław is still heavily dependent on the use of coal. Approximately 80% of the Polish energy demand, including heat, is covered by coal. Therefore one of the major goals for the city is to

reduce coal consumption. Programmes like KAWKA are dedicated to that goal and support replacement of coal fuelled heating systems. In addition to that, Wrocław offers financial incentives for private PV installations to residents willing to eliminate coal heating.

Between 2007 and 2011 the City conducted the renovation of more than 150 city owned buildings under the 100 Townhouse Programme. Various measures and activities are shown to increase energy efficiency and to increase share of renewables (e.g. thermal scanning programme, smart meter programme and monitoring systems) that have been already conducted in the past or planned to be implemented in the near future. Quite interesting is the installation of a trigeneration plant in 2012, a technology that is still not common in Europe. Activities dedicated to raise awareness with of energy consumption behaviour are missing (with the exemption of the 'Children for Climate' programme).

The different measures planned for the future are well described and should contribute to energy efficiency improvements. This includes a low-carbon economy plan where potential investments in energy saving actions across all relevant sectors are listed. However, the status of this investment plan is not clear (e.g. is there a dedicated city budget behind that plan). The same is true for the Multi-Year Financial Prognosis; it would be beneficial to know which part of the expected sector specific expenditures are reserved for energy efficiency measures. Unfortunately, a clear long-term strategy (2050) is missing.

### 3.1.12 Governance

| Main Evaluator | Co-evaluator | Ranking |
|---|---|---|
| Mr. Alex Minshull | Dr. Ian Skinner | 3 |

The City of Wrocław has had 'ecological' policies for 20 years and in its application states that it has vision to become sustainable. It would have been helpful to have a little more detail on this to show how it represents an integrated vision. The City also has a good range of thematic plans, but it would have been helpful if their relationship to the overall vision had been more clearly described. The plans have been adopted by the City Council. The application provides a clear description of the environmental budget of the City Council including a very clear and informative graphic.

Wrocław demonstrates good citizen engagement. The City has a well-established Participatory Budget process. A clear statement of citizen involvement is provided, and a Public Participation Office takes responsibility for this mandate. A youth council, neighbourhood social councils and social dialogue groups are well established and engage in dialogue on environmental issues. The application does not fully show how these dialogues lead to changes/development of policy.

A new Sustainable Development Department has been created at the top tier of the City Council staff structure, with a Deputy Mayor in the Cabinet. The City Council has EMAS accreditation and a range of projects are described, addressing a range of direct and indirect aspects. The City is a member of networks such as Eurocities and ICLEI and committed to CoM etc. It would have been helpful if some information on the level of activity had been included in the application.

Whilst many cities have partnerships in place Wrocław was one of the few cities which demonstrated wider city awareness or engagement in the bid to become European Green Capital.

The development of this application has been led by the City Council and in cooperation with local NGOs representatives, the Youth Parliament/Youth City Council representatives and scientists and experts who contributed to the bid. The cooperation has included meetings, workshops, discussions, brainstorming in the final two months prior to the application submission. Wrocław's bid for the EGCA 2020 was announced to the public during a press conference held a week before the submission deadline.

Wrocław was one of the few cities in the competition to explain its historical context within the Governance section of the application. The City notes that environmental awareness in Poland lags western Europe and this has been considered in the assessment of Wrocław's application.

# APPENDIX A

# APPLICATION FORM FOR THE EUROPEAN GREEN CAPITAL AWARD 2020

# Application Form for the European Green Capital Award 2020

## City Introduction & Context

Give an overview of the city and a general background to the application, including examples of social and economic sustainability in the city.

Discuss positive and negative factors that have influenced the quality of the environment within the city and its surrounding area.

Provide a description of the key environmental challenges which the city faces including historical, geographical and/or socio-economic factors which have influenced the city's development.

The city's infrastructure plan should be briefly explained.

Applicants are advised to include any former or outstanding environmental legal proceedings in this section.

Please also complete the following table:

| **Indicator** | | **Units** | **Year of data** |
|---|---|---|---|
| Population | | Inhabitants | |
| Area | | $km^2$ | |
| Population Density | | $Inh/km^2$ | |
| GDP | | €/Capita | |
| Köppen climate classification | | | |

**(max. 1000 words and five graphics, images or tables)**

## 1. Climate Change: Mitigation

### Refer to Section 2.1 of the Guidance Note

**1A. Present Situation**

Please complete the following table:

| | | | |
|---|---|---|---|
| City reduction targets (add rows if needed for further commitments) | **Base Year** | **Target Year** | **% Reduction** |
| | | | |
| | | | |
| | | | |
| $CO_2$ emissions/capita | **t $CO_2$/inh - Total** | **Transport t $CO_2$/inh** | **Total (less transport) t $CO_2$/inh** |
| | | | |
| Total $CO_2$ emissions (tonnes) per year | | Tonnes | Please insert year of data here |
| Total $CO_2$ emissions per MWh electricity consumed | | Tonnes | Please insert year of data here |

Describe the present situation in relation to $CO_2$ emissions, including any relevant disadvantages or constraints resulting from historical, geographical and/or socio-economic factors which may have influenced this indicator area.

Give details of any Baseline Emission Inventory prepared by the city, mentioning the baseline year and the applied methodology (direct/indirect emissions, data collection process, monitoring system), as well as the competent department. Provide a breakdown of the main sources of emissions.

Where available, information/data on the inventory and on the following indicators should be provided from previous (5-10) years to show trends, together with an explanation of the evolution.

Scientific grounds should be provided for any claimed reduction in $CO_2$ emissions. Describe how the inventory system and information is integrated in the design of policies and measures.

Provide figures (in the table above), and comment on, the following specific indicators for the city:

1. Total $CO_2$ emissions (tonnes) per year;
2. $CO_2$ emissions per capita (tonnes) per year;
3. $CO_2$ emissions per capita (tonnes) resulting from fuel use in transport;
4. $CO_2$ emissions (tonnes) per MWh electricity consumed;
5. $CO_2$ emissions reduction target(s) (e.g. 20% by 2020 compared to 1990).

Please also state clearly what year the data provided relates to.

Mention any target(s) adopted specifically for the municipal administration (e.g. carbon neutral municipality

by 2020, adaptation measures set on municipal level).

**(max. 600 words and five graphics, images or tables)**

**1B. Past Performance**

Describe the measures implemented over the last five to ten years to reduce greenhouse gas emissions, including resources allocated to implement these measures. Comment on which measures have been most effective and how the implementation and impacts have been monitored.

Make reference to:

1. An overall strategy for climate change or any other strategy or action plan to reduce emissions;
2. Mainstreaming of climate protection measures across municipal services and in key areas of action such as energy efficiency in residential and commercial buildings, public transport and waste management. Highlight any innovative schemes for the built environment such as low carbon zones;
3. Mechanisms used (e.g. local regulations, financing schemes, partnerships). Explain how the city works on emissions reduction with other governmental bodies, private sector service providers, enterprises and citizens. Mention relevant national legislation or programmes and participation in EU-funded projects or networks.

Provide details on the monitoring system (frequency, responsibility, outcomes) and how lessons learned have been used.

**(max. 1200 words and five graphics, images or tables)**

**1C. Future Plans**

Describe the future short and long term objectives and proposed approach for further emissions reduction. Describe planned measures, including timescales and emphasise to what extent plans are supported by commitments, budget and staff allocations and monitoring and performance evaluation schemes.

Make reference to any long-term strategy employed and how it is integrated with other environmental areas.

Briefly explain the rationale for choosing these future measures and highlight any innovative financing arrangements.

**(max. 800 words and five graphics, images or tables)**

**1D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-

selection stage. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 2. Climate Change: Adaptation

### Refer to Section 2.2 of the Guidance Note

**2A. Present Situation**

Mention any target(s) adopted specifically for the municipal administration (e.g. adaptation measures set on municipal level).

Regarding adaptation to climate change, please mention if your city has developed a comprehensive local adaptation strategy and/or integrated adaptation to climate change into existing relevant plans (e.g. if your city has joined or is planning to join the updated 'Covenant of Mayors for Climate and Energy' that has integrated the former Mayors Adapt initiative).

