Good Practice Report

European Green Leaf

2017
Table of Contents

1. INTRODUCTION ................................................................. 4
   1.1 EUROPEAN GREEN LEAF COMPETITION ................................. 6
   1.2 THE CATEGORIES .......................................................... 7
   1.3 EGL 2017 APPLICANT CITIES ........................................... 7
   1.4 THE AIM OF THIS REPORT ............................................... 10
   1.5 STRUCTURE AND APPROACH OF THIS REPORT ....................... 10

2. ENVIRONMENTAL GOOD PRACTICES ...................................... 12

   CATEGORY 1: CLIMATE CHANGE AND ENERGY PERFORMANCE
       1. SERRES: BIOCLIMATIC RENOVATION .................................. 15
       2. CORNELLÀ de LLOBREGAT: EURONET 50/50 ........................ 16
       3. STROVOLOS: ENERGY EFFICIENT RENOVATION OF CULTURAL CENTRE 17

   CATEGORY 2: MOBILITY
       1. AOSTA: CITYPORTO ..................................................... 20
       2. LA ROCHE-SUR-YON: PROMOTION OF ELECTROMOBILITY ........ 21
       3. GALWAY: BUS AND CYCLING IMPROVEMENTS ...................... 22

   CATEGORY 3: BIODIVERSITY AND LAND USE
       1. GALWAY: LOCAL BIODIVERSITY ACTION PLAN ..................... 24
       2. MIKKELI: ECOCITY EVALUATOR ..................................... 25
       3. KARDZHALI: GREEN SYSTEM REGISTER ............................ 26
       4. SAN MINIATO: OVERFLOW WATER BASIN ......................... 27

   CATEGORY 4: AIR QUALITY AND ACOUSTIC ENVIRONMENT
       1. ORBASSANO: ACOUSTIC ZONING .................................... 30
       2. MIKKELI: SURVEYS AND ACOUSTIC MEASUREMENTS .................. 31
       3. STROVOLOS: FREE CITY PARKING FOR EV AND HYBRIDS ........... 32

   CATEGORY 5: WASTE AND GREEN ECONOMY
       1. LA ROCHE-SUR-YON: CIRCULAR ECONOMY INITIATIVES ........... 34
       2. AOSTA: SEPARATE WASTE COLLECTION ............................ 35
       3. CORNELLÀ de LLOBREGAT: PREVENTION OF FOOD WASTE ...... 36
       4. GALWAY: STOP FOOD WASTE CAMPAIGN ........................... 37

   CATEGORY 6: WATER MANAGEMENT
       1. MIKKELI: STORMWATER MANAGEMENT ................................ 40
       2. LA ROCHE-SUR-YON: PLACE NAPOLEON REFURBISHEMENT ....... 41

APPENDIX – EXPERT PANEL PROFILES ...................................... 42
1. Introduction
The future of Europe depends on increased energy efficiency, a low-carbon economy and the cultivation of our natural resources. These are the key objectives set out in 2013 by the 7th Environmental Action Programme (EAP), the leading guide for Europe’s environmental policy until 2020.

The 7th EAP seeks to increase Europe's energy independence, mitigate environmental risks and protect the health and wellbeing of EU citizens. To this end, it sets out a strategic agenda with milestones to be achieved through targeted legislation; education; investment and the full integration of environmental considerations into all policies.

Today more than two thirds of Europeans live in urban areas. Most cities face a common set of core environmental problems such as poor air quality, high noise levels, greenhouse gas (GHG) emissions, water scarcity, contaminated sites, brownfields and challenges in resource efficiency.

EU cities also play a crucial role as engines of change, and often pioneer innovative solutions to environmental challenges. They have huge potential for energy savings, for mobilising a carbon-neutral economy and for driving the economy. They are places of connectivity, creativity and innovation, and service-hubs for their surrounding areas. An ever-growing number of European cities are putting environmental sustainability at the core of their urban development strategies.

One of the Programme’s objectives is to make Europe's cities more sustainable, and it has set a fixed goal to ensure that by 2020, most EU cities are implementing policies for sustainable urban planning and design. The European Green Capital and the European Green Leaf competitions are initiatives designed to help Europe to achieve this ambition.

The European Union is one of the most urbanised areas in the world. As the conduit of economic and cultural change, Europe's cities are essential to the energy transition and the shift to more sustainable environmental practices. Cities today are becoming increasingly interconnected, but they are also increasingly in competition with each other. There has been growing demand at the EU, national and local level, for an Urban Agenda to help strengthen the urban dimension of EU policies.

The EU Urban Agenda, also known as the “Pact of Amsterdam”, was adopted by the Council on 30 May 2016. It aims to promote cooperation between Member States, the European Commission and cities in order to stimulate growth, liveability and innovation in the cities of Europe.

It is a new working method to ensure maximum utilisation of the growth potential of cities and successfully tackle the social challenges. Part of this new approach includes the development of a range of European partnerships.
The first partnerships, which were launched on 30 June, deal with:

- air quality,
- housing,
- integration of migrants and refugees,
- urban poverty.

Within these partnerships, the European Commission, Member States and European cities will work together to ensure that the urban dimension is strengthened in EU policies through: 1. Improving the development, implementation and evaluation of EU legislation; 2. Ensuring better access to and utilisation of European funds; 3. Improving the EU urban knowledge base and stimulating the sharing of best practices and cooperation between cities.

1.1 European Green Leaf competition

The European Green Leaf (EGL) is a sister initiative to the Commission’s European Green Capital Award (EGCA), which was launched in 2008 in response to the vision of fifteen European cities. Two years earlier, representatives from Tallinn, Helsinki, Riga, Vilnius, Berlin, Warsaw, Madrid, Ljubljana, Prague, Vienna, Kiel, Kotka, Dartford, Tartu and Glasgow, agreed on the importance of promoting sustainable urban planning in Europe.

They believed that pioneering cities should be rewarded, acknowledged and promoted for their efforts and achievements in environmentally friendly urban living.

Cleaner, greener urban areas are essential building blocks for creating a sustainable, healthy Europe. Every year, the EGCA promotes and rewards the exemplary actions of European cities with over 100,000 inhabitants. Smaller cities are also doing their part to generate green growth, so in 2015, the achievements of smaller urban areas received recognition with the inaugural EGL Award.

Each year the Green Leaf winner takes on the role of Green Ambassador – an EU-recognised example of how small cities can boost quality of life, improve environmental performance and encourage green growth.

The prestige, and associated benefits of winning a European competition, can encourage cities to invest in further efforts and help to spread the word within the Green Leaf city and to other cities. The competition provides great opportunities for participants to exchange knowledge and experience, create partnerships and attract investors to their cities. The Green Leaf is awarded to the cities that best demonstrate long-term, successful commitment to improving the urban environment.
The objectives of the European Green Leaf competition are:

a) To recognise small cities that demonstrate a good environmental record and commitment to generating green growth;

b) To encourage cities to actively develop citizens’ environmental awareness and involvement;

c) To identify ‘Green Ambassador’ cities, with a view to encouraging other cities to progress towards a more sustainable future.

The competition’s overarching message is that Europeans have a right to live in healthy urban areas and that, with the right motivation and knowledge, smaller cities can achieve great things. Citizens and city administrators should work together to improve quality of life, generate employment, increase sustainability and reduce the environmental footprint of their city. This message is captured in the competition’s slogan ‘Towns and Cities, Growing Greener’.

