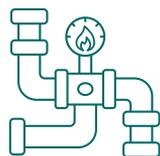


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EXECUTIVE SUMMARY

Cities are climate leaders. 64% of EUROCITIES members have already committed to reach carbon neutrality by 2050. Among them, 12 cities have even committed to reach neutrality before 2040. And climate mitigation is only one side of the coin; 87.5% of our cities have adopted climate adaptation strategies to adapt to the impact of climate change and to protect their citizens.

This publication highlights examples of climate mitigation and adaptation strategies carried out by twelve cities from all over Europe in four different sectors: buildings; energy; governance; and transport. Their innovative solutions cover a broad range of measures going from establishing a municipal carbon budget to deeply retrofitting buildings, passing by the introduction of cheap and free monthly passes for public transport to reducing energy demand while increasing households' renewable energy consumption.

Despite the large variety of solutions put forward by cities, some common conclusions can be drawn to help other cities implement efficiently the change on their territories.

First, political commitment is key; effective implementation is only possible if a clear political commitment already exists in the city. Second, local governments have a unique opportunity to engage the relevant stakeholders, thus expanding the scope of what a city can accomplish by multiple factors. Cities should always foster co-creation and collaboration with citizens and businesses. It's only by engaging with these actors, and even by accompanying them through the transition, that cities will motivate long lasting behavioural change towards sustainability. Then, sustainability should be part of urban planning, from the municipal budget to the planning of building any new type of infrastructures. And finally, municipalities must define clear goals and action plans, set up indicators to measure progress, establish regular evaluation of the impact of actions and use lessons learnt to design the new targets.

Cities are living labs, be inspired by their innovative ideas!

64% OF CITIES COMMIT TO **CARBON NEUTRALITY** BY **2050** (AND BEFORE)



29% OF CITIES COMMIT TO **REDUCE EMISSIONS** BY AT LEAST **55%** BY **2030**

12 CITIES HAVE COMMITTED TO BE **CARBON NEUTRAL** BEFORE **2040**



87.5% OF CITIES HAVE ADOPTED A **CLIMATE ADAPTATION STRATEGY**



EUROCITIES climate survey, April-May 2019: 80 responses from member cities

FOREWORD

Four years after the adoption of the Paris climate agreement, the concentration of CO₂ in our atmosphere continues to rise at rapid rates, with 2018 marking one of the sharpest increases ever recorded. The latest IPCC report made clear that we must not exceed 480 parts per million (ppm) to avoid dangerous climate tipping points, but under current trends we are set to breach this threshold within 20 years - much sooner than previously anticipated. It is high time that we match the urgency of the crisis with appropriate actions. As president of EUROCITIES, I am proud that Europe's cities are leading the way.

In my city of Stockholm, we are already set to become fossil fuel free by 2040. But we are currently developing a new city-wide climate action plan to set our sights even higher: to make Stockholm not just fossil fuel free by 2040, but climate positive. One way we will be able to do this is by drastically cutting emissions from building and infrastructure consumption, as illustrated in the example featured in this report.



Stockholm is not alone in implementing ambitious climate policies. In fact, cities all over Europe are pursuing policies that are far more ambitious than those of the EU or any European government. From Porto and Prague, to Warsaw, Barcelona or London: European cities and city networks like EUROCITIES are showing that real change is possible.

To turn the 1.5°C goal of the Paris agreement into a reality, local ambitions will need to be matched by an equally ambitious European policy framework - a framework that will remove fossil fuel subsidies, stimulate investments in green technologies, incentivize innovation and promote much closer cooperation between all levels of government.

We, as cities, fully support the efforts of new European Commission President Ursula von der Leyen and Vice President Frans Timmermans to make Europe the first climate-neutral continent. We hope they will be inspired by the many excellent examples in this report, and we look forward to working with them.

