NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Action Plan

2030 Climate Neutrality Action Plan

Leipzig

Stadt Leipzig

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Summary

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In 2015, the **Paris Climate Agreement** set the goal of limiting the global temperature rise to 1.5 degrees Celsius if possible, and in any case to well below 2 degrees Celsius. As the City of Leipzig, we are committed to this goal, which is why the City Council adopted the Leipzig **Energy and Climate Protection Programme 2030** (EKSP 2030), setting the climate policy goal of a **climate-neutral city by 2040 at the latest**. The aim is to more than halve the city's overall greenhouse gas emissions by 2030.

By participating in the EU mission "100 climate-neutral and smart cities by 2030", Leipzig City Council and the city administration have jointly committed to significantly reducing greenhouse gas emissions by 2030 (City Council resolution VII-DS-06102). However, it will only be possible to pursue this goal even more ambitiously with the involvement of society as a whole in order to achieve the necessary transformation towards climate neutrality by 2030 at a local level. The EU mission gave the city of Leipzig the opportunity to launch a **city-wide climate protection programme** in order to tackle the path to climate neutrality in a targeted manner and in a broad alliance of stakeholders. In addition to the Energy and Climate Protection Programme (EKSP), which is currently being implemented, external stakeholders from business, science and urban society were involved in a participatory process. As a result, **more than 40 stakeholders** from business, science, social institutions, administration and civil society have declared their willingness to **achieve goals and** implement **measures** on the path to climate neutrality **by 2030** in the first version of the Climate City Agreement

The **Climate City Contract** is a jointly designed programme of Leipzig's citizens, business, science and civil society that shows the **path to climate neutrality by 2030**. In addition to the EKSP 2030, whose measures and priorities for action are largely developed and implemented by the administration and its municipal companies and which is defined by 10 success factors, the Climate City Contract documents the joint efforts of the administration and private companies to develop **over 800 innovative, sustainable measures.** These are implemented in a network or as individual measures, in the neighbourhood, for the company or for society. It is estimated that this will result in **CO2 savings of 560 tonnes** and an **investment volume of 330 million euros.**

Our joint task now is:

- to drive forward the further implementation of the measures in network associations,
- to extend the use of digital applications such as digital twins, AI and our Leipzig app for support,
- to win over further partners, enablers and activists for involvement in the Climate City Contract and to include them in further stages fo development of the CCC,
- to act as a driving force for other European cities with our activities
- to advocate for the removal of the described financial and legal barriers at state, federal and european level.

In this way, we aim to contribute to the implementation of the European Green Deal while preserving the city's quality of life, along with its ecological, social, and economic resilience.

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1 Introduction

Introduction

This Action Plan is one of three parts that together form the Climate City Contract (CCC). It stands alongside the investment plan and the core contract with voluntary commitment and is closely linked to both: The cost scenarios of the Investment Plan build on the measures of the Action Plan. All three components of the CCC are therefore harmonised and aim in the same direction. Together, they can initiate a new phase of adaptation to climate change in Leipzig and lead to far-reaching and lasting reductions in emissions. To define this path, the CCC builds on what has been achieved so far.

Leipzig

Leipzig is a modern metropolis and, with around 629,000 inhabitants, is not only the largest city in Saxony, but also the seventh largest in Germany. The city area covers almost 300 km². Leipzig is made up of ten city districts, which are subdivided into 63 neighbourhoods. An overview of the districts is shown in the following illustration.

Figure 1 Leipzig and its districts

Situated in the north-western part of the Free State of Saxony, bordering on the federal states of Bavaria, Thuringia, Saxony-Anhalt and Brandenburg, Leipzig is today an important cultural city throughout Europe. Its economy and population are developing dynamically. The city has a dense network of research institutions and is home to the University of Leipzig, one of the oldest universities in Germany. As an important trade fair centre and a traditional university city, Leipzig has always been a city of trade, encounters, creativity and the exchange of people from the most diverse backgrounds and ideas. This

is complemented by its historically grown self-image as a civic city, in which individual freedom, participation and co-determination of public life play a special role.

Leipzig Charter

In 2007, the "Leipzig Charter for a Sustainable European City" was adopted in Leipzig by the European ministers for urban development and spatial planning. The aim of the Leipzig Charter 2007 was to establish integrated, city-wide urban development as a key approach to strengthening and developing the European city. A special focus was also placed on neighbourhoods with particular development needs. As a city that has undergone a fundamental transformation - characterised by shrinkage in the 1990s to dynamic population and economic growth and a very high quality of life - Leipzig today serves as a role model for strategic and sustainable urban development.

In the course of global changes over the last decade, the Charter was revised in a broad national and European dialogue process. The "New Leipzig Charter" (full title "New Leipzig Charta - The transformative power of cities for the common good") sets out ambitious guidelines for an integrated urban development policy for European cities. It places particular importance on public and social action that is committed to the common good. The New Leipzig Charter formulates three substantive dimensions of action for cities: the "green city", the "just city" and the "productive city". The aim is to focus on the transformative power of cities and the participation of all sections of the population. The City of Leipzig welcomes the update of the Leipzig Charter. Many of the topics mentioned are included in the strategic goals of the City of Leipzig as mandates for action. The core principles, such as integrated working, citizen and stakeholder participation or location-based approaches to action, are anchored above all in the Integrated Urban Development Concept.

Population

As at 31.12.2023, the city of Leipzig had 628,718 main residents and a population density of 2129 people per square kilometre. Leipzig has a foreign population of approx. 14%. The city of Leipzig is the only region in eastern Germany to be one of the fastest-growing districts and cities in Germany. According to a new population forecast by the Federal Institute for Research on Building, Urban Affairs and Spatial Development, the population in Leipzig will increase by more than 14% by 2040. In the main variant of the forecast, around 639,000 inhabitants are predicted for the year 2030, and a further population increase to a probable 664,000 is expected by 2040

Since 1990, Leipzig has undergone a transformation characterised by phases of shrinkage and re-urbanisation. After the reunification of Germany in 1990, the number of inhabitants initially fell due to emigration and relocations to neighbouring municipalities. These waves of emigration led to a decline in the population, which was partially offset by incorporations in the late 1990s. From 1990 to 1999, the number of inhabitants fell from just under 511,000 to around 489,500 due to emigration and relocation to neighbouring municipalities.

Since around 2005, however, there has been a significant increase in the population. In the last ten years, the population has grown by 15.9 % - making Leipzig the fastest growing metropolis in Germany. This change is reflected not only in the population trend, but also in the increasing dynamism and diversity of the urban environment, which is characterised by a growing economy, a flourishing cultural life and a lively urban atmosphere. One of the reasons for this growth is the high level of life satisfaction: according to a survey by the EU Commission, Leipzig ranks fifth out of 83 European cities in terms of quality of life, making it the most liveable city in Germany.

Urban policy

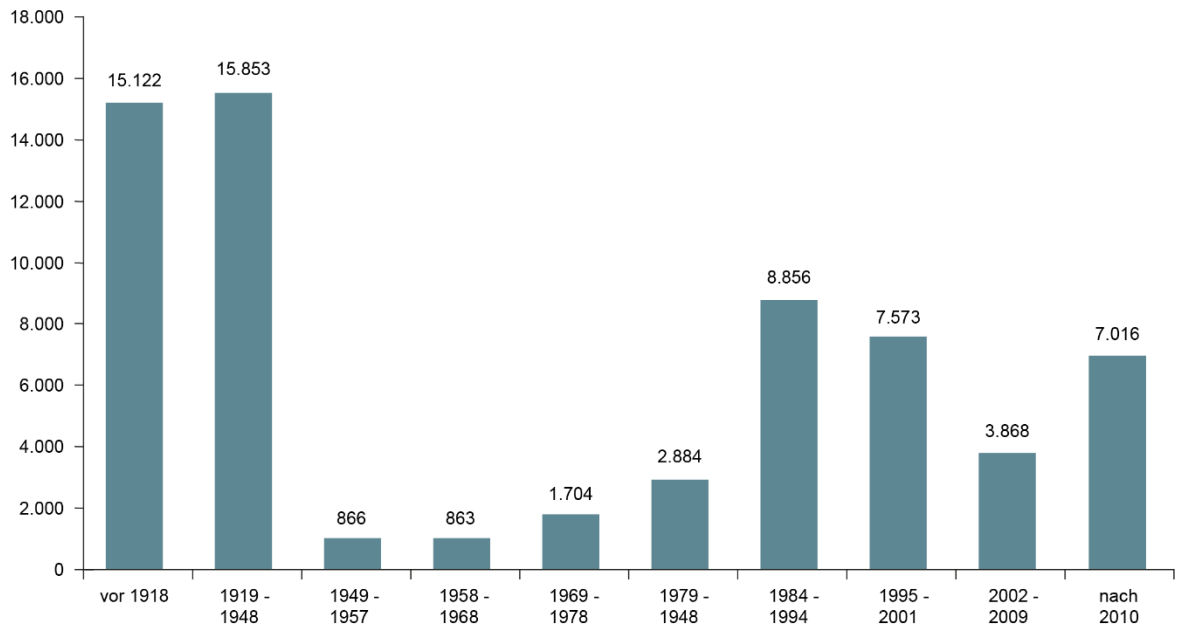
City policy is shaped by the City Council, the Lord Mayor and the eight specialised mayors (aldermen). The City Council is the elected representative of the citizens and the main body of the City of Leipzig. Councillors are elected by direct universal suffrage, free, equal and secret ballot for a five-year term. The election of the current City Council took place on 9 June 2024. According to the Saxon municipal code, the Mayor is the Chairman of the City Council. The City Council lays down the principles for the administration of the City of Leipzig and decides on all matters concerning the City of Leipzig, unless the Lord Mayor is responsible by law or the City Council has delegated certain matters to him. The Lord Mayor is therefore Chairman of the City Council, head of the city administration, responsible for the internal organisation and ongoing administrative business and implements the resolutions of the City Council and its committees. The term of office of a Lord Mayor is seven years.

Building stock and cityscape

Leipzig suffered little destruction during the Second World War and therefore has a large stock of buildings from the Wilhelminian era and the years of the Weimar Republic. During the GDR era, the Gründerzeit neighbourhoods and many residential buildings fell into disrepair due to a lack of investment. Of a total of 257,000 flats in 1990, around 196,000 were in need of refurbishment, including 103,000 from the Wilhelminian era. After German reunification, extensive refurbishments were carried out in the building sector, which also improved the energy efficiency of the buildings. In the meantime, over 70% of all flats from the Wilhelminian era have been completely refurbished and in 2022, almost 67,700 residential buildings and 349,000 flats were counted. Today, the Gründerzeit neighbourhoods are considered lively and attractive residential areas.

In the years between 1961 and 1990, large industrial housing estates were built in some Leipzig districts. Grünau and Paunsdorf are particularly worthy of mention. The buildings constructed in these neighbourhoods provide concentrated space for several tens of thousands of residential units. Figure 4-1 shows the distribution of residential buildings by age group. Since reunification, around 40 % of today's housing stock has been added. Almost all residential buildings in neighbourhoods such as Schönau or Heiterblick were built after reunification.

Figure 2 Construction age classification



The total number of buildings amounts to 142,577 buildings, which cover an area of 22.4 km2. It should be noted that a number of neighbouring municipalities were incorporated into the City of Leipzig at the end of the 1990s. Historically, these municipalities are not or only partially connected to existing infrastructure networks. In particular, peripheral locations are generally not connected to district heating supply networks.

The number of residential buildings in Leipzig is approx. 45 % and the number of non-residential buildings accounts for approx. 55 %. Almost 64,600 buildings were categorised as single-family houses, multi-family houses and large multi-family houses. In the residential building category, 67 % of the usable floor space is accounted for by apartment blocks and large apartment blocks Figure 2.(Key points for municipal heat planning) Single-family houses account for around 24 % of the usable floor space of residential buildings. High-rise buildings account for around 4.4 %. While districts such as Plaußig-

Portitz or Meusdorf, which are located on the outskirts of the city, have a comparatively high proportion of single-family houses, high-rise buildings are also strongly represented in the centrally located districts, for example in Grünau or Lößnig. Half of all residential buildings in the city of Leipzig were built before 1948. As a result, around 19,700 buildings are listed, most of which are in locations close to the city centre. However, the districts of Plagwitz and Connewitz are also characterised by old districts with buildings from the Wilhelminian era. As listed buildings can often only be renovated to make them more energy-efficient at great expense, it is sensible and necessary to differentiate between listed and non-listed buildings with regard to energy-efficient renovation.

Urban green, forest and park areas

Leipzig is one of the greenest cities in Europe. The entire urban area of Leipzig is characterised by numerous parks and green spaces, a species-rich stock of street trees, many allotment gardens and important cemeteries. Large parks and open spaces, a network of green spaces and the Pleiße, Weiße Elster and Parthe rivers with their floodplains, together with the residential and commercial areas, also characterise a varied urban landscape. One of the largest alluvial forest areas in Central Europe stretches right through the city of Leipzig and into the region. Leipzig's alluvial forest is of great ecological importance.

As a compact city in the ecological green network, it is both a cause and a victim of climate change: heavy rainfall events are increasing, as are heat and drought, which have a negative impact on the city's ecological green network and the quality of life and health of its residents. As a green city with lots of green spaces, Leipzig's urban area acts as a carbon sink and reservoir. These must be urgently preserved in the interests of natural climate protection in order to avoid damage to the green infrastructure and the resulting greenhouse gas emissions in the long term.

In order to prevent the elimination of green spaces, which are essential to mitigate the effects of climate change and species extinction, in the course of the city's extraordinary growth, the city council adopted a green statute for the city of Leipzig in February 2024. The greening statute provides clear regulations for new buildings: Flat roofs must be greened over a wide area and permanently, unless there are photovoltaic or solar thermal systems if the two systems would interfere with each other by combining, façades must be greened and backyards and front gardens must be green and integrate the habitat of animals as early as the building planning stage. In 2022, green spaces will account for around 20 % of the urban area. In order to increase this proportion and also protect urban waters, the city has developed a comprehensive blue-green strategy that combines approaches such as the "UrbanGreenEye" satellite climate monitoring lighthouse project and the "Valuing urban greenery" research project, which has developed a digital assessment tool for the benefits of urban greenery. The "Integrated Water Concept for Leipzig and the Neighbouring Region" developed by the Office for Urban Parks and Bodies of Water Authority has been nominated for the nationwide "Blue Compass" climate adaptation prize organised by the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) and the Federal Environment Agency (UBA) and is competing for the audience award.

Transport

Leipzig is structurally very well integrated into the national and international transport networks: The city is directly connected to all neighbouring regional centres and metropolitan regions via the A 9, A 14 and A 38 motorways. These are in particular the greater Berlin area in the north, the Dresden area in the east, Halle (Saale) in the west and Erfurt in the south-west. In order to reduce air pollution, a clean air plan was developed, the central measure of which - the establishment of a low emission zone - has been in force since 2011. Within the low emission zone, only vehicles labelled with a green sticker (pollutant group 4) are allowed to drive on public roads.

Urban transport is characterised by a dense tram network with 13 lines on a total route of 218 km. There are also 61 bus routes, most of which operate in the city centre. The public transport tariff of the Central German Transport Association (MDV) applies not only in the city of Leipzig, but throughout Central Germany. Located directly in Leipzig city centre, Leipzig Central Station is traditionally one of the most important hubs in the German railway network. The ICE, IC, EC, CityNightLine and DB night train connections provide good and fast connections for long-distance transport. Direct ICE lines run from Hamburg, Berlin, Frankfurt, Erfurt, Munich, Nuremberg and Dresden to Leipzig every hour.

The rail network provides direct connections to the regional centres of Halle (Saale) and Chemnitz as well as numerous medium-sized centres (e.g. Bitterfeld, Wurzen, Altenburg). In the regional rail network,

the main and medium-sized centres such as Eilenburg, Delitzsch, Borna, Oschatz, Döbeln and Wurzen are connected to the Leipzig regional centre as a link to long-distance transport. In the long-distance bus network, various transport companies offer regular connections from Leipzig Central Station to destinations in Germany and abroad, including Berlin, Düsseldorf, Stuttgart, Munich, Prague and Budapest.

The growing population means more traffic and an increased need for mobility with the same amount of space. A particular challenge for transport and urban planning and the city's mobility service provider, the Leipzig public transport company (Leipzig public transport company), was to develop a mobility strategy that integrates Leipzig's environmental and sustainability goals. Leipzig's mobility should be safe, reliable, clean, affordable and accessible to all. In order to meet these challenges, several solutions were outlined on the basis of scientific methodology. Of the six scenarios, a concept was unanimously adopted in September 2018 that prioritises the equal expansion of cycling, walking and public transport. This sustainability scenario also gave rise to the Mobility Strategy 2030. The implementation of this strategy is ensured by a framework plan that is further developed and updated every two years. An integral part of the framework plan for implementing the Mobility Strategy 2030 is currently around 230 projects that are to be started or implemented as part of the 2025/2026 dual budget and contribute to achieving the defined goals (LINK) .

Leipzig is nicknamed "Little Venice" due to its many waterways and around 300 bridges. The Karl Heine Canal in particular is a striking feature of the city: the three-kilometre-long artificial waterway runs along artistic building facades and under 15 bridges past sights, is popular for boat and canoe trips, paddling and strolling and connects the urban area with Leipzig's New Lakes landscape.

As part of the Mobility Strategy 2030, the Cycling Action Programme 2023/2024 was developed, which provides for structural measures to improve or construct cycle paths, mark cycle traffic facilities and set up cycle lanes. The aim is to close gaps in Leipzig's cycle network, increase the attractiveness of the infrastructure and provide better protection for children and senior citizens in particular. In addition, cycle paths in the countryside, for example along the Saale-Elster Canal or the Elster cycle path, are to be expanded.

With the D4 (Mittellandroute) and D11 (Leipzig-Hof) routes through Germany, Leipzig is well connected for inter-regional cycle traffic. From the Saxony Cycle Network (cycle traffic concept of the Free State of Saxony 2005), the Leipzig New Lakes Route also runs through Leipzig.

Due to its compact and mixed settlement structure, the generously dimensioned street spaces in the Wilhelminian-style residential areas and a well-developed car-free network of paths in the large new development areas, Leipzig has good starting conditions for pedestrian traffic and is one of the strongest pedestrian cities in a city comparison. The compact city centre with its car-free streets and passages is extremely pedestrian-friendly. According to the latest traffic survey conducted by TU Dresden in 2018, over 27% of all journeys in Leipzig are made exclusively on foot. The conceptual basis for the promotion of pedestrian traffic and the development of a city-wide footpath network is the pedestrian traffic development plan. The different requirements of streets, paths, squares, open spaces and green areas are evaluated using a differentiated importance plan and applied in planning. A plan of measures prioritises the fields of action and measures required for implementation for the time horizon up to 2030. A particular concern of the plan is to achieve a sense of urban mobility through promenades, an improved residential character of boulevards, passages and squares and improved safety, especially for children and senior citizens. To this end, various programmes have been drawn up, taking into account citizen participation processes.

Leipzig has an international commercial airport, Leipzig/Halle Airport. In 2023, there was a passenger volume of around 2.09 million passengers at Leipzig/Halle Airport. With an increase of 35% compared to the previous year, the number of passengers is thus approaching pre-pandemic levels.

Economy

In 2023, Leipzig was home to around 46,900 companies from a wide range of economic sectors such as manufacturing, construction, trade, transport, hospitality, information and communication, financial and insurance services or real estate and housing. Leipzig's economy is characterised by a correspondingly high level of sector diversity. Following losses in value creation in the wake of the coronavirus pandemic, Leipzig can look back on a successful business year in 2023. Despite several

crises, the trade fair city proved to be economically stable and resilient. Due to the war of aggression against Ukraine and the associated refugee movements, the population grew even faster than in previous years. Nevertheless, the unemployment rate rose only moderately. This is also due to the overall economic growth. For the second time in a row, Leipzig has set a new record for the number of companies with a total of 46,880 resident companies. This also applies to individual sectors such as manufacturing, business services, science, technology and IT as well as the creative sector. Other sectors, such as trade, achieved record figures in a multi-year comparison.

Following the economic and financial crisis of 2008/2009, there was positive economic development until 2019. In 2020, the coronavirus pandemic led to a drop in value added of just under 1.5 %. The service sector accounted for around 80 % of economic value added in 2020, while the manufacturing industry accounted for around 20 % and the construction industry for around 6 %. A recovery in the economic situation can be seen for 2021: compared to 2019 and 2020, value added has increased again, although this also has an impact on resource consumption and thus on GHG emissions, particularly in the manufacturing sector. However, it is not yet possible to determine from the figures available whether this trend has continued over the past two years against the backdrop of the war of aggression against Ukraine.

Close cooperation between the city administration, research and development institutions, the committed civilian population and a forward-looking business landscape can leverage a wide range of synergies in various economic sectors and strengthen the resilience of the entire Central German region in terms of regional value creation. Leipzig has for many years relied on a cluster strategy that promotes the greatest possible diversity of sectors and thus sustainable growth to diversify local economic strategies. In addition to traditional sectors that have established themselves over decades, there is a strong focus on innovation-driven sectors. This mix of innovation and tradition creates an ideal climate for successfully meeting the challenges of the global economy and continuing to grow. A particular concern is to strengthen the regional innovation potential of Leipzig as a business location. To this end, there is close co-operation in the form of projects between the city administration, research institutions such as Leipzig University or the Fraunhofer Institute and industry, in which civil society is directly or indirectly integrated through participation processes. Since the declaration of the climate emergency in 2019, the aim has also been to increasingly recognise the environment as an actor in its own right and to involve it in the development and promotion of innovations. For example, Leipzig municipal utilities is planning to expand the BioCity Campus Leipzig innovation centre with funding from the Free State of Saxony. With the help of an investment of around 15 million euros, around 10,000 square metres of rental, office and laboratory space as well as co-working and conference rooms for companies from the life sciences sector are being created on the old exhibition grounds. The city's economic development agency is thus paving the way for start-ups and the development of sustainable ideas. As a top life sciences cluster, Leipzig is a dynamic location for research and start-ups and offers efficient networks, fast approval procedures and a comprehensive research and transfer landscape. Another example of an innovation centre is Hall 7 on the site of the cotton mill. Hall 7 will be renovated by 2025 and transformed into an innovation centre, the Digital Hub, for start-ups, SMEs, researchers and users. The aim is to work together at this location on ideas for the city and with the city. The Digital Hub will focus on the development of new technologies and business areas in the fields of smart city, energy and e-health.

The north of Leipzig is home to a strategically important automotive industry for the whole of Europe. With the arrival of BMW and Porsche at the turn of the millennium, the Saxon metropolis became a centre for cutting-edge technology in automotive production. In modern and sustainable plants with flexible logistics, Porsche and the BMW Group produce innovative electric vehicles and other premium vehicles for export worldwide. Porsche, BMW and their suppliers now employ around 20,000 people in Leipzig. In the course of the transformation, Leipzig has also attracted other companies specialising in connected driving and battery production. With a focus on electromobility, Leipzig is becoming a pioneer in this field.

In future, the City of Leipzig will focus its cluster strategy more strongly on the Greentech, Health and Energy clusters, thereby laying the foundations for the transformation of Leipzig's economic structure.

International network

Leipzig is present and engaged both in Europe and worldwide. Leipzig assumes holistic global responsibility under the motto "think globally, act locally". Sustainable urban development and mobility, climate protection, cultural exchange, education, inclusion and fair trade are the hallmarks of Leipzig's

activities with selected partner cities and institutions as part of the development policy agenda. The City of Leipzig is committed to the 2030 Agenda adopted by the United Nations with its 17 global sustainability goals.

As part of the City of Leipzig's membership in the European city network "Eurocities" and through numerous European policy activities and projects, e.g. in the Horizon 2020 project Office for City Planning RCS, the city administration contributes to the promotion of the European idea and cohesion. With its involvement, for example in the committees of the Association of German Cities or as a Mission City in European networks such as NetZeroCities, the city is committed to greater municipal room for manoeuvre and inclusive, sustainable and modern urban development. Furthemore, the City of Leipzig is member of the global Cities Coalition for Digital Rights (CC4DR). Various EU programmes such as Interreg, Erasmus+ and Horizon 2020 have resulted in relationships with European partners that continue even after the end of the project and have led to a constructive exchange, particularly with regard to energy policy, digitalisation, infrastructure and sustainable development.

22,170 people from another EU country live in the city. As EU citizens, they can settle in Leipzig without restrictions, pursue a profession and, for example, vote in local and European elections. Around 4,800 foreign students make up 12% of the student body at Leipzig's universities (as of 2022). In the last funding period 2014-2020, projects totalling over 143 million euros were financed in Leipzig with the support of the European Regional Development Fund (ERDF).

Current climate neutrality target

The city administration is aware that the crucial window of opportunity to effectively prevent the physical tipping points of the climate system by massively reducing greenhouse gas emissions will close in the next few years. To this end, the City of Leipzig is pursuing the goal of climate-conscious urban development throughout the city.

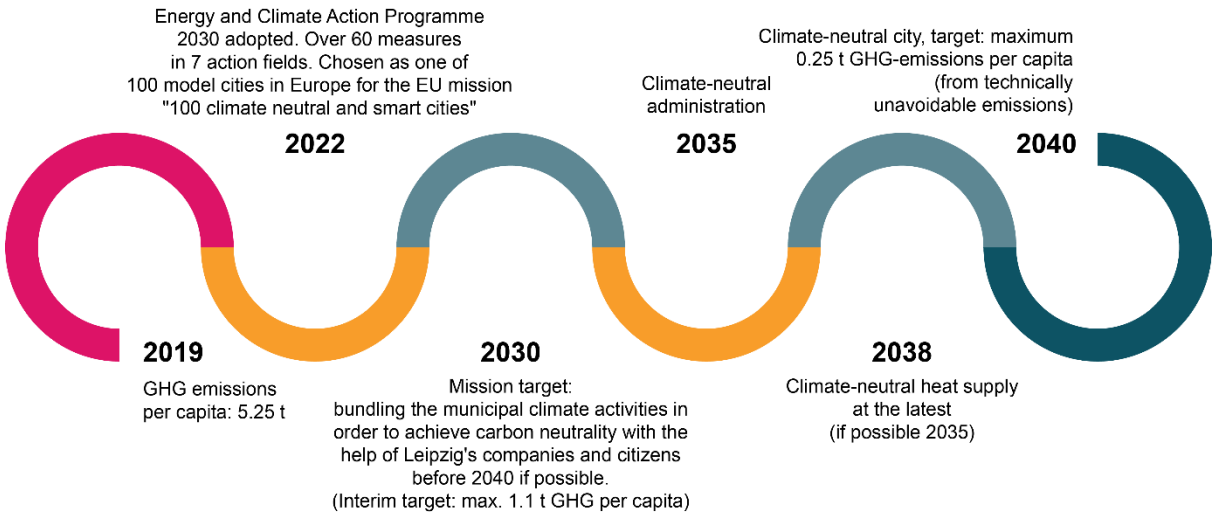
Among other things, the city administration is to serve as a role model and operates in a climate-neutral manner in all areas of municipal self-government by 2035. With the Leipzig Group as a municipal holding company and city-owned group, the City of Leipzig has far-reaching control options. The operating business is divided into the business areas of energy and heat supply (Leipzig municipal utilities), mobility (Leipzig public transport company) and water (Leipziger Wasserwerke, Leipziger Sportbäder).

The municipal greenhouse gas balancing is carried out in accordance with the BISKO standard (Bilanzierungs Systematik Kommunal), which is applied uniformly throughout Germany and is based on the final energy-based territorial principle. The balance therefore includes a list of final energy consumption that occurs within the city area, an analysis of the life cycle of all energy sources (including extraction, conversion, transport and utilisation) and a derived greenhouse gas balance. Leipzig's balance sheet is therefore comparable with those of other German municipalities, although the actual input data collected must be taken into account in each case. All energy-related consumption in the private household, commercial and transport sectors in the Leipzig city area is recorded. Energy consumed outside the city limits (e.g. for consumer goods) and air travel cannot be recorded. In addition to carbon dioxide (CO2), the most emitted greenhouse gas, the two other most important greenhouse gases methane (CH4) and nitrous oxide (N2O) are also analysed.

The municipal utilities are subject to European emissions trading and are nevertheless included in the City of Leipzig's reduction target, meaning that the purchase of certificates is not included in the city's overall balancing (energy generation is balanced according to energy source-specific emission factors). Larger private actors in the city of Leipzig are sometimes involved in emissions trading independently of the administration.

In accordance with the Paris Agreement on climate change, the City of Leipzig has set itself the goal of achieving climate neutrality by 2040 at the latest. Climate neutrality is defined as a residual emission value (without compensation measures) of 0.25 tonnes of CO2 equivalents per inhabitant (residual value of technically unavoidable emissions). This ambitious climate protection target is based on a socially just, economically resilient and ecologically sustainable vision of the future. The state of climate neutrality is achieved when the remaining amount of technically unavoidable greenhouse gas emissions is offset. The City of Leipzig is examining the extent to which offsetting measures can be utilised in the future.

Figure 3 Medium-Term Climate Targets



In accordance with the Council resolution on the **climate emergency in 2019**, the City of Leipzig is pursuing the goals of the Paris Climate Agreement at municipal level and applies the internationally applied CO2 budget approach as a basic principle. The calculation of Leipzig's remaining CO2 budget is therefore based on a target scenario of a possible **limitation of global warming to 1.75 degrees with a probability of 83%**.

The residual budget still available is determined using the methodology proposed in the 2020 Environmental Report of the German Advisory Council on the Environment (SRU), resulting in a final **residual budget of 29.0 million tonnes of CO2 equivalents** for the city of Leipzig **from 2020**.

The **EU Mission "100 Climate-Neutral and Smart Cities by 2030"** has given the City of Leipzig the opportunity to launch a city-wide climate protection program, aimed at purposefully pursuing the path to climate neutrality in a broad alliance of stakeholders. In addition to the already ongoing implementation of the Energy and Climate Protection Program (EKSP), external stakeholders from business, academia, and civil society are being involved in this process through a participatory approach.

By participating in the EU Mission, the **Leipzig City Council and city administration** have jointly committed to significantly reducing greenhouse gas emissions by 2030 (City Council Resolution VII-DS-06102). A significant intermediate goal is an 80% reduction in greenhouse gas emissions by 2030 compared to the baseline year of 2019 (5.25 tons of CO2 equivalents per capita), assuming the optimal implementation of all measures.

Climate neutrality is defined as a **gross emission value (without compensation) of 0.25 tons of CO2 equivalents per capita**. As an interim target on the path to climate neutrality, the City of Leipzig, through the EKSP, aims to reduce greenhouse gas emissions to 1.90 tons of CO2 equivalents per capita by 2030, which corresponds to a **65% reduction** from the 2019 baseline.

With the help of the **Climate City Contract**, supported by political decisions at the state and federal levels, and with the promised measures (financial, regulatory, personnel) to reduce existing barriers, the achievement of the climate neutrality goal set by the City Council by **2040** is expected to accelerate. Based on the 2019 baseline, the goal is to close the **emission gap from 1.9 tons per capita to 1.1 tons per capita by 2030**, achieving a significant reduction of 80%.

In the **first phase** of the Climate City Contract, stakeholders from business and academia will be involved in the collective path towards climate neutrality. However, given the current conditions and the current level of external stakeholder integration, the ambitious goal of an 80% reduction is unlikely to be fully achieved for the time being, under the current conditions (first version of the CCC), we can realistically expect a **65% reduction in greenhouse gas emissions by 2030**.

The first phase of the Climate City Contract lays the foundation for a city-wide climate protection program. Processes and structures will be refined, and a more comprehensive monitoring system will be established.

In further **expansion stages of the CCC**, additional stakeholders will be integrated into the city-wide climate protection program over the next few years. Additional to this, further external support is needed to break down various existing barriers, accelerate the implementation of climate-protection measures, and bring the city closer to achieving climate neutrality under realistic assumptions.

Integration of the CCC into existing urban strategies and development process

As descibed above, the City of Leipzig's climate protection goals reflect an integrated and long-term planning mentality. Overall, the City of Leipzig sees the EU mission as an opportunity to further strengthen its climate protection efforts and, in cooperation with external players from the private sector, research and development institutions and civil society organisations, to play a pioneering role in a competitive, vibrant and climate-neutral European Union. Leipzig also recognises the opportunities for the structural promotion of innovation and sustainable economic growth that arise from participation in the ambitious EU mission.

The cross-departmental development of the Leipzig Climate City Contract is being carried out in alignment with the following urban strategies and concepts with a technical climate protection focus (further strategies at national, state and local level are presented in detail in Chapter 2.2 Current Policies and Strategies Assessment, which is why only the most important local strategies are named here):

The **Leipzig Strategy 2035** sets out the direction in which Leipzig should develop over the next ten years and formulates guidelines for the city administration, municipal enterprises and holdings.

In addition to a spatially organised urban development strategy, it includes several specialist concepts that bring together the department-specific specialist plans and condense them into their essential, urban development-relevant statements.

Energy and Climate Protection Programme (EKSP 2030): The EKSP 2030 (adopted in 2022) sets out strategic goals, priorities and measures aimed at achieving climate neutrality by 2040 at the latest. It comprises a catalogue of over 150 specific measures and investments of over 300 million euros annually, which are regularly monitored and evaluated. The measures of the EKSP 2030 are integrated into the city's energy and climate policy framework and are regularly certified as part of the European Energy Award (eea Gold in 2021).

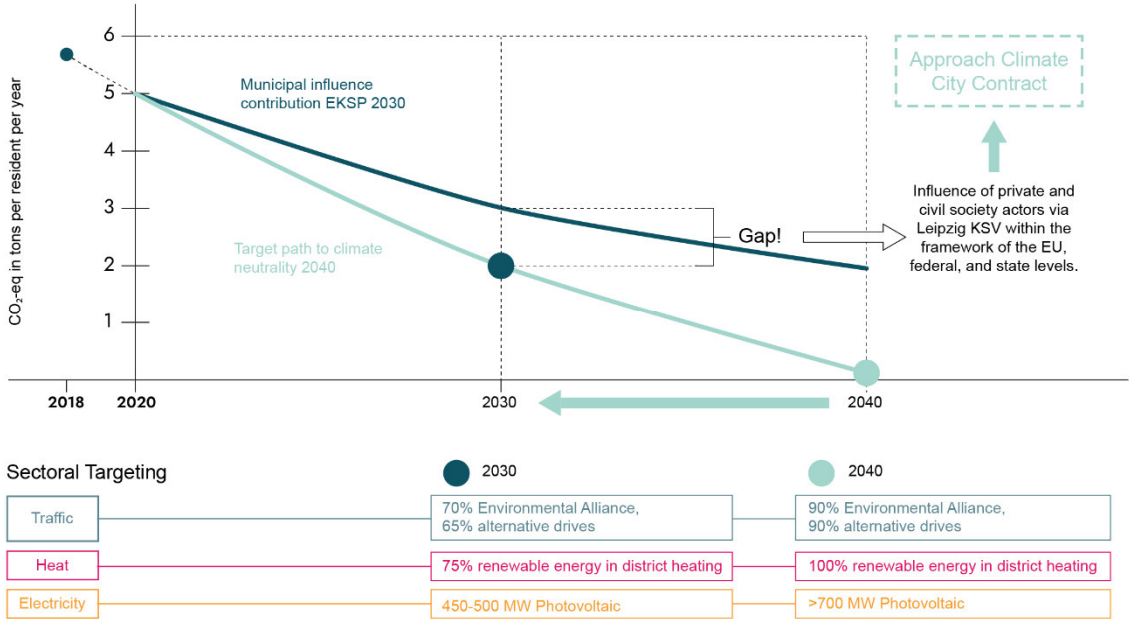
Mobility Strategy 2030: The Mobility Strategy 2030 is a comprehensive plan for the long-term sustainable development of Leipzig's transport system. It sets out goals and measures to promote climate-friendly and efficient mobility in the city. This includes strengthening local public transport, expanding cycle paths and pedestrian zones, reducing motorised private transport and its progressive electrification. The creation of the Mobility Strategy 2030 goes back to a city council resolution in 2015. At that time, the administration was commissioned to develop three different mobility scenarios for updating the local transport plan. In September 2018, the city council voted unanimously in favour of the sustainability scenario as the transport policy premise for the mobility strategy up to 2030.

