

1. Climate Change: Mitigation

Refer to Section 2.1 of the Guidance Note

1A. Present Situation

Please complete the following table:

	Base Year	Target Year	% Reduction
City reduction targets (add rows if needed for further commitments) *	2000	2020	25
	2000	2030	40
CO ₂ emissions/capita	t CO₂/inh - Total	Transport t CO₂/inh	Total (less transport) t CO₂/inh
	3.7	0.35	3.35
Total CO ₂ emissions (tonnes) per year	1 161 298	Tonnes	2010
Total CO ₂ emissions per MWh electricity consumed	0,37	Tonnes	2010

*The decline in CO₂ emissions is caused particularly by saving that take place in the consumption of heat and natural gas and, in addition, owing to favourable developments of the emission factor in electric power production in the CR.

The production of CO₂ has been influenced by the past, when Ostrava was developing as an industrial city. As part of the City's membership of the Covenant of Mayors, a Sustainable Energy Action Plan (SEAP) was drawn up in 2013; the SEAP included an emissions inventory baseline, based on 2010 data in

compliance with the methodology of the EC, it was narrowed to include so called "included sectors" that the Municipality could influence by its activities. The inventory included municipal buildings/facilities, residential buildings, municipal lighting, municipal vehicle fleet, public, private and commercial transport. The SEAP was updated in 2016 as a part of monitoring report elaboration. In September 2017, responding to the increased emphasis on climate change adaptation measures as part of the 'Mayors Adapt' initiative, the City completed its Sustainable Energy and Climate Action Plan (SECAP).

The SECAP incorporates projects whose aim is to reduce energy consumption (energy savings, reduction of environmental impacts, reduction of CO₂ emissions) while also taking into account potential climate change adaptation measures. The SECAP has been drawn up in close conjunction with another City document – the City of Ostrava Climate Change Adaptation Strategy ("Adaptation Strategy"; see Chapter 2 of the EGC application). A number of projects from the original SEAP (2013) have already been completed (see Past Performance), and other projects form part of the newly approved SECAP. The implementation of the original SEAP has brought significant energy savings, helping to achieve the SEAP's key goal – to reduce CO₂ production by at least 25%. This target was already met in 2015, though the SEAP set 2020 as the target date.



Image 1: First and last page of Ostrava's Sustainable Energy and Climate Action Plan

The evaluation of the first two years of implementing the SEAP measures (2014–2015) has already been completed; the results of the evaluation were published in the monitoring report issued in 2016. A further evaluation (including a new emissions inventory) was conducted as part of the planning process for the SECAP (2017).



Image 2: Panorama of the city with former coal mine towers

1B. Past Performance

Implemented projects:

Energy savings in public buildings

In 2014–2015 the following measures were implemented, achieving energy savings in accordance with the goals of the SEAP. Energy audits were conducted for these projects; these audits form the basis for the reported energy savings and reductions in CO₂ production.

- Set of measures 'Ekotermo II A' – insulation and revitalization of 9 City-owned buildings (primary schools, preschools, senior citizens' home, fire station, library).
- Set of measures 'Ekotermo III' – insulation of 6 City-owned buildings (primary schools, preschools, senior citizens' home).
- Set of measures 'Energy consumption reductions at Ostrava Zoo' – insulation of 6 buildings, including animal houses and technical buildings.
- Set of measures 'Energy savings at Ostrava City Hospital' – insulation of 8 buildings at the hospital site.



Image 3: Insulation of ZOO entrance building (upper left) and residential houses in Ostrava

The potential energy savings achieved via the above-listed sets of measures **total 27 000 GJ/year**, representing a reduction in CO₂ production of at least **2 100 t/year**.

Besides the large-scale projects listed above, other individual projects were also implemented during the period 2014–2015 to reconstruct and revitalize City-owned buildings, improving their technical condition and increasing energy efficiency. Energy audits were not conducted in these cases; instead, reductions in

energy consumption were estimated by experts. The total savings achieved by all implemented measures (i.e. projects with energy audits and those with expert estimates) are at least **42 400 GJ/year**, representing a reduction in **CO₂ production of approx. 3 900 t/year**.

Costs of energy efficiency projects in public buildings

The investment costs of the energy-audited projects (see above) total approx. 11.5 million EUR. The total costs of installing insulation as part of complete reconstructions of City-owned buildings in the past two years (with expert-estimated reductions in energy consumption) was a further 17.3 million EUR. (This sum also includes necessary investments where increases in energy efficiency were not the sole purpose of the investment.)