Anna König Jerlmyr
Mayor of Stockholm
President of EUROCITIES



CITIES TAKE ON CLIMATE ACTION



ALBANIA

1 Tirana

AUSTRIA

2 Vienna

BELGIUM

3 Antwerp

4 Ghent

5 Brussels

CROATIA

6 Zagreb

CZECH REPUBLIC

7 Brno

8 Prague

DENMARK

9 Copenhagen

ESTONIA

10 Tallinn

FINLAND

11 Espoo

12 Helsinki

13 Oulu

14 Tampere

15 Turku

16 Vantaa

FRANCE

17 Angers

18 Brest

19 Lille

20 Lyon

21 Nantes

22 Nice

23 Paris

24 Reims

25 Strasbourg

26 Toulouse

GERMANY

27 Berlin

28 Bonn

29 Chemnitz

30 Dresden

31 Dusseldorf

32 Essen

33 Frankfurt

34 Munich

35 Munster

GREECE

36 Athens

37 Thessaloniki

HUNGARY

38 Budapest

ICELAND

39 Reykjavik

IRELAND

40 Dublin

ITALY

41 Bologna

42 Florence

43 Genoa

44 Milan

45 Turin

46 Venice

LATVIA

47 Riga

NORWAY

48 Bergen

49 Oslo

POLAND

50 Katowice

51 Wroclaw

PORTUGAL

52 Braga

53 Guimaraes

54 Lisbon

55 Porto

ROMANIA

56 Timisoara

SLOVAKIA

57 Bratislava

SLOVENIA

58 Ljubljana

SPAIN

59 Barcelona

60 Malaga

61 Murcia

SWEDEN

62 Gothenburg

63 Karlstad

64 Malmo

65 Nacka

66 Stockholm

67 Umea

68 Uppsala

THE NETHERLANDS

69 Amsterdam

70 Eindhoven

71 Groningen

72 The Hague

73 Tilburg

74 Utrecht

UK

75 Belfast

76 Birmingham

77 Glasgow

78 Leeds

79 Liverpool

80 London

■ Cities that have a climate change / emissions reduction target by 2030

■ Cities that have a climate change / emissions reduction target by 2050

■ Cities that have no local target





TALLINN ON ENERGY EFFICIENCY



441,364
INHABITANTS

After joining the Covenant of Mayors in 2009, Tallinn established a Sustainable Energy Action Plan 2011-2021 (SEAP) in line with the covenant's obligations and signed up to the Mayors Adapt initiative in 2015. On joining the Covenant of Mayors for Energy & Climate 2030, the city developed a Sustainable Energy and Climate Action Plan 2030+.

20%

INCREASE
IN ENERGY EFFICIENCY
2007-2021

20%

OF ENERGY
FROM RENEWABLE
SOURCES BY 2021
FROM 2007

40%

CO₂ REDUCTION TARGET
BY 2030 COMPARED
TO 2007

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A HOLISTIC APPROACH TO SUSTAINABLE ENERGY EFFICIENCY

Tallinn established its Energy Agency in 2013 to coordinate the formulation of energy and climate policies by municipal agencies. It is responsible for fulfilling and accounting for the objectives of the Covenant of Mayors and for promoting the need for climate action by residents and energy-efficient renovation of private buildings.

In the public domain, the city is installing solar panels on 100 municipal buildings and has introduced smart technology to remotely control and time city lights to save energy. It has also worked for nearly a decade with private apartment associations, helping to increase building energy efficiency to at least a C rating - and save significant greenhouse gas emissions from homes.

Tallinn opened its first electric power plant in 2009 and a second in 2018. These heat and power cogeneration plants run on 90% renewable energy sources, mostly wooden chips, and minimise fossil fuel use for city heat. The electricity they generate meets the needs of over 130,000 apartments — which covers all apartments in the Tallinn district heating system.

ADAPTATION

SMART LAND USE

- **Including** issues such as rainfall, flooding and green infrastructure in planning documents
- **Using** detailed flood risk maps to inform these documents
- **Developing** urban storm water management systems

HEAT MANAGEMENT

- **Ensuring** the design of new municipal buildings is based on energy efficiency best practice
- **Using** shades in public buildings to reduce cooling costs and improve indoor climate

ACTION PLAN

- **Developing** a city action plan for adapting to climate change (SECAP 2030+)

CHALLENGES

- **Innovating** to increase the energy efficiency of buildings through renovations
- **Expanding** remote heating districts, including the integration of district cooling, and increasing the efficiency of heating networks
- **Increasing** awareness and usage of solar power in local electricity supply and diversifying renewable energy sources
- **Promoting** the use of sustainable drainage systems

LESSONS LEARNT

Energy-efficiency driven renovation of buildings is the most effective way of reducing heating-related greenhouse gas emissions — the city reduced emissions from heating from 9.6m MWh in 2007 to 8.4m in 2015.





STOCKHOLM ON ENERGY PERFORMANCE OF BUILDINGS



960,031

INHABITANTS

To support its goal of being fossil free by 2040, Stockholm aims to reduce GHG emissions from energy for heating/cooling buildings, electricity and gas use and transport to 2.2 tonnes CO₂e per capita by 2020. The city is currently developing an emission goal for 2023, a climate budget for 2040 and its sixth climate action plan.

CARBON
NEUTRALITY BY

2040

GHG REDUCTION
TARGET OF

2.2

TONNES CO₂E PER
CAPITA BY 2020

65%

REDUCTION IN CO₂E
EMISSIONS FROM
BUILDINGS SINCE 1990

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OPTIMISING THE ENERGY PERFORMANCE OF NEW AND OLD BUILDINGS

Stockholm has reduced annual emissions from the building sector by almost 1.3 million tonnes CO₂e since 1990 by switching from fossil to renewable fuels for district heating/cooling systems, improving energy efficiency in existing buildings and setting higher energy standards for new buildings built on city-owned land.

The city's last fossil fuelled district heating plant will shut down in 2022, after which plastics in the waste incineration plant will be the last remaining fossil fuel in the system. The low-climate impact of the city's main heating systems - district heating and electrical ground source heat pumps - will continue to decrease. With system progress made, the city prioritised energy efficiency.

The city provides an energy advice service for private property owners on-site to help them optimise their building's energy performance. For municipal building stock, energy efficiency goals have been set in the city's environmental programme — which are monitored annually — and funds for renovation are reserved in the annual city budget.

The city also initiates and coordinates research and development projects concerned with energy efficiency. Additionally, it has mandated that new buildings on city-owned land must be built to passive house standard - achieving energy use of 55 kWh/m² rather than the national standard 80 kWh/m².