**(max. 600 words and five graphics, images or tables)**

**2B. Past Performance**

Describe the overall strategy and action plans for climate change adaptation over the last five to ten years.

Describe the city's approach to adaptation to the impacts of climate change, including details of any analysis / vulnerability studies undertaken, and how the risks identified have been addressed via an adaptation to climate change strategy : action plan for your city.

**(max. 1200 words and five graphics, images or tables)**

**2C. Future Plans**

Describe the future short and long term objectives and proposed approach for further 'climate-proofing' and adaptation to the impacts of climate change. Describe planned measures, including timescales, and emphasise to what extent plans are supported by commitments, budget and staff allocations and monitoring and performance evaluation schemes.

Make reference to any long-term strategy employed and how it is integrated with other environmental areas.

Briefly explain the rationale for choosing these future measures and highlight any innovative financing arrangements.

**(max. 800 words and five graphics, images or tables)**

**2D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

| **(max. 400 words)** |
| --- |

## 3. Sustainable Urban Mobility

### Refer to Section 2.3 of the Guidance Note

**3A. Present Situation**

Please complete the following table providing the most recent data that is available:

| Indicator | Data | | Units | Year of Data Provided |
|---|---|---|---|---|
| Proportion of population living within 300 metres of an hourly (or more frequent) public transport service | | | % | |
| For all journeys under 5 km, proportion of these journeys undertaken by:<br>i) Car;<br>ii) Public transport;<br>iii) Bicycle;<br>iv) Foot; and<br>v) Other. | Car | | % | |
| | Public Transport | | | |
| | Cycling | | | |
| | Foot | | | |
| | Other | | | |
| Proportion of buses operating in the city that are low emission (at least Euro V) | | | % | |

In relation to the above, please state:

- For the 'proportion of population living within 300 metres of an hourly (or more frequent) public transport service': the data and calculation method of the figure;
- For public transport, please include journeys by any type of public transport present in the city (e.g. buses, trams, trolleybuses, light rail, and other rail services) even if these are privately operated;
- For 'other' in the table above please state what is included by any figure presented for as 'other'.

The remainder of the text in this section should describe the present situation for both local passenger transport and urban freight transport. This should include qualitative and quantitative information on:

- Transport infrastructure;
- Vehicle numbers;
- Mobility flows;
- Infrastructure management tools;
- Existing model shares;
- Alternative mobility scheme;
- Use of alternative-fuel vehicles;
- Any disadvantages or constraints of relevance to transport;
- Governance arrangements and responsibilities;

- Sustainable Urban Mobility Plans (SUMP).

Provide references where possible and relevant details.

**(max. 600 words and five graphics, images or tables)**

**3B. Past Performance**

The aim of this section is to make clear how the situation described in Section 3A has been achieved. Where available, quantitative information and data should be provided for the previous five to ten years in order to show recent trends.

The section should describe the **strategies and plans** that have been implemented over the last five to ten years (including any SUMP or equivalent) to ensure that the development of transport in the city was undertaken in an integrated manner. This should include both integration between the different modes of transport and also the integration of transport and land use planning in order to avoid unnecessary travel, to limit urban sprawl and to stimulate the use of public transport, cycling and walking. Be explicit about the main principles underlying the development of the plan to demonstrate that it is consistent with a SUMP. Refer to the way in which the city authorities involved stakeholders in the development of these plans, and in the development and implementation of relevant measures.

Describe the **measures** implemented over the last five to ten years. Particular reference should be given to measures that have helped to deliver:

- Increased use of public transport, cycling and walking;
- Decreased, and more efficient, car use, including measures to reduce congestion;
- Improvements in the environmental performance of urban freight, including cleaner vehicles, freight consolidation and bicycle deliveries;
- Increased use of alternatively-fuelled vehicles, using renewable and sustainable fuels; and
- Spatial planning approaches which have led to more environmentally-friendly transport models.

Comment on which measures have been most effective and lessons learned. Emphasise involvement in and possible benefits from the city's participation in national or European networks and programmes.

**(max. 1200 words and five graphics, images or tables)**

**3C. Future Plans**

The aim of this section is to demonstrate that there are plans and strategies in place to continue to develop the city's transport system in a sustainable direction. Describe the short and long term **objectives** for local transport (both passenger and freight) and how you plan to achieve these. Outline the **plans and strategies** in which these objectives are found, and the extent to which these are supported by political commitments, budget allocations, and monitoring and performance evaluation schemes. If new plans and/or strategies are to be developed, describe how these build on previous plans and strategies. Refer to integrated transport, land use planning, stakeholder involvement and the use of a SUMP or equivalent. Set out the

**measures**, including those adopted but not yet implemented, that contribute to the delivery of the objectives,including:

- Increased use of public transport, cycling and walking;
- Decreased, and more efficient, car use;
- Improvements in the environmental performance of urban freight;
- Increased use of alternatively-fuelled vehicles; and
- Development of alternative mobility schemes.

**(max. 800 words and five graphics, images or tables)**

**3D. References**

List supporting documentation (e.g. survey about user satisfaction with the urban transport system), and add links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 4. Sustainable Land Use

### Refer to Section 2.4 of the Guidance Note

**4A. Present Situation**

Please complete the following table providing the most recent data that is available:

| **Land use within the city (this will provide important background information on the character of the city and is not an evaluation criterion itself)** | | | | |
|---|---|---|---|---|
| **Land Use Data** | **Inner City** | **Overall City** | **Unit** | **Year of Data Provided** |
| Public Green Area | | | % | |
| Private Green Area | | | | |
| (Urban) Agricultural Land | | | | |
| Blue | | | | |
| Residential | | | | |
| Industrial/Economic | | | | |
| Mixed* | | | | |
| Brownfield** | | | | |
| Other*** | | | | |
| **Total** | **100** | **100** | | |
| **Population Data** | **Inner City** | **Overall City** | **Unit** | **Year of Data Provided** |
| Population density in built-up areas (city area minus green and blue) | | | Inhabitants per ha | |
| Population density (inhabitants per hectare) for new developments | | | Inhabitants per ha | |
| Percentage of people living within 300 m of green urban areas of any size | | | % | |
| Percentage of people living within 300 m of green urban areas of >5000 $m^2$ | | | % | |

*Please specify the land use types within the 'mixed land'

**See guidance note for clarification

***Please specify 'other'

Green Urban Areas/Green Infrastructure

1. What types of green urban areas can be found in the city (please refer to the map)?
2. Are green areas connected, and if so, in what way?
3. Why are green urban areas important for the city? What benefits are expected from green urban areas?

4. What indicators are used to assess the quality of green (and blue) urban areas? What is the quality of the urban green (and blue) areas, according to the indicators used?
5. How is accessibility to green urban areas ensured for all citizens?

Sustainable Land Use

1. Is there a vision or strategy for sustainable land use?
2. How does the city deal with current and future changes such as economic growth, demographic or climate change integrated in sustainable land use planning?
3. How much land within the city consists of brownfields (or derelict or underused zones) and how many of those areas have been regenerated during the last 5 years (please refer to the map)?
4. What is the percentage of sealed surface (with buildings, pavement or otherwise)?
5. Are there any areas allocated for urban agriculture / allotment gardening? If so, to what extend do these areas contribute to supplying the city with resources (food)?

Maps

- Provide a land use map that indicates a) the municipality boundaries delineating the overall city area and b) the inner city area;
- Provide additional map(s) showing city parks, the scale of green and blue areas in the city, and their connectivity and coherence;
- Provide map(s) of the location of brownfield sites (derelict zones) that:
    a. Have been regenerated in the past ten years; and
    b. Have not been redeveloped (yet).