1.2 The categories

The European Green Leaf 2017 applicants are technically assessed under the following six environmental categories:

1. Climate Change and Energy Performance
2. Mobility
3. Biodiversity and Land Use
4. Air Quality and the Acoustic Environment
5. Waste and Green Economy
6. Water Management (including Wastewater Treatment)

1.3 EGL 2017 Applicant Cities

Aosta, Italy

Aosta is the principal city of Aosta Valley, a region in the Italian Alps, 110 km north-northwest of Turin. The municipality surface area is around 21 km² and it has a population of about 34 619.

Cornellà de Llobregat, Spain

Cornellà de Llobregat is a city of 86 234 inhabitants (2014) that belongs to the Baix Llobregat region within the Metropolitan Area of Barcelona.

The municipality surface area is about 7 km², 87% of it is urban and it is located 27 metres above sea level. Population density in the urban area is 12 319 inhab./km², much higher than in other metropolitan areas. The city is characterised by its very compact structure.
**Introduction**

**Galway, Ireland**
Galway is a harbour city on the west coast of the Republic of Ireland. It is situated where the River Corrib meets the Atlantic and it has 12 km of coastal area and four beaches, two of which have been designated as Blue Flag Beaches. The municipal district of Galway City covers an area of 53.4 km$^2$, and has a population of 75 529, according to the latest census data of 2011.

**Kardzhali, Bulgaria**
Kardzhali is a city of around 67 000 inhabitants situated between 220 and 300 metres above sea level in the Eastern Rhodopes of Southern Bulgaria.

**La Roche-sur-Yon, France**
La Roche-sur-Yon and the surrounding area, located halfway between Nantes and La Rochelle, are right in the heart of the Vendée department. La Roche-sur-Yon has an area of 87.52 km$^2$ and its population, in 2015, exceeded 55 000.

**Mikkeli, Finland**
The town of Mikkeli was founded in 1838 and the municipality is situated in Eastern Finland, 240 km from Helsinki. Mikkeli has a population of approximately 55 000, and covers an area of 3 229.56 km$^2$, of which 21% is water and 68% is forest.

**Table 1-1 Details of Applicant Cities (in alphabetical order)**

<table>
<thead>
<tr>
<th>City</th>
<th>Country</th>
<th>Population</th>
<th>Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aosta</td>
<td>Italy</td>
<td>34 619</td>
<td>21 km$^2$</td>
</tr>
<tr>
<td>Cornellà de Llobregat</td>
<td>Spain</td>
<td>86 234</td>
<td>7 km$^2$</td>
</tr>
<tr>
<td>Galway</td>
<td>Ireland</td>
<td>75 529</td>
<td>53.4 km$^2$</td>
</tr>
<tr>
<td>Kardzhali</td>
<td>Bulgaria</td>
<td>67 000</td>
<td>30 km$^2$</td>
</tr>
<tr>
<td>La Roche-sur-Yon</td>
<td>France</td>
<td>55 000</td>
<td>87.5 km$^2$</td>
</tr>
<tr>
<td>Mikkeli</td>
<td>Finland</td>
<td>55 000</td>
<td>3 230 km$^2$</td>
</tr>
<tr>
<td>Orbassano</td>
<td>Italy</td>
<td>23 265</td>
<td>22 km$^2$</td>
</tr>
<tr>
<td>San Miniato</td>
<td>Italy</td>
<td>28 223</td>
<td>104 km$^2$</td>
</tr>
<tr>
<td>Serres</td>
<td>Greece</td>
<td>76 819</td>
<td>601.5 km$^2$</td>
</tr>
<tr>
<td>Strovolos</td>
<td>Cyprus</td>
<td>70 000</td>
<td>25 km$^2$</td>
</tr>
</tbody>
</table>
Orbassano, Italy

The city of Orbassano is on a plain at the mouth of Val Sangone, located about 15 km south-west of Turin. It covers an area of 22.05 km² at an altitude of 273 metres above sea level. Currently the population is approximately 23,265.

San Miniato, Italy

San Miniato is a town with 28,223 inhabitants in the Province of Pisa, in the Tuscany region. It is situated at an altitude of 209 metres above sea level and has an area of 104 km².

Serres, Greece

The municipality of Serres has an approximate surface area of 601.49 km² and its population was recorded in the latest census as 76,817. The municipality includes the urban centre (also capital of the regional unit) and 23 villages.

Strovolos, Cyprus

Strovolos was established in 1986 and is the second largest municipality in Cyprus. It has a population of about 70,000 and covers an area of 25 km². The city is 3 km away from Nicosia, the capital.

Figure 1-1 Map of 2017 EGL Applicant Cities
1.4 The aim of this report

This report aims at showcasing the best of urban environmental practices from applicant cities, to serve as inspiration for cities throughout Europe and beyond.

It is anticipated that this report will be read not only in cities that are current, previous, and potential applicants for the Award, but throughout Europe. This will help to disseminate information, inspire cities to action, showcase tried and tested environmental practices, and promote new technologies for supporting urban resource efficiency. Ultimately, by helping to mobilise urban sustainability and fuel a green economy, the initiative supports economic prosperity and job creation in accordance with the 7th EAP priorities and the EU 2020 Strategy.

1.5 Structure and approach of this report

As part of their role, the members of the Expert Panel (details in Appendix) were asked to identify two examples of environmental good practice for their primary category. These examples were to include new effective initiatives that may be transferable to other European cities. This report presents, and in some cases elaborates on, the information presented by cities in their EGL application forms. As such, all information is up-to-date as of the beginning of October 2015, unless otherwise stated.

The European Green Leaf Secretariat compiled and edited this information which is now presented in Section 2 in six individual sections, one per environmental category area, with two good practices in each.
2. Environmental Good Practices
Preventing dangerous climate change is a strategic priority for the EU. It is only through local- and regional-level strategies that the impacts of climate change can be mitigated. The Europe 2020 strategy sets three interrelated and mutually supportive objectives for climate and energy policy to be reached by 2020: reducing GHG emissions by at least 20% compared with 1990 levels; increasing the share of renewable energy in final energy consumption to 20%; and moving towards a 20% increase in energy efficiency. These targets are also known as the 20-20-20 targets.

EU initiatives developed to achieve their targets include: an Emissions Trading System; energy legislation; setting binding targets to reduce CO₂ emissions from new cars and vans; and supporting the development of carbon capture and storage (CCS) technologies to trap and store the CO₂ emitted by power stations and other major industrial installations.

The European Climate Change Programme (ECCP) has been in place since 2000 to identify and develop an EU strategy for implementing the Kyoto Protocol.

While the EU is making good progress towards meeting its climate and energy targets for 2020, an integrated policy framework for the period up to 2030 is needed to ensure regulatory certainty for investors and a coordinated approach amongst Member States.
On 23 October 2014 a domestic GHG reduction target of at least 40%, and of at least 27% for renewable energy and energy savings by 2030 compared to 1990 was agreed at EU level. The EU 2030 framework seeks to drive continued progress towards a low-carbon economy. It aims at building a competitive and secure energy system that ensures affordable energy for all consumers, increases the security of the EU’s energy supplies, reduces our dependence on energy imports and creates new opportunities for growth and jobs.