ADAPTATION

- **Climate adaptation** is an integrated part of Stockholm's Environment Programme and the Stockholm City Plan, which sets out guidelines for the use of the city's land and water areas, as well as the development and protection of the built environment.
- **To be prepared** for the changing climate the city has carried out an Urban Flood Risk Analysis identifying areas where actions need to be taken. Using ecosystem services such as biochar in tree beds to retain larger amounts of water, the city is taking action to prevent future floodings while enriching the biodiversity of the city.
- **One of the city's biggest** urban construction projects – the Slussen project – is designed to adapt the city to increased amounts of rain and rising water levels. While creating a more people-friendly and livable space in the heart of Stockholm, the investment will secure future access to potable water for the entire region around Lake Mälaren.

CHALLENGES

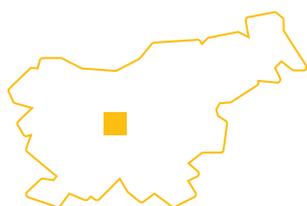
- **Enabling** city-owned housing companies to achieve the same return on investment as the private sector while also fulfilling political goals for energy efficiency
- **Educating** tenant-led building management boards about energy management
- **Ensuring** that construction companies can comply with high energy standards for new builds

LESSONS LEARNT

- *Goals and action plans must be defined and agreed by politicians*
- *Regular evaluation of the effect of actions and progress towards goals is vital*
- *Lessons learnt can provide useful information when setting new targets*
- *Implementation should use existing city processes such as budgeting and reporting*
- *Costs for actions need to be budgeted for*



LJUBLJANA'S ENERGY RETROFIT WITH PRIVATE PARTNERS



279,631

INHABITANTS

Ljubljana became the Green Capital of Europe 2016 through the recognition of being the city with the fastest sustainable development driven through 'Vision 2025' set by the then Mayor in 2006 – at the beginning of his first mandate. Vision 2025 is the long-term plan to improve quality of life realising 25 major sustainability projects by the end of the year 2025.

30%

EMISSION REDUCTION
TARGET 2008-2020

25

MAJOR SUSTAINABLE
PROJECTS BY 2025

3,500

TONNES ANNUAL CO₂
REDUCTION THROUGH
ENERGY RETROFIT
PROJECT (EOL1)

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PUBLIC BUILDINGS MADE MORE EFFICIENT THROUGH PUBLIC PRIVATE PARTNERSHIPS

As part of Vision2025, Ljubljana initiated a public-private partnership through energy performance contracting (PPP EPC), known as EOL1, within which the majority of building stock, owned by the city is being deeply energy retrofitted and, where possible, renewable energy sources are being introduced. Consequently, their greenhouse gas emissions are being reduced.

In the first project, which was implemented according to Slovenian national legislation and EU cohesion policy, a total of €14.8 million was invested in the energy retrofit of 48 buildings, ranging from schools and cultural centres to sports and health-care facilities. More than half (25 buildings) were deeply energy retrofitted, among which 25% of the energy is derived from renewable sources (solar, shallow geothermal energy – heat pumps, wooden biomass).

The 25 deeply retrofitted buildings received 51% of their funding from private partners, 40% from cohesion policy funds and 9% from the city. For the remaining 23 buildings, 51% of the investment came from private partners and 49% from the city.

A second project based on the same principle of energy performance contracting (EPC) is now underway for retrofit of further 11 buildings (EOL2 project).

Ljubljana's EOL1 project has been recognised as the most successful PPP EPC in the country and in EU and has already been replicated by other Slovenian cities.



ADAPTATION

- **The issues concerning adaptation** are solved through measures which require that the comfort within the buildings should meet all the criteria of the indoor standards for different types of use.
- **Instructions for correct operation** of the in-built energy systems as well as maintenance.



CHALLENGES

- **Educating** users to realise the potential of energy retrofit
- **Increasing** use of renewable energy sources in existing buildings
- **Achieving** a targeted 15-year payback period through energy cost savings

LESSONS LEARNT

- *How to develop legal guidelines for PPP EPC in the public sector*
- *How to set up financial and budgetary systems for PPP EPC*
- *How to use PPP EPC in practice for the first time*
- *How to manage diverse funding partners - a valuable skill for other EU projects*





AMSTERDAM

CITIZENS DRIVE PHASING OUT OF NATURAL GAS



731,289
INHABITANTS

To achieve its ambitious CO₂ reduction targets and phase out natural gas, the city has set up the Amsterdam Climate Neutral 2050 programme, a roadmap for reducing dependence on coal, oil and gas. Another major programme aims to achieve a circular economy by 2050 and includes the goal of reducing raw material use by 50% by 2030.

55%

CO₂ REDUCTION
TARGET BY 2030
FROM 1990 BASELINE

95%

CO₂ REDUCTION
TARGET BY 2050
FROM 1990 BASELINE

0

PHASE OUT
NATURAL GAS
BEFORE 2040

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TAKING NEIGHBOURHOODS OFF THE NATURAL GAS GRID

Through its Natural Gas-Free City Deal programme, Amsterdam is embarking on the irreversible process of taking three neighbourhoods off the natural gas grid.

Housing corporations are invited to initiate this transition in at least one neighbourhood where they are active. In this way major maintenance and repairs will be clustered, in line with the area-specific approach set out by the programme.