Municipal heat planning: Municipal heat planning is a concept for the efficient use of heat energy in Leipzig with the aim of realising a climate-neutral heat supply by 2038. As part of its municipal services of general interest, it is the task of the City of Leipzig to look for solutions in the heating sector that ensure a sustainable, secure and affordable energy supply for the population. Municipal heating planning forms the strategic basis for initiating and implementing targeted measures for the decarbonisation of the heating system. It includes analysing the city's heating requirements, identifying potential energy savings and developing strategies for the use of renewable energies in the urban area and is currently being developed. It serves the city and its municipal companies, as well as the real estate industry, property owners, energy suppliers and the population as a guide for designing, managing and investing in the efficient expansion of heating and cooling networks, saving heating energy in neighbourhoods and thus gradually decarbonising the heating sector.

Other relevant strategies and policies are listed in Module A-2.

The Climate City Contract integrates existing catalogues of measures, including the EKSP 2030, the mobility strategy and the municipal heat planning. It is also supplemented by the commitments of Leipzig companies and organisations that contribute to achieving the climate neutrality targets with their own measures, which have not yet been included in the municipal strategies. In this way, the Climate City Contract can reduce the reduction gap between municipal programmes and the city-wide reduction target, as the following figure illustrates:

Figure 4 Relationship between EKSP and Climate City Contract in terms of objectives



Work process for the creation of the Leipzig Climate City Contract

The declaration of the climate emergency by Leipzig City Council in autumn 2019 created a strong mandate to strengthen municipal climate protection activities in terms of structure, personnel and funding. Under the leadership of the Sustainable Development and Climate Protection Department, cross-departmental processes and strategies that contribute significantly to the climate neutrality target have been driven forward since 2021.

The development of the first version of the Climate City Contract was organised in cooperation between the Office for Sustainable Development and Climate Protection and the Digital City Unit and was continuously expanded to include expertise from specialist departments and the Leipzig Group. Since 2023, a wide range of participation formats have been organised to identify effective climate protection measures to address over 100 stakeholders and institutions in the Leipzig city area in a target group- and sector-specific manner. Leipzig companies, research and development organisations as well as health and social institutions were invited to workshops and information events on the topic of climate neutrality and invited to contribute effective measures to the Leipzig Climate City Agreement.

At the beginning of 2024, the Mayor of Leipzig addressed the organisations involved to date, inviting them to sign the preamble to the Climate City Contract with a strong commitment to the city's climate protection goals and to work together with the city of Leipzig to achieve a climate-neutral Leipzig. Half of the stakeholders addressed, signed the Climate City Contract online and used an online tool to contribute individual and network-related measures to the process creating a strong alliance of stakeholders for effective climate protection in Leipzig. The measures submitted by the companies are summarised and evaluated in section 3.2.

Figure 5 Co-signatories of the Leipzig Climate City Contract (A detailed overview is included in the Core Contract).

In order to achieve the City of Leipzig's climate neutrality targets, the involvement and commitment of local companies and organisations as well as civil society will also be increasingly required in the future. The city administration is therefore already offering support activities for interested organisations and will continue to expand its commitment to involving companies and civil society in climate protection activities in the future.

The Leipzig Energy Efficiency and Climate Protection Network, which was launched in 2019 in cooperation with Leipzig municipal utilities and the Leipzig Chamber of Industry and Commerce, has since offered a practice-oriented platform for advising private stakeholders on effective climate protection measures and promoting sustainable business practices. In addition, the cross-industry **cluster strategy of the Leipzig Economic Development Agency** and the **Energy and Environment Network** are working to achieve overarching climate protection and sustainability goals with numerous workshops and specialist days.

In the future, the **updating of the Leipzig Climate City Contract** will be aligned with the processing cycles of the EKSP. The implementation of the EKSP is accompanied by the creation of a **two-year implementation programme** that is linked to the respective valid planning period of the municipal budget. The implementation programme is currently being drawn up for the period 2025/2026. Furthermore, the monitoring of the Climate City Contract is also linked to the evaluation of the EKSP (further information on the continuation of the process and monitoring can be found in chapters 4 and 5).

However, the comprehensive achievement of climate neutrality in Leipzig cannot be achieved through municipal measures in the Leipzig city area alone. In addition to the active cooperation of Leipzig, organisations and companies, which were activated as part of the process of drawing up the first version of the Climate City Agreement, financial and regulatory support is also needed from the state and federal levels to underpin the climate neutrality target in the federal administrative hierarchy (see also Chapters 2.3 and 4.1).

The sectoral reduction targets of the City of Leipzig up to 2030 are presented below (No GHG accounting or strategies addressing this sector exist for the Agricultural, Forestry and Land Use (AFOLU) sector. Therefore, no data can be presented here):

Table I-1.1: Climate Neutrality Target by 2030 (referred to 2019)			
Sectors	**Scope 1**	**Scope 2**	**Scope 3**
Stationary energy and buildings	**Reduction by 70** % Climate-neutral heat-system by 2038 with use of green natural gas and hydrogen in combination with industrial waste heat potentials for district heating Transformation of private heat-systems with heat pumps and integrating renewable energies in the heat/energy sector Increased rate (~3 %) of building renovation in the public and private real estate sector	No data or targets	n.a.
Transport	**Reduction by 60 %** Modal split of 70 % environmental traffic and 30 % private traffic remaining by 2030 with high rate of alternative drives (min. 65 %)	No data or targets	n.a.
Waste/wastewater	**Reduction by 50 %** Zero-waste strategy with 10% decline and a high share of waste separation and recycling in the resource cycle	No data or targets	n.a.
IPPU	**Reduction by 65 %** High energy efficiency standards in industrial and production processes by integrating high shares of renewable energies	No data or targets	n.a.
AFOLU	No data or targets	No data or targets	n.a.
Geographical boundary	**Same as city administrative boundary**	**Smaller than city administrative boundary**	**Larger than city administrative boundary**
	City boundaries with no excluded or additional areas		

2 Part A - Current State of Climate Action

2.1 Module A-1 Greenhouse Gas Emissions Baseline Inventory

GhG Emissions Baseline inventory

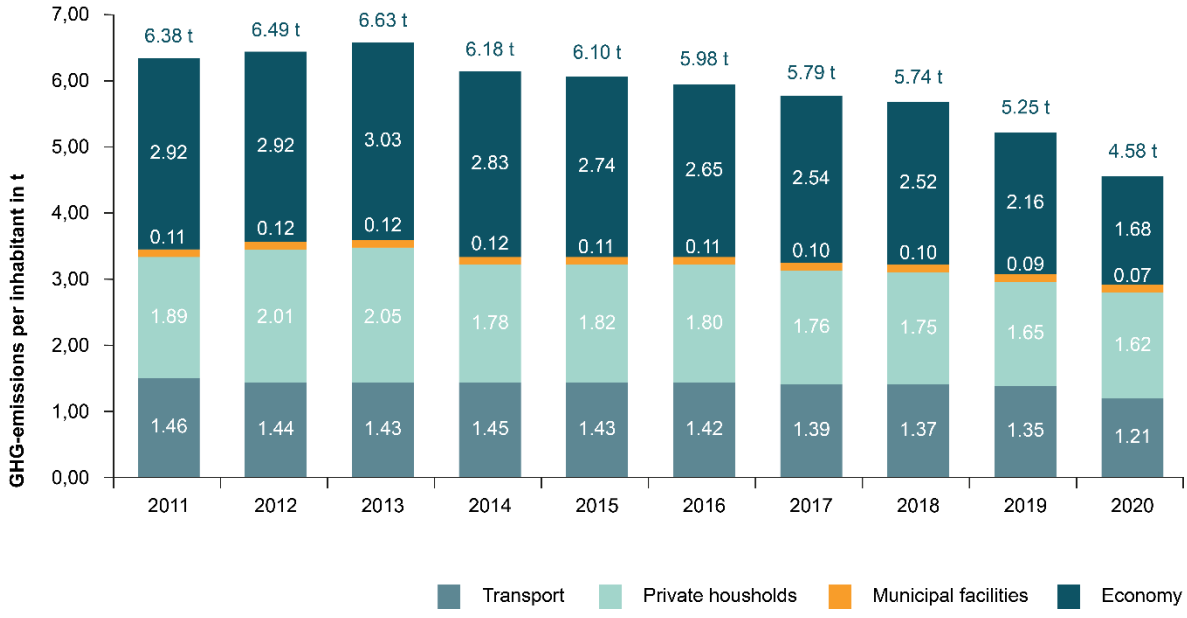
Municipal energy and GHG balances serve as an instrument for climate protection monitoring. On the one hand, to present the status quo of a municipality and thus to review the climate protection targets that have been set. On the other hand, to determine whether measures are actually having the effect attributed to them. Leipzig's energy and greenhouse gas balance is based on the final energy-based territorial principle. This means that it records energy consumption and the resulting greenhouse gas emissions in all climate-relevant areas and categorises them by consumer and energy source.

The assessment in Leipzig is carried out according to the BISKO standard, which is uniformly applied by municipalities and districts throughout Germany, and includes a list of the final energy consumption that occurs in the city area, an analysis of the life cycle of all energy sources (including extraction, conversion, transport and use) and a derived greenhouse gas balance. The calculation is carried out using the climate protection planner balancing tool developed by Klimabündnis e. V. and the IFEU Institute in accordance with the territorial principle.

Since the 2011 balance sheet year, the energy and greenhouse gas balances in Leipzig have been regularly updated based on a highly comparable database and published in annual implementation reports. This Climate City Contract is based on the base year 2019. The key results of the balance sheet are presented below.

The main indicator for the development and comparison of energy and greenhouse gas balances of different municipalities is the emissions in CO_2 equivalents per capita. The following figure shows the development for the city of Leipzig in the period from 2011 to 2019. The indicator can be used to illustrate the influence of the energy mix and population development in comparison to absolute final energy consumption.

Figure 6 Development of greenhouse gas emissions in the city of Leipzig in t 2011 (without weather correction)



After an initial increase (2011 to 2013), the nine-year balance for the city of Leipzig shows a steady decline in emissions per inhabitant across all sectors. The decrease (both including and excluding the weather correction) over the total period of nine years is 17.1 %.

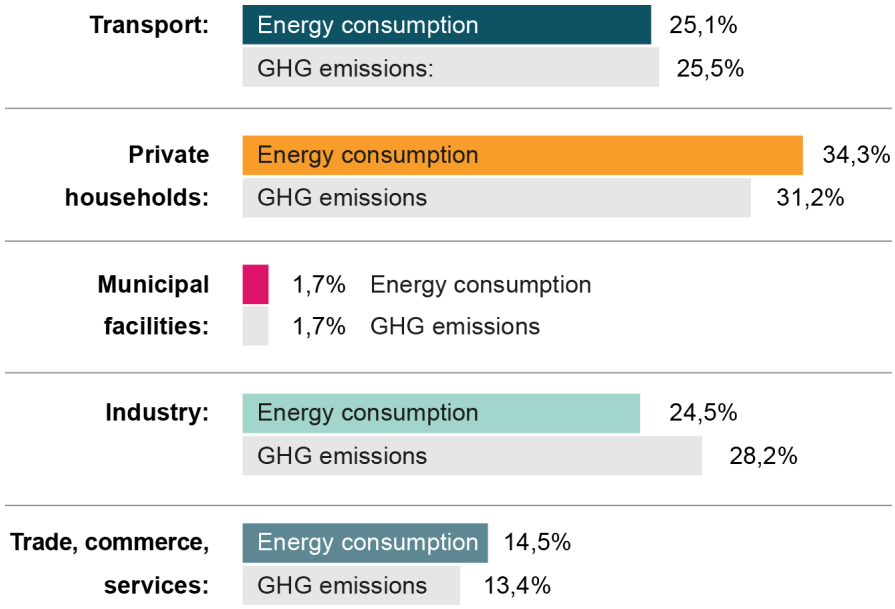
In the business sector (including all municipal facilities, which account for around 2 % of the total greenhouse gas emissions in the city of Leipzig), emissions fell more sharply by 24.4 % than in the household (12.9 %) and transport (7.3 %) sectors. The total value for 2019 is 5.3 tonnes per inhabitant and the population increased by 16.3 % in the period under review.

The industrial sector is particularly electricity-intensive and therefore accounts for the highest proportion of greenhouse gas emissions at 31.2 %, followed by private households at 28.2 %. In contrast, Leipzig's households account for 34.3 % of final energy consumption, while industry only accounts for 24.5 %. The main reasons for this are the energy source mix of the heat supply and the significantly higher electricity consumption in the industrial sector. The transport, trade, commerce and services and municipal buildings sectors show only slight differences in their respective shares.

One important reason why absolute CO2 emissions in Leipzig are not falling more sharply is the city's dynamic population growth (around 90,000 inhabitants between 2015 and 2024). It therefore makes sense to analyse this by looking at the annual per capita emissions. The number of public institutions, the size and facilities of the university, the number of municipal buildings or the development of commercial and industrial companies also influence the level of CO2 emissions and do not correlate directly with the influx of new citizens. In addition, cross-sector electrification is taking place, meaning that more facilities are equipped with electrical consumers. The increasing air conditioning of buildings and the rising level of digitalisation with decentralised IT devices continue to cause a slight increase in electricity consumption.

If more and more solar plants are built in Leipzig to cover solar power consumption, this is not directly reflected in the balance sheet. In the Bisko standard, according to which Leipzig prepares its balances, the emissions of electricity consumption are calculated using the emission factor of the overall German electricity mix (in order to avoid selective allocation). The expansion is therefore only reflected by means of the decreasing German electricity emission factor.

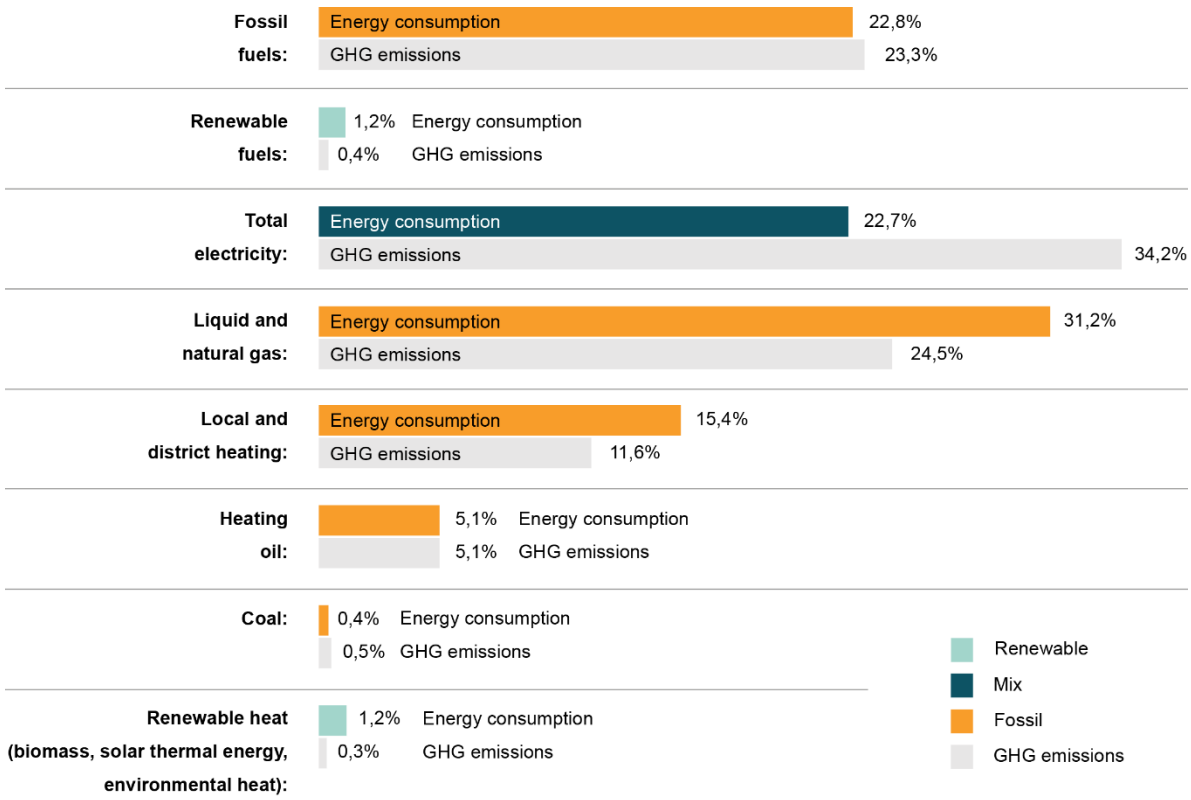
Figure 7 Shares of the various sectors in Leipzig in 2019 in final energy consumption (top) and GHG emissions (bottom)



In addition to the balancing by sector, the breakdown by energy source provides important information for the strategic orientation of energy and climate protection work in the city. The main energy source groups are therefore shown below in terms of their share of final energy consumption and greenhouse gas emissions.

The breakdown by energy source shows that fossil fuels, electricity and gas are the three main energy sources, accounting for just under 77% of final energy consumption and around 83% of GHG emissions. While gas has the highest share of consumption (31.2 %), electricity consumption is responsible for more than a third of GHG emissions (34.2 %). The advantages of renewable energy sources due to their low GHG emission factor become clear below.

Figure 8 Final energy consumption (top) and GHG emissions (bottom) by energy source group for 2019 (green: renewable, orange: fossil, blue: mix)



Greenhouse gas emissions in the city of Leipzig totalled almost 3 million tonnes of CO2 in 2019 of which around 46% was attributable to heat generation, 31% to electricity generation and the remaining 23% to the mobility sector. The sectoral distribution is broken down into final energy consumption and the resulting greenhouse gas emissions as shown below. For the Agricultural, Forestry and Land Use (AFOLU) sector, there is no GHG accounting yet, but it is planned; and beyond individual measures, there is no overarching strategy that would address this sector. Therefore, no data can be presented here.

A-1.1: Final energy use by source sectors			
Base year	2019		
Unit	MWh		
	Scope 1	Scope 2	Scope 3
Buildings			
Electricity		896.858	
Heat/Cold		1.524.428	
Natural gas	1.727.059		
Liquid gas	224.379		
Heating Oil	468.058		
Lignite	14.924		
Coal	96		
Biomass	55.322		

Solar thermal	10.811		
Geothermal	48.640		
Transport			
Electricity		115.883	
Natural gas	3.249		
Liquid Gas	15.563		
Diesel	1.465.488		
Gasoline	771.624		
Biofuel	117.343		
Waste			
Industry (refers to manufacturing and construction)			
Electricity		1.216.471	
		229	
Natural gas	1.033.392		
Heating oil	39.452		
Coal	23.500		
Other fossil fuels	1.349		
Agricultural, Forestry and Land Use (AFOLU)	n.a.		

Table A-1.2 shows the emission factors used.

A-1.2: Emission factors applied

Use of emission factors according to the German Climate Alliance / Bisko Standard (g/kWh CO2)

Primary energy source	CO_2 g/kWh		Primary energy source	CO_2 g/kWh		
Natural gas	247		Heating oil	318		
Electricity mix	544		Liquid gas	276		
Solar PV	40		Wood	22		
Windpower	10		Liquified gas	290		
Waterpower	3		Environ.heat	170		
Biomas	25		Brown coal	411		
Biogas	51		Solar thermal	25		

Diesel fuel	326		Local heat / bhp	170		
Organic diesel	112		Hard coal	438		
Petrol fuel	322		Other renew.	25		
Petrol organic	149		Other convent.	330		

A-1.3: GHG emissions s by source sectors				
Base year	2019			
Unit	Tones of CO_2			
	Scope 1	Scope 2	Scope 3	Total
Buildings				**1.440.023**
Electricity		428.698		
Heat/Cold		359.010		
Natural gas	426.584			
Liquid gas	61.929			
Heating Oil	148.843			
Lignite	6.134			
Coal	42			
Biomass	1.217			
Solar thermal	270			
Geothermal	7.296			
Transport				**801.370**
Electricity		55.392		
Natural gas	836			
Liquid Gas	4.523			
Diesel	478.449			
Gasoline	248.457			
Biofuel	13.713			
Waste	n.a.			-
Industry (refers to manufacturing and construction**)**				**860.061**
Electricity		581.473		
Heat/cold	56			
Natural gas	255.248			

Heating oil		12.546			
Coal		10.293			
Other fossil fuels		445			
Agriculture, Forestry and Land Use (AFOLU)	Sources (positive emissions)	n.a.			
	Sinks (negative emissions)	n.a.			
Total		**1.398.293**	**1.715.707**		

The calculation of the reduction targets for the individual sectors is based on the targets shown in Table -1.1. In some cases, the sector targets are already anchored in urban strategies (e.g. zero waste strategy for the waste sector), in other cases assumptions had to be made.

A-1.4: Activity by source sectors (examples)			
Base year: 2019 / Tones of CO_2			
Sector / Activity	**Scope 1**	**Scope 2**	**Scope 3**
Stationary energy and buildings	Reduction by 469,667	Reduction by 567,150	-
Activities	Climate-friendly heat systems by integrating high shares of RE (district heating, heat pumps) combined with an ambitious rate of renovation (public and private sect. ~ 3 % p.a.)	Switch to renewable power supply and integrating RE on building facades and roofs-tops (private and public)	-
Transport	Reduction by 432,667	Reduction by 32.127	-
Activity	Supporting environmental transport options (pedestrian, bike, public transport) Increasing rate of alternative drives in the private mobility share	100 % RE for public transport (electrified tram and bus fleet) Expand charging infrastructure for private electric mobility	-
Waste	Reduction by 50 %	Reduction by 50 %	-
Activity	Zero Waste Strategy	Zero Waste Strategy	-
Industrial Process and Product Use	Reduction by 181,082	Reduction by 377,956	-
Activity	Energy efficiency in industrial and production processes	Higher shares of RE in industrial and production processes	-
Agriculture, Forestry and Land Use (AFOLU)	n.a.	n.a.	-
Activity	Increased share of organic farming and regional food supply	Increased share of organic farming and regional food supply	-

2.2 Module A-2 Current Policies and Strategies Assessment

Level	Name & title	Description	Type (regulation/ policy/ strategy/ action plan)
EU	European Green Deal	With the European Green Deal, the 27 EU member states want to become climate-neutral by 2050. As a first step, greenhouse gas emissions are to be reduced by at least 55% by 2030 compared to 1990 levels. In order to achieve this goal, the economy and society must be reorganised in many areas.	strategy
EU	New Leipzig Charter	The new Leipzig Charter, as a strategic framework for integrated and sustainable urban development geared towards the common good, anchors the basic principle of joint development of projects and programmes in a joint dialogue between all stakeholders.	strategy
national	Federal Climate Protection Act (KSG)	The Federal Climate Protection Act (KSG) is a German federal law designed to ensure the fulfilment of national climate protection targets and compliance with European targets. The Climate Protection Act enshrines the climate protection and sector targets set out in the Climate Protection Plan 2050 in law for the first time: greenhouse gas emissions are to be reduced by at least 65% below the comparable figure for 1990 by 2030 and by at least 88% by 2040. Net greenhouse gas neutrality is to be achieved by 2045. The law also sets annual reduction targets for the period up to 2040. For various sectors of the economy, maximum quantities of emissions are specified per year until 2030.	regulation
national	Heat Planning and Decarbonisation of Heating Networks Act (WPG)	The law lays the foundations for the introduction of binding and comprehensive heat planning in Germany. The aim is to convert the heat supply to greenhouse gas neutrality in order to help achieve the German government's climate protection targets by 2045. (Source: https://www.bmwsb.bund.de/SharedDocs/gesetzgebungsverfahren/Webs/BMWSB/DE/kommunale-waermeplanung.html). To this end, the WPG and the Building Energy Act are interlinked.	regulation
national	Federal subsidy for efficient heating networks (BEW)	The BEW promotes the construction of new heating grids with a high proportion of renewable energies and the decarbonisation of existing grids. The BEW creates incentives for heating network operators to invest in the construction of new heating networks with a high proportion of renewable energies and to decarbonise existing networks. The funding pursues a systemic approach that focuses on the heating network as a whole and aims to reliably support the time-consuming conversion of existing networks to	regulation

		renewable energies and waste heat and the construction of new networks that are predominantly powered by renewable energies. For example, Leipzig municipal utilities can receive subsidies if they set up a local heating network with a high proportion of renewable energies in a new development area or receive funding if they convert existing district heating networks to renewable energies and waste heat.	
national	Renewable Energies Act (EEG)	The aim of the law is to implement the switch to renewable energies. The proportion of electricity generated from renewable energies is to be increased to at least 80 % of gross electricity consumption in Germany by 2030. The law regulates the electricity feed-in of grid operators and the associated remuneration. The law also regulates the proof of origin and regional certification of electricity in order to create transparency. Local authorities are to receive a financial contribution from the local plant operators; this contribution from the operators is voluntary, but the plant operators can claim reimbursement from the grid operators. In total, the financial contribution can amount to up to 0.2 cents/kilowatt hour. (Source: EEG 2023) In addition, on 29 July 2022, the law stipulated that renewable energies are in the overriding public interest and serve public safety. This is crucial for increasing the pace of expansion. As a result, they will take precedence over other interests when weighing up decisions in future. This means that the speed of planning and approval procedures can be significantly increased.	regulation
national	Building Code	The building planning law regulated in the BauGB has far-reaching significance for the construction of renewable energy installations and their utilisation. It primarily regulates the permissibility of these systems under planning law, which is binding for the federal states and municipalities. For example, the BauGB allows areas to be defined in which certain renewable energy plants such as wind turbines, hydrogen plants or photovoltaic plants can be prioritised. To further accelerate/simplify expansion, solar installations were included in the scope of privileges under building law as of 1 January 2023 under certain conditions (localisation in 200 m strips along motorways and railway lines of the superordinate network as well as agricultural PV installations in a spatially functional connection with agricultural, forestry and horticultural operations).	regulation
national	Building Energy Act (GEG)	The GEG contains requirements for the energy quality of buildings, the creation and use of energy performance certificates and the use of renewable energies in buildings. For new buildings, a permissible annual primary energy	regulation

		requirement of only 55% of a reference building applies. The GEG also aims to promote the replacement of heating systems. Local authorities have a role model function and must also fulfil certain requirements for public buildings, e.g. the use of renewable energies in new buildings and renovations.	
national	Federal subsidy for efficient buildings (BEG)	The federal funding for efficient buildings - BEG for short - combines previous funding programmes for the promotion of energy efficiency and renewable energies in the building sector and supports, among other things, the use of new heating systems, the optimisation of existing heating systems, measures on the building envelope and the use of optimised system technology. The funding comprises three sub-programmes relating to residential buildings, non-residential buildings and individual measures. Local authorities can receive grants for measures in all three sub-programmes via the funding.	policy
national	Combined Heat and Power Act (KWKG)	The Combined Heat and Power Act regulates the feed-in and remuneration of electricity from combined heat and power plants.	regulation
national	Energy Industry Act (EnWG)	The Energy Industry Act contains fundamental regulations for grid-bound energy supply.	regulation
regional	Saxony 2021 Energy and Climate Programme and associated EKP action plan	The **Saxony Energy and Climate Programme (EKP 2021)** forms the basis for the strategic direction of energy and climate policy for Saxony up to 2030, initiating a comprehensive transformation process for Saxony. The phase-out of lignite-fired power generation, the focus on long-term climate neutrality and the integrative consideration of climate change, climate protection and climate adaptation mark a paradigm shift in Saxony's energy and climate policy. The action plan for the Saxony 2021 Energy and Climate Programme describes 192 specific measures by the state government in the fields of climate-conscious state administration, municipal climate protection and climate adaptation, energy supply, industry and commerce, mobility, buildings, environment and land use, health and disaster protection as well as research and knowledge transfer in order to implement the objectives and key areas of action of the EKP 2021.	policy
local	Leipzig Strategy 2035	The Leipzig Strategy 2035 sets out the direction in which Leipzig should develop over the next ten years and formulates guidelines for the city administration, municipal enterprises and holdings. In addition to a spatially organised urban development strategy, it includes several	policy

		specialist concepts that bring together the department-specific specialist plans and condense them into their essential, urban development-relevant statements.	
local	Energy and Climate Protection Programme 2030 (EKSP 2030)	The Energy and Climate Protection Programme 2030 describes the guidelines for the coming years towards climate neutrality. It formulates climate protection policy objectives and specifies the concrete implementation steps for achieving these objectives in the form of a detailed catalogue of measures.	policy/ action plan
local	Mobility strategy 2030 (type: strategy)	The "Framework Plan for the Implementation of the Mobility Strategy 2030" consolidates all mobility projects of the city of Leipzig and the Leipzig Public Transport Company, even beyond the year 2030. It includes over 300 measures, overarching concepts, guidelines, as well as specific initiatives and projects for implementation strategy.	policy/ action plan
local	Municipal heat planning	The municipal heating plan is a key instrument for shaping a climate-neutral heating supply by 2038, preferably by 2035, within sustainable integrated urban development and is also a key component of the City of Leipzig's Energy and Climate Protection Programme 2030. The heating plan in Leipzig is being developed by the city administration, in particular in cooperation with Leipzig municipal utilities and Leipziger Wohnungs- und Baugesellschaft.	policy/ action plan
local	Development of a concept for municipal energy/heat supply (type: system	The municipal energy supply concept analyses the energy transition potentials, identifies required generation infrastructure, and assesses land requirements for renewable energy production. It is being developed in collaboration with Leipzig municipal utilities. The measure also involves creating a waste heat register, as per the council resolution (delivery date: 2024; responsible Office for Sustainable Development and Climate Protection as well as Leipzig municipal utilities /Leipzig Municipal Utilities).	strategy/ action plan
local	Framework concept for renewable energies (RaKofEE)	The framework concept for the planning control of land requirements for the generation of renewable energies (RaKo-FEE for short) is an instrument for guiding the expansion in the urban area and reconciling it with municipal needs. The content of the framework concept is the development of a balanced set of criteria which, by means of consideration, enables statements to be made on the possible suitability or non-suitability of areas for the compatible construction of wind and solar energy plants in outdoor areas. The site concept is being developed in close cooperation with the Leipzig-Western Saxony Regional Planning Association.	strategy

local	Concept "Climate-neutral city administration 2035"	The Climate Neutral Administration 2035 concept addresses internal administrative processes and describes measures to achieve climate neutrality by 2035 for the entire city administration, including its buildings and properties.	strategy/ action plan
local	Digital agenda	The Digital Agenda is a basic document for shaping the digital transformation of the City of Leipzig. It applies to the city administration, the municipal enterprises and the municipal associated companies. The agenda describes guiding principles, responsibilities, procedures for decision-making processes and concrete steps for realising the goals. It forms the basis for interdisciplinary and integrated cooperation both within the municipality and with urban society, business and science.	strategy/ action plan
local	School and day-care centre construction Commitment Solar/PV Office for Building Management	In cooperation with Leipziger Kommunale Energieeffizienz GmbH, a subsidiary of Leipzig municipal utilities, municipal roof surfaces on school, daycare centre and sports buildings are being upgraded for the installation of roof-mounted PV systems. The system installation and commissioning is carried out in close coordination with the Office for Building Management.	strategy/ action plan
local	Energy guideline for municipal buildings	As Leipzig's energy and building standard, the energy guideline sets out the framework conditions and requirements for municipal buildings in order to achieve the goal of a climate-neutral municipal building stock by 2035.	strategy
local	Concept for implementing a zero waste strategy for the city of Leipzig	Leipzig is endeavouring to become a member of the international Zero Waste Cities network. To this end, a zero waste strategy is currently being drawn up, which will form the basis for the application to become a "Zero Waste City". The strategy is being developed in a comprehensive participation process. It includes specific measures to prevent waste and reduce non-recyclable waste, thereby contributing to greater resource conservation and indirect savings in CO_2 consumption.	strategy/ action plan
local	Climate balance	The aim of the sustainable climate-neutral municipal budget project is to analyse the impact of the 2023/2024 double budget on CO2 emissions. The initial aim is to determine the total amount of CO2 or CO2 equivalents emitted in a year by the City of Leipzig through the fulfilment of municipal tasks. The municipal costs are to be linked to the climate impact of municipal action.	strategy

		On this basis, instruments will be developed for managing climate protection and sustainability in the coming financial years in order to achieve the goal of "climate-neutral administration in 2035" and climate neutrality for the city as a whole by 2040 at the latest.	

A-2.1: Description & assessment of policies - Description and assessment of policies relevant to climate protection

International Framework for action

Limiting the rise in the global mean temperature at an international level was quantified in the Paris Climate Agreement in December 2015. The temperature rise is to be limited to well below 2 °C, if possible to 1.5 °C. By ratifying the **Paris Agreement**, nations and international alliances have committed to aligning their energy and economic policies with this goal. In the UN climate conferences that followed Paris, implementation steps for the Paris Climate Agreement were developed. The current status of this process is represented by the final declaration of the UN Climate Change Conference in Dubai in December 2023. This was the first time that all member states were called upon to abandon the use of fossil fuels. At the same time, a tripling of renewable energy capacities and a doubling of energy efficiency were set as medium-term targets for 2030.

At European level, the EU Commission has presented a package of legislative projects to implement the **European Green Deal**, with concrete reduction targets for 2020, 2030 and the strategic vision of a climate-neutral Europe by 2050. The targets are formulated in line with the Paris resolutions and are intended to provide the guidelines for national action plans.

The starting point for formulating interim targets for **climate neutrality by 2050** is the calculation of a remaining budget, which is distributed by sector. This results in ambitious emission reductions for the years 2030 to 2050 in order to limit the increase in the annual mean temperature. With the **"Fit for 55" package of measures**, the EU Commission is pursuing the concrete interim climate protection target of a 55 per cent reduction in CO2 emissions by 2030 (compared to 1990).

On 7 October 2020, the European Parliament adopted the new **EU Climate Change Act**, which raises the reduction target for greenhouse gases from 40% to 60%, thereby exceeding the Commission's proposal of 55%. In addition to the stricter targets, the EU Climate Change Act includes mechanisms for budgeting emissions, a ban on subsidies for the use of fossil fuels and a right to climate protection.

Climate protection at national and federal state level

As the economically strongest and most populous nation within the European Community, Germany has a special responsibility to make the internationally agreed targets a reality. Subsidies and restrictions at federal policy level have the greatest influence on the European Community's contribution to limiting the rise in global temperatures. The international trend from declarations of intent to concrete emissions targets is also continuing in Germany. The **Federal Climate Protection Act** (KSG) passed in December 2019 establishes a binding commitment to this overall target.

With the amendment of the German Climate Protection Act, passed by the German government in May 2021, these targets were tightened. With reference to the year 1990, **the reduction target for greenhouse gas emissions** is **65%** for **2030, 88%** for **2040** and **Germany should be climate-neutral by 2045,** i.e. have achieved a balance between emission sources and sinks.

The Federal Climate Protection Act creates better conditions for federal states and municipalities to formulate their own targets and legitimise specific measures. The current situation also demonstrates how global crises are closely interlinked and have a direct impact on the ground. This involves the need to phase out fossil fuels as quickly as possible and to completely switch from coal, oil and gas to renewable energies at all levels within two decades. And to shape the heating and transport transition in parallel with the energy transition.

In the Free State of Saxony, the **Energy and Climate Programme Saxony 2021** (EKP) regulates the strategic direction of energy and climate policy up to 2030. However, the EKP does not define its

own reduction targets, either overall or per sector, but refers to the national targets from which a derivation for the Free State of Saxony is to take place.

According to the EKP, the state government assumes responsibility for ensuring that Saxony makes its contribution to limiting the increase in the global average temperature to 2 degrees. No statement is made on the 1.5 degree target set out in the Paris Agreement.

Local Framework for action

Selected local strategies and concept papers of the City of Leipzig are analysed in more detail below with regard to their impact on the climate protection efforts of the City of Leipzig. Even h though the processes and strategies presented underpin the City of Leipzig's climate protection and climate neutrality efforts, at least some of them contain concrete reduction targets or development paths for GHG. Only the EKSP is an exception here.

As already explained, the action plan comprises **a summary of selected measures** from the various existing strategies and concepts (e.g. from the EKSP) for which a concrete greenhouse gas reduction can be expected. The local strategies mentioned are measure- and sector-oriented (e.g. mobility, energy and heat supply), but they do not contain any concrete GHG reduction pathways, but rather work with a qualitative catalogue of targets, such as achieving a modal split of 30:70 for eco-mobility in 2030.

Nevertheless, it should be noted that various decarbonisation strategies are being or have been developed for all key levers (electricity, heating, transport), each of which is underpinned by specific catalogues of measures. The development is always carried out within the administration in a cross-departmental process, often with the participation of the municipal companies of the Leipzig Group (municipal utilities, transport companies, waterworks, grid company) and together with civil society in the form of analogue and digital participation processes (see, for example, online participation in the pedestrian traffic development plan https://buergerbeteiligung.sachsen.de/portal/leipzig/beteiligung/themen/1029291).