Many of the actions necessary to tackle climate disruption fall within the scope of local governments. Local stakeholders, citizens and civil society must share the EU commitment to reducing emissions. Local and regional governments need to lead action and set a good example.

Due the products and services they use, towns and cities account directly and indirectly for more than half of human-cause greenhouse gas (GHG) emissions. Today more than two thirds of Europeans live in urban areas. Most cities face a common set of core environmental problems such as poor air quality, high noise levels, greenhouse gas (GHG) emissions, water scarcity, contaminated sites, brownfields and challenges in resource efficiency.

EU cities also play a crucial role as engines of change, and often pioneer innovative solutions to environmental challenges. They have huge potential for energy savings, for mobilising change towards carbon-neutrality and for driving the economy.

The following examples selected from the applications for the 2017 European Green Leaf competition, showcase what smaller cities are doing in terms of Climate Change and Energy Performance in an urban environment.
1. SERRES: BIOCLIMATIC RENOVATION

SUMMARY
The bioclimatic restoration of the city centre through various refurbishment projects.

CONTEXT
Restoration of the city centre.

OUTCOME
A unique and quite ambitious project concerning the city centre, bioclimatic restoration is now taking place in Serres. The total budget is EUR 3.8 million for an area of 31 km². The projected implementations include: creating green spaces; widening pavements with eco-friendly materials; replacing asphalt elements with ‘cold’ materials; creating new bicycle paths; planting trees and flowers; operating fountains and outdoor fans; replacing the public lighting system with LED lights. Ultimately, a small PV system will be put in place in order to cover the area’s electrical supply needs.

The expected benefits of the project are several:

- Improving the area’s microclimate;
- Reducing energy consumption in buildings and simultaneously reducing the electrical peak load of the country;
- Improving building capacity relating to environmentally friendly construction materials and equipment;
- Avoiding high traffic volumes and promoting alternative modes of transport;
- Reducing air pollution and noise;
- Stimulating the local market.
2. CORNELLÀ de LLOBREGAT: EURONET 50/50

**Summary**

This project aims at saving energy in public facilities, such as schools, due to changing behaviours: 50% of the economic savings arising from energy savings is returned to the facilities, while the other 50% is a net saving on the bills for the city council.

**Context**

A citizen engagement initiative to change behaviour towards environmental issues.

**Outcome**

In 2010, Barcelona Provincial Council launched the EURONET 50/50 initiative in 13 of the province’s schools. Abat Oliba school was the first of those selected. Since then, the project has been extended to four more schools and five sports facilities. In 2015 it was also implemented in one municipal library.

The following actions are taking place:

- The appointment of energy managers in schools and sport facilities;
- Posters are displayed to remind people to switch off lights;
- Lighting is being improved with LED lamps and unnecessary lighting is being eliminated;
- Training hours are being changed to avoid unnecessary lighting;
- Training courses are being conducted.

Several schools and sports facilities in Mollet del Vallès, European Green Leaf 2015, are also participating in the project.

**Link**

3. STROVOLOS: ENERGY EFFICIENT RENOVATION OF CULTURAL CENTRE

SUMMARY
An energy efficient renovation of the municipal cultural centre through various energy measures.

CONTEXT
The implementation of a strategy based on a holistic approach, which was established in 1986. The municipality's mission is to try turning Strovolos into a model city by: using technology; creating the necessary infrastructure; improving the level of security and health; improving the environment; emphasising the energy policy, and; promoting culture, sports, entertainment and social welfare.

OUTCOME
Strovolos Municipality Cultural Centre is a combination of an old historic building and a new building. In 1915 the building was operating as a school, it was then transformed into an abattoir. The Municipal Council decided to maintain, restore, renovate and expand this old municipal building.

Energy efficiency measures used in the renovation:

- 5 cm rockwool insulation for the roof;
- Double glazing on the north and east sides, with a U-value of 1.1 W/m-K;
- Laminated glazing on the west side with a U-value of 3.8 W/m-K;
- Replacement of the existing material (clay) with polyurethane foam;
- Installation of geothermal heat pumps to fully cover the energy demand for heating and cooling;
- Energy efficient compact fluorescent lamps used for lighting.

The local authority has used its own resources for financing the EUR 500 000 implementation and has reduced CO₂ emissions by the equivalent of 118 tonnes.
Category 2: MOBILITY

INTRODUCTION TO THE THEME

Mobility in an urban environment is of primary importance to citizens’ quality of life, but often it is strongly connected to air quality and acoustic problems, and is a major contributor to climate change. There are, however, a number of ways to mitigate these negative consequences. Policies for greening transport follow three interlinked principles:

- Optimising transport demand, i.e. avoiding or reducing trips through the integration of land use and transportation planning, and localised production and consumption;
- Obtaining a more suitable modal split – shifting to more environmentally efficient modes, such as public and non-motorised transport for passengers, and to rail and water transport for freight;
- Using the best available technology, i.e. improving vehicle and fuel technology to reduce the negative social and environmental effects from each kilometre travelled (EEA, 2011a).

Studies indicate that often the environmental and social costs of local air pollutants, traffic accidents and congestion, far exceed the limits necessary to facilitate a green economy (UNEP, 2011).

The European Commission White Paper Transport 2011: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system sets out a roadmap of 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. At the same time, the proposals will dramatically reduce Europe’s dependence on imported oil and cut 60% of transport-related carbon emissions by 2050. The key goals that have an impact on cities are: urban mobility plans that include halving the number of conventional-fuel cars by 2030; CO2-free city logistics in major centres by 2030; and completely phasing out of diesel and petrol cars by 2050.

In 2013 the European Commission published the communication Together towards competitive and resource-efficient urban mobility. The communication builds on the 2011 White Paper on transport and sets out how the Commission will strengthen its actions on sustainable urban mobility in areas where there is EU added value. The Commission also encourages Member States to take more decisive and coordinated action and provides considerations for urban mobility.

The communication states that, with their high population densities and high share of short-distance trips, cities have greater potential for moving towards low-carbon transport than the transport system as a whole, through the development of walking, cycling, public transport and the early market introduction of vehicles powered by alternative fuels.

---

1 Environmental indicator report 2012, EEA – 6 Air pollution and air quality
The European Environmental Agency (EEA) Report, *A closer look at urban transport – TERM 2013: transport indicators tracking progress towards environmental targets in Europe* includes an assessment of progress towards the transport-related environmental targets set out in the 2011 White Paper and other transport and environment regulations. The report presents an overview of progress towards transport goals, showing that European transport is currently improving its environmental performance. The latest data reveal that observed values are better than the ‘target path’ for the overall GHG emissions, oil consumption reduction and average CO₂ emissions for new passenger cars targets. However, achieving the EU’s long-term targets requires that the improvements in environmental performance become sufficient to avoid locking the transport system into unsustainable trends.

The Reference Framework for European Sustainable Cities (RFSC) offers guidance for encouraging urban citizens to change their travel behaviour e.g. trying alternatives to the car such as cycling, walking and public transport.

The following are some examples of what smaller cities in Europe are doing to tackle mobility issues in their environment.

---

GOOD PRACTICES > Category 2: Mobility

1. AOSTA: CITYPORTO

SUMMARY
Cityporto is Aosta’s main logistic centre, a platform which aims at improving city traffic, reducing noise and improving air quality through the use of vehicles with low CO₂ emissions.