Introduction of an Energy Management System

Creation of a new position: City Energy Manager.

A new position – City Energy Manager (EM) – was created at the Ostrava City Authority in order to coordinate the systematic implementation of the SEAP and monitor progress towards its goals.

The EM is currently also responsible for the pilot introduction of ISO 14000 standards for the City Authority building as an integral part of the City's energy management system.

Ecological improvements to local heating sources

The Moravian-Silesian Region (MSR) has suffered from poor air quality for many years; one measure implemented to improve the situation has been a scheme financing the replacement of obsolete household boilers (or boilers no longer meeting emissions standards) with modern low-emission boilers. This programme has been co-funded by subsidies from EU structural funds (EUSF), the MSR and the City. Solid fuel boilers have been replaced by more modern systems (including gas boilers and heat pumps). In 2012–2015, a total of 266 boilers were replaced via this programme. In December 2015 a new call for applications was announced in the MSR; a total of 359 boilers have so far been replaced in Ostrava households as part of this call. This figure is not yet final, as the current call remains open until June 2018 (422 applications have been received to date). A total of 625 boilers have thus been replaced so far as part of all completed calls and the current call; this number may well increase in the future.

Thanks to this support from the City of Ostrava, households are able to replace boilers almost free of charge; this makes the programme very attractive to citizens. The City's contribution, combined with the EUSF and MSR funding, means that the programme is accessible to people on low incomes, who would not otherwise be able to afford it (the subsidy programme stipulates that applicants must cover 15% of the costs, which is not a viable option for some households in Ostrava). Citizens were informed of the programme (and the City's contribution) via leaflets, advertising on public transport, targeted communication, meetings in affected areas, etc.

This large-scale boiler replacement programme has not only helped to reduce emissions of pollutants into the atmosphere from household heating sources; it has also reduced energy consumption (the modern boilers are more efficient) and thus also CO₂ emissions. Existing solid fuel boilers are being replaced by more modern systems (including gas boilers and heat pumps). Solar thermal systems can also be installed as part of the replacement.

The replacement of the first 226 boilers in Ostrava households brought reduction of **CO₂ emissions by 794 t/year**. Including the 359 boilers replaced as part of the following call, reductions in **CO₂ emissions were 2195 t/year**.

Note: The figures for CO₂ reductions are expert estimates based on the change in fuel type.



Image 4: Promotion of local heating programme

Savings in public lighting

In accordance with the SEAP, work has continued on the modernization of Ostrava’s public lighting (street lighting) system – including the installation of LED technologies in place of the previously used gas-discharge lamps. Since 2014, only LED lamps with integrated power regulation have been installed as part of this process (the first LED lamps were installed in 2010).

The mean energy consumption per lighting point decreased between 2013 and 2015 from 0.485 MWh to 0.471 MWh. This falling trend in energy consumption by Ostrava’s public lighting network is a result of the application of modern LED technologies combined with a consistent long-term policy of using lighting systems which reliably meet stipulated quality parameters (in terms of technology, light quality, lifespan and design) without compromising on lighting performance.