Climate adaptation

In addition to numerous concepts and action plans for reducing greenhouse gas emissions, a comprehensive strategy for adapting to the changed climatic conditions (climate adaptation strategy) is being developed, which is expected to be available in 2025. With the Green Master Plan, the Heat Action Plan and the Urban Climate Analysis, there are already various strategic and measure-oriented concepts and, for example, the Green Roof Promotion Programme, concrete support for Leipzig's adaptation to the effects of climate change, **which are not part** of the Climate City Agreement.

The possibilities of digitalisation for accelerated planning and monitoring processes are also increasingly being used in the area of climate adaptation. For example, the Urban Green Eye project is developing a cloud-based portal for the Germany-wide collection of climate adaptation-relevant indicators for integration into municipal administration and planning processes, particularly for integrated urban development.

Overarching strategies in the area of climate protection

Since 2009, the City of Leipzig has been participating in the multi-stage European **Energy Award (EEA)** award process for municipal commitment to energy efficiency and climate protection, in which an accredited auditor checks annually whether and to what extent the existing potential and the measures of the Energy and Climate Protection Programme have been implemented. In 2011, the City of Leipzig was honoured for the first time and has been entitled to bear the title **"European Energy and Climate Protection Municipality"** ever since. This is visible to the citizens of Leipzig on the blue city entrance signs, among other things.

Leipzig was already **awarded Gold status in** 2017, which is awarded for special achievements in municipal climate protection. Leipzig is thus one of an exclusive group of major cities that have successfully implemented the EEA targets. In 2021, the City of Leipzig was again honoured with the **European Energy Award Gold**. This external audit forms the basis for the certification and recognition of municipalities and takes place every four years.

In order to **evaluate climate protection activities**, a systematic analysis of energy consumption in the administration and municipal companies is carried out. This takes place

in interdisciplinary energy teams consisting of employees from relevant municipal departments, municipal companies and important institutions such as the Chamber of Industry and Commerce, Chamber of Crafts, University and HTWK Leipzig. The process supports the municipal administration in identifying strengths, weaknesses and potential for improvement in order to subsequently implement urgent energy efficiency and optimisation measures.

By **declaring a state of climate emergency in October 2019**, the City of Leipzig made a clear commitment to municipal responsibility for the scientific facts of anthropogenic and progressive climate change. Climate protection and adaptation to the consequences of climate change have been given a much higher priority in municipal action.

To intensify activities, an **immediate action programme 2021/22** for climate protection with 24 measures was drawn up based on the existing Energy and Climate Protection Programme 2014-2020. As a result, the **Office for Sustainable Development and Climate Protection** was established as a central contact point for climate protection and sustainability processes in the City of Leipzig to accelerate the implementation process.

The **Leipzig Strategy 2035** is the fundamental strategy paper for the future development of the city of Leipzig and formulates the key objective: **Leipzig grows sustainably and serves the common good.** Climate protection is firmly anchored in the specialised concepts of *climate protection, technical infrastructure* and *sustainable mobility*.

Specialised concept for climate protection and technical infrastructure

To ensure that future generations will also be able to live in Leipzig as a city worth living in despite advancing climate change, far-reaching climate protection measures in the areas of heat and electricity supply, regional recycling management and resource conservation must be actively prioritised and promoted in municipal decision-making. Municipal heat planning and energy master planning for the city as a whole contribute to the networking of the energy system with the industrial, transport and building sectors. In order to ensure a stable energy supply and price against the backdrop of volatile global markets, renewable energies are being ambitiously expanded in the urban area and in co-operation with the region. This strengthens innovative approaches to regional economic resilience based on low-carbon technologies.

The specialised concept looks at urban energy development, the grid-based technical infrastructure and broadband supply. It takes a holistic approach to the energy transition, covering the areas of heating, electricity and mobility. The implementation of a holistic energy transition is pursued as a central field of action of the city administration in close cooperation with the municipal companies of the Leipziger Group with the following objectives of public services:

- strategic integration of the topics of energy transition and climate protection into the ongoing processes of urban development and renewal,
- initiating the heating transition in the building sector and establishing sustainable solutions for supply, disposal and financing,
- development of a sustainable, resilient and intelligent supply and disposal structure by intelligently linking centralised and decentralised approaches
- Extensionof the use of digital applications and innovative technologies like sensor infrastructure and AI.

The City of Leipzig's energy and climate protection process for the coming years is based on the **Energy and Climate Protection Programme 2030 (EKSP 2030)**, which was adopted by the City Council in autumn 2022.With the adoption of the Energy and Climate Protection Program 2030 (SECAP) the city of Leipzig continued to formalize its ambitious climate protection and sustainability goals and committed itself not only to a strategic programme, but also concrete implementation measures. Every two years, the implementation program will be updated, adapted to changing conditions, and further concretised to actually implement the goals of the SECAP and achieve climate neutrality no later than 2040.

In order to achieve significant GHG savings by 2030 and, at the same time, to shape a transformation to a sustainable city, the city of Leipzig has identified the following ten success factors, which will be

used to the future energy and climate protection work of the city up to the year 2030, continuously developing further measures and taking up impulses from the public and integrating them into the work. The success factors of the EKSP are compared with the Fields of Action of the Climate City Contract in the following process.

1. Sustainable mobility
2. Sustainable energy and heat supply
3. Sustainable land-use
4. Climate-friendly green-blue infrastructure
5. Climate-friendly urban district development
6. Climate-neutral city administration
7. Regional circular economy
8. Sustainable nutrition
9. Climate education
10. Climate protection initiative

The strategies and concepts aimed at the three main factors for Leipzig's climate neutrality (mobility, heat, electricity) are briefly outlined below.

MOBILITY

The **sustainable mobility concept** pursues intelligent mobility on the basis of integrated transport planning. In Leipzig, as a **"city of short distances"** with a constantly growing volume of traffic, the concept focuses municipal action on strengthening the environmental network, efficient traffic management and a significant improvement in the quality of cycling, walking and local public transport services.

The aim is to increase the share of eco-mobility from 60 % of journeys made by Leipzig residents (modal split 2018) to 70 % by 2030 (of which 27 % on foot, 20 % by bike and 23 % by public transport). A further increase is aimed for in the long term. The following goals are formulated in the Sustainable Mobility Concept for dealing with increased traffic volumes through integrated transport planning and intelligent mobility:

- Continue participation and communication with high quality and reach,
- Promote environmentally friendly transport organisation by increasing the attractiveness and strengthening the environmental network,
- Minimising the negative effects of traffic on people and the environment,
- Strengthening Leipzig as a business location through intelligent and sustainable mobility,
- Improving the quality of public spaces in the main thoroughfares,
- Ensure multifunctional public space design and equal mobility opportunities.

Mobility Strategy 2030

The aim of the sustainable mobility strategy is to remain a city of short journeys and to make mobility safe, accessible, clean and affordable for everyone. The mobility turnaround will be consistently strengthened through the promotion of eco-mobility and the area-appropriate distribution of transport space. On the one hand, settlement development and a mix of functions will contribute to reducing motorised private transport. On the other hand, the environmental alliance (public transport, cycling and walking, shared mobility) will be specifically promoted as the backbone of the mobility turnaround in order to facilitate the flow of commercial traffic that will continue to be necessary. The foreseeable technical changes in the context of e-mobility and autonomous driving, as well as the opportunities of intermodal change between different types of mobility, are to be utilised in a targeted manner for Leipzig.

The expansion of eco-mobility services increases the pressure on existing public spaces and requires a climate-adapted redistribution of traffic space and a reconsideration of stationary traffic. Intensive communication and participation are essential cornerstones here and must be incorporated into the coordination of parallel work processes (ecological transition, climate adaptation, etc.).

In a participatory process, a total of six scenarios were developed, each with a different focus. The Leipzig Citizens' Representation unanimously voted in favour of the sustainability scenario, which prioritises the equal expansion of cycling and pedestrian traffic along with public transportation (ÖPNV). Additionally, the aim of the measure is an implementation of traffic control measures

depending on the environmental pollution (among others NOx) at LSA and digital information media (LED boards). This makes it possible to defuse hotspots with increased environmental pollution and to liquefy traffic (delivery date: 2030)

Measures and focus topics are described in 10 fields of action, the individual measures of which are **not part** of the Climate City Contract.

Table 1 Fields of action and focus topics of the 2030 mobility strategy

Traffic safety	- Financial support for the Traffic Accident Commission to analyse accident steles - Strengthening the traffic organisation
Pedestrian traffic	- Pavement renovation and new construction - Zebra crossing programme - Town square programme - Review of traffic light circuits
Cycling	- New cycling facilities on main roads - Closing gaps in the cycle network - Additional designation of cycle lanes - Expansion of bicycle parking facilities - Bicycle car park at the main station - Winter maintenance on important cycle routes - Fast cycle connections - Updating the cycle traffic development plan
Traffic management	- Expansion of intelligent transport systems for targeted traffic control - Expansion and further development of traffic light control systems for prioritising trams and buses - Promotion of automated and demand-orientated public transport services
Public transport/ SPNV	- Route network expansions - Cycle densification - New flexible on-demand offers
Multimodal offers	new digital solutions that enable the flexible combined use of several modes of transport with the "LeipzigMOVE" app.
Commercial transport	- Implementation of new concepts for "last mile logistics": goods that are to be delivered to the city are bundled outside the city centre, reloaded and then transported to their destination using low-emission means of transport. - Establishment of loading and delivery zones for efficient delivery with conflict-free traffic flow
Commuter flows	- Improvement of the existing P+R offer - Integrated mobility study for the European Metropolitan Region of Central Germany
Stationary traffic	- Long-term concept for dealing with stationary traffic (parking) - Realisation of new resident parking areas
Infrastructure	- Coordinate all construction projects of municipal companies and the city in the infrastructure programme, e.g. Leipzig municipal utilities for the use of wide trams

Cycling development plan 2030+

The Cycling Development Plan 2030+ forms the basis for the city's planning of measures and resources to promote cycling and concretises the Mobility Strategy 2030 for the field of cycling.

The attractiveness of cycling as a largely emission-free mode of transport is to be increased in order to raise the modal split to 23% cycling mode share and the cycling mode share for journeys to work to 35% by 2030.

The Cycling Development Plan 2030+ addresses both politics and administration for the provision of adequate infrastructure, but also takes the economy into account. In addition to establishing and maintaining a cycle infrastructure that meets requirements and is seamless, e.g. by increasing the number of public cycle parking facilities to 50 parking spaces per 1,000 inhabitants or increasing the number of public cargo bike parking spaces to 2 per 1,000 inhabitants by 2030, the plan also aims to increase the share of bicycles in commercial passenger transport and the use of cargo bikes in commercial transport.

The Cycling Development Plan 2030+ was created in a comprehensive participation process involving city council groups, the youth parliament, municipal advisory boards, associations and well over 4,000 citizens in the form of workshops, online participation and public discussion rounds.

HEAT

The city of Leipzig is pursuing ambitious targets to reduce greenhouse gas emissions in the heating sector, which is responsible for more than 57% of the final energy required. This area is to be made climate-neutral before the city as a whole and the electricity supply. Heat generation currently accounts for almost half of total emissions, which is why the heating sector can be seen as a key area on the road to climate neutrality. The main instrument for achieving the targets set is the creation of a municipal heating plan, the current framework of which is based on the Heating Planning Act (WPG), which came into force on 1 January 2024, and the amended Building Energy Act (GEG). Heat planning is divided into three main components/working steps:

- Inventory analysis,
- Potential analysis and
- Scenario development.

The first two work modules have essentially already been completed. This showed that over 95% of the current useful heat requirement of approx. 4,600 GWh is generated from fossil fuels, primarily natural gas, heating oil and coal. The majority of this is generated in individual plants, but around a third is also generated in large-scale plants that supply the heat produced via a district heating network. The so-called transformation plan describes how the current heat generation in the district heating system can be replaced. To this end, technologies such as the utilisation of industrial waste heat, power-to-heat plants and the use of hydrogen were investigated and transferred into a decarbonisation strategy. There is also a wide range of potential for areas outside the district heating network, which was analysed as part of the heat planning. These include the potential of environmental heat and geothermal energy for use in heat pumps, as well as solar thermal energy and biomass.

When developing scenarios, the potential identified must be harmonised with the local conditions and weighing up criteria such as affordability and security of supply. It is already foreseeable that the expansion of the district heating supply in Leipzig is the decisive factor in transforming the existing system in the shortest possible time and at manageable prices. The advantage of district heating also lies in the fact that the high proportion of listed buildings in Leipzig can be supplied with this technology. In areas where district heating cannot be expanded for technical and economic reasons, heat pumps will dominate the system in future. In order for this to be technically successful, it is necessary to focus more on building refurbishment.

Overall, municipal heating planning is the City of Leipzig's action strategy for decarbonising the city's heating supply. Based on the identified potential, further sub-strategies must be developed, in particular for decentralised solutions for areas not supplied with district heating. In addition to evaluating the technical possibilities in these areas, the focus here is also on consulting and funding opportunities for property owners in these areas. The EnAct4CleanCities pilot city project is developing initial solutions for this in the period 2025-2026.

In addition, the expansion of district heating in the city will entail immense infrastructure measures. In particular, planning and coordination processes between the city administration and the Leipziger Group must be optimised and accelerated. Digital solutions, such as a digital energy twin, are also

being developed. In addition, obstacles in the expansion process are being discussed for a model expansion area, solutions are being developed and transferred to all subsequent areas in a streamlined process. Various working groups have been set up to tackle the complex problems involved in implementing heat planning, involving various specialist departments and Leipzig Group companies (in particular municipal utilities, waterworks, network operators). The focus here is on topics such as securing space for the heating transition, digital twins and addressing property owners.

At the same time, a structured decommissioning of the gas grid and a correlating **expansion of the heat and electricity grids** will be conceptualised (by the end of 2025). In addition, the possibility of converting parts of the existing gas network to a hydrogen supply is being examined.

Based on the results of the framework paper on the municipal heating plan, the following requirements arise:

1. City-wide refurbishment of the building envelope (and heating distribution) of properties with above-average energy requirements (worst-performing buildings) so that, on the one hand, the limited potential for utilising renewable energies is not used unnecessarily and, on the other, affordable (socially acceptable) energy costs are ensured
2. Area and building-dependent refurbishment of the building envelope and technology in preparation for the change in heating technology and the change in primary energy source, communication to tenants about the upcoming changes
3. Development of special neighbourhood and building-specific solutions in areas without a foreseeable district heating supply, with insufficient potential for supplying renewable energies and/or other challenges (e.g. high energy deficits).

To ensure the successful implementation of municipal heating planning, the process for creating the municipal heating plan is carried out transparently and external stakeholders are involved at an early stage. A project advisory board was therefore established in parallel to the existing project organisation. The role of the project advisory board is to provide technical advice to the project team during the development of the municipal heating plan and to assess the results in an integrative manner. The advisory board is made up of representatives from business (e.g. IHK, HWK), environmental/consumer protection, the housing industry and science as well as regional and state authorities.

ELECTRICITY

With the help of the framework concept for the planning control of land requirements for the generation of renewable energies, or RaKo-FEE for short, the City of Leipzig has created an instrument to drive forward and steer the expansion of wind and solar energy and to reconcile it with municipal needs.

On the one hand, areas for the generation of solar and wind energy are identified. At the same time, a comparison is made with existing land requirements for future uses such as new housing construction, agricultural land, commercial use in harmony with green and open space utilisation and taking into account binding nature and species protection requirements. The framework concept contains a set of criteria with statements on the possible suitability or non-suitability of areas.

At the same time, the area targets for wind energy are being defined at regional level in the Regional Planning Association of Western Saxony on the basis of the Wind-an-Land Act. The City of Leipzig's land use concept is therefore being developed in close cooperation with the Leipzig-Western Saxony Regional Planning Association. The specifications in the RaKo-FEE form the basis for an accelerated expansion of solar and wind energy plants in the Leipzig urban area. At the same time, digital tools were used to sensitise and inform citizens in workshops on the topic of wind and solar expansion, as there are some considerable reservations among the population.

WASTE

With the aim of realising the vision of zero waste - i.e. the preservation of all resources through responsible production, consumption, reuse and recovery of products, packaging and materials without incineration and without disposal on land, in water or in the air that endangers the environment or human health - in the city of Leipzig, the municipal cleaning entity is developing a city-wide zero waste strategy and concrete measures in a zero waste concept.

The core objectives of the Zero Waste Strategy for the City of Leipzig are:

1. Ensuring the long-term high level of separately collected residual waste
2. Reduce the volume of residual waste by 10 % to 125 kg/E*a by 2030 (2020 = 139 kg/E*a)
3. Reduce municipal waste by 10 % by 2030 to 330 kg/E*a (2020 = 367 kg/E*a)
4. Expansion of support services for local businesses to reduce residual waste (waste for disposal).

In the concept for implementing a zero waste strategy, Leipzig is relying on a high level of citizen participation and the involvement of multiple stakeholders, as success requires awareness throughout society and a change in consumer behaviour. The zero waste strategy will be developed by the end of 2024.

Leipzig City Council as an organisation

Leipzig City Council is also looking at its own climate neutrality as an organisation.

For "**Climate-neutral city administration 2035**", a concept is to be created for the first time that places the city administration as an acting organisation at the centre of municipal climate protection activities and consequently deals with its underlying internal processes.

The concept highlights the areas of heat generation, electricity consumption (100% green electricity procurement and own consumption of self-generated electricity on municipal roof areas) in buildings and infrastructure, energy consumption in the vehicle fleet, business trips, waste disposal and procurement. The concept for the "**Climate-neutral city administration 2035"** will be finalised by 2025.

Climate balance

The climate budget project aims to analyse the impact of future dual budgets on CO2 emissions. The initial aim is to determine the total amount of CO2 or CO2 equivalents emitted in a year as a result of the City of Leipzig's fulfilment of municipal tasks. The municipal costs are to be linked to the climate impact of municipal action. On this basis, instruments will be developed for managing sustainability in the coming years via the budget in order to achieve the goal of "climate neutrality of the administration in 2035".

The Leipzig energy and building standard for municipal properties (energy guideline)

The City of Leipzig's energy guideline defines energy principles and targets as well as specific minimum requirements and standards for the planning, construction and operation of municipal buildings and facilities. It forms the basis for all architectural and engineering commissions and sets an annual target of modernising 2 - 3 % of the building stock. Based on the 2018 reference point, this means refurbishing around 30,000 m² - 45,000 m² of the municipal building stock each year and saving around 54% of GHG emissions from municipal buildings and properties by 2030 (target: 12,500 tonnes of residual CO2 emissions in 2030).

In addition to the requirements for the construction and modernisation of existing municipal buildings, a key prerequisite for achieving decarbonisation by 2035 is the conversion of the heating supply. Properties previously supplied with fossil fuels are to be converted on the basis of the municipal heating plan. Only district heating or fossil-free energy sources are to be used for new builds and complete modernisation. KfW energy efficiency class 40 is the target standard for new buildings. In the case of partial modernisation of buildings, the use of components that meet the KfW Efficiency Building 55 energy standard must be observed. From 2025, only sustainable buildings are to be constructed; a separate standard has been defined for this.

As part of the planning of new buildings and modernisations, the full use of roof surfaces for photovoltaic systems is planned. At the same time, all existing municipal buildings will be analysed for possible retrofitting with photovoltaics. The target is to install photovoltaic systems on municipal roofs in new and existing buildings totalling approx. 1,000 kWp to 1,500 kWp per year.

Evaluation of policies at national and regional level

Laws and regulations set the legal framework for action. They influence the structures and scope within which people and organisations can act (e.g. opposing steering effects of regulatory instruments, financial incentive instruments). The organisational factors are decisive for the implementation efficiency of climate protection measures (e.g. sufficient availability of skilled workers, particularly in the area of construction and renovation).

In order to achieve the goal of climate neutrality, the organisational and financial power of the municipal level is not sufficient. Targeted support and customised framework conditions are therefore required in the multi-level federal system at EU, federal and state level in order to support cities in effective climate protection at municipal level. Many strategic objectives of energy and environmental policy are defined at EU level and transposed into national law. Clear, reliable regulations help national policy and therefore also the municipalities. In addition to the targets, various directives set the course for climate protection measures at local authority level. At present, the EU's climate policy framework is still relatively broad, which is why significantly more ambitious targets for the EU member states would lend more weight to the necessary climate protection.

The German government is pursuing a trio of targets consisting of greenhouse gas reduction, expansion of renewable energies and increased energy efficiency. A climate policy should strengthen the municipalities in their role as central organisers of the energy transition. The federal and state governments should support municipal decision-makers in consolidating the success of municipal climate protection measures. Political will and explicit support are needed at all political levels - without circumventing the principle of subsidiarity. This manifests itself not only in long-term goals, but also in concrete measures that set the framework for energy and climate policy.

Tax incentives for investments in energy efficiency and renewable energies create suitable economic incentives in conjunction with a more extensive design of the funding programmes. This will benefit energy efficiency in particular (e.g. building refurbishment), which has so far fallen well short of the targets. The promotion of renewable energies should be given a reliable long-term framework. At municipal level, simplification for self-consumers of solar power is a driver for the further expansion of solar energy. There is still a lot of potential here. The Renewable Energy Sources Act needs to be amended to abolish the burden on self-consumption of renewable electricity. A nationwide climate protection law is urgently needed that gives climate protection a clear legal position in all relevant fields of action and provides for interactions with existing laws in construction, urban development and spatial planning, the energy industry, mobility and agriculture.

The federal states can use state legislation to set requirements that have a direct impact on municipalities and cities. For example, they could define climate protection as an objective for municipalities within the framework of municipal ordinances (or municipal regulations) or as part of the Saxony climate protection programme. It would be possible and sensible to define climate protection at state level as a mandatory task (at least for precisely defined areas), but in the political discussion it is often pointed out that federal funding programmes (municipal guidelines) may then no longer be able to be used, as mandatory tasks may not be funded.

Possibilities

The local climate targets can only be achieved through a coherent and supportive political framework. The City of Leipzig wants to ensure that all urban measures and programmes are in line with the overarching climate targets and are continuously adapted.

In principle, the Federal Environment Agency's assessment from 2022 can be shared here (sub-report "Klimaschutzpotenziale in Kommunen. Quantitative and qualitative assessment of greenhouse gas reduction potential in municipalities", p. 62/63):

Climate protection is currently not adequately taken into account in specialised legislation that addresses municipalities or is implemented locally by municipalities. Almost all climate action is based on voluntary local action and therefore has a lower priority than mandatory tasks. Climate protection and climate adaptation should also become mandatory municipal tasks. This means that there is a clear legislative line with specific tasks and targets to be fulfilled at municipal level with corresponding funding from the state and federal government.

Further challenges exist in the following areas:

- The measures to activate private building owners have great potential for savings, for example with regard to building refurbishment or switching to district heating.
- In practice, only a fraction of the GHG reduction opportunities are utilised, as these are exclusively voluntary activities. The responsibilities of local authorities in this area need to be expanded in order to improve access to the huge reduction potential in the building sector.
- There is often a lack of framework conditions and knowledge for the legally compliant implementation of various measures.
- In addition, local authorities often lack the human resources to cushion the additional personnel costs of enforcing stricter climate protection criteria in specialised legislation (e.g. according to Section 52 of the German Renewable Energy Sources Act (GEG), the obligation to use renewable energies in an existing public building).
- There is still a lack of democratic commitment in the population towards climate neutrality endeavours, which must be countered with information and advice. Existing advisory structures (e.g. in advising building owners on the heat and energy transition) in the municipalities as competent local actors must be qualified and expanded for this purpose (funding gap).
- In addition, the time frame in which cities have been pursuing climate protection must be taken into account: while western German cities can already look back on a decades-long tradition of municipal climate protection and can build on established civil society networks and commitment, this development has only been taking place in the eastern German states since 1990.

To address these challenges, the eight German mission cities have joined forces to form the stonGERcities network. The cities regularly exchange within the framework of this network. In addition, a steering committee was set up as a formal forum

for dialogue between various interest groups. This consists of representatives from federal ministries (Federal Ministry of Housing, Urban Affairs and Development, Construction; Federal Ministry of Education and Research; Federal Ministry of Digital and Transport; Federal Ministry of Economics and Climate Protection; and the Federal Ministry for Economic Affairs and Energy).

Ministry of Finance), the Association of German Cities, the Federal Institute for Urban Development Research, two representatives of the mission cities and representatives of the state ministries. In this steering forum, the German mission cities are given the opportunity to address needs and obstacles and work on solutions.

Explanations to table A2.1
The urban strategies and concepts described above result in sectoral emission reduction paths depending on European, national and regional framework conditions. For example, achieving the GHG reduction target of 70 % in the heating sector can only be realised with accelerated planning and approval processes for district-bound pipeline infrastructures for local and district heating networks. The financing and implementation deadlines for large-scale projects to integrate industrial waste heat and the economic availability of "green gases (e.g. hydrogen)" as climate-neutral energy sources for the city-wide heat supply are also decisive for achieving the ambitious reduction targets by 2030. On the consumption side, a massive increase in renovation rates in the private, municipal and commercial building sector to approx. 3 % per year is required in order to significantly reduce the overall urban heat demand through increased building energy efficiency. These secondary conditions result in residual emissions of 30 % (440,007 tonnes of CO2 in 2030) for 2030 in an optimistic scenario with regard to structural and technical implementation processes and the sufficient availability of climate-neutral energy sources (e.g. green hydrogen). The level of emissions in the transport sector is also highly dependent on European and national requirements regarding the substitution of conventional drives and the targeted promotion of alternative drive models, particularly in the medium and lower price segments, as these make up a large proportion of the city's vehicle fleet. With regard to the modal shift to environmentally and climate-friendly modes of transport, the city of Leipzig has set itself ambitious targets with its sustainable mobility strategy and a modal split of 70/30, so that by 2030 over 2/3 of all urban journeys will be climate-neutral. The remaining individual journeys can be made climate-friendly by increasing the electrification rate of private motorised transport. To this end, the Leipzig Group is investing heavily in public and semi-public charging infrastructure and attractive conditions for climate-conscious mobility services in cooperation with the transport planning departments. This will enable a realistic reduction in emissions of around 60 % to be achieved by 2030. In contrast, the city of Leipzig has little influence on the fleet renewal of the remaining 30 % of private motorised traffic, but is leading the way by electrifying its own vehicle fleet. In the area of waste, the zero waste concept is a strategy developed to ensure the preservation of all resources through cycle-orientated production, consumption, reuse and recovery of products, packaging and materials. The core objectives are to achieve a high proportion of separately collected residual waste in the long term and to reduce the volume of residual waste to 125 kg per inhabitant per year. In addition, municipal waste is to be reduced by 10 % to 330 kg/a by 2030 and advisory services for businesses are to be intensified. Valid statements on GHG reduction in the waste sector cannot be made on the basis of current data. In recent years, a wide range of climate protection activities can be recognised in Leipzig's finely structured economy with its predominantly small and medium-sized enterprises, the dynamism of which can be further strengthened through intensive networking (Leipzig Energy Efficiency and Climate Protection Network, Energy & Environment Network, Solar Booster, green industrial estates, etc.). With the increasing use of renewable energies in industrial and production processes and significant efficiency gains, the diversity of private sector players in the Leipzig Climate City Contract results in a savings potential of 65 % in the commercial and industrial sector (IPPU) by 2030, which can also be exceeded with scaling effects.

Table A2.1											
	(1) Baseline emissions	**(2) Emissions reduction target 2030**		**(3) Emission reduction through other Action Plans**		**(4) Emissions Gap**		**(5) Emissions reduction through the CCC Action Plan to address the Gap**		**(6) Residual emissions**	
	Baseline emissions (ideally not older than 2018) - referring to the inventory used for target setting	The emissions reduction target for 2030 ideally achieves a minimum 80% reduction from the baseline, as reported in Section 2 of the Commitments document of the CCC. The overall target should be absolute or net-zero (i.e. including the compensation of any residual emissions).		These are the emissions reductions that would be achieved through existing policies, and plans, outlined in Section A-2.1. Those actions are by definition not part of the action portfolio in section B. If they are fully or partially incorporated in module B-2, their associated reduction potential should be referenced in column (5) and not be included here. WARNING if the baseline is a BAU scenario: If the BAU modelling includes any of these existing measures, please also do not include the associated emissions reduction in this column as otherwise it would be double counted.		(4) = (2) - (3)		This column is used to present the already quantified emission reduction associated with the action portfolios outlined in module B-2. Ideally, this equals the gap. If there is a difference between the reduction potential of the actions specified in module B-2 (for instance because their reduction potential has not been fully estimated or because additional measures will be identified in future iterations), the CCC AP should be explicit about this difference and explain how the difference will be closed. In principle, as long as the difference has not been addressed, it would be considered as part of the residual emissions.		(6) = (1) - (2)	
	(absolute tones)	(absolute t)	(%)	(absolute tones)	(%)	(absolute t)	(%)	(absolute tones)	(%)	(absolute t)	%
Stationary energy and buildings KWP with 3% refurbishment rate, climate-neutral district heating and ambitious targets	1.440.022	1.036.816	72	144.002	10	856.013	60	458.277	32	403.206	28

for new-build neighbourhoods											
Transport Mobility strategy with (70/30 modal split by 2030)	801.371	480.822	60	80.137	10	400.686	50	224.524	28	320.549	40
Waste Zero Waste Strategy	No data	No data		No data		No data		No data		No data	
Industrial Process and Product Use (IPPU) Solar booster, green business parks for sustainable business with federal & EU targets	860.061	559.040	65	86.006	10	473.034	55	215.015	25	301.021	35
Agricultural, Forestry and Land Use (AFOLU)	No data	No data		No data		No data		No data		No data	
Total	**3.111.033**	**2.039.877**	**65,6**	**310.145**	**10**	**1.729.733**	**55,6**	**897.816**	**29**	**1.061.**577	**34**

2.3 Module A-3 Systemic Barriers and Opportunities to 2030 Climate Neutrality

A-3.1: Description of urban systems, systemic barriers, and opportunities

Due to the complexity of the various systems and stakeholders involved in achieving climate neutrality, there are many potentials as well as challenges and barriers to achieving the goal of climate neutrality by 2030. European cities face similar challenges in this regard. These are explained below and placed in concrete relation to Leipzig's circumstances.

Energy Systems

In order to achieve climate neutrality, the further development and expansion of the technical infrastructure for greenhouse gas reduction is essential. In the case of individual technologies and infrastructures, such as the use of green hydrogen, it is still unclear whether and in what way the solutions will be available and usable. Furthermore, it is unclear which opportunities they offer and what obstacles there are to their use. The existence and low-threshold accessibility of an infrastructure are the basic prerequisites for being able to identify and utilise solutions on the path to climate neutrality (e.g. existence of an infrastructure for the production and distribution of gases from renewable energies). The high investment costs of low- and zero-emission solutions are an obstacle to their widespread use.

Possibilities:

- A central component of Leipzig's climate neutrality target is the expansion of renewable energies with 400 MW of installed capacity by 2030. The use of local resources for solar, wind and other renewable energy projects plays a key role in this. As a municipal subsidiary, Leipzig has a direct influence on the city's energy supplier in the form of Leipziger Stadtwerke.
- The strategic foundations for climate-neutral energy supply and disposal in Leipzig have been finalised or are in the process of being updated in the EKSP 2030
- Leipzig municipal utilities, the main player and wholly owned subsidiary of the City of Leipzig, has developed a strategy for climate-neutral heat supply and has a highly efficient and hydrogen-ready energy generation infrastructure in the form of the Gas Power Plant South. This is accompanied by the expansion of solar thermal energy and decentralised CHP plants (https://zukunft-fernwaerme.de/).
- Increased joint use and collection of data for digital twins by the city administration, utility companies and other municipal companies for accelerated and more efficient planning and approval processes (e.g. to prepare the implementation of municipal heat planning)

Barriers:

- The planning and approval procedures for renewable energy projects, such as the construction of wind turbines, solar power plants or power lines, are very complex and lengthy in Germany. These procedures include extensive environmental impact assessments, public participation and various coordination processes between the authorities involved. This can delay the realisation of projects by years.

Nature conservation and species protection laws such as the Federal Nature Conservation Act stipulate strict requirements that can restrict the construction of wind turbines in certain areas in order to protect flora and fauna. This applies in particular to the protection of bird and bat species that could be endangered by wind turbines.

Land availability and spatial planning: There are often conflicts regarding the use of land for renewable energy projects, particularly in densely populated areas. The regional development plans of the federal states determine which areas are available for renewable energies. The lack of suitable land or competition with other uses (e.g. agriculture, residential development) can hinder the implementation of the energy transition. Leipzig's urban area offers only limited suitable areas for the construction of large-scale renewable energy plants (ground-mounted PV and solar thermal systems

as well as wind turbines due to distance regulations), which is why close cooperation with the surrounding area of Leipzig is essential

The expansion of the electricity grids, especially the transmission grids, is crucial for the transport of renewable electricity from the generation centres (e.g. wind farms in the north) to the consumption centres (e.g. in southern Germany). However, grid expansion is often delayed by lengthy approval procedures, regional resistance and legal objections. When planning large-scale renewable energy projects, the existing grid capacity and integration must always be taken into account, which may result in increased project costs

Legal disputes and citizen participation: Citizens' initiatives and environmental organisations have the opportunity to file lawsuits against planned projects, which can lead to further delays. While citizen participation is an important aspect of democracy, it can slow down the processes considerably if objections and legal disputes block the procedures. A lack of local acceptance can also hinder ambitious RE expansion. As part of a former lignite mining region, the infrastructure is heavily geared towards this energy source. A climate-neutral conversion requires massive investment.

Regulatory uncertainties: Uncertainty about future legislative changes and support programmes can deter investors from investing in renewable energies. Frequent changes to subsidy mechanisms such as the Renewable Energy Sources Act (EEG) can impair planning certainty and lead to a decline in willingness to invest.

Federal and state competences: The responsibilities between the federal and state governments are often unclear, which can lead to coordination problems. Differing regulations and political priorities at federal and state level can make it difficult to implement the energy transition.

Together, these barriers contribute to the fact that the implementation of the energy transition is progressing more slowly than planned. Accelerating these processes requires legal adjustments, better coordination between levels and possibly also greater centralisation of certain decision-making processes.

Barriers to innovation and technology development: The rapid development of new technologies and their implementation on the market can be hindered by patent rights, regulatory uncertainties and competition with existing, established technologies. Companies may be reluctant to invest in innovative but unproven technologies. The technical availability of hydrogen as a fuel has not yet been determined.

Political and lobbying influences: The influence of lobby groups representing fossil fuels or energy-intensive industries can delay or water down political decisions in favour of the energy transition. These groups exert pressure on political decision-makers to protect their interests, which can lead to compromises or weakening of climate protection measures.

Energy market regulation and design: The current rules and structures of the energy market, such as the way prices are set or feed-in tariffs, can make it difficult to integrate renewable energies. A reform of the market rules is necessary to enable flexibility and promote renewable energies more strongly.

Mobility and Transport

The mobility sector is responsible for a third of greenhouse gas emissions in Leipzig. However, a large-scale transformation is challenging and must be tackled at all levels of scale. Leipzig is already implementing various strategies and measures to promote eco-mobility (see chapter A2 current policies). The following opportunities and barriers exist on the path to climate-neutral mobility:

Possibilities:

- Leipzig has an extensive public transport network as well as numerous pilot projects for improved public transport services in peripheral areas and time zones (e.g. FLEXA). The Deutschlandticket also has a positive effect on the use of public transport
- Numerous innovative mobility concepts are available (Leipzig Move for multimodal use of public transport, bike and car sharing, scooters & taxis including ticketing), city-wide network of mobility stations, promotion of Park & Ride / Bike & Ride

- Increased joint use and collection of data for digital twins by the city administration, utility companies and other municipal companies for accelerated and more efficient planning and approval processes (e.g. facilitating the planning of charging infrastructure expansion)
- The climate-friendly mobility options of eco-mobility are flanked by a good walking and cycling infrastructure
- A large part of the built environment dates back to times when motorised traffic was not yet widespread.

