10. Green Growth and Eco-innovation

Refer to Section 2.10 of the Guidance Note

10A. Present Situation

Indicator		Unit	Year of Data
Number of electric vehicles owned by the municipality	8	Number	2017
Number of electric vehicles owned by the municipality (in % of all cars owned by the municipality)	Less than 1	%	2017
Number of charging outlets available for cars owned privately	8 (plus 2 private with partial access)	Number	2017
Number and percentage of procurement contracts that take into consideration green issues, particularly employment and eco-innovation.	0	Number	2017

Eco-innovation is not an isolated practice; it overlaps with activities described in many other chapters in the EGC application. This chapter therefore describes several activities and projects more from the perspective of the importance of their contribution to Green Growth than in terms of their actual positive environmental impacts (which are described in the other relevant chapters).

Currently, the most important activity in this area in which the City of Ostrava participates is the **Programme for long-term inter-sectoral collaboration between the private and academic spheres**. This Programme incorporates several areas focusing on the management and use of materials and resources, the circular economy, technologies for developing Smart Cities, and innovations – including environmental innovations (the expected volume of project funding is estimated at 27,7 millionEUR).

An important aspect of Eco-innovation and Green Growth is raising awareness of these issues; it is impossible to achieve progress without informing all key stakeholders and informing the public of the positive environmental impacts of innovations. In partnership with other key actors, the City has participated in the **Smart Cities Hackathons project** (VSB–Technical University and Impact Hub). Ostrava is also a member of the **Smart Region Strategy Group**, participating in the evaluation and selection of projects focusing on transport, ICT, the environment, energy savings and health.

Due to the current system of job classification used in Czechia, **new jobs related to eco-innovation** cannot be clearly distinguished from other new jobs. One possibility is to estimate future job numbers in individual industries, combined with job numbers at Ostrava's successfully developing Science and Technology Park, and numbers of new jobs at start-ups (and at other institutions connected with eco-innovations). However, due to statistical inaccuracies, any such estimate would be very imprecise. Moreover, Czechia currently has the lowest unemployment rate in EU, and the rapid rise in employment (due to the ongoing economic boom) makes it difficult to identify new jobs created by supporting eco-innovations.

Ostrava's activities in innovation-related projects also include smart mobility projects supporting **electric vehicles**, and the City is a member of an inter-ministerial committee set up to study the potential use of hydrogen-powered vehicles.

Image 1: Electric cars of Municipal Police Force

In the future, the City is prepared to apply principles of sustainable development to a greater extent than is currently the case when selecting suppliers and contractors. The practical application of this principle – **Green Public Procurement** – is still restricted due to the current state of national legislation, which does not permit contracting authorities to weight their decision-making in favour of candidates offering potential positive environmental impacts in the form of products/services supporting sustainable development, reduction of negative environmental impacts or support for eco-innovation. Current Czech legislation sets out rigid criteria for the public procurement selection process, which in the large majority of cases is based solely on the criterion of lowest price. The original intention of the law was to increase transparency in public procurement, but it severely restricts contracting authorities' ability to take into account factors such as those mentioned above; by doing so, the contracting authority would risk intervention by the Office for the Protection of Competition, which could potentially declare the entire tender process invalid due to the use of potentially discriminatory criteria. The City of Ostrava has experienced this problem several times in the past, and because such a train of events causes significant delays (the decision-making process at the Office for the Protection of Competition may last several months), it can lead to a situation in which the project is no longer eligible for the planned subsidy funding or other source of funding because the time limit for the funding has already expired.

10B. Past Performance

In recent years, a number of projects have been implemented that can be classified as innovative activities with a positive environmental impact. The most important of these projects are listed below:

Smart water metering

In recent years, Ostrava's water management company OVAK (part-owned by the City of Ostrava) has

introduced smart metering technology, and it continues to expand this system (see also Chapter 9). Smart metering gives customers instant access to current water consumption data, enabling them to detect any hidden leaks in the system. The meters are fitted with transmitters which automatically send the data via a radio signal to an information system which can be accessed by the customer; the data can be displayed in numerical or graphic form. Thanks to this system, users can easily track their water consumption via the internet. The system can also send e-mails or text messages warning customers about abnormal consumption. This helps to minimize damage in the case of a hidden leak, as well as helping to conserve supplies of a natural resource which is becoming increasingly valuable due to the effects of climate change.