CONTEXT
Aosta focuses on a number of measures that will contribute positively to the sustainability of transport in the city; the freight distribution centre is one of these measures.

OUTCOME
Traders can optimise their businesses by streamlining the loads of the vehicles used to supply their shops. Even the quality of life is improved: the streets, squares and artistic heritage of the historic centre have greater appeal.

The goods arrive at the logistics centre and are unloaded and reorganised according to a delivery schedule. Cityporto then organises delivery to the city. Goods can be transported in the historic centre’s limited traffic zones (LTZ) every day during predetermined time slots.

The service is provided by the Municipality at no cost and it has created new job opportunities in the city for the local service management.

LINK
http://www.cityportoaosta.it/home.html
2. LA ROCHE-SUR-YON: PROMOTION OF ELECTROMOBILITY

Summary
Various initiatives aiming at promoting electromobility in the city.

Context
La Roche-sur-Yon has a mobility plan that sets out the appropriate principles for a sustainable mobility policy, including a focus on limiting car use and encouraging the use of other modes of transport. The objective is to reduce the modal share of car use by 9% by 2025 (and to increase the share of other modes of transport).

Outcome
The city was identified as a Positive Energy Territory and rewarded with a Sustainable Development Ribbon in recognition of its commitment to soft and alternative means of transport. The city has a proactive policy towards electromobility. It has doubled the number of municipal electric vehicles (four to nine) in 2015; supplied 17 electric bicycles for municipal services; given a EUR 200 bonus to people purchasing an electric bike (320 units since 2012, with a strong increase in 2015), awarded total free parking for electric vehicles; installed 10 electric charging stations, and; sent a municipal crew to participate in the Vendée Electric Tour (VET).

Link
http://www.ville-larochesuryon.fr/115-le-deplacement.htm
3. GALWAY: BUS AND CYCLING IMPROVEMENTS

SUMMARY

Renovation of one of the city’s major transport corridors in favour of bus and bicycle circulation.

CONTEXT

Galway has been developing an integrated transport plan that aims at improving the situation for, and the performance of, more sustainable modes of transport, while limiting access to the city for private cars and freight.

OUTCOME

Opening in 2012, the Bishop O’Donnell Road/Seamus Quirke Road Improvement Scheme widened 1.7 km of the primary arterial corridor servicing the west of the city. The passage was widened to provide bus and cycle lanes in each direction, wider footpaths and increased pedestrian and cyclist priority at junctions along the corridor. This was the first scheme in Ireland to be designed using the National Transport Authority’s Cycle Manual. The scheme introduced raised cycle lanes to the network and innovative cycle priority measures at junctions. The corridor was also the first in Galway to be connected to the city’s Urban Traffic Control Network, which is based on the UTOPIA/SPOT system developed in Turin, Italy, and was also installed in 2012. As a result of the upgrade, three of the city’s bus routes that had been routed to avoid the corridor were re-routed onto it, with journey time savings of between three and six minutes.
Category 3: BIODIVERSITY AND LAND USE

INTRODUCTION TO THE THEME

As urban areas grow and population densities rise, there is a risk that municipalities may neglect the need for green areas, and sacrifice these spaces for industrial, commercial or housing growth. Green spaces, quiet streets and recreational parks are vital to the well-being of citizens and it is imperative that these areas are maintained and enhanced within the urban environment.

Urban sprawl often happens within cities, and a balance is required between the needs of urban, rural and residential areas; sustainable land use policies and practices need to be in place to help find this balance. The Territorial Agenda of the European Union was developed and adopted informally by EU ministers in 2007 to promote spatial development plans to address sprawl and promote stronger partnerships between urban and rural areas. The EU’s Global Monitoring for Environment and Security (GMES) programme enables the monitoring of land use in Europe through mapping at continental scale (‘CORINE land cover’) and local hot spot scale (‘Urban Atlas’).

The EU utilizes funding programmes to foster green space initiatives such as the ‘Green and Blue Space Adaptation for Urban Areas and Eco Towns’ (GRaBS) project which is supported by Cohesion Policy funds and promotes urban planning efforts aimed at preserving and adapting open spaces to improve quality of life, while also combating climate change.

There is a considerable range of size across participating urban areas and consequently very varying population density within them. Galway, Serres and Strovolos each have a population between 70,000 and 77,000 whilst the smallest applicants, Orbassano and San Miniato, have populations closer to 25,000. The area within each city’s boundaries is variable – e.g. 7 km² for Cornellà, 601 km² for Serres, and 3230 km² for Mikkeli. The composition and make-up of cities and towns can vary greatly and are influenced significantly by the geographical location and history.
1. GALWAY: LOCAL BIODIVERSITY ACTION PLAN

SUMMARY

The implication of various stakeholders in the definition of the local biodiversity action plan and the general biodiversity strategy of the city.

CONTEXT

Galway city has a large and diverse range of habitats and wildlife in relation to its size, due to its varying geology, the extent of its urban woodland and its proximity to the River Corrib, Galway Bay, and Lough Corrib.

OUTCOME

In 2008 The Heritage Council commissioned a consultant ecologist to prepare the first draft Local Biodiversity Action Plan in partnership with Galway City Council and the relevant stakeholders. Consultation is an essential part of the process to prepare a local biodiversity action plan that achieves local ownership of the plan and maximises participation from a wide range of sectors and stakeholders. The objectives and actions proposed in the plan are, therefore, the result of an extensive consultation process. In 2012 the Galway City Biodiversity Website was created and corresponding Facebook and Twitter pages were created.

LINK

https://www.facebook.com/GalwayCityBiodiversity/?fref=ts
2. MIKKELI: ECOCITY EVALUATOR

Summary

Mikkeli City Planning is currently using two programmes designed to evaluate GHG emissions and one assessment method to provide sustainability to design processes.

Context

Mikkeli’s three-part city strategy includes a focus on the wellbeing of nature and the environment. This spacious city, with many green areas around its denser centre, promotes a healthy and ecologically sustainable urban environment as part of its city planning.

Outcome

EPECC’s Ecocity Evaluator takes the requirements of climate assessment in urban planning into account. The programme calculates the aerial GHG emissions, type of land, land area and user input. Information on buildings, traffic, agriculture, industry and energy production can be accurately presented by the calculation. Ecocity Evaluator is mainly used in master planning phases.

KEKO, the second programme, is being finalised and a demo version has been in use since spring 2015. The development phase should be finished by 2016 and the city will start using it regularly.

In its Green Rating project the city has been using the BREEAM Communities assessment method. BREEAM Communities supports the creation of more sustainable places by providing design teams with a simple framework to consider sustainability.

Links

http://www.syke.fi/fi-fi/Tutkimus__kehittaminen/Tutkimus_ia_kehittamishankkeet/Hankkeet/Kaupunkien_ia_kuntien_alueellinen_ekolaskuri__KEKO_B
http://www.breeam.org/communitiesmanual/
3. KARDZHALI: GREEN SYSTEM REGISTER

SUMMARY

The Municipality has created and actively maintains a Green System Register, a database of the city’s parks and green areas.

CONTEXT

Green areas cover 149 ha (14 %, nearly one sixth) of the city. It is estimated that 80 – 85 % of the population live within 300 metres of a public green area. All (100 %) of the city’s green areas are open to the public.