Barriers:

- The expansion and modernisation of transport infrastructure is associated with high investments and has correspondingly long planning, approval and implementation cycles. This also applies to electric vehicles and charging infrastructure
- Limited long-term revenue opportunities for public transport, as no nationwide price increases are possible with the Deutschland-Ticket. Low awareness and acceptance of sustainable mobility options.
- Strong cultural focus on motorised private transport
- Path dependencies due to the long half-life of the built environment

Waste and circular economy

Waste management plays a crucial role in achieving climate neutrality by reducing greenhouse gas emissions through waste minimisation, recycling and resource efficiency. The transition to a circular economy requires significant changes at all levels, from individual behaviour to city-wide infrastructure. Leipzig has already implemented various strategies and measures to promote waste reduction and improve recycling (see chapter A2 current policies). The following opportunities and obstacles are crucial on the road to a climate-neutral waste economy:

Possibilities:

- Existing recycling infrastructure: Leipzig has a well-established waste collection and recycling system that offers potential for further optimisation in order to increase recycling rates. The city has access to modern sorting facilities that are capable of efficiently processing different types of waste, which facilitates the recovery of valuable materials and helps to conserve resources.
- Innovative circular economy projects: Leipzig has a large number of ongoing projects aimed at reducing waste and increasing resource efficiency. Examples include
  - The social departmentstore in Leipzig-Sellerhausen, where furniture, electrical appliances and other consumer goods can be purchased at favourable prices to low income households, which extends the life cycle of these products.
  - The promotion of “swap shops” and “swap shelves” that enable the exchange of used items and thus contribute to waste avoidance.
  - Repair workshops that enable citizens to repair defective everyday objects and make them functional again, such as the Makerspace in Leipzig-Gohils
  - The "Wiederschön" concept shop in Leipzig's Höfe am Brühl, which is run by the municipal waste company and operates entirely in the spirit of recycling.

Digital tools for waste management: Leipzig is researching the use of digital technologies, such as intelligent waste containers and the collection of data in real time, to improve the efficiency of waste management. These technologies can help to optimise waste collection routes, reduce operating costs and increase recycling rates. Pilot projects provide important insights and pave the way for wider implementation.

Awareness campaigns: The city has launched various awareness campaigns aimed at educating citizens about waste reduction and recycling. These campaigns promote a circular economy mindset and encourage residents to reduce, reuse and recycle waste. Among other things, the Alliance for Waste Prevention serves as an active network of numerous municipal associations, structures and initiatives with the aim of avoiding waste, using items for longer and promoting the use of reusable materials.

Exchange with other municipalities: Leipzig is committed to exchanging ideas with other cities and municipalities, particularly through networks such as the "Zero Waste Cities", in order to share best practices and work together on solutions for a low-waste future.

Utilising green waste to generate energy or storing carbon in biochar by means of pyrolysis is not yet common practice in Leipzig.

Barriers

The transition to a circular economy requires considerable investment in infrastructure, e.g. in modern recycling facilities and advanced waste processing technologies. These investments are often associated with long planning, authorisation and implementation cycles.

Cultural and behavioural barriers: There is a lack of awareness and acceptance of circular economy principles in some parts of the population. Many residents are still accustomed to linear consumption patterns that prioritise disposal over reuse and recycling.

Regulatory challenges: Existing regulations do not fully support the transition to a circular economy. For example, there may be legal barriers to the use of certain recycled materials, or regulations may not incentivise companies to adopt circular practices.

Planned obsolescence is a challenge, a repair obligation or extension of the warranty requires federal German regulations.

Conversion of **waste and wastewater treatment for energy generation**: The construction of a fourth treatment stage in wastewater treatment plants in Leipzig is capital and space intensive. Similarly, the production of biogas from sewage sludge, the recovery of waste heat from wastewater, the utilisation of all areas in waste plants for renewable energies and the optimal energy-efficient design of power plants all require skilled workers, time resources and technology.

Leipzig has **old landfill sites** from the GDR era. It requires capacities to retrofit all of these with measures for landfill gas capture (CO2 and CH4).

Green infrastructure and nature-based solutions: Food

Worldwide, food systems are responsible for approx. 25-35% of global THF emissions, which means they alone are expected to contribute to 0.6-09°C of global warming by 2100. The interplay of individual factors within food systems is complex and is based on value networks and supply chains that are interdependent at local, regional and international levels. The transformation of regional food systems cannot therefore take place without holistic approaches. For this reason, the city of Leipzig is developing a food strategy as part of a broad-based public participation process, which is intended to provide action goals and recommendations for measures to shape the local and regional food system in a sustainable and climate-neutral way, from the field to the plate.

Possibilities:

- Communal catering (e.g. in schools and municipal kindergartens) represents a major lever for municipal action to increase the proportion of bioregional food and at the same time make the corresponding products accessible to all social milieus
- Stronger, predictable demand for organic products incentivises producers to switch to organic farming.
- At the same time, the City of Leipzig has adopted a new leasing concept in which areas of land belonging to the City of Leipzig are structurally leased to organic farms with a regional marketing concept. Organic farming practices promote the build-up of organic carbon in the soil, sequestering relevant amounts of CO_2 in the land.
- In combination with agroforestry systems, the potential for carbon sequestration in woody plants and the resilience of agricultural land to climate change impacts also increases.
- The regional processing structures for primary agricultural products - especially in the organic sector - have great potential for expansion. Regional or local processing and service centres that supply out-of-home catering and food retailers can avoid transporting products for processing (e.g. grain to the mill) over many hundreds of kilometres and thus directly prevent greenhouse gas emissions. In recent years, various projects have already emerged in this area, which need to be bundled across the board so that service providers, producers and customers can network better with smart logistics structures.

- Through coordinated communication and education work and the establishment of producer-consumer networks, people in Leipzig can be made more aware of the value of bioregional products. At the same time, campaigns for the sustainable utilisation of leftovers and waste avoidance help to prevent food waste among end consumers and also in individual and communal catering.

Barriers:

- The solitary, direct tendering of organic and regional food in communal catering is not expedient, as "regional" is not a valid European tendering criterion and is also not firmly defined.
- Simply replacing components or product groups with organic food would increase purchasing costs and therefore the end customer price for diners above a socially acceptable level. In addition, misallocations can occur because organically produced products are not (yet) available in the expected quantities regionally or even nationally, meaning that products with very long transport distances would be purchased.
- The establishment and expansion of regional processing capacities is associated with high costs and must be linked to a corresponding increase in demand in order to maintain profitability for the companies. The same applies to organic certification on farms. In addition to the financial risk, there is sometimes a lack of willingness, expertise and trained staff.
- Broad sections of the population - regardless of their socio-economic background - are less willing to spend more money on bioregional products following the stacking crises of recent years. A lack of information and misconceptions further reduce this willingness.

Green Infrastructure: Green Areas

Green-blue infrastructures in urban areas play a crucial role in combating climate change and improving the quality of life. They involve the integration of water and vegetation areas into urban landscapes, which provides a variety of benefits, including regulating the urban climate, promoting biodiversity and improving air quality. These infrastructures can also help reduce flood risks and provide recreational and leisure opportunities for residents.

Possibilities

- The targeted creation of green spaces and water areas in urban areas can have a positive impact on the urban microclimate and reduce urban heat stress.
- Green infrastructures contribute to the storage of carbon dioxide and thus make an important contribution to climate protection.
- The city of Leipzig has already launched several initiatives to improve the green-blue infrastructure. These include the renaturalisation of the alluvial forest, the creation of floodplains and the promotion of community gardens in residential areas. These measures not only support climate adaptation, but also promote social interaction and residents' identification with their city.
- Thanks to the numerous allotment garden sites in the city, Leipzig has a high level of biodiversity and space in some parts of the city centre

Barriers

- Financing such projects is often a challenge, as the costs for planning, realisation and maintenance can be considerable. Another obstacle is the availability of land in densely populated urban areas
- In addition, there needs to be a change in awareness among citizens and decision-makers in order to recognise and promote the importance of green-blue infrastructures for urban development.
- Due to the increasing heat stress, a loss of trees is to be feared

Built environment

Leipzig will see further population growth in the coming years and expects over 25,000 additional residents by 2030. In order to respond to this development, the city is aiming to develop several new

neighbourhoods and upgrade existing ones. Large inner-city neighbourhoods are being planned, particularly on the former railway sites of the Eutritzscher Freiladebahnhof and the Bayerischer Bahnhof. A total of over 8,745 new flats have been approved (as of 2023). Significant increases in residential space are also planned in the coming years, even if no precise forecasts are possible given the current weak construction sector.

In the interests of sustainable growth, priority should be given to the development of areas in existing settlements that already have infrastructure by closing gaps between buildings, adding storeys, conversion, redensification, consolidation and reutilisation of converted areas or garage yards. The limits of inner-city development are particularly evident in inner-city neighbourhoods: Unsealed, publicly accessible green spaces on undeveloped plots make a significant contribution to the quality of the residential environment and play an important role in the microclimate (avoiding heat islands), biodiversity, rainwater infiltration and reducing air and noise pollution in the neighbourhoods.

With a portfolio of almost 36,700 flats (10.6% of flats throughout Leipzig), the municipal subsidiary Leipziger Wohnungsbaugesellschaft (municipal housing association (LWB)) fulfils a secure and socially responsible housing supply on behalf of the city. In doing so, LWB sets energy standards and integrates renewable energies in new buildings and refurbishments and contributes to the city's refurbishment target. In order to contribute to the city's climate neutrality target, LWB is guided by its sustainability scenario, which assumes an energy-efficient refurbishment rate of 2.1 per cent. The aim is to phase out all fossil-fuelled systems and switch to district heating/heat pumps. For buildings with gas systems with low energy efficiency standard (cat. F-H), the target standard is efficiency house standard EH 85 (61-73 kWh/m 2), for listed buildings EH 100/115 (74-86: 87-99 kWh/m 2), for buildings cat. D (100-130 kWh/m2), E (130-160 kWh/m2) the target is EH 70 (48-60 kWh/m2), for buildings from EH 115 the target is EH 70 + conversion of fossil fuels to heat pumps. This means an required investment (including indexed cost extrapolation) of EUR 635 million. At the same time, the focus is on developing a green and intergenerationally fair public space in housing areas. This includes planting, mobility stations (car sharing, e-bikes), parcel boxes and rainwater retention and infiltration on the properties and districts. 14 % of the housing stock is owned by local housing associations (e.g. Genossenschaften) that also have high interest in the climate neutral transition of their building stock.

Leipzig has formulated the goal of net-zero sealing by 2030 as the basis for an urban development strategy that takes into account both the need to create affordable housing and the sustainable protection and unsealing of open spaces.

Possibilities:

- Increasing energy efficiency, both in existing and new residential buildings
- Revitalisation of open and brownfield sites as part of dual inner development to limit land take
- Innovative solutions for climate change adaptation (sponge city, heat planning)
- Adaptation of existing buildings (energy-efficient refurbishment, façade greening)
- Pilot projects as the Horizon 2020 project SPARCS on the development of Positive Energy Districts (PEDs) gave valuable insights in the prerequisites and feasibility of the PED concept in social housing and monument protected areas. Learnings from the project and esp. replicating developed solutions help to speed up the transition of the building stock. LWB and its energy management subisidary WSL have developed a dynamic heat control within SPARCS that helps to reduce energy amount for heating by 10% and that is now succesively being rolled out to the LWB building stock. (www.sparcs.info, www.sparcs-leipzig.info)
    - Dedicated information and consultation campaigns adressing private house owners (e.g. single home owners, owner occupiers) can support the transformation of this building stock and increase refurbishment rates. Digital tools can be used to reach out to this target groups as it is done in the Mission Cities pilot project EnAct4CleanCities.

Barriers:

- Ensure affordability of housing, although financing measures is difficult for owners with low incomes
- High costs for new construction and refurbishment measures (integration of new technologies into "old" building stock is expensive)

- Skilled labour shortage in the skilled trades for the implementation of new construction and renovation measures
- Heterogeneous ownership structures in the existing neighbourhoods (very small-scale, many of whom do not live in Leipzig and are therefore difficult to reach)
- 20 % of Leipzig's building stock is under monument protection law. The refurbishment of those buildings is often more difficult and expensive compared to other building stocks.
- Continued growth in housing demand leads to further land sealing and resource consumption for new housing construction

Communication and Cooperation

Knowledge of climate-friendly solutions and behaviours as well as the experience of self-efficacy are prerequisites for individual and organisational learning (e.g. correct heating and ventilation). The factors described here influence the development of climate-friendly behavioural routines and are therefore a key driver of social transformation.

Climate-friendly actions are determined on the one hand by values (long-term) and on the other by attitudes (short-term). These are the prerequisite for communication and cooperation; and are in turn influenced by these. Values and attitudes influence personal actions on an individual level and the actions of groups and organisations on a societal level (e.g. with regard to consumption patterns).

Public sentiment could change if the population had to accept noticeable restrictions or pay higher levies and taxes to finance climate protection measures. Compensatory measures must therefore be found for socially disadvantaged population groups. Climate protection should be organised in a socially just and participatory manner.

Possibilities:

- Educational initiatives are of great importance to strengthen the community's commitment to climate protection. By promoting climate education, citizens can be better informed about the causes and consequences of climate change and motivated to act sustainably.
- Educational programmes in schools and public institutions raise awareness of the necessity and possibilities of climate protection.
- Programmes in daycare centres reach both children and their parents.
- Leipzig has an active citizenry and a wide-ranging landscape of organisations that proactively provide support (see chapter on stakeholders).
- The City of Leipzig is also increasingly communicating digitally with its citizens on climate protection issues, e.g. via the Leipzig app.

Barriers:

- Climate protection is part of populist debates in local, state and federal elections, which makes it difficult to conduct an objective debate.
- It requires a large portfolio of communication measures that are strongly customised to the individual target groups. The development and implementation of these measures is sometimes associated with great effort and costs

Work and Enterprises

Long-term economic activity is a basic prerequisite for achieving climate neutrality. The economic framework conditions influence investment decisions in technologies and infrastructures (e.g. profitability gaps when investing in refurbishment measures or renewable energies). Tariffs and subsidies (e.g. CO2 pricing) have a steering effect on climate-relevant decisions. The preservation of dignity and free personal development are basic prerequisites for social acceptance of the necessary transformation (e.g. dealing with income sufficiency). The expansion of climate-neutral technologies and infrastructures requires massive investment from the private and public sectors. If it is not possible to secure the investments required to achieve the climate targets through grants and loans, their implementation will be jeopardised. Many of the planned climate protection measures are therefore heavily dependent on financial support through appropriate project funding at regional, national and international level. Due to the Russian war of aggression against Ukraine and international market instability, certain sectors are currently experiencing extreme price increases and fuelling inflation. Such external geopolitical effects may jeopardise the economic implementation of

planned climate protection measures. On the other hand, high reference prices for (fossil) energy increase the economic viability of renewable energy technologies. This can be supported, for example, by appropriate CO2 prices that reflect the externalised costs of fossil fuels.

Possibilities:

- The mobilisation of private investment is essential for the long-term development of sustainable infrastructure, particularly in the transport and energy sectors. Public-private partnerships are one way of generating additional funding and realising innovative projects. These co-operations contribute to the financing and implementation of climate protection measures and at the same time promote economic growth and future-oriented innovations.
- Windows of opportunity created by high reference prices due to external effects should be utilised
- High carbon prices and a climate fee for all would ensure that higher costs for poorer people are offset, as they usually have a smaller carbon footprint and would get back more than they would pay in addition
- The shortage of skilled labour in the building market, different crafts but in the planning/consulting and public sector could be counteracted by forward-looking training support
- Through the participation process of the Climate City Contract and the Leipzig Energy Efficiency Network, a cross-sector network is being established that is to be expanded for further cooperation, knowledge exchange, etc. It is to be expanded.
- Exploring the benefits gn the use of climate investments and creating capacities in this regard will become crucial for companies in the future.
- The Office for Economic Development of the City of Leipzig already offers a wide range of support options for Leipzig companies, e.g. support for the procurement of cargo bikes, the solar scout and increased subsidies for the implementation of climate efficiency measures.
- In the coming years, Leipzig's economic development strategy will increasingly focus on the clusters greentech, health and energy.
- Separate climate neutrality concepts are being developed for Leipzig's existing industrial estates. The Hupffeld site in Leipzig-Leutzsch is leading the way here.

Barriers

- Shortage of skilled labour and, in some cases, a lack of knowledge, including in the skilled trades, for the installation and maintenance of RE technologies.
- Non-economic viability of RE technologies and long refinancing periods make investment decisions by companies more difficult.
- Complex regulatory and subsidy landscape affected by frequent changes, e.g. for the installation of renewable energy systems, high bureaucratic costs

Internal Organisation

As part of the concept for climate-neutral administration in 2035, a wide range of employee awareness-raising measures are being implemented (Eco:Check as part of the Smart City Challenge, energy-saving challenges, participation in city cycling and job cycling campaigns). Innovation projects on specific energy and climate-related issues are being introduced to the municipal workforce in order to effectively reduce the GHG footprint of employees (accelerated expansion of the e-charging infrastructure for cars and bicycles and cargo bikes, digital meter reading and monitoring processes as part of municipal energy management).

In a preliminary study on Leipzig's climate budget, the following challenges in integrating the topics of climate protection and climate adaptation were identified by the specialised departments:

Possibilities:

- The concept for climate-neutral administration is a comprehensive programme of measures for Leipzig's city administration.
- A climate protection manager in the central Office for Digitalisation and Organisation supports the various measures and networks between specialist departments and other stakeholders.

- The aim of the sustainable and climate-neutral municipal budget project is to analyse the impact of the current 2023/24 double budget on CO2 emissions. The initial aim is to determine the total amount of CO2 equivalents emitted in a year as a result of the City of Leipzig's municipal task fulfilment. On the basis of this initial balance sheet, instruments are to be developed as to how the issues of climate protection and sustainability can be managed via the budget in the following years in order to achieve the strategic goals.

Barriers:

- Lack of standardisation or conflicting objectives between internal city strategies in climate protection and climate adaptation (e.g. monument protection, land use planning for renewable energies)
- Bureaucratic hurdles and limited personnel and financial capacities for process coordination/control and implementation of measures
- Insufficient legal freedom of action or abstract regulations
- Outdated data basis for transparent decision-making and monitoring

A-3.2: Systems & stakeholder mapping			
System	**Stakeholders (e.g.)**	**Influence on the city's climate neutrality ambition**	**Interest in the city's climate neutrality ambition**
Energy Systems: Heat	Leipzig municipal utilities Decentralised players (homeowners)	High, as they provide district heating and heating uses a big share of total energy consumption	High
Energy Systems: Electricity	Covenant Market players Leipzig municipal utilities Network operator Regional planning association	High, electricity is a big share of energy consumption	high
Mobility & transport: Public transport	(Leipzig public transport company) MDV (Central German Transport Association)	High, an attractive public transport is crucial to change the modal split	high
Mobility & transport: **Pedestrian and cycling traffic**	Environmental organisations Citizens Mobility providers (e.g for bike-sharing)	High, attractive conditions for cycling and walking can help to change the modal split	Varying, political debates on individual mobility
Mobility & transport: motorised **Individual mobility**	Citizens Companies Mobility providers (e.g. for car-sharing)	High, lowering the share of individualised mobility leads to reduced emissions	varying

Mobility & transport: logistics	companies	High, lowering the share of individualised mobility leads to reduced emissions	varying
Waste & circular economy	Municipal waste management company	low	high
Green infrastructure & nature-based solutions: green-blue infrastructure	Private individuals Relevant districts Allotment garden associations Environmental organisations	Medium, functionality of carbon sink might be endangered by draughts, land area is also limited	Varying, high, in case of environmental NGOs very high
Green infrastructure & nature-based solutions: Nutrition	Farmers Citizens companies Public facilities	Medium	Depending on individual preferences, regulation and economic factors
Built environment: urban neighbourhoods	Federal level Market players Local housing co-operatives Leipziger Wohnungs- und Baugesellschaft (LWB)	High, as energy saving can be implemented on a neighbourhood scale	Depending on regulation and economic factors, complex actor networks
Built environment: municpal buildings	Municipality (City of Leipzig)	Medium, the share of energy used on these buildings is under 2% of the total energy consumption	high
Built environment: new buildings	Owner-occupiers Private sector Investors LWB Local housing co-operatives Craft enterprises	Medium, most buildings are already errected.	Depending on individual preferences, regulation and economic factors
Built environment: existing buildings	Owner-occupiers Private sector and private landlords LWB local housing co-operatives Craft enterprises	High, heating uses a big share of total energy consumption.	Depending on individual preferences, regulation and economic factors

Civil society	Citizens Clubs Initiatives	Medium, as the influence of individual decissions is limited and also structural change is needed	Generally high, also depending on individual preferences, regulation and economic factors
Education and research	Schools Kindergartens Universities Research institutions Civil society actors	medium	Generally high, also depending on individual preferences and regulation
Labour and economy	companies Associations (e.g. Chamber of Industry and Commerce, Chamber of Crafts)	high	Depending on regulation and economic factors
Internal organisation	Administration (Office for Digitisation and Organisation)	Low (share of emissions from the city administration in total emissions Leipzig low)	High

3 Part B - Pathways towards Climate Neutrality by 2030

3.1 Module B-1 Climate Neutrality Scenarios and Impact Pathways

The framework for Leipzig's climate neutrality strategy is provided by the Energy and Climate Protection Programme (EKSP). Biennial implementation programmes are drawn up for this, with which current measures are developed in each case.

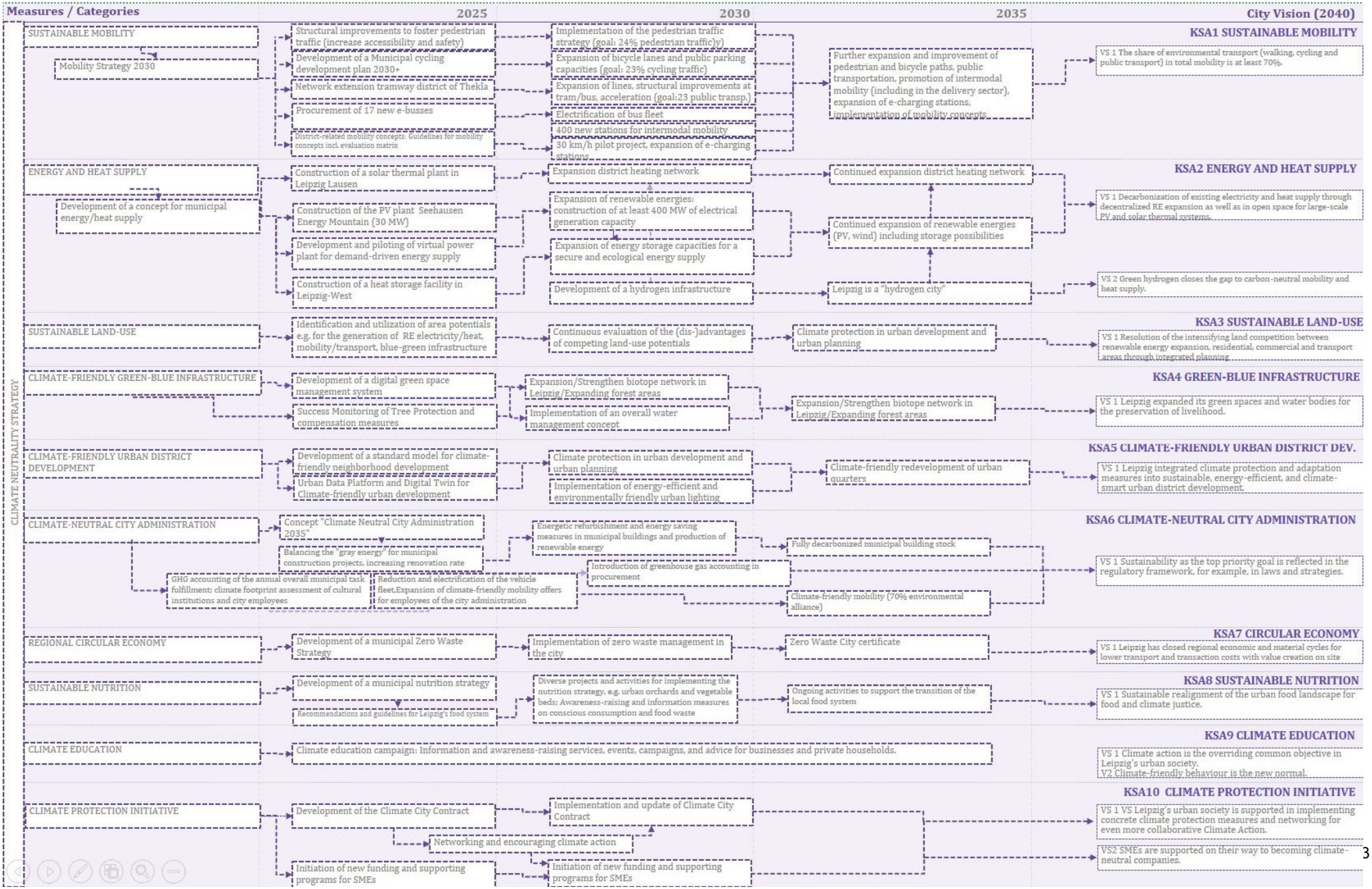
The Energy and Climate Protection Programme is divided into ten "success factors", i.e. key strategic areas (KSAs). In the logic of the EKSP, the Climate City Contract is a building block of the Climate Protection Initiative key strategic area and helps to close the gap to climate neutrality by 2030 by activating companies and civil society.

The following page shows a roadmap of Leipzig's climate neutrality strategy. As the overview originates from preliminary work, it is organised according to the structure of the EKSP by key areas (shown on the right).

For a consistent presentation in the Climate City Contract, it was decided to assign the success factors of the EKSP to the fields of action of the Climate City Contract, as this makes it easier to structure the indicators and impact pathways. This is done as follows:

Table 2 Merging fields of action & EKSP

Merging fields of action & EKSP	
Fields of action	"Success factors" (= key areas) of the EKSP
Energy systems	Sustainable energy and heat supply (KSA 2)
Mobility & transport	Sustainable mobility (KSA 1)
Waste & circular economy	Regional circular economy (KSA 7)
Green infrastructure & nature-based solutions	Climate-friendly green-blue infrastructure (KSA 4) Sustainable nutrition (KSA 8) Sustainable land-use (KSA 3)
Built environment	Climate-friendly urban district development (KSA 5)
Other/Engagement	Climate-neutral city administration (KSA 6) Climate education (KSA 9) Climate protection initiative - CCC (KSA 10)


Measures / Categories
2025
2030
2035
City Vision (2040)
CLIMATE NEUTRALITY STRATEGY
SUSTAINABLE MOBILITY
Mobility Strategy 2030
Structural improvements to foster pedestrian traffic (increase accessibility and safety)
Development of a Municipal cycling development plan 2030+
Network extension tramway district of Thekla
Procurement of 17 new e-busses
District-related mobility concepts: Guidelines for mobility concepts incl. evaluation matrix
Implementation of the pedestrian traffic strategy (goal: 24% pedestrian traffic)y)
Expansion of bicycle lanes and public parking capacities (goal: 23% cycling traffic)
Expansion of lines, structural improvements at tram/bus, acceleration (goal:23 public transp.)
Electrification of bus fleet
400 new stations for intermodal mobility
30 km/h pilot project, expansion of e-charging stations
Further expansion and improvement of pedestrian and bicycle paths, public transportation, promotion of intermodal mobility (including in the delivery sector), expansion of e-charging stations, implementation of mobility concepts
KSA1 SUSTAINABLE MOBILITY
VS 1 The share of environmental transport (walking, cycling and public transport) in total mobility is at least 70%.
ENERGY AND HEAT SUPPLY
Development of a concept for municipal energy/heat supply
Construction of a solar thermal plant in Leipzig Lausen
Construction of the PV plant Seehausen Energy Mountain (30 MW)
Development and piloting of virtual power plant for demand-driven energy supply
Construction of a heat storage facility in Leipzig-West
Expansion district heating network
Expansion of renewable energies: construction of at least 400 MW of electrical generation capacity
Expansion of energy storage capacities for a secure and ecological energy supply
Development of a hydrogen infrastructure
Continued expansion district heating network
Continued expansion of renewable energies (PV, wind) including storage possibilities
Leipzig is a "hydrogen city"
KSA2 ENERGY AND HEAT SUPPLY
VS 1 Decarbonization of existing electricity and heat supply through decentralized RE expansion as well as in open space for large-scale PV and solar thermal systems.
VS 2 Green hydrogen closes the gap to carbon-neutral mobility and heat supply.
SUSTAINABLE LAND-USE
Identification and utilization of area potentials e.g. for the generation of RE electricity/heat, mobility/transport, blue-green infrastructure
Continuous evaluation of the (dis-)advantages of competing land-use potentials
Climate protection in urban development and urban planning
KSA3 SUSTAINABLE LAND-USE
VS 1 Resolution of the intensifying land competition between renewable energy expansion, residential, commercial and transport areas through integrated planning
CLIMATE-FRIENDLY GREEN-BLUE INFRASTRUCTURE
Development of a digital green space management system
Success Monitoring of Tree Protection and compensation measures
Expansion/Strengthen biotope network in Leipzig/Expanding forest areas
Implementation of an overall water management concept
Expansion/Strengthen biotope network in Leipzig/Expanding forest areas
KSA4 GREEN-BLUE INFRASTRUCTURE
VS 1 Leipzig expanded its green spaces and water bodies for the preservation of livelihood.
CLIMATE-FRIENDLY URBAN DISTRICT DEVELOPMENT
Development of a standard model for climate-friendly neighborhood development
Urban Data Platform and Digital Twin for Climate-friendly urban development
Climate protection in urban development and urban planning
Implementation of energy-efficient and environmentally friendly urban lighting
Climate-friendly redevelopment of urban quarters
KSA5 CLIMATE-FRIENDLY URBAN DISTRICT DEV.
VS 1 Leipzig integrated climate protection and adaptation measures into sustainable, energy-efficient, and climate-smart urban district development.
CLIMATE-NEUTRAL CITY ADMINISTRATION
Concept "Climate Neutral City Administration 2035"
Balancing the "gray energy" for municipal construction projects, increasing renovation rate
GHG accounting of the annual overall municipal task fulfillment; climate footprint assessment of cultural institutions and city employees
Reduction and electrification of the vehicle fleet,Expansion of climate-friendly mobility offers for employees of the city administration
Energetic refurbishment and energy saving measures in municipal buildings and production of renewable energy
Introduction of greenhouse gas accounting in procurement
Fully decarbonized municipal building stock
Climate-friendly mobility (70% environmental alliance)
KSA6 CLIMATE-NEUTRAL CITY ADMINISTRATION
VS 1 Sustainability as the top priority goal is reflected in the regulatory framework, for example, in laws and strategies.
REGIONAL CIRCULAR ECONOMY
Development of a municipal Zero Waste Strategy
Implementation of zero waste management in the city
Zero Waste City certificate
KSA7 CIRCULAR ECONOMY
VS 1 Leipzig has closed regional economic and material cycles for lower transport and transaction costs with value creation on site
SUSTAINABLE NUTRITION
Development of a municipal nutrition strategy
Recommendations and guidelines for Leipzig's food system
Diverse projects and activities for implementing the nutrition strategy, e.g. urban orchards and vegetable beds; Awareness-raising and information measures on conscious consumption and food waste
Ongoing activities to support the transition of the local food system
KSA8 SUSTAINABLE NUTRITION
VS 1 Sustainable realignment of the urban food landscape for food and climate justice.
CLIMATE EDUCATION
Climate education campaign: Information and awareness-raising services, events, campaigns, and advice for businesses and private households.
KSA9 CLIMATE EDUCATION
VS 1 Climate action is the overriding common objective in Leipzig's urban society.
V2 Climate-friendly behaviour is the new normal.
CLIMATE PROTECTION INITIATIVE
Development of the Climate City Contract
Networking and encouraging climate action
Initiation of new funding and supporting programs for SMEs
Implementation and update of Climate City Contract
Initiation of new funding and supporting programs for SMEs
KSA10 CLIMATE PROTECTION INITIATIVE
VS 1 VS Leipzig's urban society is supported in implementing concrete climate protection measures and networking for even more collaborative Climate Action.
VS2 SMEs are supported on their way to becoming climate-neutral companies.

The impact pathways are organised according to the specified fields of action. Chapter 3.2 shows which measures are assigned to these. Whether the measures achieve the desired impact is measured using indicators, which are presented in section 3.3.

The definied impact pathways can be summarized as followed: In the **energy system**, the development of renewable energy generation capacities is being promoted in various ways. By providing information on whether the expansion is already achieving the set targets, the aim is to encourage subsequent adjustments. Companies are also involved in this area. Heat planning and the expansion of district heating are working towards climate-neutral heat.

In **the transport sector**, the Mobility Strategy 2030 is being implemented with many different measures. Companies are getting involved here by improving opportunities for their employees, which also promotes new standards in the corporate context.

The circular economy and waste are topics that have received less attention to date. The zero-waste strategy creates a good basis. There is still potential to further systematise the handling of waste and wastewater, to use all energy sources and to reduce emissions. There is also still potential in the economy on the way to a circular economy.

Leipzig is well positioned in the area of **green-blue infrastructure** insofar as it is recognised and dealt with as a separate topic area. Many co-benefits can be expected here, including in the area of mandatory tasks. Companies are also planning a number of measures in this area. The quantification of the contribution to reducing emissions is still pending, but is planned.

In the area of **buildings and the built environment**, a department is being formed within the responsible office that will increasingly drive forward the necessary change. Various projects have recently been acquired to promote the refurbishment and expansion of renewable energies.

The CCC process plays a major role in the area of **engagement/miscellaneous**, offering opportunities for systematisation and for working with companies and civil society. The commitment of companies is central here, which is networked with the urban climate agreement process.