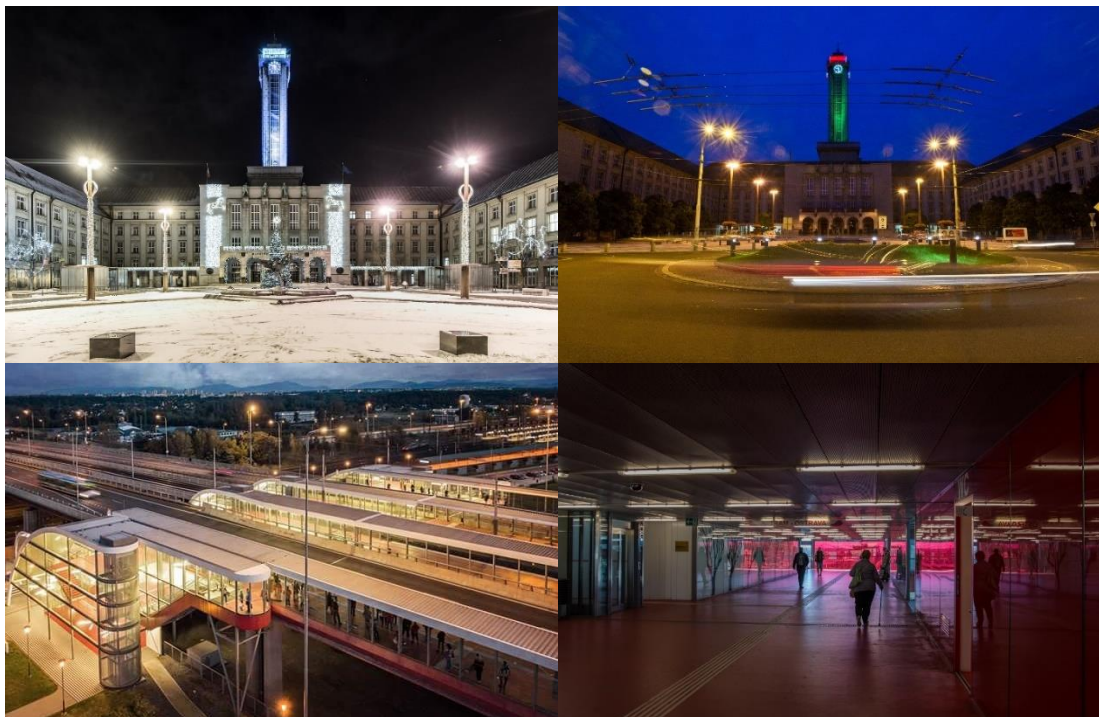


Image 5: LED lighting used in city townhall (upper part) and transport terminal Svinov (bottom part)

Eco-friendly public transport

Ostrava's public transport system has made an important contribution to environmental improvements (and to cost efficiencies in its bus services) through the acquisition of 105 new low-floor buses running on compressed natural gas (CNG); these have already replaced around one-third of the City's diesel bus fleet. A new high-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 Nm³/hour, 24 buses/hour).

Ostrava's investment in CNG buses and the CNG filling station has totalled just under 28.5 million EUR so far. Of this sum, 85% has been covered by EUSF, 5% by state subsidies, and 10% by the City's public transport corporation. The difference in CO₂ emissions between CNG and diesel buses is less marked than the difference in their emissions of substances that are harmful to human health. CNG brings a major decrease in emissions of suspended particles PM₁₀, PM_{2,5}, NO_x and polyaromatic hydrocarbons). Considerably greater reductions in CO₂ emissions are achievable via electric vehicles, which emit zero CO₂ directly at the point of use. The City plans to acquire more electric vehicles; the strategic goal is for 60% of vehicles in the City's public transport fleet to be electric-powered by 2025 (today it is 54%). Nevertheless, the use of 105 CNG buses has enabled the City to achieve reductions of approx. **980 t CO₂/year**.



Image 6: Example of CNG bus in public transport

Other related transport-related measures are described in Chapter 3 of the EGC application.

1C. Future Plans

New commitment to reduce CO₂ emissions

In accordance with the current development vision set out in the Ostrava City Strategic Development Plan 2017–2023 (and in view of the fact that the City has already achieved its current targets), Ostrava plans to commit to a new reduction in CO₂ emissions of 40% by 2030. This step will enable Ostrava to join the ranks of major cities whose sustainable development policies help to address global problems – including climate-related issues. The City has recently completed its new Sustainable Energy and Climate Action Plan (SECAP) covering the period up to 2030; the SECAP incorporates not only Ostrava's current and planned future commitments, but also the outputs of the City of Ostrava Climate Change Adaptation Strategy (currently at

the draft stage).

Benefits of the planned energy management system

The total energy consumption of City-owned buildings (schools, preschools, health care and social services facilities, etc.) has not previously been monitored via a single integrated system at the City Authority level. One of the expected key benefits of the City's planned energy management system is the evaluation of all City projects or other activities in terms of energy consumption – and also in terms of the energy benefits or synergies that the project/activity could bring. Another measure will involve the introduction of a centralized monitoring and information system for energy consumption, which will collect and evaluate data on energy consumption and other operating parameters. These measures will also form part of the planned introduction of the ISO 50000 standard and the award of ISO certification for the City's integrated energy management system.