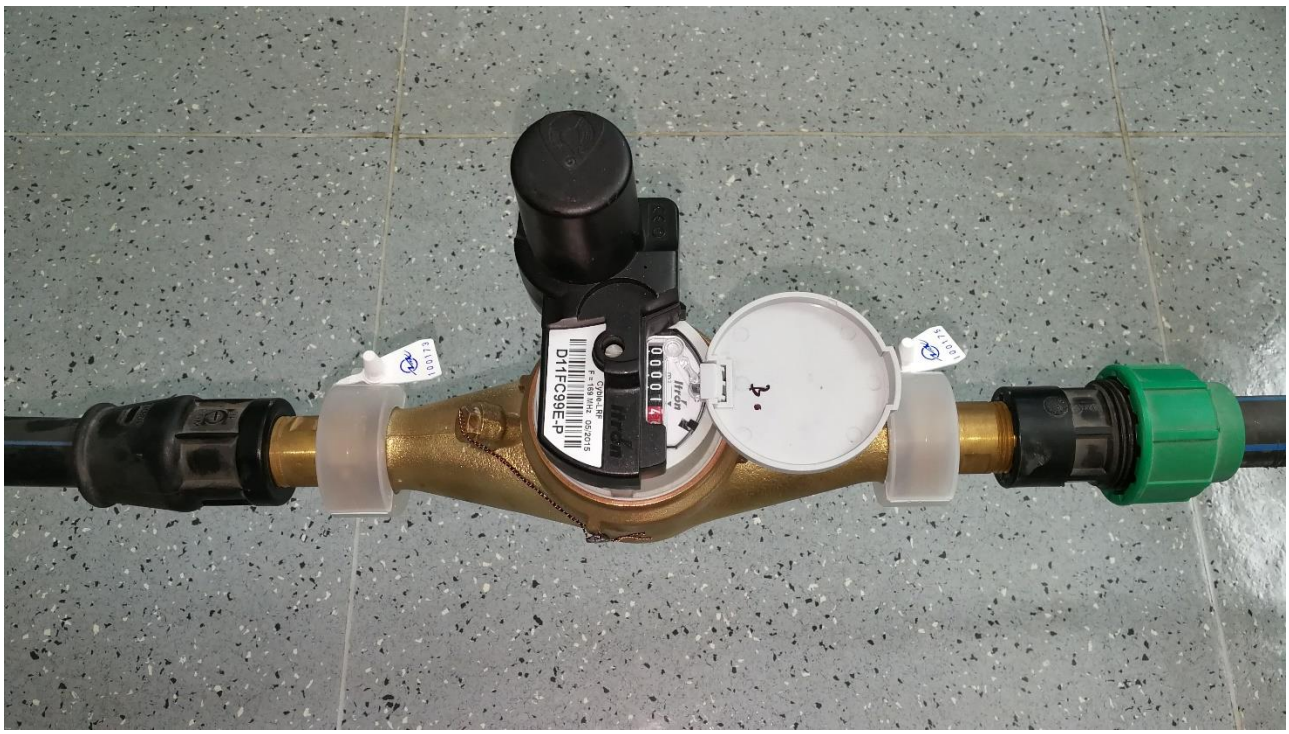

Image 2: Smart water measurements

Ice pigging – a new method of cleaning water mains pipes

Preventive maintenance of the water supply network helps to ensure the efficient use of drinking water resources and reduce water loss. Ostrava's water management company OVAK has launched a programme of preventive water mains cleaning using a new method – ice pigging (see also Chapter 9 of the EGC application). After successfully piloting the method in 2015, in the following year the company began to use it in one of Ostrava's municipal districts that is predominantly village-like in character. The quantity of sediment removed from the pipes varied from 4-10 kg/km. In view of the success of this trial application, the company plans to use it at other suitable locations in the future. This sophisticated method involves injecting a pressurized mixture of ice slurry and salt into the pipelines, which cleans the pipe far more effectively than standard water jet or air cleaning methods. Ice pigging is a revolutionary new development in water management infrastructure maintenance; though it is relatively expensive to test, it has the potential to significantly reduce water loss and retain excellent quality standards. The main advantage of the ice/salt mix is its abrasive effect, which can remove up to a thousand times more dirt than previously used methods – regardless of the material that the pipe is made from. There is also a 50% reduction in water consumption compared with standard methods (water jet cleaning), as well as a 50% time saving. The risks of ice pigging are negligible; if any problems occur, the ice will soon melt.

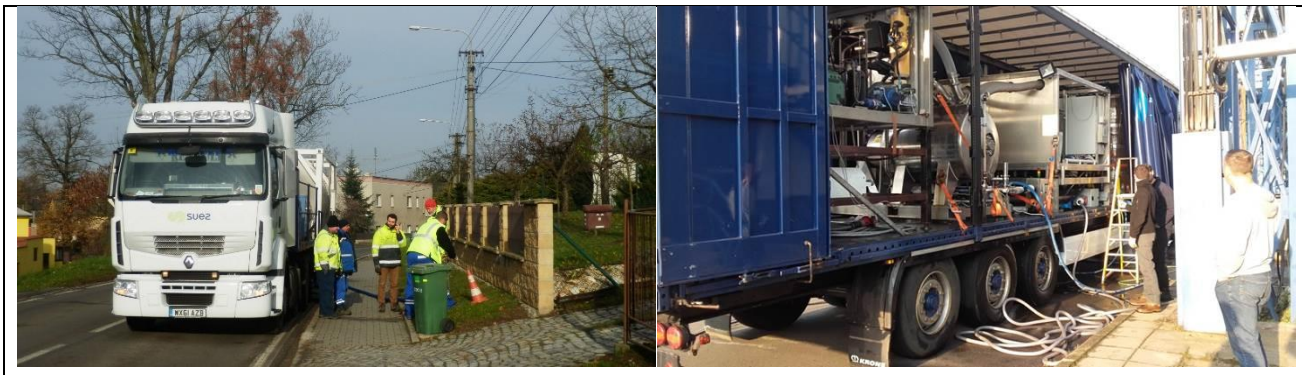

Image 3: Ice-pigging equipment

Utilization of landfill gas