B-1.1: Impact Pathways					
Fields of action	**Systemic levers**	**Early changes (1-2 years)**	**Late outcomes (3-4 years)**	**Direct impacts (Emission reductions**	**Indirect impacts (co-benefits)**
Energy systems	Technology /infrastructure	Increase RES share and start enlargement of district heating system (e.g. combined heat and power plant Leipzig Süd, solar thermal plant Lausen) Energy storage capacities	Higher Use of energy-saving lighting and energy-efficient friendly urban lighting Photovoltaic systems on municipal roofs REFILL project	Less emissions from electricity and heat production Less wastage of processual energy	Regionally created value Job creation Independence from fossil fuels Increased local market market stability and resilience Avoids environmental damage Favourable/stable energy costs Clean air

Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Energy systems	Technology /infrastructure		Further expansion of renewable electricity generation capacity Solar thermal south Expansion of district heating		Resilence
	Governance & policy	Several concepts and strategies on regional and local level (e.g. on land potential for renewable energy, municipal heating strategy) Urban Data Platform/Digital Twins for climate sensitive urban development	More targeted RES extension within city boundaries and in cooperation with region around Leipzig Faster planning and approval processes for RES plants	Increase RES share in energy and heating production	Better information on state of RES integration
	Social innovation	Sensibilisation and Activitation of house owners for energy efficient building development (incl. decentralized RES integration)	Increase renovation rate in existing building stock in non-municipal buildings	Increase RES share in energy and heating production, reduction of energy and heating demand	Booster for local building industry/ craftsmen Long-term: indepency of home owners from centralised heating and energy provision
	Democracy/ participation	Citizens-led RES projects (e.g. Leipzig Energy Co-operative)	Support in matching processes between energy communities and roof/building owners	Increase RES share in energy and heating production	

Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Energy systems	Finance & funding	(Federal support schemes for energy suppliers), local programmes for citizens (tenants) for installation of solar panels on balconies	Increase involvement of non-home owners on energy transition	Increase RES share in energy and heating production	Reduce energy costs for tenants, prevent energy poverty
	Learning and capabilities	Support for local craftsmen (increase knowledge on RES integration in existing buildings)	Increase knowledge on RES integration, better implementation of RES in building stock	Increase RES share in energy and heating production	Secure markets for local craftsmen
	New projects	EnAct4CleanCities (Pilot Cities Mission Call)	Information and activation campaign for small property owners/ self-occupiers	Increase renovation rate in existing building stock in non-municipal buildings	Increase RES share in energy and heating production
Mobility & Transport	Technology /infrastructure	Continue decarbonisation of bus fleet and enlargement of tram network Strengthen Leipzig Move App as multi-modal application for customers Continuous improvement of walking and cycling infrastructures (pathways, cycle lanes, extension of bicycle street network, park & bike areas etc.)	Increase share of e-buses, extended tram network incl. enhanced accessibility at tram stops, development of High-speed cycle routes (e.g. long-distance route Leipzig-Halle)	Increased attractiveness of zero-carbon/ climate-neutral mobility modes (eco-mobility), Less individual road traffic, less related emissions, noise and pollution	Greater road safety, fewer serious accidents, better air quality Increased quality of life in buildings along formerly busy roads Health benefits due to increased physical activity

Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Mobility & Transport	Governance & policy	Leipzig Mobility Strategy 2030, Cycling development plan, Development and implementation of district and neighbourhood-related mobility concepts Parking space management in inner city neighbourhoods Support for car sharing systems, cargo bike sharing system Extension of Tempo 30 Zone (reduced speed limit zones) in Leipzig	e.g. Liveable cities through appropriate traffic speed Integration of Mobility Concepts for new-built low-car districts	New concepts of use of public spaces, Reduced speed limits	Greater road safety, fewer serious accidents, better air quality
	Social innovation	Support bike buses for cycling school kids	Less car traffic in front of schools	Increased awareness for cycling	Increase safety before schools due to less car traffic
	Democracy/ participation	Supporting Parklets, e.g. during European Mobility Week, Parking Day			
	Finance & funding	Subsidy grants for cargo bikes for companies, pilot projects for carbon neutral city logistics	Increased share of cargo bikes for inner city logistics		Increased affordability of cargo bikes
	Learning and capabilities	Communication and activation campaigns	e.g. city cycling, cycling training in schools, European Mobility Week	Increased awareness for climate friendly travel modes	Support cycling capabilities of kids

Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Waste & circular economy	Technology /infrastructure	e.g. new cleaning procedures in sewage plants			Less residues in waste waters
	Governance & policy	Development of zero waste strategy Leipzig Support circular economy in cultural enterprises		Less emissions through less waste	Regional value creation Less landfill Resource efficiency Job creation
	Social innovation	Support of social entrepreneurs e.g. for "material buffet" with used materials from fairs and other events		Waste reduction Increased recycling rate	Job creation Supply of affordable materials (e.g. wood, metals etc.)
	Democracy/ participation	Citizen-led initiatives e.g. exchange cabinets	Waste reduction, increase life cycle for great variety of goods (e.g. clothes, toys, dishes etc.)	Less waste	Increased social interaction as usually neighbourhood/community based
	Finance & funding	State programme in Saxony: Funds for repairs of household appliances	Increase share of repairs of household appliances (repair instead of buying new)	Less waste	Increased life cycle of household applications Job creation for repair shops
	Learning and capabilities	Support for citizen initiatives on waste reduction, repairs and upcycling activities (e.g. Café Kaputt, RestLos Umweltbildung, HinZundKunZ)	Increased awareness for recycling/upcycling processes, increase repair abbilities	Less waste	Increase capabilities

Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Green infrastructure & nature-based solutions	Technology /infrastructure	e.g. Expanding the stock of street trees and other blue-green infrastructures "sponge city" approach in new neighbourhoods Increase data base on blue-green infrastructure (digital twin), sensor projects for monitoring state of blue-green infrastructures		CO2 storage	Water retention Mitigation of heath island effect Health benefits due to increased physical activity Noise reduction, Better air quality Increased quality of public space and bio-diversity
	Governance & policy	Development concept for the Elster-Pleiße-Luppe flood area Integrating Mobility into Green Masterplan Involving green infrastructure in master planning processes Monitoring of tree protection and compensation measures	Strengthening biotope networks in Leipzig Overall water management concept		
	Social innovation	Initiative "Leipzig giesst" - citizen-led initiative on watering street trees			
	Democracy / participation	Large share of allotment and community gardens in Leipzig	Large green areas	Open spaces as climate sinks	Increased local food production and social interaction
	Finance & funding	Saxony/ city of Leipzig: grant for extension of green roofs	More green roofs	Increased green areas	Heat reduction, water storage

Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Green infrastructure & nature-based solutions	Learning and capabilities	Sustainable Food Strategy			
Built environment	Technology / infrastructure	Digitised building monitoring (DGM), e.g. in EU-HORIZON project Office for City PlanningRCS demo districts, e.g. dynamic heating steering	Climate-friendly renewal of urban neighbourhoods Energy-efficient refurbishment of existing municipal buildings	Reduced energy and heat consumption	Increase in value of properties, increased living comfort More climate resilient building stock Lowered running costs
	Governance & policy	Construction of sustainable municipal buildings	Integrating climate protection in urban development and urban planning		
	Social innovation				
	Democracy/ participation				
	Finance & funding	*Potential: comprehensive* refurbishment *funding*			
	Learning and capabilities				
Other/Engagement	Technology / infrastructure	*Potential: companies see opportunity in planned, early transformation*			Local value creation
	Governance & policy	Economic development strategy (Cluster strategy) for Green Tech, Health and Energy			Increased share of public transport

Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Other/Engagement	Social innovation				
	Democracy/ participation	Active and demanding climate initiatives in Leipzig	Pressure for serious emission reductions		
	Finance & funding	City of Leipzig: SME grant scheme for sustainable growth	Extra benefit for companies who invest in climate friendly measures	Increase in climate-friendly measures (e.g. RES installations, e-mobility, cargo bikes)	Increased RES share, increased local energy production
	Learning and capabilities	Climate Education programme / campaign in schools Energy Efficiency Network (EEKN) for companies	Increased knowledge on climate friendly behaviour and concrete decarbonisation pathways for companies	Companies: increased investement in RES and climate friendly transport schemes	

B-1.2: Description of impact pathways

As mentioned, the EKSP sets the framework for all climate neutrality activities of Leipzig and includes 10 success factors. Each of the success factors is linked to concrete actions or strategies. For each of the pathways listed above, municipal strategies and concepts are in place.

There are shared responsibilities for the implementation of the different strategies among the city departments. For some of the pathways an active civil society and citizens initiatives are already in place. As for local businesses the Office for economic development offers different measures and support schemes for them to encourage climate friendly businesses (e.g. in RES installation on company buildings, climate friendly transport etc.).

Yet, for some of the envisaged pathways the city itself can't set all necessary framework conditions to reach climate neutrality so there are still gaps in the pathway. Some gaps are due to a lack of a federal strategy (such as the strategy for mobility decarbonisation) or unfavourable federal conditions, which make it impossible to trigger a decarbonisation at local level (such as missing representation of harmfullnes of GHG in pricing) (see also chapter A-3 on barriers and opportunities). Other gaps are on municipal level and concern either clarity regarding the sufficiency of the currently implemented measures or funding and implementation of planned measures.

It must be noted that a full decarbonisation of an economy in a system of dependend, nested federal levels was never done before. Thus scopes of influence are not structured according to emission sources; neither are information sources needed for appropriate balances. As the federal levels depend upon each other, if higher level conditions are unfavourable, definitive answers regarding full decarbonisation from a lower level would in most cases be unsound. Hence, in each of the action fields, the municipal actors do their very best to advance measures, elaborate clarity regarding impacts and

strategy, make funding available for advancing more measures, and lobby for conditions conducive for fossil fuel phase out. Impact pathways were developed for six action fields:

Energy systems - Sustainable Energy and heat supply (KSA 2)

For decarbonising the municipal heating provision, currently a planning concept is being developed. This will probably clarify how to decarbonise district heating, which districts will be fed by district heating, for which this is unsure, and which will definitely not be fed by long-distance district heating ("decentral supply"). In some cases, for decentral supply areas, island district heating might be possible.

This heating concept needs to be finalised and implemented, which includes the connection of further districts to district heating, and decarbonised district heating supply, as well as concepts for decentral supply ares. This addresses the availability of technology.

Regarding electricity, once the heating planning is done, and a federal strategy for transport decarbonisation given, a substantial strategy for the extension of the electricity grid can be prepared. If some of the latter remain missing, a more vague strategy can be prepared.

Regarding the extension of renewable energy provision, many measures already support the extension of renewable energy in the municipal area. A dashboard shall identify whether the planned measures are sufficient to meet the demand by 2030. This addresses insufficient speed and clarity.

Aconcept is prepared to identify suitable areas; to alleviate conflicts in space.

An option would be to start planning the electricity grid extension already now. However, heating planning is legally required now.

Mobility & transport - Sustainable mobility (KSA 1)

The mobility strategy 2030 is being implemented. Developing a municipal decarbonisation strategy for mobility is difficult, as mobility relies so heavily on federal conditions and standards.

An additional concept needs to clarify whether these measures are sufficient for decarbonisation, given favourable federal conditions; or whether further measures need to be developed. This includes defining the Leipzig strategy for supporting alternative drives, and a long term vision for parking (planned). This concept also needs to define sources of resource for measures.

Campaigns address the cultural hegemony of motorised individual mobility.

Long term planning with active transport in mind shall improve traffic conditions for active transport and lay ground for many years. The street works needed for district heating extension here represent an opportunity to adapt the city to active transport needs.

To deal effectively with reluctance in the population, the main sources of reluctance against climate friendly mobility should be investigated. From this analysis, it can be defined which measures best support acceptance.

Options: prepare district mobility concepts instead. Arguments against it: municipal strategy in place; lack of resources

Waste & circular economy - Regional circular economy (KSA 7)

There are many measures already in place that help to reduce waste and disseminate knowledge about repair and long-term use. This includes local shelves for the exchange of unused things, repair shops, and second hand shops for clothes and material. Many of them were developed by the civil society. Hence, adequate appreciation should be shown to the initiators and participants.

The local waste treatment company developed a zero-waste strategy. It is understood as zero wastage of resources, not as zero garbage. Possibly, this should be sharpened to get closer to the latter. Furthermore, currently it is an idea collection. Concrete measures should be chosen according to their efficiency, and their ability to address barriers such as normality of linear usage.

Currently, waste treatment and circular economy is not a planning and implementation priority. It should be adressed in the subsequent EKSP implementation plan, to adress the capacity issues.

Green infrastructure & nature-based solutions - Sustainable land-use (KSA 3), Climate-friendly green-blue infrastructure (KSA 4), Sustainable nutrition (KSA 8)

Guidelines for sustainable land use are being developed to help to protect green spaces and infrastructures. As they help to balance building and open spaces, they also touch the field of built environment.

There are measures in place for improving the green infrastructure of the city, such as the the street tree programme or the green roof programme. And when streets will be opened for extending the district heating, they shall be rebuilt with green infrastructure and active transport in place. Standards for street designs could further advance this. Additionally, green infrastructure suffers from the effects of climate change already, so the measures first help to maintain the status quo before being able to deliver extra services. Supporting initiatives such as "Leipzig giesst", or allowing citizens to car for street tree foots, addresses this. Nature based solutions are mainly in place for climate adaptation (heat protection; sponge city planning). Their potential as CO2 sinks is not yet quantified and fully exploited in Leipzig. Creating a balance is addressed in the new EKSP implementation programme.

This field also includes measures for a climate friendly food system; as this mainly means localised agriculture. As the sustainable land use practices, sustainable nutrition practices help to protect and improve local green spaces. Yet again, many measures were developed by the civil society and should be met with adequate appreciation and support. Support for common use of tools and of production and delivery spaces addresses the expensiveness of regional products.

Built environment - Climate-friendly urban district development (KSA 5)

Regarding the built environment, a concept for climate friendly district development has been developed. Now it has to be implemented with ambition. Building up personal structures for this is ongoing. As one substantial federal funding source has been stopped last year, motivating for more renovation and updating building technology is challenging; as well as addressing sufficient numbers of districts.

This field is currently quite volatile, as the mandatory municipal heating planning caused o increasing the district heating, which results in major street renwals in the chosen district heating extension districts. Additionally, a new projects seek to complement these inner city developments with support for more peripheral areas with reducing heat demand and replacing the rest by renewable sources. This is one tool to address the availability of affordable living space. Support for balcony PV for tenants further supports tenants.

A challenge lies in Leipzig's history: after the fall of the wall, many of its old buildings were sold - mostly to owners from the west. Still today, almost 90% of Leipzig's inhabitants are tenants. Thus, measures both have to focus on tenants as well as on owners which do not reside within the region. This is known to be more challenging than dealing with home owners. In one project, new measures to address different target groups will be developed. Another project addresses the harmonisation of renewable planning with heritage protection demands.

Other/Engagement - Climate-neutral city administration (KSA 6), Climate education (KSA 9), Climate protection initiative (KSA 10) - CCC

The last pathway deals with how to mobilise people for the transformation towards a climate neutral society. Leipzig has decided to split it into three sub-strands: a) the climate neutrality of the city administration, b) climate education, and a wider c) climate protection initiative.

The climate neutrality of the administration is implemented by the EKSP and a climate protection manager for it, plus a manager for climate neutral city buildings operation. Measures are well underway. Different projects aim at harmonising target conflicts by developing guidelines. Climate protection managers do their best to steer processes and implement measures. An internal balance addresses the issue of lacking data.

Regarding climate education, there is potential to further define the matter. In schools, the leeway is limited as the curriculum (set by the "Länder"; subfederal level) is demanding. The subject is mostly too

complex for kindergartens; although basis for climate friendly habits can be formed. 50/50 is an established format for involving schools and kindergartens.

It should be investigated whether cooperations with the universities and professional schools can be assumed. Additionally, should be developed how to involve the adult education centre (VHS) to further address the variety of target groups. Addressing companies with the help of the Also the CCC is one step addressing one specific target group.

The climate protection initiative is realised by the CCC. Currently, 50 companies have pledged climate protection measures. 20 take part in a local peer learning energy efficiency and climate action network. The "Grannies for future" initiative carries out civil society engagement actions. How to mainstream climate action among all different citizen groups should be further developed in the future EKSP implementation plan.

That climate protection is part of populist debates is currently not yet actively addressed. This should be pondered in future EKSP implementation programmes.

Insecurities regarding renewable extension and its profitability will be adressed with a new project that will provide information for different target groups.

Options: working with the civil society more strongly now. Arguments against it: concentration on current energy measures; lack of resources, limited immediate emission efficiency

3.2 Module B-2 Climate Neutrality Portfolio Design

This chapter contains:

B-2.1: Description of action portfolios – measures by the city administration and municipal subsidiarities			
Fields of action	**Portfolio description**		
	List of actions		**Descriptions**
Energy systems: Electricity	1	Use of energy-saving lighting and Energy-efficient and environmentally friendly urban lighting	Replacing and modernising lighting is an important lever for reducing electricity consumption. The gradual use of LED light sources and intelligent lighting control in all areas of buildings is the focus of implementation.
	2	Photovoltaic systems on municipal roofs	The installation of PV systems is planned on all possible roofs of municipal properties.

Energy systems: Electricity	3	Combined heat and power plant Leipzig South	The combination of gas turbines with state-of-the-art burner technology and hot water generators enable operation with minimal emissions. The gas turbines used can burn high proportions of green hydrogen, so that in future, they can be switched completely to renewable technologies.
	4	Expansion of renewable electricity generation capacity	In addition to the construction of large-scale plants, larger roof systems (e.g. on hall buildings) and combined use on agricultural land also offer opportunities for the expansion of renewable energies.
Energy systems: Heat	5	Municipal heating strategy	The Municipal Heating Plan aims to determine a climate-friendly heating and cooling supply in the urban area.
	6	REFILL project	The Leipzig municipal utilities are therefore planning to transport industrial waste heat from the Leuna industrial site to Leipzig via a district heating pipeline.
	7	Solar thermal energy Lausen	A solar thermal project with around 65,000 m2 gross collector area on around 10 ha is planned, which will be connected to the district heating system.
	8	Expansion of district heating	The project includes the expansion of the district heating network and the conversion of heat generation structures towards a climate-neutral supply.
	9	Solar thermal south	A solar thermal plant will be installed on a total usable area of around 3 hectares to increase the proportion of renewable heat in the district heating network.
Energy systems: Heat and Electricity	10	Hydrogen City Leipzig	The joint project aims to establish an intelligent and regionally networked green hydrogen system as a beacon for efficient sector coupling and to integrate it into the emerging European hydrogen infrastructure.
	11	Land Potential for Renewable Energy	Identifying and Utilising Land Potential for Renewable Energy-Based Power and Heat Generation.
	12	Energy storage capacities	Storage capacities are required to smooth the volatile energy supply from renewable sources. In addition to thermal storage for the district heating network, this also concerns electrical storage for the electricity supply.

Energy systems: Energy Management	13	SPARCS Baumwollspinnerei	The SPARCS project (Sustainable energy Positive & zero cARbon CommunitieS) is pursuing the development of a smart, energy-positive and therefore sustainable neighbourhood in the monument protected area of Baumwollspinnerei.
	14	Urban Data Platform/Twin for climate sensitive urban development	Linking data from different administrative departments and associated companies on data plattforms and the development of digital twins climate neutral urban development help to implement a holistic approach and speed up planning procedures.
	15	Development of virtual power plants for demand-driven energy supply (SPARCS project)	Virtual power plants consist of decentralised renewable energy systems (e.g. photovoltaic systems), electricity storage and a networked consumption structure (e.g. smart meters and smart grids).
Mobility & transport: public transport	16	Extension of tram network	The measure connects new residential areas to an attractive public transport system and is the basis for increasing the share of public transport.
	17	Enhancing accessibility at stops	The aim is to convert at least 10 tram stops and 40 bus stops (directional stops) per year that are not yet accessible.
	18	Leipzig Move Application	The aim of the measure is to provide LeipzigMOVE as a multimodal or intermodal mobility platform and to expand it to include additional services.
	19	Acquisition of new vehicles for public transport	New trams with up to 15% more space will be introduced and there will be a gradual switch to e-buses, including the creation of charging infrastructure.
Mobility & transport: Walking and cycling **Mobility & transport:** Walking and cycling	20	Cycling development plan	The Cycling Development Plan is the conceptual basis for municipal cycling promotion and serves to plan and prioritise all measures in the field of cycling.
	21	Designation of further bicycle streets	The aim is to improve the quality and flow of traffic for cyclists and increase their visibility.
	22	High-speed cycle routes	High-speed routes will significantly increase the attractiveness of cycling as a mode of transport along the corridors.
	23	Creation and repair of footpaths	The provision of safe and continuous footpaths enables an increase in pedestrian traffic.

Mobility & transport: Individual, motorised transport	24	Leipzig - City for intelligent mobility	The aim of the concept is to support Leipzig companies in implementing the transport transition and developing new mobility services and the associated value creation.
	25	Liveable cities through appropriate traffic speed	A key instrument for creating a liveable public pace is an urban and environmentally friendly speed limit for motorised traffic - including on main roads.
Mobility & transport: other	26	Integration of Mobility Concepts for new-built low-car districts	Climate neutral modes of transport need to be integrated into the urban planning of neighbourhoods and the management of the remaining cars.
	27	Development and implementation of district and neighbourhood-related mobility concepts	The aim of a mobility plan is to encourage people to change their mobility behaviour.
Waste & circular economy	28	Circular economy in cultural enterprises	The measure aims to establish a zero-waste management system for culture that supports and coordinates the city's cultural institutions and (cultural) events.
	29	Sustainable Food Strategy	Based on the analysis of Leipzig's food system, a comprehensive nutrition strategy is being developed which bundles municipal measures.
	30	Zero-waste strategy	The City of Leipzig's approach to implementing the strategy is based on the criteria of the European umbrella organisation 'Zero Waste Europe'.
	31	Towards a circular economy	A bundle of projects aiming to reduce wastage.
Green infrastructure & nature-based solutions	32	Expanding the stock of street trees	In addition to actively sequestering CO2, the urban tree population reduces energy consumption for cooling and shades common areas, thereby improving bioclimatic conditions.
	33	Strengthening biotope networks in Leipzig	The proportion of forest in Leipzig is being increased, and with it the CO2 storage capacity.
	34	Development concept for the Elster-Pleiße-Luppe flood area	The revitalisation of Leipzig's floodplain landscape, supported by extensive open space management, will strengthen its function as a carbon sink.

Green infrastructure & nature-based solutions	35	Integrating Mobility into Green Masterplan	An attractively designed network of cycle and pedestrian routes along open spaces and waterways increases the comfort and attractiveness of moving safely away from busy roads.
	36	Monitoring the success of tree protection and compensation measures	The city of Leipzig is improving the monitoring of nature conservation compensation measures in development plans (Federal Building Code § 4c) and tree protection. This includes not only measures on municipal land, but also on private land, and the monitoring of green design measures to minimise the impact on nature and the landscape.
	37	Water management concept	The aim of the overall water management concept is to stabilise the territorial water balance in the extended urban area of Leipzig. The concept includes scientific research as well as the implementation of concrete measures.
Built environment existing buildings	38	Climate-friendly renewal of urban neighbourhoods	Creation of integrated energy and climate protection concepts at neighbourhood level and their implementation through Energy Renovation Management (ESM). The aim is to ensure a stable ceiling for net cold rents after energy-efficient renovation.
	39	Energy-efficient refurbishment of existing municipal buildings	The aim is to increase the annual rate of energy-efficient renovations in the entire municipal building stock towards a fully decarbonised building stock.
Built environment new buildings	40	Construction of sustainable municipal buildings	The Leipzig Energy and Building Standard defines the requirements for new buildings and the renovation of municipal buildings.
	41	Integrating climate protection in urban development and urban planning	implement CO2 reduction criteria in urban development planning and procedures in a structured way. From 2023, fossil fuel heating systems will be excluded from new urban land-use plans and urban development contracts.
Other/ Engagement	42	Climate neutrality and sustainability in Leipzig's administration	The Concept for a Climate Neutral City in 2035 is the first concept that places the city administration as an active organisation at the centre of the city's climate protection activities.
	43	SME development programme - sustainable growth	Special attention and higher funding are given to projects that demonstrably pursue socially or ecologically sustainable goals

Other/ Engagement	44	Climate Education	In order to raise awareness of effective climate protection in the city of Leipzig, topic-specific and target group-orientated climate education activities are planned and implemented.
	45	Energy saving schools	The city administration works closely with schools to organise energy projects and energy saving weeks.
	46	Integrated Industrial Development Leipzig North	The project ensures the long-term sustainable development of Leipzig's northern region and to harmonise economic interests, the design of future mobility and climate protection.
	47	EnAct4CleanCities	The vision of the EnAct4CleanCities pilot project is to provide clear and relevant information and support property owners and other stakeholders in their decision-making process on the energy transition. (EU Mission Pilot Project)

1 Energy-efficient and environmentally friendly urban lighting		
Action outline	Action name	Use of energy-saving lighting and Energy-efficient and environmentally friendly urban lighting
	Action type	Municipal buildings and facilities
	Action description	Electricity consumption in municipal buildings is significantly influenced by lighting (approx. 50%). Replacing and modernising lighting is therefore an important lever for reducing electricity consumption. The gradual use of LED light sources and intelligent lighting control in all areas of buildings is the focus of implementation. Street lighting in particular accounts for a significant proportion of electricity consumption in the municipal area, at 40% and around 20 GWh/year (including traffic lights), with correspondingly high electricity costs. With the lighting strategy and the lighting master plan, the necessary strategic instruments and foundations are already in place for the gradual implementation of sustainable and energy-efficient urban lighting in Leipzig. Activities need to be intensified with regard to climate protection and a climate-neutral city administration by 2035. Further financial and human resources will be made available for this purpose. Efficient urban lighting will also result in a noticeable reduction in the budget in the medium term. The use of LED lighting and intelligent, demand-oriented lighting are important aspects for the future.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology & infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Mobility and Civil Engineering, Office for Building Management
	Action scale & addressed entities	51,000 light points (entire city area), building scale
	Involved stakeholders	Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	Gradual conversion of lighting in city-owned buildings to LED technology as part of value retention and energy management Annual conversion of approx. 4 - 5 % of the total gross floor area (based on the initial area in 2018): Retrofitting as part of complete modernisations & conversion of a further approx. 2 % as lighting conversion in existing buildings → approx. 28,000 m² with an average of 12 measures

		Use of intelligent lighting control in all suitable areas Renewal of 51,000 light points Implementation of the lighting strategy Application of the lighting master plan for the public street space
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	Reduced electrical energy
	GHG emissions reduction estimate (total) per emission source sector	The lighting in municipal buildings/areas corresponds to an energy saving of approx. 143 MWh/year, and consequently a CO2 saving of approx. 80 tonnes/year. With 1,500 light points, each saving 300 kWh per year (in total 450 MWh), the emission factor of 0.478 t/MWh for the German electricity mix results in a savings potential of 215 t CO2/year.
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	2,500,000 euros/year in total

2 Photovoltaic systems on municipal roofs		
Action outline	Action name	Photovoltaic systems on municipal roofs
	Action type	Supply and disposal
	Action description	One of the most important building blocks in the expansion of renewable energies is photovoltaics (PV). With the installation of PV systems on all possible roofs of municipal properties, the goal of achieving a climate-neutral administration by 2035 is being realised.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology & infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Sustainable Development and Climate Protection, Office for Building Management
	Action scale & addressed entities	Building scale
	Involved stakeholders	Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	Designation of roof areas Consultancy Implementation of PV systems (annual target: 20 systems with 1 MWp)
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	Around 23,059 tonnes/year.
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	2023: 460,000 euros 2024: 490,000 euros

3 Combined heat and power plant Leipzig Süd		
Action outline	Action name	Combined heat and power plant Leipzig South
	Action type	Bridging technology, cornerstone for hydrogen utilisation
	Action description	The combination of gas turbines with state-of-the-art burner technology and hot water generators plus associated catalytic converters enable operation with minimal nitrogen oxide and carbon monoxide emissions. Thanks to the rigid coupling of the gas turbines with the hot water generators, the power plant is only in operation when the heat generated in Leipzig is being utilised. For the most part, the new power plant is only utilised when renewable energies from wind and sun are not available in sufficient quantities. The gas turbines used can burn high proportions of green hydrogen, so that in future, electricity and heat generation can be switched completely to renewable technologies.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Leipzig municipal utilities
	Action scale & addressed entities	Building Scale
	Involved stakeholders	Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	-
Impact & cost	Generated renewable energy (if applicable)	163 MW thermal output 125 MW electrical output 80 GWh/a with hydrogen
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate	not applicable

	(total) per emission source sector	
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

4 Expansion of renewable electricity generation capacity		
Action outline	Action name	Expansion of renewable energies through the construction of at least 400 MW renewable electricity generation capacity
	Action type	Sustainable energy production
	Action description	To significantly reduce greenhouse gas emissions, it is necessary to build renewable energy production facilities. The City of Leipzig wishes to fulfil its responsibility by enabling and promoting the development of such facilities, preferably on municipal land. Due to the limited area potential for wind energy plants in urban areas, solar plants are of particular importance. The construction of generation capacity outside the city by Leipzig Group companies should also be encouraged. In addition to the construction of large-scale plants, larger roof systems (e.g. on hall buildings) and combined use on agricultural land also offer opportunities for the expansion of renewable energies. The expansion targets by location are to be defined as part of the potential study according to M 1.8. Additional expansion is necessary to comply with the Paris Climate Agreement. To achieve this goal, areas in the immediate vicinity should be included in the consideration.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	L Group Community energy cooperatives
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	L Group Administration Citizens Oter Muncipalities
	Comments on implementation - consider mentioning resources, timelines, milestones	Identification of suitable areas of existing or open land for 50 MW/year. Consideration of how to deal with land conflicts, especially in the use of arable land for regenerative power generation plants. Creation of building rights (if necessary, by means of a procedure to deviate from the regional plan for western Saxony)

		Leipzig municipal utilities is planning to erect an installed capacity of 400 MW of solar and wind energy plants by 2030 (also outside the city area). This would provide approx. 560 GWh, or more than half of all Leipzig households, with green electricity.
Impact & cost	Generated renewable energy (if applicable)	400 MW
	Removed/substituted energy, volume, or fuel type	varius
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

5 Municipal heating strategy		
Action outline	Action name	City-wide municipal heating strategy
	Action type	Supply and disposal
	Action description	The Municipal Heating Plan aims to determine a climate-friendly heating and cooling supply in the urban area on the basis of an inventory and potential analysis, and to describe the implementation scenarios that lie outside the district heating area. This includes supply structures for the transformation of existing neighbourhoods and new development areas, as well as determining the requirements for the necessary generation infrastructure and identifying areas for the production of renewable energy. The strategy is being developed in coordination between the specialist departments and the Leipzig Group, with the help of external support and the ongoing involvement of relevant stakeholders. The result is a heat supply map with an area map and a catalogue of measures.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	▪ Technology and Infrastructure ▪ Governance and Policy
	Outcome (according to module B-1.1)	not quantifiable
Implementation	Responsible bodies/person for implementation	Office for Sustainable Development and Climate Protection, L-Group
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Housing cooperatives, owners. Citizens Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	Continuous public participation in the form of a project advisory board. Coordination of the boundary conditions and approach between the city administration and Leipziger Gruppe with regard to analysing the existing situation and potential Development of consumption and supply scenarios, taking into account the district heating areas and district heating expansion areas in the context of the district heating future concept (incl. district cooling), the identification or designation of suitable areas for future heat supply, including local heating networks and, in

		particular, low-temperature networks (possibly with municipal anchor properties) with the required supply structure and interim targets for 2030 and 2035. The following energy sources and technologies will be considered: including solar thermal energy, P2H, hydrogen, waste heat (wastewater, industry, data centre), environmental heat, capacities for storing renewable energies, decentralised integration of renewable energies into the district heating network Evaluation of the heating strategy with regard to any need for adjustment Integration of the heating plan into integrated urban development Assessment of the legal, technological and financial prerequisites and consequences required for timely implementation Involvement of key stakeholders (e.g. cooperatives, companies and businesses, institutes, etc.) Annual reporting
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	50,000 euros/year for planning. Realisation costs cannot yet be estimated.

6 REFILL project		
Action outline	Action name	REFILL project (Raffinerie Energie = district heating from industrial waste heat from Leuna to Leipzig) - Industrial Waste Heat West
	Action type	Sustainable energy production
	Action description	The unavoidable waste heat from Total's refinery in Leuna cannot be used efficiently in the refinery itself. While the refinery uses cooling capacity, the heat is needed for heating in the public and private sectors in Leipzig. The Leipzig municipal utilities are therefore planning to transport industrial waste heat from the Leuna industrial site to Leipzig via a district heating pipeline from 2027. The pipeline would be about 19 kilometres long and connected to the Kulkwitz power plant site (grid area west). At the same time, the hydrogen infrastructure will be built to prepare for the future use of hydrogen.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Leipzig municipal utilities
	Action scale & addressed entities	Regional Scale
	Involved stakeholders	State Office for Geology and Mining State Office for Road Construction and Transport District of Saalekreis Saxony-Anhalt State Administration Office LEIPZIG MUNICIPAL UTILITIES - Leipzig municipal utilities Infraleuna GmbH MITNETZ STROM Environmental organisations Funding organisations Landowners (>500 parcels) Other Municipalities
	Comments on implementation - consider mentioning resources, timelines, milestones	Planning approval decision targeted for 2024 Construction phase 2025-27 with commissioning from Q4/27

Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	Lignite, natural gas
	GHG emissions reduction estimate (total) per emission source sector	3 million tonnes of CO2 (over the initial contract term)
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	Study: 115 million euros Construction: 145 million euros (excluding costs for co-laying a hydrogen pipeline in coordination with ONTRAS)

7 Solar thermal energy Lausen		
Action outline	Action name	Solar thermal energy Lausen
	Action type	Sustainable energy production
	Action description	Step by step, renewable energy systems will provide more energy for the city's district heating supply. An important part of this is Germany's largest solar thermal plant, which has now been given the go-ahead by Leipzig municipal utilities. Around 65,000 m2 gross collector area on around 10 ha are planned, which are connected to the district heating system. A flock of sheep will be used on site to cultivate the greenery under and between the collectors with native flower mixtures and the extensive planting of shrubs, hedges and fruit trees.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Leipzig municipal utilities
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Ritter XL Solar Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	Construction started at the beginning of 2024 The plant is supposed to be completed at the end of 2025/beginning of 2026
Impact & cost	Generated renewable energy (if applicable)	Approx. 26 GWh/year
	Removed/substituted energy, volume, or fuel type	Lignite, natural gas
	GHG emissions reduction estimate (total) per emission source sector	Around 7,000 tonnes of CO2 eq. avoided
	GHG emissions compensated (natural or technological sinks)	not quantifiable

	Total costs and costs by CO2e unit	40 million euros

8 Individual action outlines Expansion of district heating		
Action outline	Action name	Expansion of district heating
	Action type	Sustainable energy production
	Action description	In Leipzig, the political goal is to supply the citizens with climate-neutral heat as soon as possible. The issues involved are being comprehensively analysed as part of the city's heating plan. An initial component of this heating plan is the expansion of the district heating network and the conversion of heat generation structures towards a climate-neutral supply. These aspects are presented in Leipzig municipal utilities' transformation plan. A second is the conversion of all other fossil-fuelled heat supplies to climate-neutral solutions that are open to all technologies. With around 50 % of the city supplied with district heating, all remaining requirements can also be covered by renewable energy systems- Several areas will be newly connected to district heating will be connected to district heating. These first six areas will be prioritised for district heating over the next few years. Expansion plans for these areas are currently being finalised. These are: Gohlis Süd, Klinikum St. Georg, Neulindenau, Südvorstadt West and the Waldstraßenviertel.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Leipzig municipal utilities , Office for Mobility and Civil Engineering
	Action scale & addressed entities	City-wide scale Neighbourhood Scale
	Involved stakeholders	Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	-
Impact & cost	Generated renewable energy (if applicable)	not applicable

	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	334 - 749 million depending on the chosen scenario according to the municipal heating plan

9 Solar thermal south		
Action outline	Action name	Solar thermal south
	Action type	Sustainable energy production
	Action description	Solar thermal systems are a building block of the heating transition. As ground-mounted systems, these have a considerable require a considerable amount of space. In principle, the systems can be integrated into the district heating system and thus increase the proportion of renewable heat. A solar thermal plant will also be part of the Leipzig South CHP plant site. The former coal storage site will find a new purpose here: collectors will be installed on a total usable area of around 3 hectares to increase the proportion of renewable heat in the district heating network.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Residential Construction and Urban Renewal, Office for City Planning, Office for Sustainable Development and Climate Protection, Office for Mobility and Civil Engineering, Office for Building Management, Office for Urban Parks and Bodies of Water Authority, LEIPZIGER HOUSING AND BUILDING SOCIETY (LWB), L-Group, housing companies/coops
	Action scale & addressed entities	Regional scale
	Involved stakeholders	Industry and producers Housing sector Citizens Consumers of .... Administration L-Group House owners Other cities
	Comments on implementation - consider mentioning resources, timelines, milestones	-
Impact & cost	Generated renewable energy (if applicable)	not applicable

	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

10 Hydrogen City Leipzig		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Hydrogen City Leipzig
	Action type	Sustainable energy production
	Action description	The joint project LHyVE aims to establish an intelligent and regionally networked green hydrogen system as a beacon for efficient sector coupling and to integrate it into the emerging European hydrogen infrastructure. As a technology showcase, LHyVE aims to implement the entire value chain from production, storage, transport and distribution to final consumption in the Leipzig region and to network it via the infrastructure with European projects, cities and municipalities.this will connect the region to European hydrogen infrastructures and markets and lead to a climate-neutral future with secure jobs, technological expertise and a high quality of life. The Leipzig region is one of the largest hydrogen consumers in Germany due to its chemical industry. Currently, more than 8.5 million standard cubic metres of hydrogen are used per day in the industrial region of Central Germany, which is more than 90 times the annual hydrogen consumption of the planned Leipzig Süd CHP plant in Leipzig (2 x 62 MW). Hydrogen is currently used in Leuna for desulphurisation in crude oil processing and for the production of methanol. In addition, there are numerous other companies and industries in the region, e.g. in the mobility sector, some of which produce large quantities of hydrogen themselves and can use it for the value chain.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	▪ Technology and Infrastructure ▪ Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	LEIPZIG SUPPLY AND TRANSPORT COMAPNY Leipziger Versorgungs- und Verkehrsgesellschaft mbH
	Action scale & addressed entities	Regional Scale
	Involved stakeholders	LEIPZIG SUPPLY AND TRANSPORT COMAPNY Leipziger Versorgungs- und Verkehrsgesellschaft mbH ONTRAS Gastransport GmbH

		Pörner Ingenieurgesellschaft mbH VNG AG Industry and producers science and research institutions associations and initiatives, a total of 50 people from around 35 companies and institution
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Resolution of the city council in October 2020 to position Leipzig as a hydrogen city and to convene a round table. ▪ Potential analysis for the development of Leipzig's hydrogen economy ("Hydrogen City Leipzig") (2022) ▪ H2 refuelling station of the Leipzig city cleaning service (2024) CO2-free mobility for commercial vehicles ▪ H2 pipeline south (2026): Hydrogen development of the southern site ▪ H2 pipeline north (2027): Hydrogen development of commercial customers and the Leipzig network area ▪ Energy site south (2028): CO2-free H2 production & heat supply through electrolysis, waste heat recovery, development of up to 100% H2-capable gas turbines
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