OUTCOME

The database gives an overview of all green areas in the city, maps the composition and state of the vegetation, and is thus a valuable tool for setting land use and management goals and priorities for the development of green areas and their integration with other urban elements. Currently there are 72 separate green area entries in the database, excluding the green areas in streets, which are subject to separate planning.

The process of developing and integrating the green area network in the urban structure will continue in the coming years along the same priorities set in the Integrated Plan for Urban Regeneration and Development and the Municipal Development Plan 2014 – 2020.

In the period up to 2020, EUR 13 million will be invested in conservation and improving the environment within the city.
4. SAN MINIATO: OVERFLOW WATER BASIN

SUMMARY

The Piaggioni overflow water basin is a major project designed to manage flooding. It comprises two reservoirs connected to the River Arno in the municipalities of San Miniato and Fucecchio. The infrastructure consists of a 40-metre-long underground channel connecting the left bank of the river to an overflow basin, through four mobile gates that guarantee maximum flexibility by working in accordance with the level of water.

CONTEXT

The project is a structural requirement outlined in the ‘Basin plan to reduce the flood risk from the River Arno’, which was approved in 1999. The project aims at providing a solution to the flooding events that have created difficulties in the area for decades. The City Council of San Miniato has very often been forced to act with utmost urgency, working to restore the embankments and the damaged areas without solving the underlying problem.

OUTCOME

The project will significantly reduce the risk of flooding in San Miniato and the surrounding region. The Piaggioni water basin allows a greater number of heavy rainfalls to be managed, providing capacity for the collection of 8.5 million cubic metres of water within a territory of about 85 hectares. The project is financed through a mix of sources from the national, provincial, and local governments. Alongside the environmental benefits, it presents a significant opportunity for policies relating to the economy, employment, and society to be put in place in the future.

LINK

http://www.comune.san-miniato.pi.it/difesa-del-suolo1/cassa-di-espansione-di-roffia.html
Category 4: AIR QUALITY AND ACOUSTIC ENVIRONMENT

INTRODUCTION TO THE THEME

Clean air is vital to our wellbeing, and cities play an important role in delivering programmes to maintain air quality in the urban environment. Economic activities, in particular those related to road transport, power and heat production, industry and agriculture, emit a range of air pollutants. These have direct and indirect effects on human health, and an adverse effect on both ecosystems and human constructions.

In December 2013 the Commission adopted a Clean Air Policy Package consisting of a new Clean Air Programme for Europe, with new air quality objectives for the period up to 2030 and a revised National Emission Ceilings Directive with stricter regulations for the six main pollutants linked to reduced life expectancy and cardiovascular and respiratory related health problems.

In many cities in Europe air quality has improved considerably in the past decades and this is partly due to local actions in cities (EEA, 2014). But a large percentage of the European urban population is still exposed to concentrations above the EU limit or target values, and substantial health improvements are expected if these limits are achieved (EEA, 2015). This is a strong incentive for cities to develop efficient abatement policies with clearly identified objectives to improve air quality.

Acoustic quality is an important element of the urban environment, and a challenging issue that city administrations have to manage. It impacts hugely on the quality of city life. Ambient sound levels that are beyond comfort levels are referred to as environmental noise pollution. This can be caused by many different sources, such as traffic, construction works, and industry as well as some recreational activities. Excess levels of noise can cause damage to hearing, increased stress levels and blood pressure, and unnatural sleeping patterns.

According to World Health Organisation (WHO) research, approximately one in five Europeans are regularly exposed to sound levels exceeding 55 dBA at night. According to the EEA report Noise in Europe 2014, more than 125 million Europeans could be exposed to levels of road traffic noise above legal guidelines, yielding a range of health problems. Traffic noise annoys almost 20 million Europeans, and disturbs the sleep of an estimated eight million. The EEA estimates that environmental noise is also linked to approximately 43 000 hospital admissions, 900 000 cases of hypertension and up to 10 000 premature deaths per year.

Road traffic is the main source of noise in Europe, the report says, followed by railways, airports and industry. Generally, in cities of more than 250000 people, a larger share of the population is exposed to levels above the legal guidelines.
The report also says that noise considerations should be incorporated into planning and building new infrastructure and that quiet areas should be protected. Finally, the document sites mounting evidence that wildlife may also be seriously affected by noise.

The Environmental Noise Directive (2002/49/EC) relates to the assessment and management of environmental noise. Its principal aim is to ‘define a common approach intended to avoid, prevent or reduce, on a prioritised basis, the harmful effects, including annoyance, due to the exposure to environmental noise’. The Directive refers to noise that people are exposed to continuously and not to noise created by people themselves, their neighbours, their workplaces, or noises experienced while in transit. It aims at providing a basis for developing EU measures to reduce noise emitted by major sources, in particular road and rail vehicles and infrastructures, aircraft, outdoor and industrial equipment and mobile machinery. The underlying principles of the Directive include:

- Monitoring environmental noise pollution through the development of ‘strategic noise maps’ for major roads, railways, airports and agglomerations, using harmonised noise indicators \( L_{den} \) and \( L_{night} \).

- Informing and consulting the public about noise exposure, its effects, and the measures considered to address, manage and reduce noise.

- Addressing local noise issues by developing action plans to reduce noise where necessary and maintain and improve environmental noise quality in areas where it is good.

- Developing a long-term EU strategy, which includes objectives to reduce the number of people affected by noise, and provides a framework for developing existing EU policy on noise reduction from source.

EU regulations on noise management have been based on internal market objectives such as setting harmonised noise limits for motor vehicles, household appliances and other noise-generating products. These laws have encouraged the development of innovations that can help limit noise pollution, such as low noise tyres and more silent road surfaces, as well as noise barriers and soundproofing. A number of applicant cities for the 2017 cycle have demonstrated the use of measures concerning noise monitoring, reporting and communication, the use of noise reduction measures, particularly in the use of low noise asphalt materials and traffic management, and also the use of measures regarding the classification, improvement and protection of quiet areas within their cities.

A number of applicant cities for the 2017 competition have demonstrated the use of noise reduction and air pollutants emission control measures, two examples of which are outlined below.

________________________
1. ORBASSANO: ACOUSTIC ZONING

SUMMARY

In 2007, an acoustic zoning plan, that establishes noise limit values during the day and night for six different land use areas, has been developed by the City for its municipal area.

CONTEXT

The municipality is composed by many different areas: the old town, in which are located the ancient buildings with residential areas; more recent districts with villas and multistorey houses; other old urbanized areas located in the periphery of the city around the lines of communication; and two villages with predominantly rural and residential vocation. This required specific and dedicated noise strategies for each part of the municipality.

OUTCOME

For the last eight years, acoustic zoning has served as an effective tool for urban planning, facilitating more efficient management of the acoustic environment. In this way the City has ensured that its citizens are protected from excessive noise pollution, resulting in a significant improvement in the quality of daily life.
2. MIKKELI: SURVEYS AND ACOUSTIC MEASUREMENTS

SUMMARY
The city conducts surveys among residents regarding the city's acoustic environment at regular intervals.

CONTEXT
For the most part Mikkeli is a quiet city. Most noise pollution comes from the main roads that pass through the city, Route 5 and Route 13. There are numerous silent areas near the city centre, such as the Urpolan river valley where the Urpolan river flows through a canyon formed during the last Ice Age.