The city is investing financially, alongside stakeholders and the national government, to get these first projects off the ground. Amsterdam provides financial support to prevent property owners from losing out and avoid any 'climate injustice'. This investment is seen as 'tuition fees', with the city learning by doing to discover what solutions work best where and to use this knowledge and experience to make the whole of Amsterdam gas free.

One of the first investments was made in a project in Middenmeer started by citizens who set up an energy cooperative — MeerEnergie — in a bid to make their neighbourhood natural-gas free. Their plan was to use residual heat from a local science park data centre via a heat network.

The municipality is investing €11.2 million in a main heat pipe network for the neighbourhood — and capitalising on cost savings as its roads were already scheduled to be opened for electricity and sewer renewal works. The project will enable 1650 households to switch from natural gas to district heating.



ADAPTATION

Amsterdam is part of the national Deltaplan of climate adaptation 2018. Together with Waternet, the municipality has created the program rainproof 2013. This aims to increase the storage capabilities for rainwater in the city by allowing its storage to work like a sponge; it can contain water when there is too much and release the water when there is a period of drought.

CHALLENGES

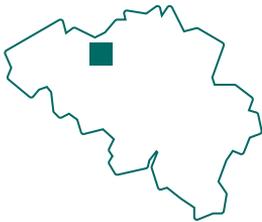
- **Dealing** with a clash with national government, which still allows citizens to opt for natural gas
- **Making** sure the sources of the district heating network are sustainable. In the case of MeerEnergie, the electricity which the datacenter uses to generate heat should be produced in a sustainable way. It is necessary for the district heating system to be more sustainable than the current natural gas system.
- **Handling** the lack of city control over construction of heat networks and security of supply
- **Being** unable to guarantee the affordability or reliability of this energy system
- **Ensuring** the system's affordability for all incomes through accessible financing (a heat fund for example) so it is possible for municipalities to issue guarantees and financing measures where systems are not yet profitable
- **Finding** the budget for expensive heat pipes and pumps

LESSONS LEARNT

- ***The energy transition will only work if it is affordable for all income levels, especially low and middle incomes, so special funding schemes must be created. The project of MeerEnergie will succeed only if a large part of the neighborhood participates. The starting point is that it will not work if the residents become financially worse off***
- ***Buy-in from citizens is critical***
- ***While speeding up implementation of heat networks, their optimisation must be a focus***



GHENT ENABLING BUSINESS TO BE MORE ENERGY EFFICIENT



261,483

INHABITANTS

Ghent was the first Belgian city to sign the Covenant of Mayors and its commitment was confirmed in 2015 when it became the first city, ahead of COP21, to join the Covenant of Mayors for Climate & Energy. A subsequent updated climate plan focusing on social climate policy puts Ghent on course for climate neutrality by 2050.

20%

EMISSIONS REDUCTION
TARGET 2007-2020

40%

EMISSIONS REDUCTION
TARGET BY 2030

AMBITION TO BE CLIMATE
NEUTRAL BY

2050

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GUIDING BUSINESS TO INVEST AND BENEFIT FROM GREATER ENERGY EFFICIENCY

Ghent has identified companies as an important target group for CO₂ reduction and set up a customised coaching scheme to encourage investment in energy efficiency measures when existing simple energy audits failed to lead to action.

The scheme offers three levels of support based on annual energy consumption. Light coaching for companies using less than 100,000 kWh/year, includes an energy review and up to 10 hours of customised advice and implementation guidance.

Medium coaching (100,000-500,000 kWh/year), provides an energy review and a year's coaching to deliver an energy action plan. Companies pay €400 and commit to implement all measures with a payback time of two years. Maxi coaching for the highest energy users provides all of the above plus more consultancy hours for €700.

Since 2014, 106 medium and high energy using companies have saved 6,280 tonnes of CO₂ a year. Most of these savings come from insulation, relighting, air pressure monitoring, peak load control and investment in combined head and power (CHP).

While this case-study focuses on initiatives involving the private sector, the city also offers citizens integrated services with the same goal. These include an online tool to understand the need and value of retrofitting and free advice for managing renovations and contractors, including quote reviews and renovation follow-ups. Available via a one-stop-shop energy hub, these services have led to €30m of investments and annual CO₂ reductions of 5,800 tonnes.

CHALLENGES

- **Convincing** companies to participate can be difficult and time consuming
- **Persuading** companies to implement measures with longer payback periods
- **Following** up with companies about impact measurement
- **Dealing** with delays where decision-makers are based abroad in a parent company
- **Overcoming** citizens' view of energy renovations as non-urgent
- **Making** it easier for citizens to get technical knowledge and a good contractor
- **Convincing** homeowners it is possible to juggle renovation with family life, work and finances



LESSONS LEARNT

- **Make contact with the right person within a company and at the right time, when new investments or retrofits are being planned**
- **Management teams must be on board with the need for action and champion the company's energy action plan**
- **Companies need to understand the importance of energy accounting, even for the smallest measures**
- **Enthusiastic energy coaches have the greatest impact**
- **Companies need to find payback periods acceptable**

Thank you

for protecting the climate.

www.klimaschutz-frankfurt.de

FRANKFURT MOBILISING CITIZENS ON ENERGY



670,000

INHABITANTS

Frankfurt was a founding member of *Climate Alliance of European Cities* and with its partners aims to reduce CO₂ emissions by 10% every five years. A finalist for European Green Capital 2014, the city launched its Master Plan for 100% Climate Mitigation in 2018, committing to 100% renewables and CO₂ reduction of 95% by 2050.