11 Identifying and Utilising Land Potential for Renewable Energy-Based Power and Heat Generation		
Action outline	Action name	Identifying and Utilising Land Potential for Renewable Energy-Based Power and Heat Generation
	Action type	Research & Concept
	Action description	In order to develop a city-wide heating strategy and the ongoing search by Leipzig municipal utilities for locations for the generation of electricity from renewable energies urgently the preparation of an energy concept (I.1), including a city-wide area concept for renewable energies is implemented. The area analysis should prioritise the possibilities for energy generation on existing buildings/parking spaces etc.. Only then should previously undeveloped but currently unused areas (e.g. derelict land, landfill sites) be included in the analysis. The suitability of agricultural land needs to be considered in the context of other land requirements of the growing city, e.g. for new housing, for new industrial estates, for organic farming, for mitigation measures. As a result, an integrated city-wide land use concept is required to provide the basis for the phasing out of fossil fuel energy generation in the medium to long term. In this context, options for energy production outside the city of Leipzig should also be considered).
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology & infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for City Planning, Office for Sustainable Development and Climate Protection Office for Sustainable Development and Climate Protection, Mayor's Department II Mayor's Department, Office for Municipal Real Estate, Leipzig municipal utilities
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Potential analysis of suitable and available areas for the utilisation of renewable energies

		▪ Comparison of theoretical potential areas with other existing uses and land requirements ▪ Prioritisation of the areas based on differentiated criteria ▪ Securing the areas under planning law, e.g. by amending the land use plan
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

12 Energy storage capacities		
Action outline	Action name	Expansion of energy storage capacities for a secure and ecological energy supply
	Action type	Supply and disposal
	Action description	In addition to the expansion of generation capacities, storage capacities are required to smooth the volatile energy supply from renewable sources. In addition to thermal storage for the district heating network, this also concerns electrical storage for the electricity supply.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology & infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	L-Group, Office for Sustainable Development and Climate Protection, Office for City Planning
	Action scale & addressed entities	City-wide
	Involved stakeholders	Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Determining the required thermal storage capacities with the help of a heating strategy (M 3.1) ▪ Determining the required electrical storage capacities ▪ Planning and construction of additional storage capacities ▪ Load optimisation with an increasing share of renewable generation units with volatile electricity and heat generation.
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable

	Total costs and costs by CO2e unit	not quantifiable

13 SPARCS Baumwollspinnerei		
Action outline	Action name	SPARCS Baumwollspinnerei
	Action type	Research & Concept
	Action description	The project Office for City PlanningRCS (Sustainable energy Positive & zero cARbon CommunitieS) is pursuing the development of a smart, energy-positive and therefore sustainable neighbourhood on what was once the largest cotton mill site in Europe. As part of the initiative, e-mobility management is being trialled alongside renewable energy sources for the electricity and heat supply. Innovative, mostly decentralised storage technology is also being used in all areas. For the Baumwollspinnerei model neighbourhood, a photovoltaic system for generating electricity for self-consumption plus electricity storage and an interface to the public grid as well as a networked heating system are planned. This will ensure that the neighbourhood is supplied with electricity and heat in the future. Any surplus production will be fed into the Leipzig municipal utilities grid. The Office for City PlanningRCS project at the Baumwollspinnerei also points the way to a resource-saving future in the field of e-mobility: a network of charging points has been set up at a central location for tenants, and public e-car sharing is offered; bidirectional charging stations are being used for research purposes, at which fleet vehicles from the commercial sector can both take in and return electricity. In a showroom on the cotton mill site, the interplay of energy production and consumption is presented in near-real time, making energy supply tangible and understandable.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	▪ Technology and Infrastructure ▪ Learning and Capabilities
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Offive for a Digital City
	Action scale & addressed entities	Neighbourhood scale
	Involved stakeholders	Industry and producers Housing sector Citizens

		Administration L-Group House owners
	Comments on implementation - consider mentioning resources, timelines, milestones	-
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

14 Urban Data Platform		
Action outline	Action name	Urban Data Platform/Twin for climate sensitive urban development
	Action type	Digital infrastructure
	Action description	The city data platform of the city of Leipzig is to be expanded as a platform for all data from the implementation of the Energy and Climate Protection Programme (EKSP) and is to serve as the basis for the development of a digital twin of the city of Leipzig. The aim is to link data from administrative departments and associated companies, to increase the collection of environmental and climate-related data via sensor technology and to create a binding set of rules for the exchange of data between departments and with associated companies within the framework of the EKSP.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Offive for a Digital City, Office for Geoinformation and Land Management
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration L-Group Research Institutions Citizens
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Development of a building and housing register to simplify the linking of building and housing data ▪ Development of the digital twin of the City of Leipzig and development of pilot applications in the area of energy neighbourhood development (link with M1.9 ▪ EKSP and Office for City PlanningRCS project) ▪ Development of sensor concept for the collection of environmental and climate-relevant data ▪ Development of pilot projects to integrate climate, energy and environmental data collected by citizens into the UDP (Citizen Science)
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable

	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	▪ Development of UDP and digital twin and integration of EKSP data (50,000 euros/year) ▪ Development of urban sensor concept (25,000 euros/year) ▪ Implementation of pilot projects for the collection of climate-relevant data and citizen science projects (50,000 euros/year)

15 Development of virtual power plants for demand-driven energy supply		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Development of virtual power plants for demand-driven energy supply
	Action type	Supply and disposal
	Action description	Virtual power plants consist of decentralised renewable energy systems (e.g. photovoltaic systems), electricity storage and a networked consumption structure (e.g. smart meters and smart grids). The share of renewables in the electricity mix can be significantly increased by demand-side management, for example by refrigerators drawing more energy from the grid for cooling during the day and reducing power consumption at night when closed. As part of the Office for City PlanningRCS project, the city and various partners are testing technical solutions and involving the public. Based on the smart city approach, specific pilot projects will be implemented (e.g. bidirectional charging of electric vehicles). The knowledge gained and the tested procedures will be applied in other districts.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology & infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	L-Group, Offive for a Digital City
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration L-Group Citizens Small Businesses House Owners Housing Sector
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Implementation of pilot project within the framework of Office for City PlanningRCS ▪ Evaluation of the knowledge and experience gained from the Office for City PlanningRCS project ▪ Transferring tested technologies and methods to other laboratories and urban neighbourhoods

Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

16 Extension of tram network		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Extension of tram network
	Action type	Changing the modal split
	Action description	The measure connects new residential areas to an attractive public transport system and is the basis for increasing the share of public transport in transport choices and passenger numbers. Efficient, barrier-free public transport ensures the participation of all social groups, is conducive to equal opportunities and increases the attractiveness of the city The measure includes carrying out feasibility studies and cost-benefit analyses, followed by concrete planning. The planning activities are aimed at extending the tram network and creating new connections and gaps (e.g. Südsehne incl. accompanying integration routes, Wahren S-Bahn station, Thekla-Süd).
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Mobility and Civil Engineering, Leipzig public transport company
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Feasibility studies for new tram lines ▪ Planning of the 3 measures Südsehne, incl. accompanying integration roads, Wahren S-Bahn station, Thekla-Süd incl. planning approval procedure ▪ Realisation of the measures
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable

	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	approx. 220 million euros (investment costs for Leipzig public transport company) (pro rata ~ 22,000,000 euros/year)

17 Enhancing accessibility at stops		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Enhancing accessibility at stops
	Action type	Changing the modal split
	Action description	As part of the local transport plan for the city of Leipzig, the aim is to convert at least 10 tram stops and 40 bus stops (directional stops) per year that are not yet accessible (target standard Z11), taking into account the extension programme that is part of the local transport plan.This means that rebuilt and, as a rule, new stops must fully comply with the minimum accessibility standards (M16).The bus stop programme involves the construction of a total of 40 directional bus stops per year on the existing network and, in some cases, as part of the bus stop densification programme.
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Mobility and Civil Engineering
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Planning ▪ Structural realisation ▪ Monitoring and, if necessary, adjustment of prioritisation
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable

	Total costs and costs by CO2e unit	300,000 euros/year

18 Leipzig Move App		
Action outline	Action name	Leipzig Move App
	Action type	Changing modal split
	Action description	The aim of the measure is to provide LeipzigMOVE as a multimodal or intermodal mobility platform and to expand it to include additional services. This includes, among other things, the choice of means of transport according to various criteria (time required, financial expenditure, CO2 footprint, reason for travel, etc.) based on the traffic situation, construction site situation, availability of vehicles and other means of transport, information from mobility stations, timetable design, car and bike sharing spaces, etc. The measure also includes structural measures at mobility stations that are not part of the transport system.) based on the traffic situation, construction site situation, availability of vehicles and other modes of transport, information from the mobility stations, timetable design, car and bike sharing spaces, etc.) based on the traffic situation, construction site situation, availability of vehicles and other modes of transport, information from mobility stations, timetable design, car and bike sharing spaces, etc.). The measure also includes structural measures at mobility stations not operated by (Leipzig public transport company) for equipment and signage, as well as the creation of areas at mobility stations to accommodate additional equipment elements (station signage, bicycle racks). ▪ Design definition of requirements ▪ Testing of targeted extensions to existing applications ▪ Implementation
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	▪ Technology and Infrastructure ▪ Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	LEIPZIG HOUSING AND BUILDING SOCIETY (LWB)
	Action scale & addressed entities	Regional scale
	Involved stakeholders	Administration L-Group
	Comments on implementation - consider mentioning	-

	resources, timelines, milestones	
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	225,000 Euro/year

19 Acquisition of new vehicles		
Action outline	Action name	Acquisition of new vehicles
	Action type	Changing the modal split
	Action description	From 2024, new trams with up to 15% more space will be introduced as part of the modernisation of the main axes and the creation of new infrastructure. In addition, there will be a gradual switch to e-buses, including the creation of charging infrastructure. The creation of additional capacity (vehicle pool) in the S-Bahn area will take place as part of the new tendering process for the MDSB network 2025+. The measure will reduce CO2 emissions by modernising the fleet, increase the attractiveness of public transport and ensure inclusion and participation opportunities for all social groups.
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Leipzig public transport company, ZVNL, Office for Mobility and Civil Engineering
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration L-Group Special-purpose association for the Leipzig local transport area (ZVLN)
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Procurement and deployment of larger vehicles (NGT 12+/NGT8+) ▪ Procurement of e-buses and construction of the corresponding charging infrastructure ▪ New tender for MDSB network 2025+
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable

	Total costs and costs by CO2e unit	2022 to 2030: 370 million euros in tram procurement (47 NGT12+ and 42 NGT8+) 101 million euros for e-bus procurement (from 2025: 70 eGB and 34 eNB, plus 17 eGB from ongoing procurement in 2022) 20 million euros charging infrastructure for e-buses (depot and route) (pro rata ~ 54,500,000 euros/year)

20 Cycling development plan		
Action outline	Action name	Cycling development plan
	Action type	Sustainable urban development
	Action description	The Cycling Development Plan is the conceptual basis for municipal cycling promotion and serves to plan and prioritise all measures in the field of cycling up to 2030 and beyond. After the start of processing at the end of 2021, the Cycling Development Plan 2030+ is scheduled to be adopted by the city council at the end of 2023. Subsequently, the implementation and monitoring of the measures as well as the evaluation of the RVEP will be ensured. The measure serves to promote urban and environmentally friendly organisation of transport.
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Mobility and Civil Engineering
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Citizens Administration Construction Sector
	Comments on implementation - consider mentioning resources, timelines, milestones	-
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	2023: 2,810,000 euros 2024: 1,773,000 euros 2025-2027: 2.4 million euros In each case own funds of the City of Leipzig

21 Designation of further bicycle streets		
Action outline	Action name	Designation of further bicyle streets
	Action type	Changing the modal split
	Action description	The designation of cycle lanes is part of the implementation of the Cycling Development Plan 2030+, which is based on the main cycle network. The aim is to improve the quality and flow of traffic for cyclists and increase their visibility. The aim is to designate new cycle lanes totalling 5 km in length throughout the city every year.
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Mobility and Civil Engineering
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Ongoing review of network components of the main cycle network for the realisation of cycle lanes ▪ Part of the RVEP 2030+ update ▪ Arrangement of further cycle lanes if the test is positive ▪ Implementation of accompanying measures in the respective sections
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

22 High-speed cycle routes		
Action outline	Action name	High-speed cycle routes
	Action type	Changing the modal split
	Action description	The measure includes the preparation of feasibility studies, design and subsequent construction of the first sections of the five high-speed cycle route corridors identified by the Free State of Saxony (subject to positive feasibility studies), which will significantly increase the attractiveness of cycling as a mode of transport along the corridors. The creation of high-speed cycle routes will address urban-rural and commuter traffic, which is currently heavily dominated by private motorised transport.
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	▪ Technology and Infrastructure ▪ Governance and Policy
	Outcome (according to module B-1.1)	not quantifiable
Implementation	Responsible bodies/person for implementation	Office for Mobility and Civil Engineering
	Action scale & addressed entities	Regional Scale
	Involved stakeholders	Citizens Administration Other cities
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Preparation of feasibility studies for the following 5 fast cycle connections: - *Leipzig - Halle / Leipzig - Markkleeberg / Leipzig - Markranstädt* - *Leipzig - Taucha / Leipzig - Naunhof* ▪ Coordination with surrounding municipalities for the joint realisation of the positively tested fast cycle connections ▪ Planning of (partial) sections in the Leipzig city area ▪ Successful realisation of (partial) sections
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable

	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	100,000 euros/year and 10,000 euros/year for investments

23 Creation and repair of footpaths		
Action outline	Action name	Cycling development plan
	Action type	Sustainable urban development
	Action description	Making walking more attractive is a contribution to changing the modal split. In 2015, the city council decided to draw up a pavement rehabilitation programme, in which independent rehabilitation measures were defined for pavements with a high frequency of use and in a desolate condition (VI-A-00968). A total of 34 schemes with condition levels 4 and 5 plus a major project at Mockauer Strasse were identified. The measures were selected on the basis of pavement condition and high importance to users, as well as the fact that the repair costs could not be realised within the framework of road maintenance. In the future, the programme will be continued and supplemented as an independent component of the medium-term road and bridge programme (pavement priority list). The provision of safe and continuous footpaths enables an increase in pedestrian traffic. This has a positive effect on noise reduction, air quality, human health and the quality of life in the city
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Mobility and Civil Engineering
	Action scale & addressed entities	City wide
	Involved stakeholders	Citizens Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	• Online survey (as part of the Mobility Strategy 2030 for Pedestrian Traffic) • Participation of the working group for the promotion of walking • Participation of the Round Table on Pedestrian Traffic • Planning and realisation based on the pedestrian traffic development plan
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable

	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	2023: 700,000 euros 2024: 800,000 euros 2025-2027: 1.8 million euros City of Leipzig's own investment funds in each case

24 Leipzig - City for intelligent mobility		
Action outline	Action name	Leipzig - City for intelligent mobility
	Action type	Sustainable urban development
	Action description	The concept "Leipzig - City for Intelligent Mobility" is intended to bundle offers from and for Leipzig companies for sustainable mobility. The aim of the concept is to support Leipzig companies in implementing the transport transition and developing new mobility services and the associated value creation. In addition to sustainable mobility and long-term economic development, the aims are to establish a company mobility management system with a mobility budget instead of a company car or job ticket. In addition, the aim is to increase employee loyalty, reduce mobility costs and advise on and develop business parks with a focus on local public transport.
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	▪ Governance and Policy ▪ Learning and Capabilities
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office of Economic Development
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Mobility Sector Administration L-Group Companies in Leipzig
	Comments on implementation - consider mentioning resources, timelines, milestones	-
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

25 "Liveable cities through appropriate traffic speed" initiative		
Action outline	Action name	Liveable cities through appropriate traffic speed
	Action type	Sustainable urban development
	Action description	Vibrant, attractive cities and communities need liveable public spaces. Streets and squares in particular, with their diverse functions, are the face and backbone of communities. They characterise quality of life and urbanity. They have a decisive influence on whether people enjoy living in their city or municipality. A key instrument for achieving this goal is an urban and environmentally friendly speed limit for motorised traffic - including on main roads. Cities and municipalities have far too narrow limits when it comes to setting speed limits. The initiative founded in July 2021 by the cities of Aachen, Augsburg, Freiburg, Hanover, Leipzig, Münster and Ulm is therefore lobbying the federal government to allow local authorities to decide for themselves when and where to impose which speed limits.
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Residential Construction and Urban Renewal, Office for City Planning, Office for Sustainable Development and Climate Protection, Office for Mobility and Civil Engineering, Office for Building Management, Office for Urban Parks and Bodies of Water Authority, LEIPZIGER HOUSING AND BUILDING SOCIETY (LWB), L-Group, housing companies/coops
	Action scale & addressed entities	Nationa scale
	Involved stakeholders	Administration Other cities
	Comments on implementation - consider mentioning resources, timelines, milestones	-
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable

	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

26 Integration of Mobility Concepts for low-car districts		
Action outline	Action name	Integration of Mobility Concepts for low-car districts
	Action type	Sustainable urban development
	Action description	Low-car and car-free neighbourhoods are an opportunity to reduce the number of cars per household.Climate neutral modes of transport need to be integrated into the urban planning of neighbourhoods and the management of the remaining cars.Implementing mobility concepts at the neighbourhood level encourages people to walk, cycle or use public transport. The administration develops differentiated concepts for new and existing neighbourhoods according to the different conditions and challenges.
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	▪ Technology and Infrastructure ▪ Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for City Planning, Office for Mobility and Civil Engineering
	Action scale & addressed entities	Neighbourhood Scale, Building Scale
	Involved stakeholders	Housing Developers L Group Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Definition of a "low-car or car-free neighbourhood" depending on the expansion standard of the environmental network, including the implementation of a potential study ▪ Creation of regulations for low-car residential districts ▪ Pilot implementation by reducing the number of parking spaces for conventional vehicles in two existing districts from 2024 ▪ Implementation of "low-car districts" as standard in all new-build districts
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	A direct GHG savings potential cannot be quantified. In addition to the direct reduction in emissions, however, this measure creates the opportunity to use former car parking spaces for other purposes, for example, to utilize the

		CO2 sequestration potential of additional green spaces.
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	Administrative action, currently no financial impact + 200,000 euros per year

27 Development and implementation of district and neighbourhood-related mobility concepts		
Action outline	Action name	Development and implementation of district and neighbourhood-related mobility concepts
	Action type	Sustainable Urban Development, Mobility
	Action description	The aim of a mobility plan is to encourage people to change their mobility behaviour. The use of sustainable and active modes of transport such as cycling, walking and public transport should be increased. This will not only reduce greenhouse gas emissions but will also reduce land sealing by reorganising and improving the quality of public spaces. Low-car and car-free neighbourhoods are seen as an opportunity to reduce the number of cars per household. To make this possible, it is necessary to develop concepts for the spatial organisation of the remaining parking spaces and to create the conditions for the new households to use environmentally friendly means of transport. Differentiated concepts need to be developed for new and existing neighbourhoods, depending on the different
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Mobility and Civil Engineering
	Action scale & addressed entities	Neighbourhood Scale
	Involved stakeholders	Citizens Administration L-Group Research Institutions
	Comments on implementation - consider mentioning resources, timelines, milestones	• Selection of the model area (start 2022) • Application to the BMVI for a pilot project or examination of independent realisation within the scope of personal responsibility If approval is granted by the federal government, then module 2: • Invitation to tender for scientific support • Preparation and realisation of a 12-month 30 km/h speed limit pilot project • Definition of a "low-car or car-free neighbourhood" depending on the development standard of the environmental network, including carrying out a potential study

		• Creation of regulations for low-car residential neighbourhoods • Pilot implementation by reducing the number of parking spaces for conventional vehicles in two existing neighbourhoods from 2024 Implementation of "low-car neighbourhoods" as standard in all new-build neighbourhoods
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	200,000 euros/year

28 Circular economy in cultural enterprises - European perspective		
Action outline	Action name	Circular economy in cultural enterprises - European perspective
	Action type	Reducing resource usage
	Action description	The measure aims to establish a zero-waste management system for culture that supports and coordinates the city's cultural institutions and (cultural) events in the implementation of an efficient circular economy. The programme also aims to cooperate with cultural institutions in Pécs/Hungary, Ljubljana/Slovenia, Zagreb/Croatia, Pilsen/Czech Republic and Venice/Italy and to develop a zero-waste app containing guidelines and recommendations for action. The prerequisite for the international orientation of the measure is the approval of the application 'Analysis of Zero Waste Practices in Cultural Institutions' (2022-2025) within the Interreg Central Europe Programme. The implementation leads to resource-saving planning and realisation of events, thereby reducing GHG emissions, improving the quality of life, promoting networking potential and cooperation within Leipzig's cultural scene as well as in an international context and imparting (specialist) knowledge and promoting education for sustainable development. Culture thus assumes a pioneering role, as it sensitises both employees and the public/urban society.
Reference to impact pathway	Field of action	Waste & circular economy
	Systemic lever	▪ Governance and Policy ▪ Learning & capabilities
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Department of Culture Municipal cleaning entity
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Department of Culture Municipal cleaning entity Office for Sustainable Development and Climate Protection all administrative departments with events all cultural institutions in the city all city-wide event organisers
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Approval of the application 'Analysis of Zero Waste Practices in Cultural Institutions' (2022-2025) as part of the Interreg Central Europe Programme; duration 2022-2025

		▪ City council resolution, call for applications and recruitment ▪ Strategy development for the implementation of circular economy in cultural institutions ▪ Organisation and implementation of regular events with cultural institutions and event organisers on site and in the individual partner cities of Pécs, Zagreb, Ljubljana, Pilsen and Venice ▪ Implementation of further education and training for cultural institutions and (cultural) organisers ▪ Organisation and implementation of a final event in Leipzig ▪ Creation of a guideline for the efficient implementation of circular economy in Leipzig's cultural institutions, based on this: development of a digital app that can be used by all international partners and contains guidelines etc.
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	25,000 euros/year 2023 - 2025.

29 Sustainable Food Strategy		
Action outline	Action name	Sustainable Food Strategy
	Action type	Reducing resource usage
	Action description	Based on the analysis of Leipzig's food system, a comprehensive nutrition strategy is being developed which bundles municipal measures in the form of projects, actions and recommendations for action along defined guidelines. Its objectives are based on the requirements for a modern, sustainable reorganisation of the urban food landscape in terms of food and climate justice. The measure raises awareness of a sustainable lifestyle, imparts (specialist) knowledge and creates transparency, thus promoting climate and food justice, raising awareness of regional value chains, contributing to the preservation of the environment and biodiversity and focussing on balanced health.
Reference to impact pathway	Field of action	Waste & circular economy
	Systemic lever	▪ Governance and Policy ▪ Learning and Capabilities
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Sustainable Development and Climate Protection
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Nutrition Council Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Development of goals and objectives ▪ Formulation of direct guidelines and development of associated bundles of measures ▪ Defining a realistic timetable ▪ Regular iteration and supplementation of the work status in working groups and participation formats
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable

	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	30,000 Euro/Year

30 Zero-waste strategy		
Action outline	Action name	Zero-waste strategy
	Action type	Supply and Disposal
	Action description	The City of Leipzig's approach to implementing the strategy is based on the criteria of the European umbrella organisation 'Zero Waste Europe'. The procedure for implementing a zero waste strategy includes the following project phases: (1) project preparation, (2) strategy development with citizen participation, (3) adoption of the zero waste concept by the city council, (4) certification procedure, (5) implementation of the strategy and (6) evaluation.
Reference to impact pathway	Field of action	Waste & circular economy
	Systemic lever	Governance & policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Municipal cleaning entity
	Action scale & addressed entities	City-wide
	Involved stakeholders	▪ Municipal cleaning entity(Municipal cleaning entity) ▪ all areas of the administration (in particular Office for Sustainable Development and Climate Protection, Department of Culture, Office of Economic Development, AfU) ▪ Citizens
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Establishment of a network working group to support implementation; consideration of setting up an advisory board ▪ Development of the concrete realisation concept 'Zero-Waste-Strategy' ▪ Creation of a zero-waste concept for the city of Leipzig, which is based on the criteria and goals of ▪ criteria and objectives of Zero Waste Europe and includes concrete implementation measures ▪ Accompanying exchange in the EU-wide Zero Waste Cities network ▪ Adoption of the zero waste concept by the city council ▪ Implementation of the measures with relevant stakeholders ▪ Information campaign based on the 'Repair Bonus' pilot project in cooperation with KELL GmbH using the information system
Impact & cost	Generated renewable energy (if applicable)	not applicable

	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

31 Towards a circular economy		
Action outline	Action name	Towards a circular economy
	Action type	Reducing resource usage
	Action description	**Second-Life Store** The aim of the 'Second-Life Department Store' project is to offer items that have been labelled as waste by a waste disposal service provider back on the market to close loops for consumer goods and conserve resources. By raising awareness, sustainable management in the sense of 'Reuse, Reduce, Refurbish, Repair' is to be placed in the centre of society. A wide range of municipal players (waste disposal companies, crafts, art/design, retail, socio-cultural clubs, associations) are brought together to create unique selling points for each individual and to revitalise properties that have been vacant for a long time for various reasons **Hardware4future** Digital solutions offer new opportunities for participation and inclusion: the Hardware4Future project, which has been running since 2020 and aims to distribute used but functional end devices to economically disadvantaged target groups, shows how digital participation can be organised. The project is currently based entirely on voluntary work. Further development and stabilisation of the service is urgently needed, as demand continues to outstrip the supply of donated technology. R**eusable containers** The aim of the measure is to offer reusable solutions for food and drinks in the takeaway sector of Leipzig's catering industry, thereby reducing the amount of disposable tableware. It is being implemented as a cooperation project between the city's own cleaning services (project management), the Office for Economic Development (funding) and BUND Leipzig (consulting/campaigning).
Reference to impact pathway	Field of action	Waste & circular economy
	Systemic lever	▪ Technology and Infrastructure ▪ Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Municipal cleaning entity Offive for a Digital City
	Action scale & addressed entities	City-wide scale

	Involved stakeholders	Citizens Private businesses Administration L Group BUND Leipzig dezentrale e. V. Media education centre Lecos
	Comments on implementation - consider mentioning resources, timelines, milestones	-
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	Store: 2023:306,050 euros own funds 2024: 255,350 euros own funds BMI funding application 'Sustainable inner cities and centres Hardware4future: Material costs: 60,000 euros/year - storage rooms, logistics/transport, training, accessories Reusable containers: 2023: 100,000 euros 2024: 175,000 euros

32 Expanding the stock of street trees		
Action outline	Action name	Expanding the stock of street trees
	Action type	Improving green infrastructure
	Action description	The development of urban tree cover is taking place both as part of the development of new neighbourhoods and in existing neighbourhoods. In addition to actively sequestering CO2, the urban tree population reduces energy consumption for cooling and shades common areas, thereby improving bioclimatic conditions. With the Leipzig 2030 street tree concept, the development of existing street trees is currently a conceptual and thematic focus. In the course of new district developments and urban redevelopment and conversion measures, residential areas with an intensive stock of street trees are to be created. In addition, the independent planting of street trees in existing streets is an important focus, which is carried out independently of other civil engineering measures. Special emphasis will be placed on compensating for the loss of trees because of the extremely low rainfall in 2018-2020. The necessary replanting will be a priority in the coming years. In addition to maintaining the street tree population of approximately 56,000 trees (statistical values as of 10/2021 - there have been shifts between tree location groups following the introduction of the new cadastral software), these measures are intended to ensure an expansion of the population by 1,000 trees per year. The potential for increasing the street tree population is estimated to be in the order of 45,000 trees.
Reference to impact pathway	Field of action	Green infrastructure & nature-based solutions
	Systemic lever	• Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Urban Parks and Bodies of Water Authority
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ The technical planning and implementation in accordance with higher-level specifications, standards, guidelines and recommendations from professional associations. ▪ Trees are given equal status in the streetscape and in urban planning. ▪ Preservation and expansion

		▪ All streets are green regardless of road construction projects ▪ Goal: equal distance between trees ▪ Tree corridors are provided ▪ Street tree planting is prioritised to compensate for new sealing through development ▪ Tree inspections to ensure the road safety of street trees
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	2,400,000 Euro/year in total

33 Strengthening biotope networks in Leipzig		
Action outline	Action name	Strengthening biotope networks in Leipzig
	Action type	Improving green infrastructure
	Action description	The proportion of forest in Leipzig is being increased, and with it the CO2 storage capacity. Priority areas for increasing forest cover are located in the post-mining landscape in the south of Leipzig. In addition to increasing the forest cover in the open countryside, forests will also be developed in the city. In addition, not only high forests are being promoted, but also sparse forest structures linked to open areas, which are particularly beneficial for biodiversity. Some existing forests are being 'remodelled' due to changes in site conditions, such as the rehabilitation of open-cast mines or climate change. The promotion of 'urban forests' to improve the urban climate is being trialled and supported. Not only does this have a positive effect on the CO2 balance, but the evapotranspiration of the plants also balances out temperature fluctuations, mitigating, for example, the consequences of hot summers caused by climate change. Applications for the implementation of the 'Tiny Forest' concept and other near-natural, structurally rich forms of land use in densely populated urban areas are being considered for their climate adaptation and air quality benefits. Their care and maintenance will be ensured by biotope management.
Reference to impact pathway	Field of action	Green infrastructure & nature-based solutions
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Urban Parks and Bodies of Water Authority
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Forest propagation in areas with a lack of forest, provided there are no conflicts with agricultural use ▪ Advising landowners and owners on the conversion of open land into woodland areas and their maintenance and operation ▪ Promotion of urban forest structures, orchards and tree meadows on fallow land, if necessary, by acquiring land using compensation funds

		▪ Piloting of 'Tiny Forest' applications in densely populated areas ▪ Establishment of a biotope maintenance structure in the SV to look after biotope areas ▪ Creation of a 'Green courtyards' funding guideline
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	200,000 euros/year for the establishment of the 'biotope maintenance' department

34 Development concept for the Elster-Pleiße-Luppe flood area		
Action outline	Action name	Flood area development concept for the Elster-Pleiße-Luppe flood area
	Action type	Improving green infrastructure
	Action description	Ecologically functioning floodplains are extremely valuable. They contribute to the preservation of biodiversity and are important as natural floodplains and for water retention during heavy rainfall and flooding. They are also a key factor for a good urban climate and, last but not least, intact floodplains store large amounts of the greenhouse gas carbon. The revitalisation of Leipzig's floodplain landscape, supported by extensive open space management, will strengthen its function as a carbon sink, making it particularly important for climate protection. In order to successfully revitalise the floodplain landscape in the middle of a large city, many aspects and concerns have to be taken into account, e.g. nature conservation and hydrological potential for floodplain development, local recreational use or infrastructure such as settlement areas and traffic routes or urban drainage. This approach is pursued by an integrated spatial floodplain development concept, which develops a programme of actions and measures with short-, medium- and long-term solutions with the involvement of many stakeholders.
Reference to impact pathway	Field of action	Green infrastructure & nature-based solutions
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Urban Parks and Bodies of Water Authority
	Action scale & addressed entities	Medium scale among the rivers
	Involved stakeholders	Administration Federal administration of reservoirs (LTV) Saxon State Ministry for Energy, Climate Protection, Environment and Agriculture (SMEKUL) State Office for Environment, Agriculture and Geology (LfULG), environmental associations Leipzig University Helmholtz Centre for Environmental Research (UFZ)

	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Integration of large-scale nature conservation project Leipzig floodplain landscape ▪ Floodplain communication concept ▪ Conversion of arable land into extensive grassland
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	45,000 euros/year for ongoing updating and communication

35 Integrating Mobility into Green Masterplan		
Action outline	Action name	Integrating Mobility into Green Masterplan
	Action type	Sustainable urban development
	Action description	Green-blue corridors through the city should be maintained and created to continue to meet the need for urban green spaces and water bodies to sustain life and ensure a high quality of life for all citizens in the city. An attractively designed network of cycle and pedestrian routes along open spaces and waterways increases the comfort and attractiveness of moving safely away from busy roads. The basis for this is the Green Masterplan.
Reference to impact pathway	Field of action	Green infrastructure & nature-based solutions
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Urban Parks and Bodies of Water Authority
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Administration Environmental associations
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Qualified expansion of cycle and footpath network ▪ Targeted use of street vegetation ▪ Attractively designed pedestrian paths, cycle lanes and car parks ▪ Improve intermodality ▪ Ensure accessibility and reachability of urban green spaces and water bodies ▪ Creating an improved supply of open spaces
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	120,000 Euro/year

36 Monitoring the success of tree protection and compensation measures		
Action outline	Action name	Monitoring the success of tree protection and compensation measures
	Action type	Sustainable Urban Development
	Action description	Trees perform many functions. They provide shade, absorb carbon from photosynthesis, reduce noise and improve the urban climate. They provide cooling in high temperatures and help reduce air pollution through the dust-binding effect of their leaves. They are also important guardians of urban biodiversity. To preserve and protect existing trees, a Tree Preservation Statute protects the urban population, trees and shrubs. Ordered replacement planting in the case of interventions in the tree population or protective measures during the realisation of construction measures in the area of protected tree population are not sufficiently enforced. The administration wants to commit itself to the enforcement of tree protection. In addition, the city of Leipzig is improving the monitoring of nature conservation compensation measures in development plans (Federal Building Code § 4c). This includes not only measures on municipal land, but also on private land, and the monitoring of green design measures to minimise the impact on nature and the landscape.
Reference to impact pathway	Field of action	Green Infrastructure and Nature-based Solutions
	Systemic lever	• Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Urban Parks and Bodies of Water Authority
	Action scale & addressed entities	City-wide
	Involved stakeholders	▪ Property developers and construction companies ▪ private builders ▪ Administration (Office for Urban Parks and Bodies of Water Authority, Office for Mobility and Civil Engineering, Office for Building Regulation and Preservation of Monuments, Office for City Planning, AfU) ▪ Infrastructure developers
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Digital recording of the tree and shrub population ▪ Personnel to enforce the tree protection statutes and the associated assessment

		of the affected trees and shrubs and to set conditions ▪ Random checks of properties to be built on ▪ Monitoring the success of the replacement plantings and their permanent preservation ▪ Regulation on the implementation of measures and their monitoring as part of the conclusion of urban development contracts. Deposits withheld are released only after successful acceptance. ▪ Recording of all outstanding greening and mitigation measures from urban development contracts and development plans without urban development contracts through on-site inspections and aerial photo analysis. ▪ Monitoring of the implemented measures in relation to the planned target biotope and correction of identified deficits. ▪ Subsequent claims or, if unsuccessful, use of retained deposits.
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	50,000 euros/year to enforce the tree protection statutes 100,000 euros/year for the implementation of municipal administrative law enforcement of compensation measures

37 Water management concept		
Action outline	Action name	Water management concept
	Action type	Sustainable urban development
	Action description	The aim of an overall water management concept is to stabilise the territorial water balance in the extended urban area of Leipzig. A major challenge, in addition to climate change, is the large number of sealed surfaces and the associated loss of natural soil functions. The concept includes basic scientific research as well as the implementation of concrete measures. The measure contributes to the objectives of multiple use of land and open spaces, the potential use of green-blue infrastructure to adapt to climate change and minimise urban pollution, and the securing and expansion of existing green-blue infrastructure through precautionary land management.
Reference to impact pathway	Field of action	Green Infrastructure and Nature-based Solutions
	Systemic lever	• Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Urban Parks and Bodies of Water Authority, Office for Mobility and Civil Engineering, AfU, Office for City Planning
	Action scale & addressed entities	City-wide
	Involved stakeholders	▪ Administration (Office for Urban Parks and Bodies of Water Authority, Office for Mobility and Civil Engineering, AfU, Office for City Planning) ▪ LWW ▪ individual special-purpose associations ▪ neighbouring municipalities and districts
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Biological engineering construction methods ▪ Reopening of water bodies ▪ Ecological upgrading of watercourses ▪ Stabilisation of the water balance ▪ Creation of retention areas ▪ Planting of shrubs and trees ▪ Better interaction between agriculture, water, soil and nature conservation
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable

	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	1,000,000 Euro/Year

38 Climate-friendly renewal of urban quarters		
Action outline	Action name	Climate-friendly renewal of urban districts
	Action type	Sustainable urban development
	Action description	The creation of integrated energy and climate protection concepts at neighbourhood level and their implementation through Energy Renovation Management (ESM) is an important tool for energy-efficient urban renovation. To this end, refurbishment roadmaps are to be drawn up for all energy-efficient refurbishment areas by 2023 and for all other existing districts by 2025, with the aim of achieving a refurbishment rate of 3.5% of the existing stock per year and replacing fossil heating systems in the entire stock with renewable heating solutions by 2035. The measures are designed and implemented by a multidisciplinary team in close consultation with local people and stakeholders. The "Heating modernisation" support programme provides incentives and enables cooperatives to finance, install and distribute heating systems based on renewable energy. From 2024, there will also be an "Energy Efficiency with Stable Rents" funding programme, which will provide one-off grants to homeowners and housing companies for energy-efficient renovation of the building envelope. The aim is to ensure a stable ceiling for net cold rents after energy-efficient renovation.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	▪ Technology and Infrastructure ▪ Finance and Funding
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Offive for a Digital City, Office for Building Management, Office for City Planning
	Action scale & addressed entities	Neighbourhood Scale, Building Scale
	Involved stakeholders	Citizens Administration L Group Housing coops Housing companies Private owners
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Identification of further suitable neighbourhoods ▪ Application for funding ▪ Creation of integrated energy-related neighbourhood concepts ▪ Development of neighbourhood-related participation concepts ▪ Implementation support through the "Energy-efficient refurbishment management (ESM)" ▪ Continuation of the "Heating modernisation" funding programme

		▪ Launch of the "Energy efficiency with stable rents" funding programme
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	A concrete quantification of this measure is only possible at the level of individual neighbourhood concepts. However, it represents an important basis for leveraging the considerable potential for refurbishing existing buildings. According to the 2019 BISKO balance sheet, emissions due to heat consumption by private households are 2019 BISKO balance responsible for 21 % of GHG emissions (675,000 t). Through potential for GHG reductions of up to around 200,000 tonnes per year by 2030. 200,000 t/year. For example, a conventional refurbishment of a residential building (compliance with the minimum standards of the 2014 Energy Saving Ordinance) already reduces the heat requirement by around a third.
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	Integrated energy district concepts and energy refurbishment management: 315,000 euros/year. "Heating modernisation" funding programme: 250,000 euros/year.