**(max. 1100 words and five graphics, images or tables plus the three requested maps)**

**4B. Past Performance**

Green Urban Areas/Green Infrastructure

1. What measures have been undertaken to increase green infrastructures? (e.g. sustainable urban drainage, green rooftops, vertical gardens, high-quality business parks and public spaces, biodiversity-rich communal gardens, green belts and metropolitan park systems);
2. What investments or policies have been used for promoting the use of green infrastructure? (e.g. tax reductions for green roofs, building permits, funding schemes for green roofs or biodiversity-rich communal gardens);
3. Have those investments or measures been effective or promoted changes in:
    a. Quality of green (and blue) urban areas? (if so, please show some trends);
    b. Connectivity of green urban areas; and
    c. Accessibility of green urban areas.
4. To what extent do green urban areas meet the needs of citizens or have citizens been involved in planning, designing or creating green urban areas?

Sustainable Land Use

1. What measures have been taken to minimise the total area of fallow, derelict and contaminated land (brownfields)?
2. How did the city organise (realise) the renovation or regeneration of derelict zones (make reference to involvement of partners, citizens, other cities or governments)?
3. What measures have been taken to minimise the environmental effects of soil sealing? How effective are those measures?
4. What other measures or plans were important for the city in regard to sustainable land use of green urban areas?

**(max. 1200 words and five graphics, images or tables)**

**4C. Future Plans**

1. What are the short and long term objectives and strategic approaches to the establishment and management (maintenance) of green urban areas (publicly and privately owned)?
2. How are those objectives related to;
   a. Social benefits of green areas (for people's quality of life, public health and recreation);
   b. Environmental benefits (regulating water balance, adaptation to weather extremes, filtering air pollution, pesticide risk and use reduction etc.); and
   c. Economical benefits.
3. What are the short and long term objectives and strategic approaches which address the rehabilitation of brown field sites, derelict and/or contaminated land, both for new development and/or desealing measures for environmental purposes?
4. To what extent are plans supported by commitments and budget allocations?
5. Are there any monitoring and performance evaluation schemes? If so, what criteria will be used to measure progress and impacts?
6. Are there any other future plans concerning Green Urban Areas or Sustainable Land Use worth mentioning?

**(max. 800 words and five graphics, images or tables)**

**4D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 5. Nature and Biodiversity

### Refer to Section 2.5 of the Guidance Note

**5A. Present Situation**

Please complete the following table providing the most recent data that is available:

| Indicator | Number | Total Area (ha) | Year of Data Provided |
|---|---|---|---|
| Number and total area of Natura 2000 sites that are located in the city or nearby (i.e. within 10 km) | | | |
| Number and total area of designated sites of **national** biodiversity importance within the city (habitat/species management areas) | | | |
| Number and total area of designated sites of **local (city)** biodiversity importance within the city (habitat/species management areas) | | | |
| Date and time horizon of your city's Biodiversity Action Plan | | | |

Describe how nature and biodiversity is monitored, protected and managed in your city, and how local people are engaged in nature conservation and biodiversity action.

Please provide details of the following:

1. Maps showing protected sites, habitats, ecosystems or biotopes;
2. Examples of species and habitat monitoring programmes;
3. Current strategies, plans and projects for the management of ecological networks, key sites, and priority species;
4. The city's approach to involving and engaging residents, visitors, business and institutions in planning and action for nature.

**(max. 600 words and five graphics, images or tables)**

**5B. Past Performance**

Describe how your city created and developed its measures to protect and improve nature and biodiversity over the last five to ten years. Comment on how effective these have been.

1. Indicate changes in the extent of sites and ecological network protected for nature and biodiversity (e.g. Natura 2000 network of sites);
2. Illustrate habitat and species trends using collected monitoring data;
3. Give examples of conservation actions to manage and restore sites and habitats, and redress

species, including any measures introduced to control invasive non-native species;

4. Explain how the city encourages nature in other open spaces. Has naturalisation been encouraged outside of formal nature reserves?
5. What communication and educational activities have been introduced to promote awareness of nature and biodiversity among the public, including young people?

**(max. 1200 words and five graphics, images or tables)**

**5C. Future Plans**

Describe the city's short and long term ambitions and objectives for nature and biodiversity and how these proposals will be achieved. Indicate strategic and policy commitments, budget allocations and monitoring and performance evaluation schemes. Demonstrate how this work coincides with the EU 2020 Biodiversity Strategy, Nature Directives and other relevant Directives such as sustainable use of pesticides and complementary national strategies.

**(max. 800 words and five graphics, images or tables)**

**5D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 6. Air Quality

### Refer to Section 2.6 of the Guidance Note

**6A. Present Situation**

Please complete the following table providing the most recent data that is available:

| Indicator | | Unit | Year of Data |
|---|---|---|---|
| Number of $PM_{10}$ monitoring stations | | No. of monitoring stations | |
| For each station provide the number of days per year $PM_{10}$ exceeded 50 µg/$m^3$ | | Days | |
| For each station provide annual average $PM_{10}$ concentration | | µg/$m^3$ | |
| Number of $NO_2$ monitoring stations | | No. of monitoring stations | |
| For each station provide the number of hours with $NO_2$ concentrations higher than 120 ug/$m^3$ | | Hours | |
| For each station provide annual average $NO_2$ concentration | | ug/$m^3$ | |
| Number of $PM_{2.5}$ monitoring stations | | No. of monitoring stations | |
| For each station provide the annual average $PM_{2.5}$ concentration | | ug/$m^3$ | |

Describe the present situation in relation to ambient air quality, including any relevant disadvantages or constraints resulting from historical, geographical and/or socio-economic factors which may have influenced this indicator area. Topographical constraints should also be mentioned where relevant. Where available, information/data should be provided from previous years (5-10) to show trends.

Make reference, providing data in the table above, to:

1. Assess the contribution from local sources and from long-range transport for annual mean concentration of $NO_2$, $PM_{10}$ and $PM_{2.5}$;
2. If available provide information on the relative contribution of different local sources (e.g. road traffic, residential wood combustion etc.) to the annual mean of $NO_2$, $PM_{10}$ and $PM_{2.5}$;
3. If exceedances occur, describe the extent of the exceedances in the city as a whole, not only at the monitoring sites. If available, provide maps of air pollutant concentrations.

**(max. 1000 words and five graphics, images or tables)**

**6B. Past Performance**

Describe the plans and measures implemented over the last five to ten years for the improvement of ambient air quality. Comment on which measures have been most effective.

Particular reference should be given to:

1. Existence and implementation status of an air quality management plan;
2. Local measures taken to improve air quality and quantify their effect on air quality;
3. Information for the public (both inhabitants and tourists) on air quality levels (e.g. web pages, information screens) in order to increase public awareness and behavioural change.

**(max. 800 words and five graphics, images or tables)**

**6C. Future Plans**

Describe the short and long term objectives for the future, proposed plans and the proposed approach and measures for their achievement. Quantify the effects of proposed measures on air quality.

Emphasise to what extent plans are supported by commitments, budget allocations, and monitoring and performance evaluation schemes.

**(max. 800 words and five graphics, images or tables)**

**6D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 7. Noise

### Refer to Section 2.7 of the Guidance Note

**7A. Present Situation**

Please complete the following table providing the most recent data that is available:

| Indicator | | Unit | Year of Data |
|---|---|---|---|
| Share of population exposed to total noise values of $L_{den}$ above 55 dB(A) | | % | |
| Share of population exposed to total noise values of $L_{den}$ above 65 dB(A) | | % | |
| Share of population exposed to total noise values of $L_n$ (night noise indicator) above 45 dB(A) | | % | |
| Share of population exposed to total noise values of $L_n$ (night noise indicator) above 55 dB(A) | | % | |
| The percentage of citizens living within 300 m of quiet areas | | % | |

Describe the present situation in relation to the quality of the acoustic environment, including any disadvantages or constraints resulting from historical, geographical and/or socio-economic factors which may have influenced this indicator area. Where available, information/data should be provided from previous years (5-10) to show trends.

Additional figures for noise exposure to individual noise sources (road, rail, air, industry, and leisure/entertainment) can also be included.

Information on formally defined and delimitated quiet areas, or sound improved areas, should also be included.

**(max. 800 words and five graphics, images or tables)**

**7B. Past Performance**

Describe the measures implemented in recent years for improving the urban sound quality and increasing awareness to noise. Comment on which measures have been most effective.