OUTCOME
The most recent survey was carried out online in 2012. Residents were able to identify where, when and how they experienced disruptive noise. Based on the results of this survey, the city's environmental protection authority and employees from the City Planning Department carried out noise measurement projects with Mikkeli University of Applied Sciences, and the results of these projects are being used as background material for city planning.
3. STROVOLOS: FREE CITY PARKING FOR EV AND HYBRIDS

**Summary**

The city issues free parking cards to promote the use of electric and hybrid vehicles.

**Context**

Strovolos Municipality has taken measures in several categories and aims at reducing air pollutants at a local level to contribute to the national action plan.

The city has two electric charging stations and there is a programme to increase the citizens’ use of bikes.

**Outcome**

So far 120 cards have been issued since 2010. The practice has been adopted by other local authorities. Interested car owners should complete the relevant application form, which they can obtain from the Citizen’s Service Office at the town hall.
The shift towards waste prevention and recycling is essential to the development of a green economy, with lower environmental risks and lower demand for virgin resources. The transition to a circular economy like this has the potential to improve the wellbeing of citizens and contribute towards a more equitable society.

In the past, economic growth was often built on the continuous exploitation of natural resources. Our actions have significantly depleted natural resources, and the risk of shortages and rising prices is now a tangible threat.

Today, growing numbers of citizens and economists are turning to different economic models for creating wealth without harming the environment. Managing waste materials as a valuable resource with potential for reuse, recycling or recovery has now become a growing focus across Europe. Waste that is merely disposed of represents a loss of resources and an inefficiency of the economic system.

The 2008 Waste Framework Directive is the cornerstone of EU waste policy. It introduced the five step waste hierarchy, with waste prevention as the best preferred environmental option, followed by preparing for reuse, recycling and other forms of recovery, including energy recovery.

Disposal is the least preferred option, and with the implementation of landfill bans and economic instruments (i.e. taxes), disposal is now an obsolete waste treatment approach in many EU Member States. Furthermore, lifecycle thinking was also introduced as a new waste policy concept.

Today EU waste legislation takes a strategic approach to waste and resource efficiency, setting out legislative frameworks for the management of different waste streams accompanied by material-specific recycling and recovery targets. For example, the 2017 target for the recycling of vehicles will be 85% and the recovery target (including energy recovery) will be 95%. The EU Roadmap to a Resource Efficient Europe is positioned alongside the Waste Framework Directive and reinforces this approach.

In 2013 approximately 481 kg of municipal waste was generated per person in the EU.

This represents almost a 9% decrease since 2002 and shows a downward trend in waste generation across Europe. Although this is a positive result, there is a long way to go. Across Europe consumption patterns remain resource intensive and as a result the generation of waste remains high. The challenge into the future will be to decouple waste further from economic growth as part of a widespread transition to more resource-efficient economic models.

---

6 Municipal waste is defined as ‘waste generated by households, and also includes similar waste from sources such as shops, offices and public institutions’. Data on municipal waste generation in the Netherlands is not available as municipalities in the Netherlands are by law only responsible for the collection and environmentally safe treatment of household waste.
1. LA ROCHE-SUR-YON: CIRCULAR ECONOMY INITIATIVES

SUMMARY

A specific strategy for a circular economy was established by the authorities.

CONTEXT

The city has very progressive and innovative responses to the demands of the green economy. The city has an impressive focus on growing green industry and jobs in the region, and doing so in a sustainable manner following the principles of the circular economy.

OUTCOME

A study was conducted on a panel of 20 local companies employing 3000 people. An inventory of incoming (raw materials, energy) and outgoing (waste) flows was set. Following this study, working groups dedicated to pooling the purchasing of generic products (office), training in eco-driving and the collection of certain wastes were established. The first actions began in late 2015.
2. AOSTA: SEPARATE WASTE COLLECTION

**SUMMARY**

A new contract for urban sanitation and waste collection has been in place since September 2013.

**CONTEXT**

The city has a series of clear objectives in terms of improving waste management, including the progressive use of technology to improve solutions. The city regularly carries out information campaigns to raise awareness on waste.

**OUTCOME**

The services are carried out with more efficient, environmentally friendly new vehicles (electric vehicles for urban sanitation, white diesel vehicles for waste collection).

Computerisation has been implemented in order to have a greater availability of data on which to base future decisions. All containers are distributed with a bar code for identifying and assigning users. After unloading, operators must upload the intervention performed and the percentage filled of each container.

Each operator has been supplied with a magnetic card to access the two urban centres for waste delivery. With these ID cards, access to the historic centre for waste collection has been streamlined.
3. CORNELLÀ de LLOBREGAT: PREVENTION OF FOOD WASTE

SUMMARY

The project ‘Cornellà harnesses food potential’ consists of two initiatives: offering surplus food from municipal markets and supermarkets to charities and raising awareness about the problem of food waste. Although these aims are distinct and independent, they have the same goal: prevention of food waste in Cornellà.

CONTEXT

For a city of this size it has an impressive waste prevention plan. Innovative reuse applications are in place, as well as campaigns targeting and promoting reuse and waste prevention.

OUTCOME

Channelling surpluses avoids fresh food from local businesses going to waste, and takes advantage of suitable products for consumption that would otherwise have been lost.

The local government identifies suitable local businesses, organises the transport, guaranteeing good conditions and providing isothermal containers, and liaises with the relevant charities.

The project started in June 2012 and during 2014 recuperated 7.7 tonnes of surplus food (doubling the figure from 2013), to supply more than 1500 vulnerable families.

This initiative was awarded with the Spanish Sustainable City prize in 2013 and it was showcased as a good practice in Expo Milan 2015.
4. GALWAY: STOP FOOD WASTE CAMPAIGN

SUMMARY

An awareness raising campaign on the subject of food waste.

CONTEXT

Galway City Council has at all times embraced Government policy in respect of waste management and, in particular, has led the way in the implementation of segregated collection, diversion from landfill through central composting, and the application of the polluter-pays principle through the introduction of pay by weight.

OUTCOME

Despite the ongoing rollout of brown bins (for food waste), a large proportion of wasted food still ends up in landfills where it has significant impacts on the local environment. Galway City Council partake in a number of interactive education and awareness events. One such event, to promote the Stop Food Waste campaign, is held at the annual Galway Food Festival. ‘Luscious Leftovers’ recipe booklets were developed for distribution at this event. A cookery demonstration showcases a number of the dishes in the booklet. The stall at this event is always very popular with the public and receives very positive feedback. Useful advice and information on reducing food waste is available.
Category 6: WATER MANAGEMENT

INTRODUCTION TO THE THEME

The EU Water Framework Directive (WFD) acknowledges that modern water management needs to take account of the environmental, economic and social functions of water resources throughout an entire river basin (EEA, 2007). Indeed, more and more countries are considering both supply and demand in their river basin management plans, and particularly in their public water management (EEA, 2010).

How can we improve water management in our homes and cities in order to reduce consumptions and withdrawals?

Water pricing and governance are among the strategies and measures employed to encourage sustainable use. The WFD requires Member States to consider a polluter-pays principle7 that would recover the cost of water services, including environmental and resource costs, from users including farmers, industries and ordinary household consumers (EEA, 2007, 2010a). Water metering provides a strong incentive to save water, and experience shows that households with water meters (and associated charges) generally use less water than those without them. Currently, however, only some European countries meter all household and business water use; often metering is still limited to agricultural water use.