39 Energy-efficient refurbishment of existing municipal buildings		
Action outline	Action name	Energy-efficient refurbishment of existing municipal buildings
	Action type	Energy efficiency in the building sector
	Action description	According to the Climate Emergency Resolution, the administration is to become carbon neutral by 2035.to achieve this, the greenhouse gas emissions caused by the electricity and heating needs of the municipal building stock must be reduced. The energy guideline already provides a roadmap for achieving this goal. In order to keep to the timetable, it will be necessary to provide the necessary financial resources and to continue and expand the measures already established in the past. The selection of buildings to be renovated should be prioritised on the basis of potential savings and expected costs. The aim is to increase the annual rate of energy-efficient renovations in the entire municipal building stock towards a fully decarbonised building stock by 2035. From 2023, no gas or oil heating systems (except district heating) will be planned and installed in buildings owned by the municipality and municipal enterprises. Buildings already under construction and buildings in the planning stage (from work phase 4) are exempt. Exceptions must be submitted to the City Council for decision.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	• Technology & infrastructure
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Building Management
	Action scale & addressed entities	Building Scale
	Involved stakeholders	Building Industry Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Monitoring and publication of the status of the implementation of the energy guideline in the annual energy report. ▪ Development of an action programme through further development and regular updating of the refurbishment planning, essential contents: Current energy consumption, expected energy savings, expected costs, financial savings, time of implementation, responsibility for implementation and financing, measures required to achieve the LEB standard,

		formation of energy performance indicators for prioritisation of plans. ▪ Preparation of the buildings for the installation of solar systems in the existing buildings (roof renovation).
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	approx. EUR 105.37 million/year, cumulative EUR 1,370 million (2023 to 2035)

40 Construction of sustainable municipal buildings		
Action outline	Action name	Construction of sustainable municipal buildings
	Action type	Municipal buildings and facilities
	Action description	The Leipzig Energy and Building Standard defines the requirements for new buildings and the renovation of municipal buildings. The focus is on energy-efficient buildings. In addition to this standard, which applies to all buildings, at least two pilot projects (a school/day-care centre and a multi-storey building) in sustainable construction are to be realised with the involvement of municipal companies (LESG and LEIPZIGER HOUSING AND BUILDING SOCIETY (LWB)). As a major building owner and developer, the City of Leipzig is thus taking on an important pioneering role and strengthening its function as a role model. Sustainable construction means not only meeting the highest energy and utility standards (e.g. zero- or plus-energy house for new buildings, EH40 KfW for refurbishment and modernisation), but also using ecological building materials, resource-saving and recyclable materials. Reducing land use is another goal of sustainable construction. At the beginning of the planning phase, the potential for optimisation is identified on an interdisciplinary basis and variants are examined in order to implement the most ecological and economical construction method. In recent years, the sustainability and sufficiency of buildings in new construction, but also in the modernisation of buildings, have increasingly come to the fore, so that certification systems for sustainable buildings and the development of new criteria and evaluation systems have gained more attention. The Sustainable Building Rating System (BNB) is an existing tool for the planning and evaluation of sustainable and generally public building projects. The aim of the pilot projects is to gain experience and lay the foundations for forward-looking construction with an impact beyond 2030. From 2025, municipal construction projects must be planned as sustainable buildings according to a certification system to be chosen by the city.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	Technology & infrastructure Learning & Capabilities
	Outcome (according to module B-1.1)	not applicable

Implementation	Responsible bodies/person for implementation	Office for Building Management (service provider), Office for Building Regulation and Preservation of Monuments, AfU
	Action scale & addressed entities	Building Scale
	Involved stakeholders	Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	Initiation of the pilot project(s) with the involvement of external experts: ▪ Selection of suitable construction projects and locations ▪ Consideration of the building's life cycle: construction, operation, disposal ▪ Survey of additional costs and balancing of savings potential (incl. grey energy) ▪ Selection of a suitable certification system, definition of the desired quality standard (at least "GOLD") ▪ Planning and realisation of the construction project(s) ▪ If necessary, scientific monitoring of the project(s) ▪ Detailed evaluation of the process (gaining insights into feasibility in terms of costs, personnel requirements, time effects) and continuous monitoring with the involvement of users in order to derive recommendations for future construction projects and the municipal construction management process ▪ Public relations work to increase the impact and sensitisation effect
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

41 Climate protection in urban development and urban planning		
Action outline	Action name	Climate protection in urban development and urban planning
	Action type	Sustainable Urban Development
	Action description	The aim is to implement CO2 reduction criteria in urban development planning and procedures in a structured way.to this end, the potential influence of planning instruments will be identified and the coordination process in the various planning and procedural steps will be defined. From 2023, fossil fuel heating systems will be excluded from new urban land-use plans and urban development contracts and, in particular, the objectives of the municipal heating plan will have to be taken into account. By 2024, targets will be set for the share of renewable energy and the reduction of "grey energy" in the construction of buildings and infrastructure, in line with the sectoral greenhouse gas reduction targets, to be taken into account in urban land-use plans and urban development contracts from 2025.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	Technology & infrastructure Governance & policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for City Planning
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Housing sector Citizens Administration L-Group
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Derivation of climate targets for urban development planning/urban development competition from the land-use plan or other higher-level plans. ▪ Coordination of CO2 reduction criteria for urban development planning instruments and tasks related to climate protection concerns ▪ Use the UDP and the digital twin as a data hub for linking data from public authorities and associated companies, increased collection of neighbourhood-related data via sensor technology.

		▪ Create a binding set of rules for data exchange between the administration and with associated companies.
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	not quantifiable

42 Climate neutrality and sustainability in Leipzig's administration		
Action outline	Action name	Climate neutrality and sustainability in Leipzig's administration
	Action type	Internal Organisation
	Action description	The Concept for a Climate Neutral City in 2035 is the first concept that places the city administration as an active organisation at the centre of the city's climate protection activities and consequently addresses its underlying internal processes. The concept will define the accounting limits and present a roadmap with binding interim targets and concrete measures to reduce greenhouse gas emissions to a climate-neutral, i.e. technically feasible, minimum level. Compensation of emissions is only foreseen for technically unavoidable residual emissions. As a contribution to the transition towards climate neutral mobility, the company's own fleet will be climate-friendly, (electric) bicycles are used for urban transport. Climate-friendly mobility options for employees increase the use of environmentally friendly means of transport. Leipzig's cultural institutions and cultural events throughout the city are striving for climate neutrality. A digital, user-friendly management system centrally links supply and demand. Municipal IT infrastructures (e.g. data centres) are designed on the premise of energy and data efficiency (greentech). Rebound effects are to be avoided as far as possible. The direct and indirect GHG emissions caused by procurement along the supply chain are recorded so that levers can be identified and reallocated. Monitoring is used to set the course for emission-neutral or lower-emission supplies and services. Climate protection and sustainability must always be taken into account and given equal weight when redesigning work organisation as part of Modern Administration and Administrative Accommodation 2030. The three dimensions of sustainable working environments will be taken into account.
Reference to impact pathway	Field of action	Other/Engagement
	Systemic lever	▪ Technology and Infrastructure ▪ Governance and Policy ▪ Learning and Capabilities
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	All departments
	Action scale & addressed entities	Building Scale City-wide scale

	Involved stakeholders	Employees of city Administration Contractors of administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Process support for concept development ▪ Development of an evaluation methodology ▪ Development of a strategy for the continuation of data collection and balancing of cultural institutions and events ▪ Successful development of a monitoring system for GHG emissions in procurement ▪ Conversion to green IT and corresponding adjustment of the operating service contract ▪ Procurement of technical devices according to the highest energy efficiency class, always fairly traded and certified (e.g. with Blue Angel)
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	Mobility: 586,300 euros per annum Procurement: 15,000 euros Internal restructuring: 20,000 euros per annum More not yet quantifiable

43 SME development programme - sustainable growth		
Action outline	Action name	Small and medium enterprises development programme - sustainable growth
	Action type	Funding for sustainability
	Action description	The aim of the SME promotion programme is to strengthen companies to become more competitive nationally/internationally by developing new goods or services, opening up new markets, modernising internal processes or expanding business premises in Leipzig. Special attention and higher funding are given to projects that demonstrably pursue socially or ecologically sustainable goals or otherwise strengthen the regional economy (location bonus). Projects that serve to increase ecological sustainability can receive a higher funding rate if the project-induced sales growth is (already) achieved with Leipzig customer groups.
Reference to impact pathway	Field of action	Other/Engagement
	Systemic lever	• Finance and Funding
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office of Economic Development
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Industry and producers Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Development of a measure as part of the SME development programme ▪ Expansion of the specialised funding guideline for business to include the promotion of sustainability in companies ▪ Establishment of an interdepartmental expert jury (Office for Sustainable Development and Climate Protection, Office of Economic Development) to review applications
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable

	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	900,000 euros/year (figure corresponds to the total value of the SME promotion programme)

44 Climate Education		
Action outline	Action name	Climate Education
	Action type	Education and awareness raising
	Action description	In order to raise awareness of effective climate protection in the city of Leipzig, topic-specific and target group-orientated climate education activities are planned and implemented. This includes information and awareness-raising programmes, events, campaigns and advice for businesses and private households.
Reference to impact pathway	Field of action	Other/Engagement
	Systemic lever	• Learning and Capabilities
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Sustainable Development and Climate Protection, Office of Economic Development
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Industry and producers Citizen Administration House owners
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Planning, development and realisation of campaigns and events ▪ Creation of topic- and target group-specific climate education activities ▪ Advice for private households and commercial enterprises ▪ Sensitisation and activation offers ▪ Participation programmes ▪ Communication and public relations activities
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	500,000 Euro/year

45 Energy saving schools		
Action outline	Action name	Energy saving schools
	Action type	Education and awareness raising
	Action description	The city administration works closely with schools to organise energy projects and energy saving weeks (with the participation of pupils, teachers and caretakers). The activities are being extended to day-care centres in a pilot project. If the project is successful, it is planned to extend it to other day-care centres.
Reference to impact pathway	Field of action	Other/Engagement
	Systemic lever	• Learning and Capabilities
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	Office for Building Management, Office for Schools and Education
	Action scale & addressed entities	Building scale
	Involved stakeholders	Schools Children Administration
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ Implementation of participatory energy-saving projects (e.g. 'Halbe-Halbe') with external expert support as well as the creation and distribution of information materials on the topic of climate protection/energy saving ▪ Environmentally and climate-friendly educational programmes for pupils to motivate and empower them to act independently ▪ Creation and adaptation of property-specific user manuals for energy-efficient new buildings with information for users on the correct operation and use of building services (radiators, windows/ventilation, lighting, water systems) ▪ Further training of pupils as multipliers ('energy scouts', 'climate coaches' or similar) and participation in climate protection programmes ▪ Motivation of further schools for the 'Climate Schools in Saxony' programme
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable

	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	2023: 220,000 euros 2024: 230,000 euros

46 Integrated Industrial Development Leipzig North		
Action outline	Action name	Sustainable industrial estate and transport development in Leipzig's northern region
	Action type	Sustainable urban development
	Action description	With the establishment of large companies, the northern area of Leipzig has developed into one of the most important and dynamic business locations in the metropolitan region of central Germany. Against this backdrop, it is important to ensure the long-term sustainable development of Leipzig's northern region and to harmonise economic interests, the design of future mobility and climate protection.
Reference to impact pathway	Field of action	Sustainable urban development
	Systemic lever	• Technology and Infrastructure • Governance and Policy
	Outcome (according to module B-1.1)	not applicable
Implementation	Responsible bodies/person for implementation	▪ Municipality of Krostitz ▪ Municipality of Rackwitz ▪ Municipality of Wiedemar ▪ District of North Saxony ▪ Saxon State Ministry of Economic Affairs, Labour and Transport (SMWA) ▪ City of Delitzsch ▪ City of Leipzig ▪ City of Schkeuditz ▪ City of Taucha
	Action scale & addressed entities	Regional Scale
	Involved stakeholders	Industry and producers Administration Other cities Federal Government DB
	Comments on implementation - consider mentioning resources, timelines, milestones	▪ The local authorities have committed to a joint, coordinated approach. ▪ A steering group for fundamental decisions and a project team for the continuous implementation of 14 individual measures have been implemented. ▪ Each measure has an individual implementation horizon. ▪ The majority of the individual measures are planned until 2030.
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	not applicable

	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	At least 200 million euros total investment

47 EnAct4CleanCities		
Action outline	Action name	EnAct4CleanCities (NetZeroCities Pilot Cities Programme, Cohort 3)
	Action type	Education and awareness raising
	Action description	In coordination with the municipal strategies for a sustainable heating transition, the vision of the EnAct4CleanCities pilot project is to provide clear and relevant information and support property owners and other stakeholders in their decision-making journey. A data-based and digital approach is used to increase knowledge and acceptance among citizens and stakeholders and to activate them for change. The EnAct4CleanCities pilot will develop, test and pilot a digital toolbox for informing, activating and involving relevant target groups in the energy transition at district and city level.
Reference to impact pathway	Field of action	Other/Engagement
	Systemic lever	• Technology and Infrastructure • Governance and Policy • Learning and Capabilities
	Outcome (according to module B-1.1)	The goal is to engage various target groups in the energy and heating transition by making municipal strategies transparent, publishing relevant data, and providing tailored information and advice to property owners. The project aims to reduce property owners' uncertainties about the ambitious plans for achieving climate neutrality. It will pilot new technical service products and integrate them with overall heating and energy transformation strategies.
Implementation	Responsible bodies/person for implementation	Digital City Unit
	Action scale & addressed entities	City-wide scale
	Involved stakeholders	Project Partners: ▪ City Dresden ▪ STESAD (Urban development and renovation company Dresden mbH) External stakeholders: ▪ Regional energy agency: SAENA ▪ "Consumer Advice Center Saxony" (Consumer Advice Centre Saxony) ▪ Saxon State Ministry for Energy, Climate Protection, Environment and Agriculture (SMEKUL) ▪ Energy Efficiency and Climate Protection Network Leipzig (EENK)

		▪ The Leibniz Institute for Ecological Spatial Development (IOER) ▪ Home owner associations
	Comments on implementation - consider mentioning resources, timelines, milestones	The stepwise implementation of the EnAct4CleanCities tool kit on city and district level includes developing and deploying tools to engage and activate stakeholders, assessing their effectiveness through testing, and evaluating outcomes. An accompanying communication strategy for the use of the tool kit is developed and implemented.
Impact & cost	Generated renewable energy (if applicable)	not applicable
	Removed/substituted energy, volume, or fuel type	Decarbonisation of heating and cooling - shifting from fossil fuels (such as natural gas and crude oil) to renewable sources for district heating
	GHG emissions reduction estimate (total) per emission source sector	not quantifiable
	GHG emissions compensated (natural or technological sinks)	not quantifiable
	Total costs and costs by CO2e unit	Total costs: € 502,500.00 (sept 2024 - sept 2026)

Commitments and measures of Leipzig companies and organisations to the Climate City Agreement

More than 70 organisations were asked to document their climate protection measures in an online survey in 2024 and contribute them to the Climate City Agreement. Over 40 organisations responded to the survey. The measures submitted included climate protection measures already implemented since 2019 (base year) as well as measures planned up to 2030. It was stipulated that planned measures must at least a) have already been adopted by a shareholders' meeting or similar and b) be integrated into the companies' business plans or medium-term plans. It can be assumed that the companies will plan and implement further measures by 2030, which are to be included in future versions of the Climate City Agreement.

Due to the amount of work involved, the measures were not documented in the same level of detail as the municipal measures. The information on CO2 reduction is based on company data and estimates by the transition team using standard values. Table B-2.3 lists the measures per company, Table B-2.4 summarises the CO2 reduction per field of action and measure across all submitted measures.

B-2.3: Description of action portfolios of private actors

Actor	Portfolio description		
	Fields of Action	Descriptions	Min. C02 Reduction
Leipzig Employment Agency	Energy systems	Installing a photovoltaic system, switching to an electricity provider with certified electricity from renewable sources, optimising lighting, reducing flow temperatures in the heating system, using energy-efficient appliances and machines, using "green" IT services, smart control of lighting, pumps or compressed air	5615,6
	Mobility & transport	Switching to electric vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, setting up car pools, offering bicycle parking spaces, offering home office options, bundling orders	1160
	Waste & circular economy	Reduction of material consumption, introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance	0
	Other/Engagement	Participation in networks and partnerships, participation in Leipzig's city cycling programme	0
Arvato Systems Digital GmbH	Energy systems	Switch to an electricity provider with certified electricity from renewable sources, optimise lighting, use energy-efficient appliances and machines	1634
	Mobility & transport	Conversion to electric vehicles, conversion to hybrid vehicles, use of bicycles and cargo bikes, virtual meetings instead of physical travel, guidelines for sustainable business travel, provision of job bikes, provision of job tickets/ Germany tickets, provision of home office options, adaptation of working hours to travelling times	361,7

	Waste & circular economy	Introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance	0
biosaxony Management GmbH	Energy systems	Optimisation of lighting, smart control of light, pumps or compressed air	6,4
	Waste & circular economy	Purchase of new appliances with more climate-friendly technical gases	0
	Mobility & transport	Virtual meetings instead of physical travel, guidelines for sustainable business travel, offering job tickets/ Germany tickets, offering home office options, adapting working hours to travelling times, regional supply chains, selecting climate-friendly logistics service providers	29,5
	Green infrastructure & nature-based solutions	Greening	0
BMW Group Plant Leipzig	Energy systems	Construction of a combined heat and power plant, installation of a photovoltaic system, construction of a wind turbine, switch to electricity provider with certified electricity from renewable sources, optimisation of lighting, optimisation of heating, ventilation and air conditioning systems	47000,9
	Mobility & transport	Switch to electric vehicles, offer job tickets/Germany tickets, offer job bikes, offer bicycle parking spaces, offer shower rooms for employees, offer home office options, offer electric charging infrastructure for cars and bicycles, coordinate car pools, select climate-friendly logistics service providers	584,1
	Green infrastructure & nature-based solutions	Greening, unsealing, targeted promotion of biodiversity	0
	Waste & circular economy	Supply chain optimisation	0
	Other/Engagement	Compensation of emissions through the purchase emission certificates (Gold Standard), participation in networks and partnerships, climate protection training for employees, participation in Leipzig's city cycling programme	0
	Energy systems	Installation of heat pumps, installation of a photovoltaic system	97674,14

Caralux LED-u. Neonlichttechnik GmbH	Mobility & transport	Offer of shower rooms for employees, offer of home office options, coordination of car pools	0
Caritas Association Leipzig e. V.	Energy systems	Switch to an electricity provider with certified electricity from renewable sources, optimise lighting, use energy-efficient appliances and machines	2977,7
	Mobility & transport	Conversion to electric vehicles, use of bicycles and cargo bikes, provision of an electric charging infrastructure for cars and bicycles	40,7
	Other/Engagement	Participation in Leipzig's city cycling programme	0
DBFZ German Biomass Research Centre gGmbH	Energy systems	Installation of pellet heating, switch to electricity provider with certified electricity from renewable sources	1210,3
	Built environment	Improving building insulation	0
	Energy systems	Optimisation of lighting, optimisation of heating, ventilation and air conditioning systems, reduction of flow temperatures in the heating system, use of waste heat, use of energy-efficient appliances and machines, installation of external sun protection	118,8
	Mobility & transport	Switch to electric vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, offer of job tickets/Germany tickets, offer of bicycle parking spaces, offer of shower rooms for employees, offer of home office options, bundling of orders, selection of climate-friendly logistics service providers	411,7
	Green infrastructure & nature-based solutions	Greening, targeted promotion of biodiversity, rainwater management	0
	Waste & circular economy	Introduction of waste separation to reduce residual waste	0
	Other/Engagement	Compensation of emissions through the purchase certificates (Gold Standard), participation in networks and partnerships, climate protection training for employees, climate protection communication with politicians and city society, participation in Leipzig's city cycling programme	489
Deloitte GmbH auditing company	Energy systems	Switch to electricity provider with certified electricity from renewable sources, optimisation of lighting	217,4

	Built environment	Efficient room utilisation	0
	Energy systems	Use of energy-efficient devices and machines, utilisation of "green" IT services	0
	Mobility & transport	Conversion to electric vehicles, conversion to hybrid vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, provision of job bikes, provision of job tickets/Germany tickets, provision of bicycle parking spaces, provision of shower rooms for employees, provision of home office options, regional supply chains	68,6
	Waste & circular economy	Reduction of material consumption, supply chain optimisation, introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance	0
	Other/Engagement	Compensation of emissions through the purchase certificates (Gold Standard), promotion of climate protection projects, participation in networks and partnerships, climate protection training for employees	30
DHL Group Leipzig	Mobility & transport	Use of bicycles and cargo bikes	12
DRK District Association Leipzig-Stadt e.V.	Mobility & transport	Switch to electric vehicles, virtual meetings instead of physical travel, offer of job tickets/ Germany tickets, offer of job bikes, offer of home office options	678,6
	Green infrastructure & nature-based solutions	Greening, unsealing, targeted promotion of biodiversity, rainwater management	20
Energy Exchange Services GmbH	Mobility & transport	Conversion to electric vehicles	0,2
ETE EmTechEngineering GmbH	Other/Engagement	Participation in networks and partnerships	0
European Energy Exchange AG	Energy systems	Switch to an electricity provider with certified electricity from renewable sources, optimise lighting, smart control of lighting, pumps or compressed air	4581
	Mobility & transport	Switching to electric vehicles, switching to hybrid vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, offering job bikes, offering job tickets/Germany tickets, offering an electric charging infrastructure for cars and bikes, offering shower rooms for employees, offering home office options, adapting working hours to travelling times, regional supply chains,	487

		bundling orders, selecting climate-friendly logistics service providers	
	Waste & circular economy	Use of recycled materials, reduction of material consumption, range of spare parts and repairs, supply chain optimisation, internal communication or guidelines on waste avoidance, changes to the menu	64
	Other/Engagement	Compensation of emissions through the purchase certificates (Gold Standard), climate protection training for employees, climate protection communication with politicians and city society, participation in Leipzig's city cycling programme	0
Ev. Diakonissenkrankenhaus Leipzig gemeinnützige GmbH	Energy systems	Installation of a photovoltaic system, optimisation of lighting, optimisation of heating, ventilation and air conditioning systems, use of waste heat to generate energy	355,7
	Mobility & transport	Switch to electric vehicles, switch to hybrid vehicles, virtual meetings instead of physical travel, guideline for sustainable business travel	1012,8
	Green infrastructure & nature-based solutions	Greening	0
	Waste & circular economy	Use of recycled materials, reduction of material consumption, introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance	0
	Other/Engagement	Participation in networks and partnerships, climate protection training for employees, climate protection communication with politicians and city society, participation in Leipzig's city cycling programme	0
Fraunhofer Institute for Cell Therapy and Immunology IZI	Energy systems	Installation of a photovoltaic system, switch to an electricity provider with certified electricity from renewable sources	899,1
	Mobility & transport	Offer of job tickets/Germany tickets, offer of electric charging infrastructure for cars and bicycles, offer of bicycle parking spaces, offer of shower rooms for employees, offer of home office options	0
	Waste & circular economy	Introduction of waste separation to reduce residual waste, reduction of production waste	0
	Other/Engagement	Participation in networks and partnerships, climate protection training for employees, participation in Leipzig's city cycling programme	0

GISA GmbH	Energy systems	Switch to electricity provider with certified electricity from renewable sources, utilisation of waste heat energy	6569,1
	Built environment	Efficient room utilisation	0
	Energy systems	Use of "green" IT services	0
	Mobility & transport	Switch to electric vehicles, switch to hybrid vehicles, virtual meetings instead of physical travel, guideline for sustainable business travel	1519,2
	Green infrastructure & nature-based solutions	Greening	0
	Waste & circular economy	Replacement of fossil raw materials with renewable raw materials, reduction of material consumption	0
Helmholtz Centre for Environmental Research GmbH - UFZ	Energy systems	Installing a photovoltaic system, switching to an electricity provider with certified electricity from renewable sources, optimising lighting, optimising heating, ventilation and air conditioning systems, reducing flow temperatures in the heating system, using energy-efficient appliances and machines	1860,9
	Mobility & transport	Switch to electric vehicles, switch to hydrogen vehicles, use of bicycles and cargo bikes, virtual meetings instead of physical travel, guidelines for sustainable business travel, offer of job tickets/ Germany tickets, offer of electric charging infrastructure for cars and bicycles, offer of home office options	962,1
	Green infrastructure & nature-based solutions	Greening, unsealing, targeted promotion of biodiversity	0
	Waste & circular economy	Reduced and/or more climate-friendly packaging, Reduced and/or more climate-friendly packaging, Spare parts and repair offer, Introduction of waste separation to reduce residual waste, Reduction of production waste, Internal communication or guideline on waste avoidance, Changes to the menu, Offer of take-away options	128
	Other/Engagement	Compensation of emissions through the purchase emission certificates (Gold Standard), participation in networks and partnerships, climate protection communication with politicians and city society, participation in Leipzig's city cycling programme	10961,9

Leipzig University of Music and Theatre	Energy systems	Switching to electricity providers with certified electricity from renewable sources, optimising lighting, optimising heating, ventilation and air conditioning systems, reducing flow temperatures in the heating system	1399,4
	Mobility & transport	Guideline for sustainable business travel	0
	Waste & circular economy	Reduction of material consumption	0
HTWK Leipzig	Mobility & transport	Conversion to hybrid vehicles, virtual meetings instead of physical travel, provision of job bikes, provision of job tickets/Germany tickets, provision of an electric charging infrastructure for cars and bikes, provision of bike parking spaces, provision of shower rooms for employees, provision of home office options, adjustment of working hours to commuting times	1109,9
	Green infrastructure & nature-based solutions	Greening	0
	Waste & circular economy	Spare parts and repair services, introduction of waste separation to reduce residual waste	74,7
	Other/Engagement	Participation in networks and partnerships, participation in Leipzig's city cycling programme	0
Impact Hub Leipzig	Mobility & transport	Setting up car pools, offering job tickets/ Germany tickets, offering bicycle parking spaces, offering home office options, coordinating car pools, adapting working hours to travelling times	0
	Waste & circular economy	Supply chain optimisation, reduction of material consumption, introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance	0
	Other/Engagement	Participation in networks and partnerships, climate protection training for employees, participation in Leipzig's city cycling programme	0
Leipzig Job Centre	Energy systems	Installation of a photovoltaic system, switch to an electricity provider with certified electricity from renewable sources, optimisation of lighting, reduction of flow temperatures in the heating system	6538,1
	Built environment	Efficient room utilisation	0

	Energy systems	Use of energy-efficient devices and machines, utilisation of "green" IT services, smart control of lighting, pumps or compressed air	0
	Mobility & transport	Conversion to electric vehicles, use of car-sharing services, virtual meetings instead of physical travel, guidelines for sustainable business travel, establishment of car pools, provision of bicycle parking spaces, provision of job tickets/Germany tickets, provision of bicycle parking spaces, provision of home office options, bundling of orders	1350,6
	Waste & circular economy	Reduction of material consumption, introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance	0
	Other/Engagement	Participation in networks and partnerships, participation in Leipzig's city cycling programme	0
Johanniter Services Saxony GmbH	Energy systems	Installation of a photovoltaic system, switch to an electricity provider with certified electricity from renewable sources	2805,4
	Mobility & transport	Switch to electric vehicles, switch to hybrid vehicles, virtual meetings instead of physical travel, guideline for sustainable business travel	616,2
	Waste & circular economy	Use of recycled materials, Reduced and/or more climate-friendly packaging, Supply chain optimisation, Introduction of waste separation to reduce residual waste, Internal communication or guidelines on waste avoidance, Changes to the menu, Demand-oriented purchasing of perishable foods	0
Kommunale Wasserwerke Leipzig GmbH	Energy systems	Construction of a combined heat and power plant, switch to electricity provider with certified electricity from renewable sources, optimisation of lighting, use of energy-efficient devices and machines	1141,4
	Waste & circular economy	Regular maintenance and repair of leaks	0
	Mobility & transport	Switch to electric vehicles, virtual meetings instead of physical travel, offer of job bikes, offer of job tickets/ Germany tickets, offer of home office options, regional supply chains	1075,5
	Green infrastructure & nature-based solutions	Greening, targeted promotion of biodiversity	0
	Waste & circular economy	Supply chain optimisation, introduction of waste separation to reduce residual waste, reduction of production waste, internal	0

		communication or guidelines for waste avoidance	
	Other/Engagement	Offsetting emissions, promoting climate protection projects, participating in Leipzig's city cycling programme	900
Plastics Centre in Leipzig gGmbH	Mobility & transport	Use of car-sharing services, virtual meetings instead of physical travel, provision of job bikes, provision of bicycle parking spaces, provision of home office options	85,5
	Waste & circular economy	Support for suppliers in reducing emissions, introduction of waste separation to reduce residual waste	0
	Other/Engagement	Participation in Leipzig's city cycling programme	0
Lecos GmbH	Energy systems	Installation of a photovoltaic system, switch to an electricity provider with certified electricity from renewable sources, optimisation of lighting, optimisation of heating, ventilation and air conditioning systems	2360,9
	Built environment	Efficient room utilisation	0
	Energy systems	Use of energy-efficient devices and machines	0
	Waste & circular economy	Regular maintenance and repair of leaks, purchase of new appliances with more climate-friendly technical gases	0
	Mobility & transport	Conversion to electric vehicles, conversion to hybrid vehicles, use of bicycles and cargo bikes, virtual meetings instead of physical travel, guidelines for sustainable business travel, establishment of car pools, provision of job bikes, provision of job tickets/Germany tickets, provision of electric charging infrastructure for cars and bicycles, provision of bicycle parking spaces, provision of shower rooms for employees, provision of home office options, adjustment of working hours to commuting times	2377,9
	Waste & circular economy	Introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance, changes to the menu	0
	Other/Engagement	Promotion of climate protection projects, climate protection training for employees, participation in Leipzig's city cycling programme	577
Leibniz Institute for Jewish History and Culture - Simon Dubnow e. V.	Energy systems	Switch to electricity provider with certified electricity from renewable sources, optimisation of lighting	297,8
	Mobility & transport	Virtual meetings instead of physical travelling, offering home office options	60,6

	Waste & circular economy	Use of recycled materials, reduction of material consumption, introduction of waste separation to reduce residual waste	0
Leibniz Institute for Regional Geography	Mobility & transport	Virtual meetings instead of physical travel, guideline for sustainable business travel	186,6
	Waste & circular economy	Reduced and/or more climate-friendly packaging, range of spare parts and repairs, supply chain optimisation, introduction of waste separation to reduce residual waste, changes to the menu	12,8
Leibniz Institute for Tropospheric Research e.V.	Energy systems	Switch to an electricity provider with certified electricity from renewable sources, install a photovoltaic system, optimise lighting, optimise heating, ventilation and air conditioning systems, reduce flow temperatures in the heating system, use energy-efficient waste heat, use energy-efficient devices and machines, use "green" IT services, smart control of lighting, pumps or compressed air, install external sun protection	1632,3
	Waste & circular economy	Regular maintenance and repair of leaks	0
	Mobility & transport	Use of bicycles and cargo bikes, use of car sharing services, virtual meetings instead of physical travel, setting up car pools, offering job tickets/Germany tickets, offering bicycle parking spaces, offering home office options, adapting working hours to travelling times, reducing returns	311,3
	Green infrastructure & nature-based solutions	Targeted promotion of biodiversity, rainwater management	0
	Waste & circular economy	Changing the menu, offering take-away options	0
	Other/Engagement	Climate protection training for employees, climate protection communication with politicians and city society, participation in Leipzig's city cycling programme	0
Leipzig municipal utilities GmbH	Mobility & transport	Switching to electric vehicles, offering job bikes, offering job tickets/Germany tickets, offering an electric charging infrastructure for cars and bikes, offering bicycle parking spaces, offering shower rooms for employees, offering home office options, adapting working hours to travelling times	70
	Green infrastructure & nature-	Greening, unsealing, targeted promotion of biodiversity	0

	based solutions		
	Waste & circular economy	Changing the menu	0
	Other/Engagement	Compensation of emissions through the purchase of emission certificates (Gold Standard)	850
Leipzig public transport company Ltd.	Energy systems	Installation of a photovoltaic system, switch to an electricity provider with certified electricity from renewable sources	26006,6
	Built environment	Improving building insulation	0
	Energy systems	Optimisation of lighting, optimisation of heating, ventilation and air conditioning systems, reduction of flow temperatures in the heating system	1236,1
	Built environment	Efficient room utilisation	0
	Energy systems	Use of energy-efficient devices and machines, smart control of lighting, pumps or compressed air	0
	Mobility & transport	Switch to electric vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, offer of job tickets/Germany tickets, offer of electric charging infrastructure for cars and bicycles, offer of bicycle parking spaces, offer of home office options	20566,6
	Green infrastructure & nature-based solutions	Greening, targeted promotion of biodiversity, rainwater management	0
	Waste & circular economy	Replacing fossil raw materials with renewable raw materials, offering spare parts and repairs, optimising the supply chain, introducing waste separation to reduce residual waste, reducing production waste, internal communication or guidelines on waste avoidance, changing the menu, needs-based purchasing of perishable foods, offering take-away options	277,4
	Other/Engagement	Compensation of emissions through the purchase emission certificates (Gold Standard), promotion of climate protection projects, participation in networks and partnerships, climate protection communication with politicians and urban society	2500
Leipziger Versorgungs- und	Built environment	Efficient room utilisation	4,4