A major innovative project with a direct positive impact on the environment is the use of a gas harvesting system at Ostrava's landfill site (see Chapter 8). The system channels gas via extraction vents to a gas station at the site, where the gas is stored and then used to generate electricity. There are plans to use the biogas to power Ostrava's waste collection vehicles. Biogas is also a by-product of the treatment process at the Central Waste Water Treatment Plant; this gas is also used for power generation.

One of the City's important pro-innovation measures is the **phasing out of the standard diesel buses used in Ostrava's public transport system** and their replacement with vehicles powered by compressed natural gas (CNG); the city's public transport corporation launched this programme during the last EU structural funds programming period (2007–2013). Currently the corporation runs 105 low-emission vehicles meeting EURO6 standards; the remaining diesel buses will be gradually replaced by **electric buses and trolleybuses** partially powered by batteries. A new large-capacity CNG filling station has also been built for the new buses; the station is one of the largest facilities of its type in Central Europe (3000 Nm^3/hour, 24 buses/hour).

One of the most visible innovations introduced by the City – with the aim of making public transport a more attractive option and thus reducing the environmental impact of transport – is the introduction of a system enabling **passengers to pay using contactless bank cards**. This makes it considerably easier for passengers to use the system and has boosted the number of users (including visitors to Ostrava). Ostrava was only the second European city (after London) to introduce an electronic passenger payment system of this type, ranking it among Europe's top cities in using modern electronic systems.