50%

PER INHABITANT CO₂
EMISSIONS REDUCTION
TARGET BY 2030 FROM
1990 BASELINE

100%

OF ENERGY SUPPLY
TO COME FROM
RENEWABLES BY 2050

95%

REDUCTION IN CO₂
EMISSIONS BY 2050

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CITIZEN CAMPAIGN REDUCES EMISSIONS

To achieve its climate protection goal and CO₂ reduction targets, Frankfurt has implemented a mix of technical and non-technical measures. Technical measures primarily focus on implementing new technologies and non-technical on reaching strategic key multipliers and achieving broad-based understanding.

Non-technical measures include education of citizens about energy and climate change, competitions in industrial and office sectors and expansion of independent advice, information and education. One of the most important measures concentrated on the image and marketing of climate protection.

The city launched a campaign to draw attention to the issue and motivate people to take action, using the slogan 'thank you for protecting the climate'. To reach as many citizens as possible, 12 'thank you' motifs were translated into nine languages.

The campaign made people aware of the need for action and encouraged them to visit the dedicated website to find out how easy it is to make small personal contributions to the city's climate efforts.

The website provides a wide range of information, from blogs to event details to tips for different target groups about the changes they can make, and it has become the central contact point for climate protection issues and networking in the city.



CHALLENGES

- **Maintaining** outstanding communication with citizens and local companies as they, alongside political will, have a decisive influence on success
- **Accelerating** the expansion of renewable energies as progress is lagging behind the target
- **Improving** the federal policy framework to strengthen cities' opportunities to define their own statutes and specifications for the energy consumption of buildings and industries

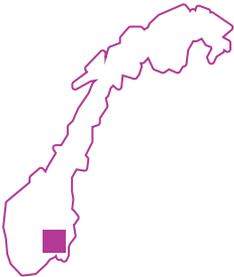


LESSONS LEARNT

- *If energy efficiency is improved by an average of 50% across all sectors (households, commerce, services, industry and transport), the remaining energy demand could be met 100% from renewable energies, 50% of this from the city and surrounding area*
- *Renewables generated locally could meet 90% of the remaining demand if large storage capacities for heat and electricity and the wind and biomass potential of the state of Hesse are added*



OSLO CITY CLIMATE BUDGET



Oslo's revised climate strategy, to be adopted in 2019/2020, sets out a series of goals to be achieved by 2030. These include reducing GHG emissions by 95% and total energy consumption by 10% compared to 2009, strengthening the city's ability to adapt to climate change and lowering its contribution to GHG emissions outside the municipality.

675,000
INHABITANTS

22%

REDUCTION IN GHG
EMISSIONS BETWEEN 2009
AND 2017

EMISSIONS REDUCTION
TARGET OF

45%

BY 2020 FROM 2009

TARGETING EMISSIONS
REDUCTION OF

95%

BY 2030 FROM 2009

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CLIMATE BUDGET: EMBEDDING CROSS-DEPARTMENTAL RESPONSIBILITY FOR EMISSIONS

Oslo was one of the first cities in the world to introduce a climate budget (CB) as an integral component of the municipal budget process. Since 2016 its annual CB has proposed a maximum emission ceiling just like the maximum economic expenditure of the fiscal budget, whose structure it shares.

This ceiling is set at 932,000 CO₂e for 2019 and 809,000 CO₂e has been recommended for 2020. As with the fiscal budget process, all municipal agencies contribute to the budget's achievability by submitting measures to reduce emissions under their responsibility. Overall responsibility for the CB lies with the vice mayor of finance.

The CB consists of more than 40 measures at different scales - national, regional and local - thereby serving as a climate action plan. Some measures directly reduce emissions and others are softer instruments such as communication and engagement.

Municipal bodies report on their climate mitigation actions throughout the year to the finance department. To track trends in near real time, the city developed a 'climate barometer'. This updates 14 indicators three times a year, reflecting developments and changes in activity.

Recent analysis of measures' anticipated effects identified a gap representing 100,000 CO₂e, triggering an alert for short-term action - and demonstrating one of the many benefits of the CB.

ADAPTATION

Goal in new Climate Strategy: Oslo's ability to withstand climate change is strengthened by 2030 and the city is being developed so that it is equipped for the changes expected until 2100. Main measures, priority areas include; opening freestone rivers and streams; enhance presence of rain beds; enhance total area of green roofs; by 2030, plant 100,000 new trees in the building zone of the city.