Make reference to:

1. Classification of territory (if applicable) into appropriate noise classes and with appropriate noise limits (e.g.: specially protected, hospitals/schools, residential, commercial, industrial) including details on enforcement mechanisms if in place;
2. Stakeholder involvement;

3. Communication with citizens;
4. Preservation and improvement of good acoustic urban environments such as quiet areas;
5. Noise reduction measures that influenced the current situation;
6. Municipal regulations concerning noise management and reduction;
7. With respect to action plans that are already adopted, what is the percentage of the plan effectively implemented (e.g. overall amounts already paid for actions versus overall amounts initially committed).

**(max. 1000 words and five graphics, images or tables)**

**7C. Future Plans**

Describe the short and long term objectives for quality of the acoustic environment and the proposed approach for their achievement. Emphasise to what extent plans are supported by commitments, budget allocations, and monitoring and performance evaluation schemes.

Make reference to:

1. Stakeholder involvement;
2. Consultation with the population including noise perception surveys;
3. Actions to reduce the impact of noise from roads, railways, industrial areas and air traffic (Noise Action Plan);
4. Foreseen reduction in the share of population exposed to noise values of $L_{den}$ (day-evening-night indicator) above 55 dB(A) and above 65 dB(A) and in the share of population exposed to noise values of $L_n$ (night indicator) above 45 dB(A) and 55 dB(A), mention targets;
5. Actions to maintain, extend, or improve urban quiet areas;
6. Holistic/qualitative approaches to the acoustic environment (e.g by soundscape design approaches, using green infrastructure solutions etc.).

**(max. 800 words and five graphics, images or tables)**

**7D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 8. Waste

### Refer to Section 2.8 of the Guidance Note

**8A. Present Situation**

Please complete the following table providing the most recent data that is available for your city. If city data is not available, please provide a short explanation and use regional or national data.

| Indicator | Type of Data (City/Regional/National) | Unit | Year of Data |
|---|---|---|---|
| Percentage of household waste sent to landfill | | % | |
| Percentage of household waste sent for thermal treatment or similar recovery | | % | |
| Percentage of organic waste collected separately *Please indicate what is included within the organic waste collected i.e. food waste only or food and garden waste* | | % | |
| Percentage of recycled household waste | | % | |
| Percentage of recycled packaging waste | | % | |
| Percentage of recovered packaging waste | | % | |
| Amount of household waste generated per capita | | kg/capita | |
| Amount of municipal waste generated per capita | | kg/capita | |

Describe the present situation in relation to waste production and management by responding with details to each of the following questions:

1. Waste strategies or plans in place;
2. Waste prevention measures which reduce food waste, packaging waste and other waste materials;
3. Reuse and/or repair initiatives/partnerships currently in the city (include an example describing the types and quantities of materials reused);
4. Describe current waste collection system, the types of waste collected separately (including organic wastes) and the extent of roll-out (% coverage) of the collection systems;
5. Provide details of the treatment of the separately collected wastes;
6. If thermal treatment operations are in use, describe the scale of the facility, the type of energy recovered, including the energy performance, and the number of households who are part of the facilities energy network;
7. Application of the 'polluter pays' principle, including 'Pay As You Throw' (PAYT) initiatives.

**(max. 800 words and five graphics, images or tables)**

**8B. Past Performance**

Describe the measures implemented over the last five to ten years for improving waste management and include details on the following:

1. Historical trends in the amount of household waste produced per capita in the city;
2. Medium to long-term measures/programmes which have promoted waste prevention or recycling;
3. Trends in waste treatment in the city, for example how have rates of recycling, recovery and disposal changed over this period?
4. Evolution of source segregated collection systems in the city;
5. The collection market in terms of how it has developed and the role of municipal (public) authorities and/or private waste companies;
6. Type and scale of infrastructure put in place to manage waste including the approach to managing residual waste and progress to date;
7. Use of instruments (economic or regulatory) applied in the city to effect the management of household and or municipal wastes.

**(max. 1000 words and five graphics, images or tables)**

**8C. Future Plans**

Describe the future plans of the city in terms of progressing the management of waste and the transition to a circular economy, which in the context of the waste sector refers to keeping resources within the system through activities such as reuse, repair, refurbishment, and recycling. Your response should include:

1. A description of the short and long term objectives/targets for the management of waste and the approach the city proposes to take to ensure these are achieved;
2. Emphasise to what extent plans are supported by commitments, such as budget allocations;
3. Details of the monitoring and performance evaluations of the waste system;
4. How the city is taking account of EU policy on waste management within the framework of the Circular Economy.

**(max. 800 words and five graphics, images or tables)**

**8D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 9. Water

### Refer to Section 2.9 of the Guidance Note

**9A. Present Situation**

Please complete the following table providing the most recent data that is available:

| Indicator | | Unit | Year of Data |
|---|---|---|---|
| Domestic usage (drinking water) - litres per capita per day | | litres/capita/day | |
| Total usage (drinking water) - litres per capita per day | | litres/capita/day | |
| Water loss in pipelines, leakage management and network rehabilitation | | % | |
| Percentage (%) of total annual generated waste water load, connected to waste water collecting system + urban waste water treatment plants (UWWTPs) | | % | |
| No. of WWTP | | Number | |
| Total design capacity (Population Equivalent - PE) | | PE | |
| Total load received by UWWTP (PE) | | PE | |
| Connection rate | | % | |
| Treatment level which is applied in each UWWTP: secondary or more stringent; in this case, type of treatment: nitrogen and/or phosphorus removal, disinfection etc. | | Treatment level | |
| Waste water reuse (describe type of reuse) | | % | |

Describe the present situation in relation to water management, including any relevant disadvantages or constraints resulting from historical, geographical and/or socio-economic factors which may have influenced this indicator area, including the situation of your river basin (e.g. if water bodies are in good status, if you are regularly experiencing droughts, scarcity and/or floods and expected future trends). Where available, information/data should be provided from previous years (5-10) to show trends.

Detail the present situation regarding water demand of different sectors and describe plans currently in place to reduce water consumption and to improve water status.

Describe the current general features of waste water treatment according to national requirements and the requirements of the Urban Waste Water Treatment Directive (UWWTD, 91/271/EEC).

Make reference to:

1. Total water drinking water consumption (in cubic meters/year and litres/capita/year) including a breakdown for different sectors (households, industry, energy, agriculture, small business, tourism, public sector);
2. Proportion of urban water supply subject to water metering, both for domestic and non-domestic metering;
3. Source of water (surface water, groundwater) - make reference to aquifers and river basin management;
4. Quality of drinking water (e.g. how many days of non-compliance with the Drinking Water Directive?);
5. Connection to large / small supplies;
6. Water loss in pipelines, leakage management and network rehabilitation; please provide data on total unaccounted water in percentage and whereas available, in specific losses ($m^3$/km/day) and information on leakage management and network rehabilitation;
7. Storm water management (including number of storm water overflows) and use of natural water retention measures (www.nwrm.eu) and/or sustainable urban drainage systems (SUDS);
8. Compliance with the Floods Directive and link to the relevant Flood Risk Management Plans;
9. How the links between water and energy consumption (water-energy nexus) (e.g. through pumping, treatment, heating) is taken into account; if available provide data on yearly energy consumption (kWh/$m^3$ of distributed water);
10. Use of 'non-conventional resources' and water recycling initiatives (rain water use and grey water or waste water reuse);
11. Compliance with the EU Water Framework Directive and other EU/national/regional legislation applicable at the city level indicating status of water bodies relevant for the urban area within the city limits and relevance of measures enshrined in the applicable river basin management plans;
12. The scale of river restoration projects planned - e.g. for resurfacing (lost) rivers, naturalising previous channeled rivers;
13. Projects to reconnect citizens with waterbodies – e.g. creation of wetland parks, cleaning up water quality such that swimming is possible.

Include data and a short explanation for the following specific indicators. Provide explanation in the case of missing information.