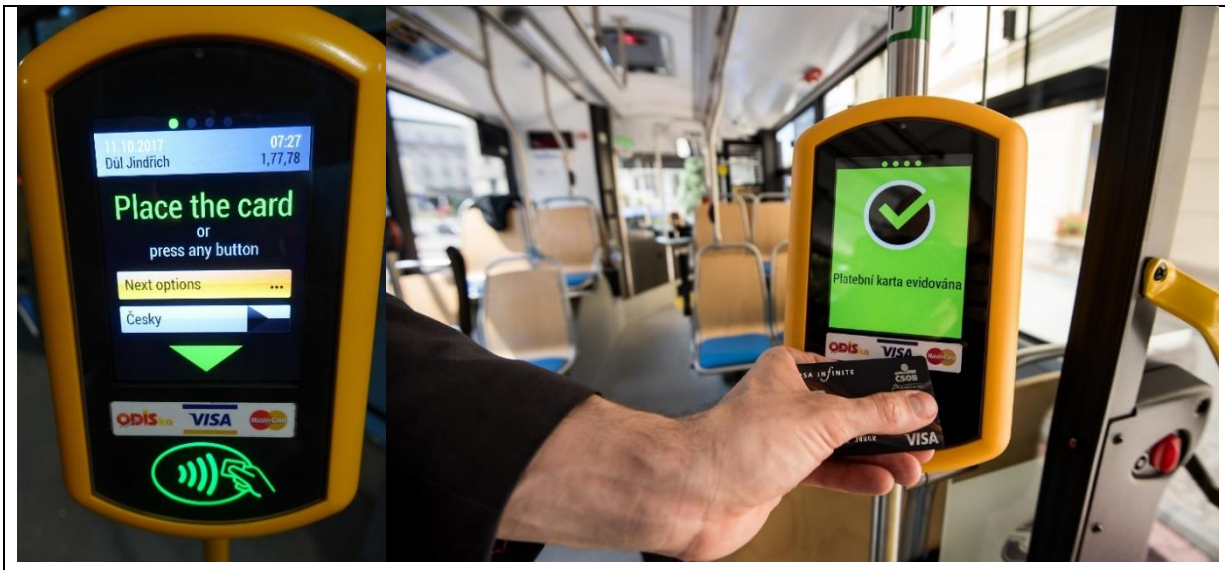

Image 4: Ticket payment terminal/Ticket payment in public transport through a bank-card

An important part of eco-innovation is **raising public awareness** of its goals and other related aspects; in the case of young people, this process will also help to inspire a future generation of experts, start-up founders, business people and scientists. An important role is played here by the Science and Technology Centre/STC (including U6 STC located in former Central Energy Station), an interactive educational attraction at the revitalized Lower Vitkovice complex (see Chapter 4), which was opened in 2014; the STC has signed a Memorandum of Understanding with the American Museum of Natural History in New York, which forms the basis for inter-institutional cooperation. Lower Vitkovice is also currently the location of a large-scale project involving the City of Ostrava, local universities and other partners; the project will create a new complex with research centres, cultural institutions and leisure facilities, integrating the goals of the City, the universities and companies while also enabling broad-based public involvement.

Image 5: Learning through games in Science and Technology Centre and U6 at revitalized Dolni Vitkovice

10C. Future Plans

The **Smart City** project (and the Smarter Region project, in which Ostrava is also involved) includes a number of projects with an impact on the development of Eco-innovation and supporting Green Growth.

Image 6: Signing of Smart City/Region memorandum (left: Ostrava, Ministry of Enviornment, Ministry of Industry, MS Region)

The City of Ostrava is a member of a strategic partnership supporting the application of smart technologies in five thematic areas outlined within the Smart Region Development Strategy, approved by the Moravian-Silesian Region in June 2017. The Czech Ministry of Regional Development recognized the excellence of this Strategy by awarding it the highest possible status in the country's regional smart concept system.