CHALLENGES

- **Motivating** a switch to electrification, biogas and hydrogen to reduce emissions from commercial traffic
- **Stimulating** circular economy policies to reduce emissions from incineration of residual waste
- **Developing** new policies and regulations favouring fossil-free, non-road mobile machinery to reduce emissions from construction sites
- **Working** with the port authority on electrification and hybrid solutions to reduce emissions from maritime transport

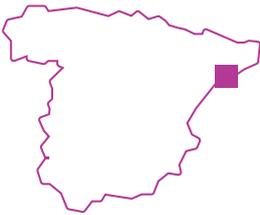


LESSONS LEARNT

- *All agencies and departments should be involved from the start to ensure consistent, comprehensive reporting*
- *The budget must be based on specific measures, rather than on the anticipated effects of policies and incentives, so their impact is clear*
- *Listening to critical questions from scientists, non-governmental organisations, political parties and the media can inform ongoing improvements*
- *Anchoring responsibility with the finance department is critical to ensuring measures are prioritised, costed, measured and reported*



BARCELONA CO-CREATING A CLIMATE PLAN WITH CITIZENS



1,604,555
INHABITANTS

Barcelona has co-created a holistic climate plan with citizens which covers mitigation, adaptation and resilience, climate justice and promoting action by the general public. The plan's objectives include a 45% reduction in GHG emissions by 2030 and increasing the city's resilience through more green spaces and less potable water consumption.

TARGET OF
45%
GHG EMISSION
REDUCTIONS BY 2030
ON A 2005 BASELINE

AMBITION TO BE
CARBON NEUTRAL BY
2050

TARGET TO REDUCE
POTABLE WATER
CONSUMPTION TO
100
LITRES A DAY
PER RESIDENT

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CITIZENS DRIVE ROADMAP TO ADDRESS CLIMATE CHANGE

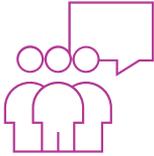
The city's climate plan was created at the request of citizens through the *More Sustainable Barcelona Network*, which is made up of companies, universities, schools and professional associations among others.

Continuing this bottom-up approach, the city adopted a participative process throughout the plan's development, organising sessions for citizens to put forward proposals - around 80% of which were included.

The process also involved many departments across the city administration in over 100 interviews, training, information and participation sessions and working groups on specific topics.

The outcome was a co-produced plan with five strategic axes, 242 concrete actions and more than 100 monitoring indicators. A variety of citizen projects also set mitigation targets which, despite not being quantified, will contribute to overall targets.

To ensure the success of the plan, a taskforce was created to drive its development and implementation. This is made up of technical municipal staff from departments such as resilience, energy, social rights and sustainability. Supra-local bodies and administrations are also contributing to the progress and effectiveness of the plan.



ADAPTATION

- **Creating** an urban resilience department and resilience working group
- **Setting** up a taskforce to enhance the climate plan and monitor its implementation
- **Appointing** a councillor on climate emergency and ecological transition to lead and coordinate all policies related to climate protection

GREEN SPACES

- **Creating** an additional 1.6km² of urban green space by 2030
- **Ensuring** 100% of the population are within a five-minute walk of a climate shelter
- **Promoting** roofs, walls and walks that provide social and environmental services - a green roofs competition has created 4,000m² of new plant-covered space
- **Increasing** tree cover by 5% by 2037

WATER CONSUMPTION

- **Achieving** domestic potable water consumption of 100 litres per resident per day by 2030, compared to the 2017 volume of 108 litres
- **Increasing** the use of underground water by 2.6hm³/year

CHALLENGES

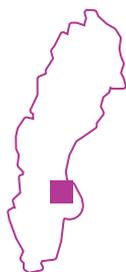
- **Enabling** the required paradigm shift in local governance so that it's possible for staff to work transversally, on a variety of scales and levels, with a large number of internal and external players, while incorporating risk management at every step
- **Managing** a high number of proposals from participants

LESSONS LEARNT

- **Citizen engagement is critical, particularly face-to-face sessions - the city connected with 119 organisations this way**
- **New grants and subsidies need to be launched for collaborative projects and technical and administrative support - the city made €1.2m available**
- **A climate advisory board and an executive committee encompassing all sectors and districts are vital to successfully produce, implement and monitor a climate plan**



UPPSALA A NETWORK INSPIRING SOLUTIONS



220,000
INHABITANTS

Uppsala's community wide aims is to be reliant on renewable energies by 2030 - by focusing on scope 1 emissions from energy production and transportation - and climate positive by 2050 - by tackling scope 1, 2 and 3 emissions including local agriculture and long-distance travel. Its 2030 goals for the city organisation include phasing out new fossil plastics and halving concrete emissions.

TARGET TO BE FOSSIL
FUEL FREE BY

2030

100%

ENERGY FROM
RENEWABLES BY 2030

AMBITION
TO BE CLIMATE
POSITIVE BY

2050

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THE NETWORK WORKING FOR LOCAL SOLUTIONS TO A GLOBAL PROBLEM

The city has a cross-sectoral network, the Uppsala Climate Protocol, whose member organisations work together to inspire each other and others to find local solutions to the climate challenge.

The network was initiated in 2010 by the city which invited 17 organisations - private companies, public organisations, academic institutions, civil associations and environmental organisations/associations - to sign a local climate agreement. Today it has 40 members.

Members contribute their time, competence and an annual fee to the protocol. This is currently €3000, although non-profit organisations are exempt. The city provides co-finance, matching the total fee figure up to a maximum of €100,000 a year.