1. Provide an indication of the fraction (%) of the total annual generated waste water load of the city coming from population and from industry (also specifying type of industry, where information is available);
2. Proportion (%) of total annual generated waste water load, not connected to waste water collecting systems, and explanation of the type of waste water treatment applied to this fraction (reference to individual or other appropriate systems, i.e. IAS);
3. If the city is located in an EU Member State include data on waste water treatment obligations according to the UWWTD (based on city's size and nature of the area of discharge);
4. Waste water collecting systems: main type of collecting system (combined/separated) and annual proportion (%) of COD-loads discharged via storm water overflows;
5. UWWTPs: organic design capacity (PE), most advanced treatment level, annual incoming and discharged loads (tonnes/year) of $BOD_5$, COD, Ntot and Ptot and treated waste water amounts

($m^3$/a) of all UWWTPs serving the city. If the city is located in an EU Member State, indicate whether the UWWTP complies with the treatment requirements under the UWWTD;

6. Annual amounts of generated sewage sludge (tonnes/year) and description of treatment/disposal pathways (% of total amount);
7. Provide data on annual energy consumption for waste water treatment in kWh/year/PE, if available. Is an energy management concept available?
8. Further information (e.g. on treated waste water reuse, economic sustainability, use of integrated constructed wetlands or other GI/nature-based solutions) is highly appreciated.

**(max. 800 words & 5 graphics, images or tables)**

**9B. Past Performance**

Describe the measures implemented over the last five to ten years for improving water management, including waste water management. Comment on which measures have been most effective and what progress has been achieved.

On waste water more specifically: if the city is located in an EU Member State special reference should be given to non-expired deadlines for compliance with the UWWTD, when applicable (reference to Accession Treaties or sensitive areas under transitional period). Particular reference should be given to capacity building, measures for maintenance, management and restoration of waste water collecting systems and UWWTPs.

Make reference to:

1. Technical, nature-based, economic and institutional measures adopted and their effectiveness in achieving reduction of total water consumption or improvement of water status;
2. Byelaw implementation in relation to efficiency in water usage, tariff and metering systems and water quality;
3. Citizen engagement and public awareness initiatives.
4. Actual and projected improvements (in %) of water status/potential compared to 2009, when the first river basin management plans were to be in place.

**(max. 1200 words and five graphics, images or tables)**

**9C. Future Plans**

Describe the short and long term objectives for water management and the proposed approach for their achievement, including how they are influenced by the expected impacts from climate change and other long-term trends. Emphasise to what extent plans are supported by commitments, budget allocations, and monitoring and performance evaluation schemes.

Place particular emphasis on water quality goals and on key water saving and reuse targets for the future and the proposed approach to achieve these, including technical and nature-based measures incorporating

water infrastructure to deal with future impacts of climate change.

Describe the future short and long term objectives for waste water treatment and management and the proposed approach, and specify the measures for their achievement. Emphasise to what extent plans are supported by commitments, budget allocations, and monitoring and performance evaluation schemes. Emphasise to what extent plans are triggered by the demands of EU and national regulations.

Refer to:

1. Improvement/maintenance/management of collecting systems;
2. Improvement of connection to collecting systems (inter alia, additional percentage of PE forecasted to be connected);
3. Improvement of design capacity, treatment level and treatment performance of UWWTPs and indicate if these go beyond the requirements in the Directive;
4. Improvement of connection to UWWTPs (inter alia, additional percentage of PE future connections);
5. Improvements of further environmental and economic aspects of waste water treatment (e.g. removal of micropollutants, pollution prevention, energy efficiency at UWWTPs, sludge treatment and disposal, treated waste water re-se, use of integrated constructed wetlands);
6. Measures to improve public participation;
7. Other improvements.

**(max. 800 words and five graphics, images or tables)**

**9D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 10. Green Growth and Eco-innovation

### Refer to Section 2.10 of the Guidance Note

**10A. Present Situation**

Please complete the following table providing the most recent data available:

| Indicator | | Unit | Year of Data |
|---|---|---|---|
| Number of electric vehicles owned by the municipality | | Number | |
| Number of electric vehicles owned by the municipality (in % of all cars owned by the municipality) | | % | |
| Number of charging outlets available for cars owned privately | | Number | |
| Number and percentage of procurement contracts that take into consideration green issues, particularly employment and eco-innovation. | | Number | |

Describe the present situation in relation to green growth and eco-innovation, including any relevant disadvantages or constraints resulting from historical, geographical and/or socio-economic factors which may have influenced this indicator area. Where available, information/data should be provided from previous years (5-10) to show trends.

Make reference to:

1. Innovations that address material/resource use, (substitution, minimisation of material use, closing loops, etc.) and reduce environmental impacts, i.e. measures to improve resource efficiency; new business models (sharing schemes), including actions inspired by circular economy thinking;
2. Awareness raising and training to encourage the development and take-up of environmentally friendly technologies, particularly through training in industrial and business settings. Make reference to the authority launching the initiative as well as its target audience;
3. Efforts to promote green skills, or green jobs;
4. Efforts to promote Green Public Procurement (GPP);
5. Social innovation/stakeholder participation, including for example community programmes, that shows entrepreneurship and new ways of organisation that promote sustainable development and protect the environment locally and globally;
6. Efforts to drive innovation that address societal and particularly environmental challenges through creating the right enabling conditions, like putting in place advanced infrastructure (IT or more traditional) or investing in and partnering with innovators, clusters and hubs.
7. Share of the city budget dedicated to support environmental R&D (with particular reference to eco-innovation) by public and private entities;
8. Number of jobs created in green sectors in total, as a share of total jobs in the city and as total jobs created during a period of one year;

9. Share of hybrid or fully electric cars in total stock of vehicles owned by the city. Number of charging outlets available for the cars owned privately.

**(max. 600 words and five graphics, images or tables)**

**10B. Past Performance**

Describe the measures implemented over the last five to ten years concerning green growth and eco-innovation. Comment on which measures have been most effective.

Make reference to:

1. Initiatives aimed at increasing green growth and eco-innovation, e.g. projects under Cohesion Policy funds, Horizon 2020, COSME, LIFE, Eco-Innovation Action Plan (EcoAP), Green Public Procurement (GPP), as well as national policy initiatives;
2. How European and national policies have been transferred into policy action at the city level;
3. The publication of reports, such as green accounts, revealing the timely implementation of planned initiatives;
4. Any action which the city is taking in order to develop the urban tissue/infrastructures in an innovative/sustainable way including actions inspired by circular economy thinking;
5. Name/describe what you consider to be the flagship of eco-innovation in your city.

**(max. 1200 words and five graphics, images or tables)**

**10C. Future Plans**

Describe the future short and long term objectives to promote green growth and eco-innovation and the proposed approach for their achievement. Emphasise to what extent plans are supported by commitments, budget allocations, and monitoring and performance evaluation schemes.

Make reference to:

1. Plans to establish eco-innovation clusters, strategies and initiatives to attract public-private partnerships for further developing eco-innovation and sustainable employment;
2. Future targets of how eco-innovations can be applied by the city, e.g. make reference to share of hybrid or fully electric cars in total stock of the public fleet, or plans to support the infrastructure development for electric cars in public areas (i.e. increase the number of charging points for electric cars in public car parks), sharing economy schemes (i.e. bike sharing) use of public procurement of innovation;
3. Participation at green business networks or partnerships and covenants and cooperation with knowledge institutions, such as universities;
4. Programmes to reach the population and industries promoting green economy thinking;
5. Identify the key future plan which is considered as the flagship of eco-innovation in your city.