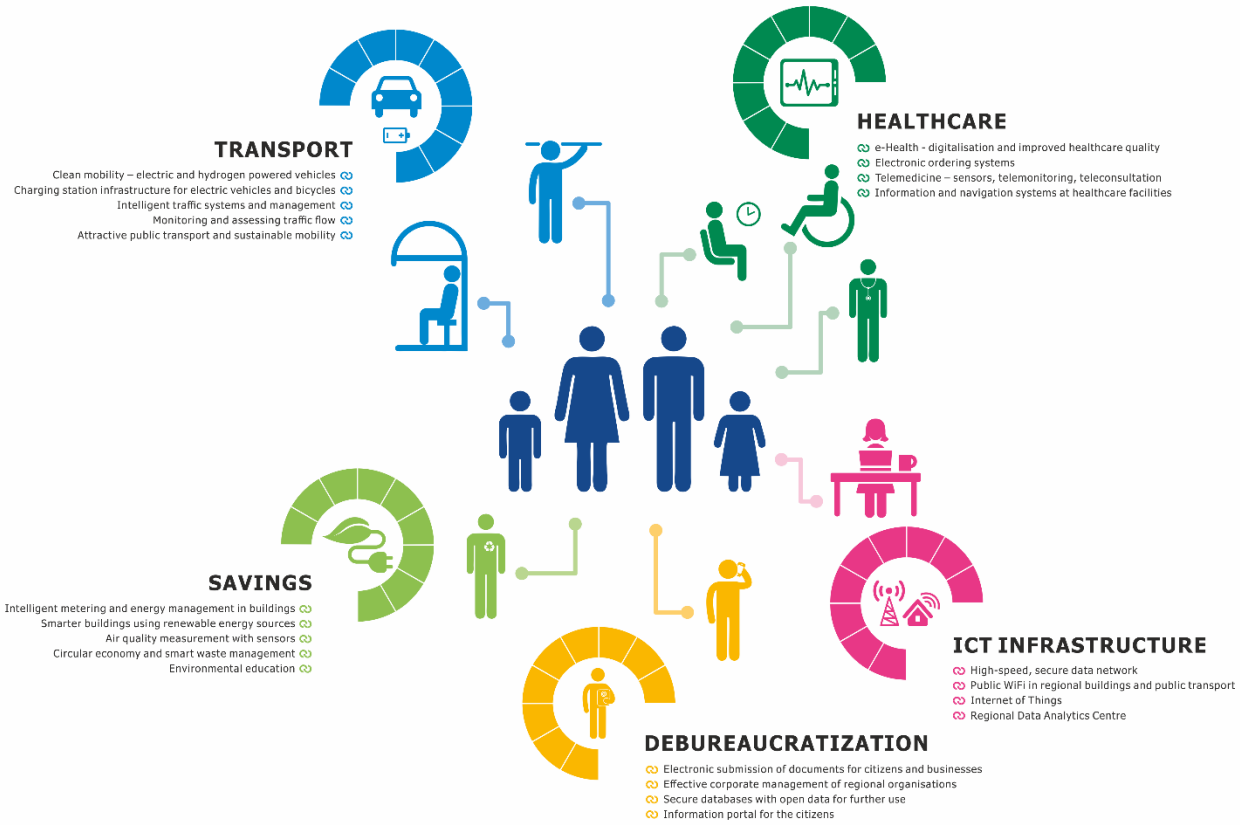

Image 7: Smart Region (MSR) Priorities and Projects

One of the five priority thematic areas of the Strategy is 'Savings', which focuses on supporting projects introducing smart measurement systems in buildings, modernizing buildings to use renewable energy resources, mapping air quality by sensors in the internet of things, supporting the circular economy and smart waste management, and providing environmental education. In 2017, in partnership with the Moravian-Silesian Region, the City supported a public competition to find eco-innovations which help to achieve energy savings. In 2018 two of the winning projects will apply the solutions in the fields of zero waste management and air quality monitoring.