The network organises its work in three-year periods and is currently in its fourth period (2018-2021). It is led by a steering committee chaired by the city and a facilitation team with practical work being realised through thematic working groups. There are currently 10 groups, however non-members are welcome to participate.

For each three-year cycle, members set a common climate goal. In previous periods this goal has been set on the basis of what the members as a group can achieve. For the current period the goal is now set as science-based target, that is what the members as group must achieve. In the previous period the network achieved a 5% annual reduction in emissions. What now must be achieved is 10-14%.



ADAPTATION

With the fourth Protocol period adaptation has been introduced as an overall strategy alongside the focus on mitigation. The working group on sustainable city districts has, in line with this, taken up the theme of strengthening the urban eco-systems and how to use natural based services to both adapt the city and to make it more attractive. Harvesting rain water and using it for toilets and gardening, is a new theme in Sweden, but a possible important adaptation action that the protocol can explore.

CHALLENGES

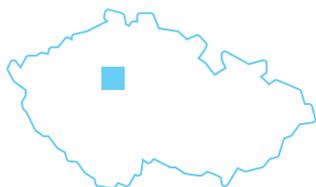
- **Rising** to the challenge of changing the target from 'what we can' to 'what we must'
- **Identifying** if there are any 'low-hanging fruit' still left
- **Continuing** to grow the Climate Protocol in numbers while also maintaining quality and trust

LESSONS LEARNT

- *Local government's ability as a representative of the public to engage different stakeholders is vital to expanding the scope of what a city can accomplish*
- *Although the city set up the network as a political initiative, it has the same commitment and role as any other member to its ongoing co-creation*
- *The network's three-year cycle plays an important role in its ability to reinvent itself and means it is easier for new organisations to join*
- *Cooperation doesn't happen by itself and requires continuous encouragement, cultivation and organisation*



PRAGUE TOWARDS LOW CARBON TRANSPORT



1,309,000
INHABITANTS

Prague has made climate protection a political priority, approving a commitment in 2019 to reduce CO₂ emissions by 45% by 2030 and achieve zero CO₂ emissions by 2050. The city has called on municipal districts, organisations, companies and citizens to help achieve these goals, which are in line with the UN Climate Report 2018.

EMISSIONS REDUCTION
TARGET OF AT LEAST

45%

BY 2030 FROM 2010

AIMS TO BE A ZERO
CARBON CITY BY

2050

AT THE LATEST



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MAKING PUBLIC TRANSPORT MORE EFFECTIVE AND ATTRACTIVE

At the heart of the city's transport policy is a more integrated, energy efficient and environmentally effective public transport system. Improvements are being made both to the system's backbone, the electric rail network encompassing railway, metro, tram and new battery-powered trolley buses, and to its intermodal hubs.

A major new transport terminal, Praha Smichov, is being developed to connect rail, buses, metro and car travel, encouraging use of public transport by making the transfer between transport modes faster and easier. Another important upcoming construction project will create a new 8km metro line linking to an existing line and a new tramline - and reduce suburban car and bus emissions.

These are just two of the ways the city is working to cut the number of conventional combustion engine cars on the roads. It is also striving to strengthen electromobility and boost active transport. Walking and cycling are being encouraged through the development of high quality, green public spaces. Over 20 streets and squares are being remodelled to make more space for trees, pedestrians and cyclists.

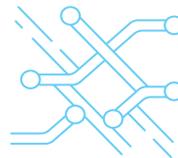


ADAPTATION

- **Extending** and enhancing green and blue (water) areas
- **Strengthening** electromobility
- **Encouraging** active transport modes (walking and cycling) thanks to high quality public spaces with green vegetation

CHALLENGES

- **Finding** money for electric rail transport improvements from the city budget, national budget, EU funds and private sources such as PPP projects
- **Convincing** politicians and citizens of the need for low carbon mobility
- **Persuading** the national railway infrastructure administration to build new railroads as soon as possible to unclog capacity in existing suburban lines and connect Prague with other regions by high speed rail.



LESSONS LEARNT

- **Strong support from public transport organisations is critical, especially those running the backbone electric rail system**
- **Increasing use of public transport demands incentives, such as cheap fares and priority lanes, as well as infrastructure and new rolling stock**
- **Strong communication with the national railway infrastructure administration is vital to make - and sustain focus on - the case for more new railways in the city and its suburbs**



LONDON DECARBONISING TRANSPORT WITH ULTRA-LOW EMISSION ZONES



7,800,000
INHABITANTS

London's Environment Strategy, one of the first city plans compliant with the highest ambition of the Paris Agreement, is targeting transport decarbonisation by 2050 through greater use of active, electric and public transport. Its 1.5C Compatible Plan outlines scenarios for achieving these and other goals such as zero carbon new buildings and divestment from fossil fuels by London's pension funds.

80%

OF TRIPS TO USE
SUSTAINABLE TRANSPORT
BY 2041

100%

OF MOTORISED ROAD
TRANSPORT TO BE
ELECTRIC BY 2050

AIMS TO BE A ZERO
CARBON CITY BY

2050

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REDUCING AIR POLLUTION THROUGH CLEANER TRANSPORT

At the heart of London's Transport Strategy is a new model for ensuring transport decisions prioritise human health and quality of life. Central to this Healthy Streets Approach — through which London is the first city to apply such an initiative to a major city's entire transport system — is the Ultra-Low Emission Zone (ULEZ) launched in 2019.