**(max. 800 words and five graphics, images or tables)**

**10D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 11. Energy Performance

### Refer to Section 2.11 of the Guidance Note

**11A. Present Situation**

Please complete the following table providing the most recent data that is available:

| **Indicator** | | **Unit** | **Year of Data** |
|---|---|---|---|
| Final Energy Consumption | | MWh | |
| Final Energy Use/capita | | kWh/capita | |
| Share of Renewable Energies of Final Energy Demand | | % | |
| Share of Locally Produced Renewable Energies of Final Energy Demand | | % | |
| Energy Performance of Municipal Buildings | | $kWh/m^2$ | |
| **Final Energy Usage /Sector** | | | |
| Agriculture & Fisheries | | % | |
| Industry & Commercial | | | |
| Transport | | | |
| Domestic | | | |
| Services | | | |
| Other | | | |
| **Total** | **100** | | |

Describe the present situation and development (particularly in relation to the building sector), using quantitative data and figures. Where available, information/data should be provided from previous years (5-10) to show trends. Highlight the most relevant driving forces for the observed trends. List any disadvantages resulting from historical, geographical and/or socio-economic factors which may have influenced this indicator area.

1. Present total final energy consumption by sectors (structure of energy consumption);
2. Past development of energy consumption and current plan (activities) for energy efficiency improvements and decreasing the use of energy, particularly for energy performance of municipal buildings (in $kWh/m^2$) with specific reference to city owned buildings and important developments related to other end-use sectors besides the building sector (e.g. transport, industry production, services, public, lighting, electrical appliances food);
3. Present situation, development and current plan for the energy supply mix, particularly regarding the renewable versus non-renewable mix of energy sources during the past ten years (for both heat, electricity and transport; expressed in kWh, MWh or GWh);
4. The current plan for integration and performance of renewable energy technology in municipal

buildings and homes compared to the total energy use;

5. The development so far and the current plan of compatible and integrated district heating energy and of combined heat and power energy consumption compared to the total energy use, (expressed in kWh, MWh or GWh);
6. Application of innovative technologies (e.g. current plan for increasing the use of LED lamps in public lighting and use of green roofs/walls for energy saving).

**(max. 600 words and five graphics, images or tables)**

**11B. Past Performance**

Describe the measures implemented over the last five to ten years concerning energy, as a qualitative narrative. Comment on which measures have been most effective.

Make reference to:

1. Attempts to improve the energy performance (i.e. energy efficiency standards particularly of municipal buildings) above national requirements;
2. Maximising and prioritising the use of renewable energy technology (particularly in municipal buildings);
3. Measures to facilitate integrated district system solutions (e.g. cogeneration) and a more sophisticated city-wide control;
4. Measures to trigger stakeholder engagement in the city to improve overall energy demand performance preferably including local government institutions, local market actors and citizens; mention existing co-operations.

**(max. 800 words and five graphics, images or tables)**

**11C. Future Plans**

Describe the future short and long term objectives for shaping a sustainable energy system and the proposed approach for achievement. Include measures adopted, but not yet implemented, and details for future measures already adopted.

Emphasise to what extent plans are consolidated by commitments, budget allocations, and monitoring and performance evaluation schemes, what potential there is and what kind of barriers you might expect in the implementation phase. Express and explain if and how far the strategies and targets go beyond national ambitions.

Make reference to the city's strategy to achieve goals by 2030 and 2050 and highlight:

1. The role of energy efficiency improvements;
2. The role of an increasing share of renewable energy in the total energy supply;
3. The city's strategy regarding renewable versus non-renewable energy mix, as well as of the renewable energy mix per se (the percentage of different renewable energy sources). Describe the

planned energy mixes for at least the coming two decades, preferably add diagrams to describe this evolution;

4. Other measures affecting the total energy use in the city, e.g. changes in transport systems, industrial practices, food and commodities production and consumption, urban morphology and use of Green Infrastructure, consumer behaviour and import and export chains.

**(max. 800 words and five graphics, images or tables)**

**11D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## 12. Governance

### Refer to Section 2.12 of the Guidance Note

**12A. Present Situation**

Please complete the following table providing the most recent data available:

| Indicator | Yes/No | Date From: |
|---|---|---|
| Signatory of CoM | | |
| Aalborg Signatory | | |

Vision, Strategy:

Describe if the city has a clearly defined, widely understood and supported environmental vision for the municipality, for example as part of a broader commitment to urban sustainability.

Is this vision reflected in different strategies and action plans, which include objectives and targets for individual sectors? Please list the most important strategies and plans and indicate their relationship to the overall vision.

Have your vision and the corresponding strategies been endorsed and implemented by the city council? Is there a dedicated budget for implementing the environmental vision?

Management, Monitoring and Evaluation:

Which stakeholders have participated in the development of the city's environmental vision and associated strategies and action plans? (e.g. contribution of civil society and citizens) How was the participation organised?

How are the management structures of your city organised, and what management tools are used, to achieve your environmental objectives and targets? For example management circles, obligatory sustainability impact assessments of policy proposals, project structures, management groups of different departments, skills promotion, periodic evaluations, etc.

Describe the system of monitoring, reporting and evaluation. What is generally reported to whom at what frequency?

Leadership:

Is the city (administration) leading by example in environmental behaviour? Describe your activities regarding environmental management systems, green public procurement, skills development, etc.

Does your city cooperate with other authorities at different levels or other organisations (regional, national, EU, international) on environmental and sustainability issues? Which of these cooperation activities or projects has your city initiated or acted as leading partner? Please also refer to your participation in European funded projects and to your commitment to international initiatives, charters, etc. Agenda 21,

Aalborg Commitments, Covenant of Mayors, C40, Climate Alliance, ICLEI, EUROCITIES, etc.).

List any disadvantages resulting from historical, geographical and/or socio-economic factors, which may have influenced this indicator area.

Involvement of Citizens

Describe your activities and engagement with the different communities within your city with particular attention to youth participation.

Describe the goals of these activities, i.e awareness raising, shared responsibility, policy development, etc.

Please reference any structures/projects/programmes that you have in place i.e. youth council, elderly citizens, disabled, socially deprived citizens; number of activities that were completed with different groups, the reach and objectives/impacts of these activities.

**(max. 1000 words and five graphics, images or tables)**

**12B. Implementation**

Describe the organisational structure of the city administration and show how the environmental strategies are embedded in the organisation. Please include an organogram and indicate which department or political body is the driving force behind the environmental vision.

Innovative instruments

Does the city use, in its environmental policy, innovative instruments like 'nudges', citizen participation in environmental enforcement, awareness-raising through social media, innovative financing etc.?

Above the level of basic monitoring, do you periodically evaluate the progress of your policies/strategies/ projects and do you adopt them according to findings?

**(max. 400 words and five graphics, images or tables)**

**12C. Future Plans**

Describe the short and long term objectives for the integrated management of environmental policy and the proposed approach for their achievement.

Describe present and future projects that demonstrate your commitment to an integrated management of the urban environment.

Demonstrate public awareness of this bid i.e. public consultation, availability to read etc.

**(max. 800 words and five graphics, images or tables)**

**12D. References**

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

**(max. 400 words)**

## Good Practices

Please provide details of at least one present or future flagship project that demonstrates your commitment to an integrated approach to the management of the urban environment; Indicator 12.

Please summarise up to six good practices, in any six different indicators (one of which must show the integrated management approach, mentioned above), that demonstrate how your city is improving its environmental record.

Please identify to which indicator(s) your good practice is relevant.

Good practices should be taken from information already provided within the application form.

Each good practice should be supported by a maximum of three graphics, images or tables (max. 300 words per good practice).

### Good Practice 1

**(max. 300 words and three graphics, images or tables)**

Indicator:

### Good Practice 2

**(max. 300 words and three graphics, images or tables)**

Indicator:

### Good Practice 3

**(max. 300 words and three graphics, images or tables)**

Indicator:

### Good Practice 4

**(max. 300 words and three graphics, images or tables)**

Indicator:

### Good Practice 5

**(max. 300 words and three graphics, images or tables)**

Indicator:

### Good Practice 6

**(max. 300 words and three graphics, images or tables)**

Indicator:

# APPENDIX B

# EXPERT PANEL PROFILES

## Indicator No. 1 - Climate Change: Mitigation

**Expert: Dr. Matthew Kennedy, Head of Strategy and Business, International Energy Research Centre, Ireland**

Dr. Matt Kennedy is Head of Strategy and Business in the International Energy Research Centre, an Irish Government supported energy research centre. He was previously National Delegate (Energy) for Horizon 2020 for Ireland and led Energy R&D for the Irish Government's Sustainable Energy Authority of Ireland. Matt held the position of Special Advisor on energy and climate issues.