The next phase of the household boiler replacement programme

Applications for the replacement of obsolete household boilers can still be submitted (until 30 June 2018). A total of 422 applications have been received as part of this call, and just under 360 boilers have been replaced so far (see Past Performance). The next call in the programme was announced in June 2017, and applications were accepted from September 2017; so far, 428 applications have already been received as part of this call, and more applications may still be submitted, as the call remains open until 31 December 2018. Based on the number of boilers replaced as part of previous calls (625) and the number of applications from the latest call (428), the total number is 1053; this is the number of boilers that are currently set to be replaced by 31 December 2019 (when the latest call ends). However, this figure may yet rise in the future, as the calls are still open. Out of the total number of solid fuel boilers in detached houses in Ostrava (2429), at least 1053 boilers will thus be replaced by 31 December 2019. The success rate will therefore be at least 43% (based on data valid as of 15 September 2017). If the expected 428 boilers are replaced, this will bring an additional approx. **40 000 GJ/year** in energy savings and **CO₂ reductions of 1503 t/year** besides the savings/reductions achieved in the previous period.

Reductions in CO₂ emissions from transport

In accordance with the plans of the City's public transport corporation and the measurable indicators set out as targets in the 'Mobility' section of Ostrava's Strategic Development Plan, by 2025 the City's public transport fleet will consist of at least 60% zero-emission vehicles (currently 54%), and at least 35% low-emission vehicles meeting EURO 6 standards (currently 17%). A total 95% of the fleet will thus consist of zero-emission or low-emission vehicles (currently 71%).

Action plan as part of the RESOLVE project

In order to achieve the above-mentioned target, Ostrava is participating in the **international RESOLVE project**. The project's objective is to reduce carbon emissions created by retail-related traffic in town and city centres while also supporting jobs and growth in the local retail economy. After sharing experience with partner cities abroad, Ostrava has introduced a monitoring and evaluation tool that will enable the City to evaluate the situation and prepare an action plan to reduce private car use related to retail zones. The project (co-financed via the INTERREG programme) will be implemented up to 2021.



Image 7: RESOLVE project meeting in Ostrava

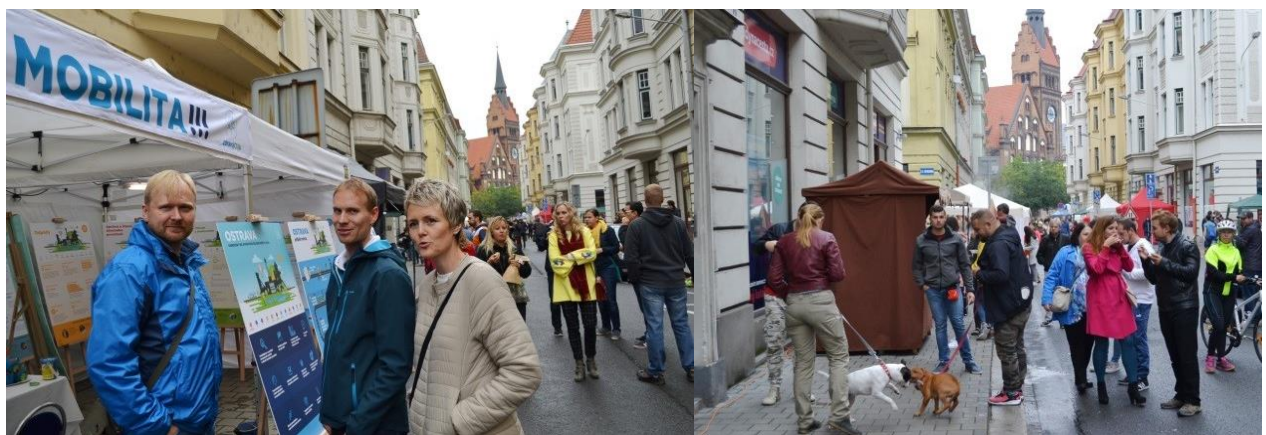


Image 8: RESOLVE project in Ostrava's streets

1D. References

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

Local heating programme: <https://dycham.ostrava.cz/kotlikove-dotace>

Project Resolve: <http://www.resolve-project.eu/>

Project Resolve: <https://www.interregeurope.eu/resolve/>

Project Resolve: <http://www.parkinginfo.biz/PIZine/article.php?id=2995&title=Opava-and-Ostrava-expert-team-RESOLVE-project>

Action Plan for Sustainable Energy: <http://docplayer.cz/7056393-Statutarni-mesto-ostrava.html>

Covenant of Mayors/Ostrava: http://covenantofmayors.eu/about/signatories_en.html?city_id=3583&seap

Ostrava/no. of inhabitants: <https://www.ostrava.cz/cs/urad/hledam-informace/aktualni-informace/pocet-obyvatel-ve-spravnim-obvodu-statutarniho-mesta-ostravy>