Operating 24-hours a day, seven days a week, the ULEZ addresses the need to reduce pollutants such as nitrogen oxides (NO_x) — half of which come from transport — which make chronic illnesses worse, shorten life expectancy and damage lung development.

The scheme deals with emissions from different vehicle types in the most appropriate way. Most have to meet the ULEZ emissions standards — Euro 6/VI for diesel and Euro 4 for petrol — or drivers must pay a daily charge. Buses in the zone will be Euro VI compliant or electric.

In its first month, ULEZ compliance was 74% in a 24-hour period, a huge increase from 39% in 2017 and 61% just before its launch. Around 9,400 fewer older, more polluting vehicles enter the zone on an average day.

The ULEZ has helped reduce exhaust NO_x emissions by 45% and will reduce CO₂ emissions by 15% in its current form, with further reductions achievable when it is expanded to cover a larger area.



ADAPTATION

THE HEALTHY STREETS APPROACH

The Healthy Streets Approach is the system of policies and strategies to help Londoners use cars less and walk, cycle and use public transport more.

The approach uses 10 evidence-based indicators to make London streets more sustainable. Introducing more trees and greenery creates more attractive public spaces, increases biodiversity and helps to mitigate the impacts of air pollution.

Greener streets can deliver against all of the Healthy Streets Indicators and can contribute to London's resilience to the consequences of climate change, such as extreme weather events like flooding and heatwaves.

CHALLENGES

- Getting stakeholders on board with the need for ULEZ and participating in its development involves organising a comprehensive consultation process
- Making sure people are aware of the changes requires a series of information campaigns ahead of implementation
- Funding incentives to enable different groups to switch from older, polluting vehicles to cleaner options requires large investment in funding (in this case £48 million for scrappage funds)

LESSONS LEARNT

- *People in deprived areas are exposed to more pollution than others and the ULEZ reduces this inequality, contributing to air quality policies*
- *As the number of schools exceeding NO₂ limits will drop from 453 in 2013 to zero by 2025 through the ULEZ, it contributes to air quality goals specifically for children*
- *If London is to be within the World Health Organisation's air quality guidelines for particulate matter limits — PM_{2.5} — by 2030, further action will be needed*



PORTO REDUCING THE CLIMATE IMPACT OF MOBILITY



In 2019 Porto pledged to reduce GHG emissions by 50% by 2030 from their 2004 level. This builds on work over recent decades which resulted in a 26% reduction from 2004 to 2016, 16% through decarbonising energy production (national policy) and 10% through local policies.

214,936
INHABITANTS

GHG EMISSIONS
REDUCED BY

26%

FROM 2004-2016

EMISSIONS REDUCTION
TARGET OF

50%

BY 2030 FROM 2004

AMBITION TO BE
CARBON NEUTRAL BY

2050

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TACKLING TRANSPORT EMISSIONS WITH NEW VEHICLES AND BEHAVIOURS

Transport accounts for 39% of total emissions in Porto and the city is focusing significant efforts on the sector - its municipal fleet and public transport in particular.

Last year, the city replaced 70% of its diesel-powered light vehicles with a large number of electric vehicles and plug-in hybrids. This has decreased annual CO₂ emissions by 542 tonnes. The new vehicles are now being fitted with trackers to drive out further improvements in energy consumption.

Between 2002 and 2018, Porto's metro enabled 12,983 individual vehicles to be taken off the roads and 45,000 tonnes of CO₂ to be removed annually from the atmosphere. To encourage use of the network, the city is building a line between the two busy hubs of Boavista and Baixa and has introduced a concessionary travel pass scheme allowing children up to the age of 12 to travel free on the regional network and children up to 15 free inside the city. In addition, it has launched a monthly €30 transport pass, 20,000 of which were issued within the first 12 days.

The city is also renewing 81% of the public bus company fleet. This will see 276 diesel buses gradually replaced with electric and natural gas-powered vehicles. The first 50 of these cleaner buses entered into service last year.



ADAPTATION

In 2016, Porto presented its Municipal Strategy for Adaptation to Climate Change where 52 strategic options have been identified with the aim of gradually prepare the city to absorb climate impacts, to adapt and act retroactively to reduce its

residents' exposure to the effects of climate change. Many of these measures are already in place, of which can be highlighted the Asprela Central Park: in 2020, a new green area with 6 ha at the heart of the university campus, will be 98% permeable and able

to contain 10.000 m³ of rainwater (flood level). The expected consequence is a reduction of the flooding pressure over the Metro rail as well as pedestrian, bike lanes and roadways.

CHALLENGES

- **Securing** private investment, especially after financial crises
- **Motivating** long-lasting behavioural change around energy sustainability
- **Implementing** systems for monitoring progress and impact
- **Embedding** energy sustainability in urban planning of dense environments
- **Integrating** energy sustainability and world heritage historical patrimony

LESSONS LEARNT

- *Clear political commitment enables plans to become part of municipal activities*
- *Political decision-makers are more sensitive to energy use within their own municipal territory (quick win with politicians)*
- *Bottom-up emissions information is time-consuming to collect but critical*



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