There are many techniques that can be applied to buildings, and urban areas. First of all, there are simple solutions to save water at home, such as tap aerators, dual-flush toilets or low consumption domestic appliances. But it is also possible to adopt more suitable water systems. Why should we use drinking water to flush toilets, to irrigate gardens or wash cars? Rainwater and greywater use is one way to save water, and the EU supports rainwater management systems and the decentralised treatment and reuse of wastewater. Stakeholders can benefit from great advances in wastewater treatment and the corresponding increase in the quality of water discharged into the environment.

Identifying where leaks occur within the system, and repairing and updating the distribution infrastructure is critical to minimising and preventing of wasted water. Techniques to reduce losses in water networks are particularly important, as they also create energy savings.

A clean urban environment is among the goals of the Urban Waste Water Treatment Directive. Its overall objective is to protect the environment from the adverse effects of urban wastewater discharges and discharges from certain industrial sectors. This Directive requires all cities and towns with populations of 2000 or more to have sewage collection systems in place and to treat the wastewater to certain minimum standards before it is discharged into the environment. This legislation has helped to clean up rivers, lakes and coastal

areas and has been essential for meeting the health-based standards of the Bathing Water Directive.

The following examples showcase what cities are doing in terms of water management and wastewater treatment.
1. MIKKELI: STORMWATER MANAGEMENT

SUMMARY
Adaptations in the city centre to manage stormwater issues.

CONTEXT
Of the 128 lakes and 11 rivers in Mikkeli, 83% and 82% respectively, were rated as excellent or good.

OUTCOME
Climate change has increased rainfalls and prolonged the snow-free period, which has led to an increase in stormwater and the release of nutrients into waterways. In 2015, the stormwater system in the city centre will be changed so that the stormwater is directed through a wetland before entering the water system. The natural wetland will ecologically bind nutrients with solids. The total cost of altering the system is EUR 1 million. In 2013, the city invested approximately EUR 40000 in monitoring the water quality in waterways and drawing up management programmes.
2. LA ROCHE-SUR-YON: PLACE NAPOLEON REFURBISHEMENT

**Summary**

Refurbishment of the city’s main square, Place Napoleon, with special attention to water management.

**Context**

Adopted in October 2015, the strategic plan for water and sanitation aims at answering the following challenges:

- Securing a wastewater treatment station for the territory;
- Investing in the optimisation of networks and a treatment centre;
- Setting sanitation zoning consistent with the planning documents.

**Outcome**

The water comes from four basins that collect rainwater from roads, roofs, pedestrian areas and green spaces, an area of over 11000 m².

This water is used to supply an ornamental pond in Place Napoleon and then is discharged to three other basins according to a set pattern. After two years of operation, only collected water was used to fill the basins, with no water coming from the drinking water supply.
Appendix – Expert Panel Profiles
Category No. 1
Climate change and energy performance


F. Javier González Vidal is an industrial engineer who graduated from the Polytechnic University of Valencia. Throughout his professional career he has always focused on the promotion of environmental respect, both at the regional and international level. For the last 13 years he has been working for the Regional Government of Valencia in the Directorate-General for Environment, where the activities and responsibilities of the job have provided him with a broad overview of the situation related to the intensive use of energy, climate change, polluting emissions and air quality.

The development and implementation of policies to fight air pollution and climate change have been one of his priorities, and he has used emissions inventories as a key tool to assess effectiveness. During this period some of the main tasks he has been involved in have been: the development, implementation and monitoring of the policies included in the regional Climate Change Strategy; and the implementation of the EU ETS; the management of the PRTR register; air quality network analysis and the subsequent development of air quality actions plans.

He was a member of the Climate Change Committee of the European Commission as a representative of the regional governments of Spain in order to express their opinion during the negotiations of the European policies.

Since 2005, as a member of the Roster of Experts of the United Nations Framework Convention on Climate Change, Javier has contributed to the review of national communications and inventories, focusing on the Energy Efficiency Chapter, according to the Kyoto Protocol commitments. He has cooperated actively with D.G. Enlargement, providing technical support to EU partner countries with regard to the approximation, application and enforcement of EU environmental legislation through the Technical Assistance and Information Exchange instrument.

In 2013 he worked with the Ministry of Environment of Brazil, in the context of the sectoral dialogues between the EU and Brazil, on the Climate Change and Energy Efficiency Chapter.
Manfred Fischedick is the Vice President of the Wuppertal Institute, an internationally well-known think tank investigating transformation processes for sustainable development. With particular reference to the areas of climate, energy, resources and mobility, the institute is looking for technical, infrastructural and social innovations that support the transition to sustainable structures. Special focus is given to the transition process of the energy system and cities.

Manfred Fischedick also leads 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 advisor to the German government as well as the Bundesland of North Rhine-Westphalia, author of various publications and peer reviewed articles. Manfred Fischedick is coordinating lead author for the IPCC (responsible for the chapter on industry in the upcoming 5th Assessment Report), and a member of several national and international scientific boards and advisory councils.

Manfred Fischedick has been intensively working in the context of sustainable urban infrastructures and energy-efficient cities. His project experience comprises, among other things, 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 at reducing emissions by 50% between 2010 and 2020, he leads the scientific accompaniment process.

Category No. 2
Mobility

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.
After 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 European level for the European Commission, which has involved impact assessments and evaluations of various EU transport and environmental policies.

He has also worked for UNEP, supporting their EST goes EAST project, and has been an independent evaluator for the European Commission. In 2013, Ian was invited to draft the chapter on European transport policy for the Edgar Elgar book, Research Handbook on Climate Change Mitigation Law (2015, Van Calster and Vandenberghe, eds).

He was involved in several Eco-City projects: for the City of Vienna, Jan led the development of the Environmental Vision of Vienna and is presently supporting the network Cities for a Nuclear Free Europe (CNFE). Also for Vienna he was technical chair of the EUROCITIES Environment Forum. As a UNIDO expert Jan has been involved in the organisation and reporting of conferences in Jordan and Bahrain on Eco-Cities in the Middle East and North Africa (MENA) Region.

Also for UNIDO and the Government of Japan he is currently setting up a network of Eco-Cities in South East Asia, introducing the instrument of Peer Review for Cities. Together with the Astronaut Marcos Pontes Foundation and UNIDO he is preparing the development of an Eco-State in Roraima, Brazil.

Jan has started a project in Morocco to develop a reference framework of sustainability for the Eco-City Zenata. In the past Jan worked on Green Industry and the promotion of Eco-Business projects in India and Thailand, for example, and on the development of a Green Award mechanism in Cambodia.

Jan has been a member of the Expert Evaluation Panel for the European Green Capital Award since 2012, acted as Lead Expert for URBACT-II and is a member of the expert group for the UNEP-JCEP Sustainable Urban Development and Liveable Garden Community – China Programme in China.

Expert: Jan Dictus, UNIDO Eco-City Expert, Founder of GOJA Consulting for Environment and Sustainable Development, Vienna, Austria

Jan Dictus (nationality Dutch, living and working in Austria since 2000) is an expert on the sustainable development of cities. He has provided services to a wide range of clients at international, European, regional and local levels on environmental and sustainable development issues.
Category No. 3
Biodiversity and land use

Expert: Dr Annemieke Smit, Senior researcher on Nature Based Solutions for Society at Alterra (part of Wageningen University and Research Center), the Netherlands.