Matt was lead EU Negotiator for energy technology transfer at the UNFCCC's international climate change negotiations (COP21) and was a member of the UNFCCC's Technology Executive Committee (TEC) responsible for providing mitigation and adaptation technology policy advice to the UN Conference of the Parties.

Matt was Chair of UNEP's Climate Technology Centre and Network, Copenhagen, Chair of the IEA's Renewable Energy Technology Deployment Technology Collaboration Programme, Paris, and the Chair of the Programme Board of the Renewable Energy and Energy Efficiency Partnership (REEEP), Vienna.

Matt holds a PhD from the School of Engineering of Trinity College Dublin, and Masters' degrees from NUI Galway and University College Dublin.

## Indicator No. 2 - Climate Change: Adaptation

**Expert: Ms. Birgit Georgi, Urban and Adaptation Expert, Founder of 'Strong Cities in a Changing Climate', Germany**

Birgit Georgi is a freelance expert in the areas of climate change adaptation, environment and integrated urban development. She has a deep and broad integrated understanding of the urban environment and sustainability due to her long-standing professional experience in these fields for more than 25 years.

From 2007-2017 she worked with the European Environment Agency, initially as Project Manager for urban issues, and, since 2011, on climate change adaptation relating to cities and transport. Among Birgit's key contributions to the sector are the assessment reports; 'Urban Adaptation to Climate Change in Europe' (2012 and 2016), 'Adaptation of transport to climate change in Europe' (2014), and 'Quality of life in Europe's Cities and towns'.

Birgit was responsible for developing the interactive map book on urban vulnerability, the Urban Adaptation Support Tool, and the numerous case studies related to cities of the European Climate Adaptation Platform Climate-ADAPT. She supported the Commission in developing the Mayors Adapt initiative and its integration into the Covenant of Mayors for Climate and Energy. Birgit also organised the annual networking and learning event: Open European Day Resilient Cities. She has worked as an adviser for several EU projects such as PLUREL, SUME, RESIN and is a frequent speaker and moderator at many events on her topics.

Birgit's experience is complemented by her work at the German Federal Environment Agency from 1991-2007 where she developed action plans and supervised projects in the fields of sustainability planning, biodiversity, environmental management and sustainable transport. The scope ranged from local demonstration projects in Germany and other European countries to international activities, e.g. technical support in the framework of the UN Convention for Biological Diversity and as national contact point for the UNECE Programme, THE PEP.

### Indicator No. 3 - Sustainable Urban Mobility

**Expert: Dr. Ian Skinner, Director of Transport and Environmental Policy Research, Crowborough, London, United Kingdom**

Ian Skinner is an independent researcher and consultant with over 20 years of experience in undertaking research and consultancy projects focusing on the environmental impacts of transport.

His PhD from University College London was on the implementation of sustainable transport policies in South East England and he has also undertaken research at the University of Kent on the marginal cost pricing of transport.

Since his PhD, Ian has worked at the Institute for European Environmental Policy (IEEP) and AEA (now Ricardo-AEA) before co-founding TEPR in 2009. Ian's work focuses on the implementation and evaluation of sustainable transport policies for national and international organisations. Much of Ian's work has been undertaken at the European level for the European Commission, which has involved impact assessments and evaluations of various EU transport and environmental policies.

Ian has also drafted reports for UNEP, WHO and UNECE in the context of THE PEP (Transport, Health and Environment Pan European Programme) on jobs in sustainable transport, the most recent of which was presented at the 'Environment for Europe' Ministerial Conference in Batumi, Georgia in June 2016.

### Indicator No. 4 - Sustainable Land Use

E**xpert: Dr. Annemieke Smit, Secretary to the Board of Wageningen Environmental Research (part of Wageningen University and Research), The Netherlands**

Annemieke Smit is a Physical Geographer with a PhD in Ecology. In 2001 she started working at Alterra (currently known as Wageningen Environmental Research) with a focus on Sustainable Soil and Land Use. She is an expert on sustainable land use management, both in urban, peri-urban and rural areas. She was one of the core team member of the Dutch Community of Practice CoP Sustainable land use management in spatial planning.

For four years she has been involved in the Alterra Green Cities programme, combining ecological, social and economic knowledge about multiple benefits of Green Infrastructure to the urban public and private stakeholders. As a Senior researcher on Nature Based Solution for Society she specialised in multi-stakeholder projects and is often involved in national input of EU assessments on sustainable development. She was part of the Dutch advisory board for the development of

BREEAM-Community. For the last year, she has been Secretary to the Board of Wageningen Environmental Research.

With a focus on good and clear communication, Annemieke always keeps in mind that experts tend to go deep into the subject, while policy makers or non-scientific partners want to know about the impact of the research on their world, work and options.

### Indicator No. 5 - Nature & Biodiversity

**Expert: Mr. David Jamieson, Parks & Green Space Manager, City of Edinburgh Council, and Director of Greenspace Scotland, United Kingdom**

Based in Scotland, David is responsible for managing Edinburgh's public parks and greenspace network, including the city's nature reserves, woodlands, allotments, cemeteries and urban forest. As head of Edinburgh's Parks Service he has secured a number of green accolades for the city, including winner of Britain in Bloom, Entente Florale Gold Medal, Eurocities, COSLA Gold Medal for Service Innovation & Improvement, the UK's Best Parks, Grounds and Horticultural Service Team award, and Fields in Trusts' Best UK Landowner.

Having led the development and implementation of Edinburgh's Nature Conservation Strategy, Urban Forestry Strategy, and Biodiversity Action Plan, he is presently directing the Edinburgh Living Landscape initiative in partnership with local universities, wildlife trust, botanic garden and green space trust. This is an innovative ecosystems approach to urban open space management, bringing nature closer to people's homes and work-places.

David is also Director and chair of the national charity, greenspace Scotland, championing the value of green space to government and other decision-makers. As a chartered ecologist and environmental manager, with degrees from Stirling, Heriot-Watt and Huddersfield universities, his career has ranged across the public, academic and voluntary sectors. In recent years he has also been a director of Volunteer Development Scotland, BTCV Scotland, Oatridge Agricultural College and the Falkirk Environment Trust - promoting volunteering as a means for positive social and environmental change.

As well as being the Expert Panel member for Nature and Biodiversity, David is also a UK-level judge for Britain in Bloom and assessor for Green Flag Award, the two largest green award programmes in Great Britain. This gives him insight into current best practice in green space management, urban ecology, community-driven environmental initiatives, and sustainable development.

### 0Indicator No. 6 - Air Quality

**Expert: Mr. Joan Marc Craviotto Arnau, Air Quality Project Manager at Barcelona City Council, Spain**

Joan Marc Craviotto Arnau is an Air Quality Project Manager in Barcelona City Council, where he has worked since 2009. He has a degree in Industrial

Engineering from the Polytechnic University of Catalonia and a postgraduate degree in Air Quality Management and Atmospheric Pollution Control from the University of Santiago de Chile.

In his role as Air Quality Project Manager for Barcelona City Council, Joan Marc has gained extensive experience in managing air quality issues at city level. He undertakes air quality assessment and provides technical and policy advice in the field of air quality. He has also contributed to the development and assessment of the city's emission inventory and takes responsibility for the air quality modelling and monitoring for the City of Barcelona. Furthermore, Joan Marc steers the design and implementation of important measures to abate air pollution.

Joan Marc is a key contributor to the air quality public awareness campaign for the City of Barcelona. He is committed to sharing knowledge and raising awareness of environmental issues related to air quality. He engages with and promotes scientific research to increase the knowledge of the air quality dynamics in the city of Barcelona and is a regular speaker and attendant at air quality conferences, congresses and workshops.