As part of its efforts to **promote low-emission vehicles**, Ostrava's City Authority and organizations owned by the City are modernizing their vehicle fleets by purchasing 24 low-emission vehicles. 18 of these (17 for the City Police Force) will run on compressed natural gas (CNG). The remaining 6 will be electric cars (used by the authorities of Ostrava's municipal districts).

Moravian-Silesian Innovation Centre (MSIC)

In 2017 the City, working alongside the Moravian-Silesian Region and Ostrava's universities, established a new organization – **the Moravian-Silesian Innovation Centre** (MSIC), which offers services supporting innovation, community programmes and new business clusters. As part of the **In Focus project** (URBACT), the MSIC is preparing an Integrated Action Plan for 2017–2019 coordinating talent attraction management activities; the plan contains projects supporting start-ups and small businesses via an eco-technologies incubator. The aim is to boost environment-focused innovations in the Region, generating new jobs and addressing environmental issues and challenges. Currently the budget for these activities is 1,2 million EUR

(to fund the MSIC directly) and 3 million EUR (from the Regional Innovation Strategy RIS3 – Smart Accelerator).

Image 8: Moravian-Silesian Innovation Centre

Among the City's main innovative projects with a positive environmental impact are the following:

The Pan-European Urban Climate Service

Ostrava is involved in the implementation of the Horizon 2020 programme 'The Pan-European Urban Climate Service', which processes the best available scientific climate data and presents the data in a comprehensible form for use in spatial planning, helping end users (in the public and private sectors) to address the consequences of climate change on a local level. The project involves a total of 14 partners from 6 European countries. For the City of Ostrava, the project is useful not only in terms of strengthening cooperation with partners, but also due to its use of a mathematical model of temperature changes in the city and as a basis for monitoring indicators of climate change impacts.

New tram lines with noise absorption

Ostrava's busiest tram routes feature unique new Czech-developed technology which absorbs and damps noise and vibrations produced by trams – especially the noise produced by the rolling contact between the wheels and the rails (metal on metal) and the traction motors. The BRENS® system combines rail noise absorption and water retention functions, and it is made entirely from recycled materials originating in the automotive industry (recycled rubber from old tyres and recycled synthetic/technical textiles used in car production). These zero-waste products are excellent examples of the circular economy, and they use synthetic industrial waste products in an entirely new and innovative way. Thanks to the properties of the synthetic base material STERED®, the noise-absorbent surface can be covered with turf (real or artificial) or succulents (stonecrops). Most types of surface provide very good noise-absorption properties while also enabling the retention of moisture; this has a beneficial impact on the urban climate, reducing dust and mitigating overheating of street surfaces. The BRENS® system can be installed on existing tram lines as well as in the construction of new lines. To improve tram safety and traffic flow while also reducing noise and vibrations, low, lightweight, easily removable anti-noise barriers can be fitted on either side of the tram lines; the barriers are made of recycled synthetic material in wire mesh moulds, which can be planted with low-maintenance local plants.

Image 9: Pilot grass planting in tramline strips

10D. References

EGC Ostrava: https://egc.ostrava.cz/

Map of electro charging stations: http://www.elektromobilita.cz/cs/mapa-dobijecich-stanic.html

Smart region Competition: www.chytrejsikraj.cz

National competition of smart cities and regions (MS region and Smart metering awarded):

http://www.mmr.cz/cs/Microsites/Smart-Cities/Aktuality/Vitezove-narodni-souteze-CHYTRA-MESTA-PRO-BUDOUCNOST-v-kategoriich-PRO

DPO (Ostrava transport company) projects: https://www.dpo.cz/o-spolecnosti/dotace.html

Bikesharing Ostrava: http://fajnova.cz/projekt/bikesharing-ostrava/

Tram lines with noise absorption:

http://www.ostrava.cz/cs/o-meste/aktualne/tramvajove-koleje-jsou-nyni-tiche

http://www.ostrava.cz/cs/o-meste/aktualne/absorbery-snizi-hlucnost-tramvaji