Annemieke Smit is a physical geographer with a PhD in Ecology. In 2001 she started working at Alterra with a focus on Sustainable Soil and Land Use. She is an expert on sustainable land use management, in urban, peri-urban and rural areas. She was one of the core team members of the Dutch Community of Practice (CoP) regarding sustainable land use management in spatial planning.

For the past two years she has been involved in the Alterra Green Cities programme, combining ecological, social and economic knowledge about the multiple benefits of Green Infrastructure for urban public and private stakeholders. She specialises in multistakeholder projects and is often involved in national EU assessments on sustainable development. She is part of the Dutch advisory board for the development of BREEAM Community.

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

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

Jake Piper has worked as a researcher and lecturer at Oxford Brookes University for the past 12 years, following on from an earlier career in environmental consultancy. Her academic background includes forestry and land management, and environmental assessment.

In recent years she has contributed to and managed studies of policy development and spatial planning, frequently related to biodiversity protection and enhancement in circumstances of climate change, as part of EU programmes (MACIS, BRANCH), and she has been a peer reviewer of the C-Change project, which promotes community engagement and behaviour change as well as creating multifunctional spaces.

She has also worked on studies preparing guidance for projects affecting Natura 2000 sites, and projects concerned with rural development. Issues around biodiversity, water resources, flooding and sustainable drainage have been a particular interest – as demonstrated in her recent book *Spatial Planning and Climate Change* (with Elizabeth Wilson). Other project work has involved the economic and environmental assessment of many forms of development, including offshore wind, water resources, railway infrastructure, forestry and leisure.
Category No. 4
Air quality and the acoustic environment

Expert: Diogo Alarcão, Specialist in Acoustic Engineering, Principal Researcher and Professor at Instituto Superior Técnico University of Lisbon, Portugal and the Polytechnic Institute of Lisbon, Portugal.

Diogo Alarcão is a physics engineer with a PhD in Acoustics. He is Principal Researcher and a Professor in the scientific area of Acoustics at Instituto Superior Técnico, University of Lisbon, Portugal.

He is a chartered acoustical engineer, member of the board of the Portuguese Acoustical Society and member of the executive commission for the Specialisation in Acoustic Engineering of Ordem dos Engenheiros.

He has been responsible for major projects in environmental acoustics and noise control, including noise mapping and action plans for large urban areas in various Portuguese cities and for many large transport infrastructures. He has also been responsible for various projects in the areas of room acoustics and virtual acoustics, including real time simulations and the auralisation of sound fields in enclosures.

Expert: Christer Johansson, Department of Environmental Science and Analytic Chemistry, Stockholm University and air quality expert at the Environment and Health Administration of the city of Stockholm, Sweden.

His focus area over the past 25 years has been on urban air pollution. This includes anthropogenic emissions, air pollution monitoring, atmospheric dispersion modelling, chemical reactions, population exposure, air quality and health impacts.

He has been working closely with epidemiologists and atmospheric scientists as well as urban planners in many national and international research projects. At Stockholm University he also supervises PhD and Masters students and is responsible for a Masters course on Air Quality Outdoors and Indoors, which deals with emissions, air quality management and health risk assessments as well as cost-benefit analyses of air pollution.

At the Swedish National Air Quality Reference Laboratory, he was advisor to the Swedish Environmental Protection Agency and collaborated with other reference laboratories mainly in Nordic countries.

In the city he works closely with local and national authorities on air quality issues. His unit at the Environment and Health Administration in Stockholm is responsible for operating an air quality management system not only for
the city, but for an association that includes 50 municipalities, energy production companies and regional governmental agencies. The system includes monitoring stations, emission inventories and dispersion models and is also used in urban planning to analyse, for example, the impacts on air quality and health of future planning scenarios.

Category No. 5
Waste management and green economy


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 Master’s degree in Engineering Science from University College Dublin.

Since joining RPS in early 2001, Warren has worked in the resource and waste management sector developing specialised skills in policy and legislation, strategy and planning, stakeholder consultations, data analysis and collation methodologies, waste prevention and online resource applications. Warren has extensive knowledge and experience in the strategic approach to managing wastes at a city, regional and national level. Warren is currently Project Manager for the development of the waste management plans covering the Irish State including the preparation of strategic environmental assessment and appropriate assessment documentation supporting the plans.

The ability to source, compile, analyse and present data is essential for the development of robust waste management systems and plans. In recent years Warren has led a team appointed by the Irish Environmental Protection Agency required to collate and analyse data gathered from all of the major waste treatment facilities in Ireland. Warren has also prepared data for the Irish government, benchmarking Ireland’s performance in the sector against comparable international countries.

Warren has applied his waste management skills and developed waste management plans for large infrastructure projects, international airports, industrial operations and university campuses. Clients have included INTEL and Aéroport de Paris.

Warren has worked on waste projects in the UK, across Europe and in the Middle East. Warren’s clients include the European Commission and the World Bank, among others. Warren is currently acting as the Irish country agent on a European Commission Horizon 2020-funded project on Sustainable Innovation (CASI project).
Warren has also worked on the design of many waste facilities including baling stations, transfer stations, material recovery facilities and recycling centres and is currently working for WRAP on the redesign of a waste facility in Wales.

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

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

Prior to his current position, he was employed as a senior consultant at Kommunalkredit Public Consulting in Austria and as a senior project scientist at the National Environmental Research Institute/University of Aarhus in Denmark within the EU-funded project Competitiveness effects of Environmental Tax Reforms (COMETR). He also contributed to the research project Resource Productivity, Environmental Tax Reform and Sustainable Growth in Europe funded by the Anglo-German Foundation. He has implemented projects for a range of clients including the Danish Environmental Protection Agency (DEPA), European Commission (EC), Organisation of Economic Cooperation and Development (OECD), United Nations Development Programme (UNDP), United Nations Environmental Programme (UNEP), German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, and the UK Department for International Development (DFID). He has carried out research projects in Africa and Asia, and has published widely on economic instruments and environmental financing and recently coedited the book Environmental Tax Reform (ETR) A Policy for Green Growth (Oxford University Press, 2011).

Category No. 6
Water management

Expert: Ana Lončarić Božić, Associate Professor, Faculty of Chemical Engineering and Technology, University of Zagreb, Croatia

Ana Lončarić Božić is an associate professor involved in teaching and research in the field of Chemical and Environmental Engineering. Ana holds a PhD in Chemical Engineering. Her research interests include advanced technologies for water and wastewater treatment, advanced oxidation technologies, photocatalysis, degradation of recalcitrant pollutants and contaminants of emerging concern and ecotoxicity. She participated in five national and international research projects within academia
and industry in the field of advanced wastewater treatment. She is the author/co-author of more than 30 scientific papers published in peer-reviewed journals (cited over 500 times, h-index 12). Ana sits on three editorial boards and is a regular reviewer for more than 20 scientific journals. She is also an environmental management system auditor.

With a background in Chemical and Environmental Engineering and expertise in wastewater treatment and water management, Ana was involved as an evaluator for FP7-ENV-2012, FP7-ENV-2013 and NCBR-Core 2012 calls.

Expert: Giulio Conte, Project Manager for natural resources area at Ambiente Italia and water policy expert at IRIDRA.

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

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

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