### Indicator No. 7 - Noise

**Expert: Prof. Dr. Diogo Alarcão, Principal Researcher and Professor in the scientific area of Acoustics at Instituto Superior Técnico - University of Lisbon and at the Polytechnic Institute of Lisbon, Portugal**

Diogo studied Physics Engineering and holds a PhD in Acoustics from the University of Lisbon. He is a Chartered Acoustical Engineer, member of the Board of the Portuguese Acoustical Society and a Coordinator of the Executive Commission for the Acoustical Engineering Specialization of Ordem dos Engenheiros.

Diogo has been responsible for major projects in Environmental Acoustics and Noise Control, including Noise Mapping and Action Plans for large urban areas and for large transport infrastructures. He has also been responsible for several projects in the area of Room Acoustics and Virtual Acoustics including real time simulation and auralization of sound fields in enclosures.

### Indicator No. 8 - Waste

**Expert: Mr. Warren Phelan, Technical Director, Waste, Energy & Environment, RPS Group Ltd., Dublin, Ireland**

Warren Phelan is a Technical Director with the Waste, Energy and Environment Section of RPS. Warren is a Chartered Waste Manager and a Chartered Civil Engineer with a Masters degree in Engineering Science from University College Dublin.

He is also a Chartered Waste Manager and a member of the Chartered Institute of Waste Managers. For the last 12 years Warren has specialised in the waste and resource management sector, developing expertise in waste policy and legislation, strategy and planning, data analysis, online resource applications and technical assessments.

Recently Warren served as co-ordinator for the national waste committee set up by the Irish Department of the Environment, Community and Local Government and tasked with completing the evaluation of the regional waste management plans. He has also served as the project manager for the EPA National Waste Statistics Project and the national online reuse website FreeTrade Ireland.

### Indicator No. 9 - Water

**Expert: Mr. Christof Mainz, Senior/First Officer at the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Bonn, Germany**

Christof Mainz is a civil engineer specialised in the environment and water sector. In May 2017 he commenced working at the Directorate for Water management at the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) in Bonn, Germany.

Prior to his current position, he worked at the European Commission in Brussels (2011-2017) and at the regional Ministry for the Environment in Düsseldorf, North Rhine-Westphalia (1998-2011). While working at the European Commission's Directorate General for the Environment (DG ENV), within the unit responsible for the Marine Environment and Water Industry, his main responsibilities were linked to several EU Water Industry Directives and their relationship with other EU legislation and policy areas, as well as supporting EU actions on innovation in the water sector, such as strategies for water reuse and resource efficiency. Prior to this, he worked in different regional administrations on technical checks and monitoring of urban waste water treatment plants.

### Indicator No. 10 - Green Growth & Eco-innovation

**Expert: Mr. Marc Okjuiksen, Co-founder and owner Zonnova BV, Director at RéciproCité, The Netherlands**

Marc is an independent consultant specialising in the application of ecological principles to spatial and energy-related initiatives for urban sustainability, with a specific focus on social relationships between partners from different sectors.

Marc runs his own company, RéciproCité and works with several different consortia, including BOnDS, a cooperative organisation he co-founded in 2013, through which specialist SMEs work together for the sustainable development and resilience of the City of Breda, Netherlands, and its surroundings. With BOnDS Marc developed the largest privately-owned crowd-funded PV solar farm in the Netherlands. Nowadays BOnDS uses its expertise far beyond the city borders.

Marc has extensive experience developing and managing EU funded cooperation projects. These have included projects in the area of water management, suburban and rural land use, Maglev transport systems and social energy cooperatives. The most recent projects support circular economy approaches, involving symbiotic industrial energy systems in business innovation zones and the use of bi-directional shared e-cars in different European cities. With BOnDs, Marc is also an assessor for the Green Destination Award and Quality Coast Award in the south of the Netherlands and for ECOXXI with FEE International.

Marc originally studied Biology and Physical and Social Geography at Fontys University. He started his career at the Dutch Ministry of Agriculture, Nature and Fisheries where he worked in the late 1980s on the creation and implementation of the national and provincial structure plans for the Primary Ecological Networks (EHS and GHS) and then on the integration of urban areas into these major networks.

In 1993 Marc was appointed City Ecologist, City of Breda, later becoming Sustainability Coordinator, Head of the Department of Habitat-Environment and then Senior Strategist - Sustainable City Development until 2014. Whilst at Breda he participated in a 10-year project on the urban regeneration of the Metropolitan Municipality of Ekurhuleni, South Africa, worked for several years with the French Ministère de l'Écologie, de l'Énergie du Développement Durable et de l'Aménagement du Territoire on the specification of the sustainable city in their 'Projet urbain' and was the main speaker at several conferences in Europe on practical approaches for sustainability in cities. Marc has an excellent overview of eco-innovation and green growth in the European context, having supported Breda's commitment to the Aalborg Charter and later initiatives such as the Covenant of Mayors.

### Indicator No. 11 - Energy Performance

**Expert: Prof. Dr. Manfred Fischedick, Vice President of the Wuppertal Institute and Professor at the Schumpeter School of Business and Economics, Wuppertal, Germany**

Manfred Fischedick is the Vice President of the Wuppertal Institute, an international well known think tank investigating transformation processes to a sustainable development. With particular reference to the areas of climate, energy, resources and mobility, the institute is looking for technical, infrastructure and social innovations supporting the transition to sustainable structures. Special focus is given on the transition process of the energy system and cities.

Manfred is also leading the research group 'Future Energy and Mobility Structures' of the Wuppertal Institute and is professor at the Schumpeter School of Business and Economics at the University of Wuppertal. He has been working for more than 20 years in the field of energy system analysis (including sustainable urban infrastructure analysis).

He is adviser to the German government as well as the Bundesland of North Rhine-Westphalia, author of various publications and peer reviewed articles. Manfred is coordinating lead author for the IPCC, member of several national and international scientific boards and advisory councils.

Manfred has been intensively working in the context of sustainable urban infrastructures and energy efficient cities. His project experience comprises among others the development of long term concepts for the German cities of Munich and Düsseldorf and the Chinese city of Wuxi.

For the Innovation City Ruhr Bottrop, which is kind of a real-term laboratory in the Ruhr Valley aiming for an emission reduction by 50% between 2010 and 2020 he is leading the scientific accompaniment process. In addition he was appointed as member of the Scientific International Advisory Council of the mayor of the city of Seoul. For the Innovation City Ruhr Bottrop, which is kind of a real-term laboratory in the Ruhr Valley aiming for an emission reduction by 50% between

2010 and 2020 he is leading the scientific accompaniment process. In addition he was appointed as member of the Scientific International Advisory Council of the Mayor of the City of Seoul.

### Indicator No. 12 - Governance

**Expert: Mr. Alex Minshull**, **Innovation and Sustainability Service, Bristol City Council, Bristol, United Kingdom**

Alex Minshull is based in Bristol, United Kingdom, where he leads Bristol City Council's Innovation and Sustainability Service. His responsibilities include the City Council's smart city, climate change and air quality programmes.

He studied for his environmental science degree at Southampton University and for his master's degree in the energy and environmental aspects of architecture at the Centre for Alternative Technology.

Alex has worked as sustainability professional for over 20 years, in the private and public sectors, as well as volunteering with environmental NGOs.

At the Environment Agency (England) he produced integrated river catchment management plans and advised on urban development to achieve environmental protection within the Midlands region of England. In later years at the Environment Agency, and then at Bristol City Council, he implemented new environmental management systems, secured ISO14001 and Eco Management and Audit Scheme accreditation, and delivered significant improvements in environmental performance of these organisations.

Since 2006 his role has focused on the sustainable development of the city of Bristol and he has managed professionals working on a range of sustainability issues including, urban development, water, food, energy, electric mobility, climate change and air quality. He has worked to create effective partnerships between the city council and other organisations, including universities, businesses and environmental NGO's, bringing together their different capabilities to create a more sustainable city.

He has been involved with the European Green Capital Award since it began. He led Bristol's bids to become European Green Capital, being shortlisted twice and securing the Award for the year of 2015. Alex is passionate about the role of cities in leading the transition to a sustainable world and in cities working together to accelerate the transition. He has shared the learnings from Bristol with many cities across Europe, and across the globe.