Verkehrsgesellschaft mbH	Mobility & transport	Switch to electric vehicles, switch to hybrid vehicles, virtual meetings instead of physical travel, guideline for sustainable business travel	7804,5
	Other/Engagement	Compensation of emissions through the purchase of emission certificates (Gold Standard)	30
Max Planck Institute for Evolutionary Anthropology	Energy systems	Installing heat pumps, switching to electricity providers with certified electricity from renewable sources	4138,6
	Mobility & transport	Conversion to electric vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, provision of job bikes, provision of job tickets/Germany tickets, provision of bicycle parking spaces, provision of shower rooms for employees, provision of home office options, adaptation of working hours to travelling times	939,6
	Waste & circular economy	Changing the menu, offering take-away options	0
mfi Shopping Centre management GmbH	Energy systems	Installation of a photovoltaic system, switch to an electricity provider with certified electricity from renewable sources	3284,8
	Built environment	Improving building insulation	0
	Energy systems	Optimisation of lighting, optimisation of heating, ventilation and air conditioning systems, use of waste heat, use of energy-efficient devices and machines, demand-oriented volume flow	213,9
	Waste & circular economy	Regular maintenance and repair of leaks	0
	Mobility & transport	Switching to hybrid vehicles, virtual meetings instead of physical travel, offering job tickets/Germany tickets, offering job bikes, offering bicycle parking spaces, offering shower rooms for employees, offering home office options, offering an electric charging infrastructure for cars and bikes	713,5
	Green infrastructure & nature-based solutions	Greening, unsealing, targeted promotion of biodiversity	0
	Waste & circular economy	Use of recycled materials, replacement of fossil raw materials with renewable raw materials, reduction of material consumption, supply chain optimisation, support for suppliers in reducing emissions, introduction of waste separation to reduce residual waste, internal	0

		communication or guidelines on waste avoidance	
	Other/Engagement	Offsetting emissions through the purchase of emission certificates (Gold Standard), participation in networks and partnerships, climate protection training for employees, climate protection communication with politicians and urban society	0
MIB Projektentwicklung GmbH	Energy systems	Utilisation of geothermal energy, installation of heat pumps, installation of a photovoltaic system	11,6
	Built environment	Improving building insulation	0
Mitteldeutscher Rundfunk	Energy systems	Switch to electricity provider with certified electricity from renewable sources, optimisation of lighting	2511,9
	Mobility & transport	Switching to electric vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, offering job tickets/ Germany tickets, offering home office options, offering an electric charging infrastructure for cars and bicycles	5965,8
	Green infrastructure & nature-based solutions	Greening, targeted promotion of biodiversity	0
	Waste & circular economy	Introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance, changes to the menu, offering take-away options	0
	Other/Engagement	Participation in networks and partnerships, participation in Leipzig's city cycling programme	0
Porsche Leipzig GmbH	Energy systems	Conversion to biogas, construction of a combined heat and power plant, installation of heat pumps, installation of a photovoltaic system, switch to electricity provider with certified electricity from renewable sources	34189,4
	Built environment	Improving building insulation	0
	Energy systems	Optimisation of lighting, optimisation of heating, ventilation and air conditioning systems, reduction of flow temperatures in the heating system, use of waste heat, demand-oriented volume flow, use of energy-efficient devices and machines, smart control of lighting, pumps or compressed air, installation of external sun protection	2092

	Waste & circular economy	Regular maintenance and repair of leaks, purchase of new appliances with more climate-friendly technical gases	0
	Mobility & transport	Switching to electric vehicles, switching to hybrid vehicles, virtual meetings instead of physical travel, setting up car pools, offering job bikes, offering job tickets/Germany tickets, offering an electric charging infrastructure for cars and bikes, offering bicycle parking spaces, offering shower rooms for employees, coordinating car pools, offering home office options, reducing returns, bundling orders, selecting climate-friendly logistics service providers	7427,4
	Green infrastructure & nature-based solutions	Greening, targeted promotion of biodiversity, rainwater management	0
	Waste & circular economy	Replacement of fossil raw materials with renewable raw materials, reduced and/or more climate-friendly packaging, reduction of material consumption, introduction of waste separation to reduce residual waste, reduction of production waste, internal communication or guidelines on waste avoidance, changes to the menu, measures for holistic food utilisation, demand-oriented purchasing of perishable food, offer of take-away options	0
	Other/Engagement	Compensation of emissions through the purchase certificates (Gold Standard), promotion of climate protection projects, participation in networks and partnerships, climate protection training for employees, climate protection communication with politicians and city society, participation in Leipzig's city cycling programme	0
RaDo mobility concepts	Mobility & transport	Use of bicycles and cargo bikes, use of car-sharing services, virtual meetings instead of physical travelling	1,6
Saat-Gut Plaußig Voges KG	Energy systems	Installation of a photovoltaic system, switch to an electricity provider with certified electricity from renewable sources	115,3
	Mobility & transport	Virtual meetings instead of physical travelling	23,2
	Green infrastructure & nature-based solutions	Rainwater management	0

SAE Institute GmbH	Energy systems	Switch to an electricity provider with certified electricity from renewable sources, optimise lighting, use energy-efficient appliances and machines	168
	Mobility & transport	Virtual meetings instead of physical travel, guidelines for sustainable business trips, offering home office options, adapting working hours to travelling times	34,2
	Waste & circular economy	Use of recycled materials, replacement of fossil raw materials with renewable raw materials, reduced and/or more climate-friendly packaging, reduction of material consumption, range of spare parts and repairs, introduction of waste separation to reduce residual waste, reduction of production waste, internal communication or guidelines on waste avoidance, changes to the menu	0
	Other/Engagement	Compensation of emissions through the purchase emission certificates (Gold Standard), promotion of climate protection projects, participation in networks and partnerships	0
SENEC GmbH	Mobility & transport	Conversion to electric vehicles, conversion to hybrid vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, provision of job bikes, provision of job tickets/Germany tickets, provision of bicycle parking spaces, provision of home office options	1147,9
	Waste & circular economy	Reduced and/or more climate-friendly packaging, introduction of waste separation to reduce residual waste, changes to the menu	0
	Other/Engagement	Compensation of emissions through the purchase emission certificates (Gold Standard), participation in networks and partnerships	0
Siemens AG	Energy systems	Installing heat pumps, installing a photovoltaic system, switching to an electricity provider with certified electricity from renewable sources	862,3
	Built environment	Improving building insulation	0
	Energy systems	Optimisation of lighting, optimisation of heating, ventilation and air conditioning systems, reduction of flow temperatures in the heating system, use of waste heat, use of energy-efficient appliances and machines, smart control of lighting, pumps or compressed air	136,6

	Mobility & transport	Switch to electric vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, provision of job bikes, provision of job tickets/Germany tickets, provision of an electric charging infrastructure for cars and bicycles, provision of bicycle parking spaces, provision of shower rooms for employees, coordination of car pools, provision of home office options, selection of climate-friendly logistics service providers	979,3
	Green infrastructure & nature-based solutions	Greening, unsealing, targeted promotion of biodiversity, rainwater management	0
	Waste & circular economy	Use of recycled materials, reduced and/or more climate-friendly packaging, reduction of material consumption, supply chain optimisation, support for suppliers in reducing emissions, introduction of waste separation to reduce residual waste, reduction of production waste, changes to the menu, measures for holistic food recycling, offer of take-away options	1041,7
	Other/Engagement	Climate protection training for employees, participation in Leipzig's city cycling programme	0
Sonovum GmbH	Built environment	Efficient room utilisation	0
	Mobility & transport	Use of bicycles and cargo bikes, virtual meetings instead of physical travel, setting up car pools, offering job bikes, offering bicycle parking spaces, offering home office options, adapting working hours to travelling times	0
	Waste & circular economy	Introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance	0
SpinLab Accelerator GmbH	Energy systems	Switching to electricity providers with certified electricity from renewable sources, optimising lighting, optimising heating, ventilation and air conditioning systems, using "green" IT services	233,3
	Mobility & transport	Switch to electric vehicles, virtual meetings instead of physical travel, guidelines for sustainable business travel, provision of job bikes, provision of job tickets/Germany tickets, provision of an electric charging infrastructure for cars and bikes, provision of shower rooms for employees, provision of home office options	49,7

	Waste & circular economy	Use of recycled materials, reduced and/or more climate-friendly packaging, reduction of material consumption, supply chain optimisation, introduction of waste separation to reduce residual waste, internal communication or guidelines on waste avoidance, changes to the menu	0
	Other/Engagement	Compensation of emissions through the purchase emission certificates (Gold Standard), promotion of climate protection projects, participation in networks and partnerships, climate protection communication with politicians and city society, participation in Leipzig's city cycling programme	0
Saxon State Enterprise for Real Estate and Construction Management	Built environment	Improving building insulation	363
	Energy systems	Optimisation of lighting, optimisation of heating, ventilation and air conditioning systems	366,1
	Green infrastructure & nature-based solutions	Greening	0
City and District Savings Bank Leipzig	Energy systems	Switch to electricity providers with certified electricity from renewable sources, optimisation of lighting, optimisation of heating, ventilation and air conditioning systems	1768
	Built environment	Efficient room utilisation	0
	Energy systems	Use of energy-efficient devices and machines	0
	Mobility & transport	Use of car-sharing schemes, provision of job bikes, provision of job tickets/Germany tickets, provision of bicycle parking spaces, provision of home office options	84
	Waste & circular economy	Use of recycled materials, reduction of material consumption, introduction of waste separation to reduce residual waste, changes to the menu	0
	Other/Engagement	Participation in networks and partnerships, participation in Leipzig's city cycling programme	5
	Energy systems	Construction of a combined heat and power plant, optimisation of lighting	137,7

Leipzig Municipal Nursing Homes for the Elderly gGmbH	Mobility & transport	Conversion to electric vehicles, use of bicycles and cargo bikes, provision of job bikes, provision of job tickets/Germany tickets, provision of an electric charging infrastructure for cars and bicycles, provision of bicycle parking spaces, provision of shower rooms for employees, provision of home office options	30
	Green infrastructure & nature-based solutions	Rainwater management	0
	Waste & circular economy	Internal communication or guidelines on waste avoidance, changes to the menu, demand-orientated purchasing of perishable foods	0
	Other/Engagement	Compensation of emissions through the purchase emission certificates (Gold Standard), climate protection communication with politicians and city society, participation in Leipzig's city cycling programme	40

The following table summarises the CO2 reduction according to fields of action and measures across all company measures submitted. Estimated by the companies themselves. Measures with "0" could not be summarised due to their complexity or no information was provided by the companies.

B-2.4: Summary of action portfolio of private actors

Fields of action	List of actions	Number of entries	M in. CO2e reduction (t)
Energy systems	Construction of a combined heat and power plant	5	151894
	Installation of a photovoltaic system	16	103819
	Switch to an electricity provider with certified electricity from renewable sources	36	187116
	Optimisation of the lighting	31	10446
	Optimisation of heating, ventilation and air conditioning systems	17	3663
	Installation of heat pumps	5	450
	Pellet heating installation	1	311
	Use of energy-efficient devices and machines	17	187
	Reduction of flow temperatures in the heating system	4	0
	Use of "green" IT services	6	0
	Smart control of light, pumps or compressed air	8	0

B-2.4: Summary of action portfolio of private actors			
	Construction of a wind turbine	1	0
	Utilisation of waste heat	7	0
	Installation of external sun shading	2	0
	Smart control of light, pumps or compressed air	2	0
	Reduction of flow temperatures in the heating system	7	0
	Installation of external sun shading	2	0
	Demand-orientated volume flow	3	0
	Utilisation of geothermal energy	1	0
	Conversion to biogas	1	0
Mobility & transport	Guideline for sustainable business travel	23	16258
	Virtual meetings instead of physical travelling	37	58428
	Conversion to electric vehicles	30	3947
	Conversion to hybrid vehicles	14	1163
	Offering an electric charging infrastructure for cars and bicycles	17	137
	Use of car sharing services	4	84
	Offer of job bikes	23	46
	Offer of job tickets/ Germany tickets	30	66
	Provision of bicycle parking spaces	25	42
	Offer of home office opportunities	37	46
	Adjustment of working hours to travelling times	12	42
	Use of bicycles and cargo bikes	10	19
	Setting up car pools	5	0
	Bundling of orders	5	0
	Regional supply chains	3	0
	Selection of climate-friendly logistics service providers	3	0
	Provision of shower rooms for employees	15	0
	Coordination of car pools	2	0
	Selection of climate-friendly logistics service providers	4	0
	Coordination of car pools	3	0

B-2.4: Summary of action portfolio of private actors			
	Conversion to hydrogen vehicles	1	0
	Setting up car pools	2	0
	Use of car sharing services	2	0
	Regional supply chains	1	0
	Reduction of returns	2	0
Waste & circular economy Waste & circular economy	Supply chain optimisation	8	1.181
	Spare parts and repair offer	8	1.122
	Introduction of waste separation to reduce residual waste	28	4
	Reduction of material consumption	11	0
	Internal communication or guideline for waste avoidance	22	0
	Purchase of new appliances with more climate-friendly technical gases	2	0
	Use of recycled materials	10	0
	Changing the menu	20	0
	Reduction of material consumption	5	0
	Reduction of production waste	8	0
	Replacing fossil raw materials with renewable raw materials	4	0
	Reduced and/or more climate-friendly packaging	4	0
	Reduced and/or more climate-friendly packaging	7	0
	Offer of take-away options	9	0
	Supply chain optimisation	5	0
	Demand-orientated purchasing of perishable foods	5	0
	Regular maintenance and repair of leaks	5	0
	Support for suppliers in reducing emissions	4	0
	Purchase of new appliances with more climate-friendly technical gases	1	0
	Replacing fossil raw materials with renewable raw materials	2	0
	Measures for holistic food utilisation	3	
Built environment	Improving building insulation	10	363

B-2.4: Summary of action portfolio of private actors			
	Efficient room utilisation	10	30
Green infrastructure & nature-based solutions	Greening	18	20
	Unsealing	6	0
	Targeted promotion of biodiversity	14	0
	Rainwater management	8	0
Other/Engagement	Compensation of emissions through the purchase of emission certificates (Gold Standard)	15	14.870
	Compensation of emissions	1	900
	Participation in Leipzig's city cycling programme	23	616
	Promotion of climate protection projects	9	16
	Participation in networks and partnerships	15	0
	Climate protection training for employees	15	0
	Climate protection communication with politics and urban society	13	0
	Participation in networks and partnerships	8	0
Total			**557.284** (Total amount may differ from 100% due to rounding)

The following table summarises the total GHG-reduction potential of actions submitted by Leipzig enterprises and organisations per field of action.

B-2.5: Summary of action fields - private actors	
Field of Action	**Balanced CO2 reduction, minimum figure**
Energy systems	457.884
Mobility & transport	80.278
Waste & circular economy	2.307
Green infrastructure & nature-based solutions	20
Built environment	393
Various	16.402
Total	**557.284** (Total amount may differ from 100% due to rounding)

B-2 .6: Summary strategy for residual emissions
As currently neither emissions nor the sequestration potential are yet solidly quantified, the a strategy for dealing with residual emissions can not yet be determined. Once this is available, the Leipzig strategy provides arguments for developing it. Measures can be implemented with the help of the biannual process for developing climate action implementation programmes, as much as with the iteration of the climate city contract. A further option would be to implement climate orientated household planning.

3.3 Module B-3 Indicators for Monitoring, Evaluation and Learning

The **monitoring** of the Climate City Contract is based on a holistic approach that takes into account all sources of emissions caused by the City of Leipzig or the municipal economy and is linked to the monitoring of the EKSP. Various indicators such as the renewable share of the city's overall energy requirements, modal split indicators and the city's green supply are regularly reviewed to ensure that Leipzig remains on track. Both the measures of the Energy and Climate Protection Programme 2030 and the Leipzig Climate City Contract are subject to a two-year reporting process and are continuously evaluated. The uniform nationwide method of greenhouse gas balancing according to the BISKO standard used in the Energy and Climate Protection Programme 2030 will be taken into account. Furthermore, the city's measures and strategies (e.g. heat planning, mobility strategy) are regularly updated and adapted to current urban developments in order to make the best possible contribution to achieving the climate targets. This means that the monitoring of measures originating from other strategies (e.g. municipal heat planning) is carried out with the individual monitoring/preparation of implementation reports for these strategies at different times if necessary. At the time of EKSP monitoring, however, the current implementation status of these measures is surveyed and taken into account in the updating of the CCC.

Findings from other cities as well as national and international bodies (German Association of Cities, Eurocities, Climate Alliance, EU Mission 100 Climate Neutral and Smart Cities, StronGER Cities, Smart City Community model projects) are also incorporated to ensure that Leipzig is always at the cutting edge of technological, socio-political and scientific developments.

25 key indicators were selected and are explained below. The City of Leipzig does not use any indicators from the recognised platforms (CDP/ SCIS/ Covenant of OBMs) to monitor its climate protection measures.

Key indicators - overview

B-3.1: Impact Pathways						
Outcomes/ impacts addressed	Action/ project	**Indicator No.**	Indicator name (**bold** if mandatory)	Target values as compared to 2019		
				2025	2027	2030
Energy Systems	Combined heat and power plant Municipal heating strategy REFILL Project Hydrogen City Leipzig **Construction of a combined heat and power plant**	1	**GHG emission from stationary energy**	-15 %	-50%	-80%
	Climate-friendly renewal of districts Use of energy efficient lighting Urban Data Platform/Twin for climate sensitive urban development Energy saving schools **Switch to an electricity provider with certified electricity from renewable sources** **Optimisation of heating, ventilation and air conditioning systems** **Use of energy-efficient devices and machines**	1b	**GHG emission from grid supplied energy**[1]	-15%	-50%	-80%

[1] GHG emissions from stationary energy will refer to the energy and heat related emissions from the municipal GHG balance. As they are calculated based on an overall German grid emission factor, this will be identical to GHG emissions from grid supplied energy; bc. there are no means to disagregate grid supplied and other energy

Outcomes/ impacts addressed	Action/ project	**Indicator No.**	Indicator name (**bold** if mandatory)	Target values as compared to 2019		
				2025	2027	2030
Energy Systems	Photovoltaic systems on municipal roofs **Installation of a photovoltaic system** Expansion of renewable electricity generation capacity REFILL project Solar thermal energy Lausen Solar thermal south Hydrogen City Leipzig Land Potential for Renewable Energy Energy storage capacities Office for City PlanningRCS Cotton Mill Development of virtual power plants for demand-driven energy supply	3	Local RES production	200MW administration + 200 MW from civil society &companies	300MW administration + 300 MW from civil society &companies	400MW administration + 400 MW from civil society &companies
Energy Systems	*Use of energy efficient lighting* Expansion of district heating Energy saving schools Development and implementation of district and neighbourhood-related mobility concepts	8b	Energy consumption per capita	-15%	-50%	-80%

Outcomes/ impacts addressed	Action/ project	**Indicator No.**	Indicator name (**bold** if mandatory)	Target values as compared to 2019		
				2025	2027	2030
Mobility & transport	Extension of tram network Enhancing accessibility at stops Leipzig Move App Cycling development plan Designation of further bicycle streets Creation and repair of footpaths Leipzig - City for intelligent mobility Liveable cities through appropriate traffic speed Integration of Mobility Concepts for new-built low-car districts Development and implementation of district and neighbourhood-related mobility concepts **Virtual meetings instead of physical travelling** **Conversion to electric and hybrid vehicles** **Offer of job tickets/ Germany tickets** **Offer of home office opportunities**	9	**GHG from transport**	-12%	-48%	-75%

Outcomes/ impacts addressed	Action/ project	**Indicator No.**	Indicator name (**bold** if mandatory)	Target values as compared to 2019		
				2025	2027	2030
Mobility & transport	Extension of tram network Enhancing accessibility at stops Acquisition of new vehicles for public transport Cycling development plan Designation of further bicycle streets High-speed cycle routes Creation and repair of footpaths Leipzig - City for intelligent mobility Liveable cities through appropriate traffic speed Shared cars to reduced parking spots **Virtual meetings instead of physical travelling** **Offer of job tickets/ Germany tickets** **Offer of home office opportunities**	12	Pm 10 concentration - excess days	X<3	X<2	0

Outcomes/ impacts addressed	Action/ project	**Indicator No.**	Indicator name (**bold** if mandatory)	Target values as compared to 2019		
				2025	2027	2030
Mobility & transport	Designation of further bicycle streets Creation and repair of footpaths Liveable cities through appropriate traffic speed Integration of Mobility Concepts for new-built low-car districts Development and implementation of district and neighbourhood-related mobility concepts Integrating Mobility into Green Masterplan	19	Traffic safety: Number of injured and deaths per 100,000 inhabitants	Fatalities & serious injuries (2022: 52) -25%= max. 39	-50% = max. 26	-80% = max. 11
Waste & circular economy	Circular economy in cultural enterprises Towards a circular economy Zero-waste strategy	20	**GHG emissions from waste**[2]	Available indicator for landfill and incineration emissions	-40%	-82 %
	Towards a circular economy Zero-waste strategy **Internal communication or guideline for waste avoidanc** **Spare parts and repair offer** **Supply chain optimisation** **Introduction of waste separation to reduce residual waste**	21	Mass of end-of-life waste	-3%	-8%	ZW strategy: 10% less residual waste

[2] Emission factor for incineration of residual waste: https://ghgprotocol.org/calculation-tools-and-guidance#country_specific_tools_id

Outcomes/ impacts addressed	Action/ project	**Indicator No.**	Indicator name (**bold** if mandatory)	Target values as compared to 2019		
				2025	2027	2030
Waste & circular economy	Towards a circular economy Zero-waste strategy	26	**GHG emissions from IPPU**	Available indicator		
Green infrastructure & nature-based solutions	Sustainable Food Strategy **Changing the menu**	32	**GHG emissions from AFOLU**	Available indicator & measures	-50%	0
	No technical sequestration is planned so far.	34	**Permanent sequestration**	-	-	-
	Expanding the stock of street trees Strengthening biotope networks in Leipzig Development concept for the Elster-Pleiße-Luppe flood area Water management concept **Greening of the company premises**	35	**Negative emissions through natural sinks**	Available indicator& measures	+12%	+25%
	Development concept for the Elster-Pleiße-Luppe flood area Strengthening biotope networks in Leipzig	41	% Protected natural area	Maintenance	Maintanance	Maintanance
	Expanding the stock of street trees Monitoring the success of tree protection and compensation measures	42	Number of street trees	57,000+1000/a from 2019 =64,000	66.000	69.000 According to the 2030 street tree concept
	Action/ project			Target values as compared to 2019		

Outcomes/ impacts addressed		**Indicator No.**	Indicator name (**bold** if mandatory)	2025	2027	2030
Built environment	Integrating climate protection in urban development and urban planning	52	Urbanised land growth rate	<0.7ha/d(2022)	<0.45ha/d	-80% of 2022= <0.14h/d
	Integrating climate protection in urban development and urban planning	53	Brownfield use	Subject to usable data from brownfieldkataster.de.		
	Climate-friendly renewal of urban neighbourhoods Construction of sustainable municipal buildings Integrating climate protection in urban development and urban planning EnAct4CleanCities **Improving building insulation** **Efficient room utilisation**	57	□ building efficiency	Subject to the continuation of heat planning with E-zwilling/building module		Improvement by 50%
Other/ Engagement		77	# of CCC companies in CCC	65	120	30% of the Leipzig company portfolio
	Offsetting emissions through the purchase of emission certificates (Gold Standard)	78	Reported CCC GHG saving	-20%	-45%	-65% in the climate protection planner for the corporate sector
	Action/ project			Target values as compared to 2019		

Outcomes/ impacts addressed		**Indicator No.**	Indicator name (**bold** if mandatory)	2025	2027	2030
Other/ Engagement	Climate Education SME development programme - sustainable growth **Participation in networks and partnerships** **Climate protection training for employees**	80	# number of participants in energy efficiency and climate action network (led by LKE)	45	75	120 TN Company
Digitisation	Construction of sustainable municipal buildings Climate neutrality and sustainability in Leipzig's administration	89b	# of municipal buildings with smart energy monitoring	25%	65%	80% of public buildings buildings
	Urban Data Platform/Twin for climate sensitive urban development		number of strategies and measures based on digital twin	5	10	15
	EnAct4CleanCities		Total number of people involved in capacity building activities (i.e., awareness campaigns for increasing awareness of social innovation for climate neutrality (citizens, urban stakeholders, etc.).	2.000	n.a.	n.a.

Legend: Indicators that are mandatory in the guidance list, but not yet available in Leipzig, are marked with a red cell background.

Key indicator Metadata tables

As Leipzig does not monitor GHGs using one of the CDP/ SCIS/ Covenant of OBMs platforms, no indicator is reported there. This information applies to all indicators and has been removed from the table.

B-3.2: Indicator Metadata	
Indicator name	GHG emission from stationary energy = GHG emission from grid supplied energy
Indicator Unit	tonnes of CO2 equivalent
Definition of	Green house gas emissions (mainly CO2 emissions) from the operations of buildings. (This is a simplified definition. The sources below include the layered approach to calculating this indicator).
Calculation	Base emission information can be derived through "Amount of fuel consumption per fuel type x GHG emission per fuel type". Calculation methodology has been described in detail in GHG Protocol for Cities (GPC) pages 60 - 73.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it measure?	Fields of action according to GHG inventory format - Module A-1
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	GHG mainly stem from combustion. Reduced combustion also improves air quality. It is an indirect indicator of air pollution at the place of combustion.
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Stationary energy
Data requirements	
Expected data source	Klimaschutz-planer.de
Is the data source local or regional/national?	local
Expected availability	Yearly with 3 years delay (2024: most current data of 2020)
Suggested collection interval	biannual

Indicator name	Local RES production
Indicator Unit	MWh
Definition of	Annual local renewable energy production. It can be inferred that this indicator will prove useful for tracking the impact of the installation and operation of renewable energy projects over time. It will allow for the analysis of the before and after situation, as following the installation and operation of renewable energy projects (or as the difference between the annual renewable energy generation related to the project compared to the BAU case). It is possible to divide the annual total energy consumption compared to a previous baseline or inventory, and then multiply by it by 100 to express the difference/result as a percentage.
Calculation	Annual local renewable energy production is calculated by acquiring the total renewable energy generation within the city each year. Relevant unit conversions are 1 J = 1 Ws; 1 kWh= 3,600,000 J; and 1 TOE = 41.868 GJ, 11,630 kWh, or 11.63 MWh (ITU-T L.1430: 2013)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	Stationary energy
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Local value production, democratisation of energy market,
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Stationary energy
Data requirements	
Expected data source	Market master data register
Is the data source local or regional/national?	local
Expected availability	daily
Suggested collection interval	biannual

Indicator name	Energy consumption per capita
Indicator Unit	kWh
Definition of	A measured trend of the energy a resident consumes in Kwh. Comparisons can be made on a quarterly or yearly basis.
Calculation	total energy demand devided by number of inhabitants
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	Stationary energy
Does the indicator measure indirect impacts (i.e., co-benefits)?	no
If yes, which co-benefit does it measure?	/
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Stationary energy
Data requirements	
Expected data source	Klimaschutzplaner.de, leipzig.de
Is the data source local or regional/national?	local
Expected availability	Annual (with 3a delay)
Suggested collection interval	biannual

Indicator name	**GHG emissions from transport**
Indicator Unit	tonnes of CO2 equivalent
Definition of	Green house gas emissions from the operations of vehicles.
Calculation	Calculation formulae for Transport indicators can be found in the GHG Protocol for Cities (2020).
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it measure?	Transport
Does the indicator measure indirect impacts (i.e., co-benefits)?	no
If yes, which co-benefit does it measure?	-
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Mobility
Data requirements	
Expected data source	Klimaschutz-planer.de
Is the data source local or regional/national?	Local combined with national averages
Expected availability	Annual with 3a delay
Suggested collection interval	biannual

Indicator name	Pm 10 concentration - excess days
Indicator Unit	# of days
Definition of	This indicator corresponds to the highest number of days in a year where the PM10 concentration level recorded at stations in urban and suburban background locations has exceeded the WHO recommendation of 45 µg/ m3. It refers to the number of days on the monitoring station that measured the most days in excess of the WHO recommendation of 45 µg/m³.
Calculation	This air quality management indicator, corresponds to the highest number of days in a year where the PM10 concentration level recorded at stations in urban and suburban background locations has exceeded the WHO recommendation of 45 µg/ m3. It refers to the number of days on the monitoring station that measured the most days in exceedance of the WHO recommendation of 45 µg/m³. Data can be obtained from: 1) Air quality monitoring reports in different stations on a municipal or regional level; and 2) Based on measurements made in urban and suburban background locations established for this purpose.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	Transport and stationary energy
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Air quality improvement
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Transport and stationary energy
Data requirements	
Expected data source	Municipal air quality dashboard: https://geoportal.leipzig.de/arcgis/apps/experiencebuilder/experience/?id=9a13182739c74c228ff27a0ec8fb7202&page=page_0
Is the data source local or regional/national?	local
Expected availability	daily
Suggested collection interval	biannual

Indicator name	Traffic safety: Number of severely injured and deaths per 100,000 inhabitants

Indicator Unit	# of deaths or severe injuries / 100,000 inhabitants
Definition of	Combined number of severe injuries and deaths per 100000 inhabitants per year
Calculation	Add severely injured and killed people in traffic accidents as reported by the police /inhabitants *100.000
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	transport
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Health and safety, stress in traffic
Is the indicator useful for monitoring the output/impact of action(s)?	Yes (?)
If yes, which action and impact pathway is it relevant for?	Transport
Data requirements	
Expected data source	Statistical yearbook, own calculation: https://statistik.leipzig.de/statpubl/index.aspx?cat=1&rub=1
Is the data source local or regional/national?	local
Expected availability	annual
Suggested collection interval	biannual

Indicator name	**GHG emissions from waste**
Indicator Unit	tonnes of CO2 equivalent
Definition of	Green house gas emissions from waste treatment, waste incineration and landfills
Calculation	Quantity of waste per End-of-life (EoL) treatment type x emission factors per EoL treatment. Detailed methods for different waste types are defined under GPC, pages 89 - 107.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it measure?	Waste
Does the indicator measure indirect impacts (i.e., co-benefits)?	no
If yes, which co-benefit does it measure?	/
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Waste and circular economy
Data requirements	
Expected data source	Under elaboration. Statistical yearbook for waste mass; emission factors to be researched. Own calculation: https://statistik.leipzig.de/statpubl/index.aspx?cat=1&rub=1
Is the data source local or regional/national?	local
Expected availability	yearly
Suggested collection interval	biannual

Indicator name	Mass of end-of-life waste
Indicator Unit	tonnes of CO2 equivalent
Definition of	Depending on end-of-life treatment options available in the city boundary, the city can report mass of waste sent towards each treatment type.
Calculation	Detailed calculation and scoping methodology described in GPC, pages 89 - 107.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	Waste and wastewater
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Space taken up by waste; resources wasted
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Waste and circular economy
Data requirements	
Expected data source	Statistical Yearbook: https://statistik.leipzig.de/statpubl/index.aspx?cat=1&rub=1
Is the data source local or regional/national?	local
Expected availability	annual
Suggested collection interval	biannual

Indicator name	**GHG from IPPU**
Indicator Unit	tonnes of CO2 equivalent
Definition of	Greenhouse gas emissions from industrial processes and product use within city boundary.
Calculation	GHG emission calculation methodology for the IPPU sector is described in detail in the 2014 IPCC Mitigation of Climate Change, chapter 10, page 746. City-level calculation and scoping methodology described in GPC, pages 109 onward.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it measure?	Industrial products and product use
Does the indicator measure indirect impacts (i.e., co-benefits)?	no
If yes, which co-benefit does it measure?	/
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Waste and circular economy
Data requirements	
Expected data source	Unclear - this indicator is under elaboration and may not be available.
Is the data source local or regional/national?	
Expected availability	
Suggested collection interval	biannual

Indicator name	**GHG emissions from AFOLU**
Indicator Unit	tonnes of CO2 equivalent
Definition of	IPCC guidelines divides AFOLU emission activities into three categories: Livestock, Land, Aggregate sources and non-CO2 emissions sources on land. The cumulative of these emissions forms the sectoral emissions. It requires identifying which categories of the AFOLU sector are relevant for reporting purposes. Cities should keep in mind that when a source/sink of emissions is included in the CCC Action Plan (either for emissions reduction or emissions compensation) both positive and negative emissions should be accounted for and monitored.
Calculation	Detailed calculation and scoping methodology described in GPC pages 121- 137.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it measure?	LULUCF
Does the indicator measure indirect impacts (i.e., co-benefits)?	No
If yes, which co-benefit does it measure?	/
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Green infrastructure and nature-based solutions
Data requirements	
Expected data source	Planned to be developped; under elaboration. Sources: Leipzig GIS, information by the greenery unit, national emission factor averages, own calculation
Is the data source local or regional/national?	local
Expected availability	tbd
Suggested collection interval	biannual

Indicator name	**Natural sinks**
Indicator Unit	tonnes of CO2 equivalent
Definition of	"Natural sinks" refer to the planting of trees or other conversion of land use. Cities are allowed to account for negative emissions through the enlargement or enhancement of natural sinks within the territory to address residual emissions (accounting for all changes in the carbon stock). Carbon sinks should be accounted for as part of the 'AFOLU' sector of the GHG inventory and can be monitored independently as a progress indicator to show negative emissions.
Calculation	Detailed calculation and scoping methodology described in GPC pages 121- 137.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it measure?	LULUCF
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Availibilty and quality of green spaces
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Green infrastructure & nature-based solutions
Data requirements	
Expected data source	Planned to be developed; under elaboration. Leipzig GIS, information by the greenery unit, national emission averages, own calculation
Is the data source local or regional/national?	local
Expected availability	?
Suggested collection interval	biannual

Indicator name	% Protected natural area
Indicator Unit	%
Definition of	It assesses the proportion of natural areas within the City.
Calculation	(Area of protected or secured natural areas) / (Total area of the city) x 100
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	LULUCF
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Availability of high quality green spaces
Is the indicator useful for monitoring the output/impact of action(s)?	no
If yes, which action and impact pathway is it relevant for?	Green infrastructure, & nature-based solutions
Data requirements	
Expected data source	Under elaboration. https://www.stadtgruen-wertschaetzen.de./app/stadtgruenapp or Leipzig GIS or https://statistik.leipzig.de/statpubl/index.aspx?cat=1&rub=1 or https://insights.sustainability.google/places/ChIJcywPIBj4pkcRUvW0udKA35M?hl=de&ty=2023 or possibly iör Flächenmonitor
Is the data source local or regional/national?	local
Expected availability	annual
Suggested collection interval	biannual

Indicator name	Number of street trees
Indicator Unit	# Number
Definition of	Number of trees on streets in Leipzig
Calculation	total number of trees on streets in Leipzig (with new plants, without losses)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	LULUCF
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Heat protection, attractiveness of city, wellbeing of residents, biodiversity, flood protection
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Green infrastructure, & nature-based solutions
Data requirements	
Expected data source	https://statistik.leipzig.de/statpubl/index.aspx?cat=1&rub=1
Is the data source local or regional/national?	local
Expected availability	annual
Suggested collection interval	biannual

Indicator name	Urbanised land growth rate
Indicator Unit	m²/capita/year
Definition of	Newly urbanised land in m2, per capita, and year.
Calculation	Area of newly urbanised land in m2 / population of the City.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	LULUCF
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Land preservation, biodiversity
Is the indicator useful for monitoring the output/impact of action(s)?	[yes/no] ?
If yes, which action and impact pathway is it relevant for?	Built environment
Data requirements	
Expected data source	Under elaboration. City planning unit; IÖR, https://monitor.ioer.de/?rid=3409 or https://insights.sustainability.google/places/ChIJcywPIBj4pkcRUvW0udKA35M?hl=de&ty=2023
Is the data source local or regional/national?	local
Expected availability	?
Suggested collection interval	bianual

Indicator name	Brownfield use
Indicator Unit	% of km2
Definition of	Share of brownfield area that has been redeveloped in the past period as percentage of total brownfield area.
Calculation	The indicator "brownfield redevelopment" is calculated as the brownfield area redeveloped in the last year [km²] (numerator] divided by the total brownfield area in the city [km²] (denominator). The result shall then be multiplied by 100 and expressed as a percentage.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	LULUCF
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Better utilisation of infrastructure Reduction of urban sprawl Improved biking and walking accessibility
Is the indicator useful for monitoring the output/impact of action(s)?	[yes/no] ?
If yes, which action and impact pathway is it relevant for?	Built environment
Data requirements	
Expected data source	Under elaboration. Availability depending on availability in brownfieldkataster.de (other sources to be confirmed)
Is the data source local or regional/national?	Not yet clear
Expected availability	?
Suggested collection interval	biannual

Indicator name	average building efficiency
Indicator Unit	Efficiency classes in kwh/m^2
Definition of	Classes of average energy consumption of buildings in Leipzig
Calculation	Building area divided by energy use? building efficiency class from the municipal heating planning
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	/
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Energy indepencence from bought energy Wellbeing (efficient buildings have less strong temperature gradients)
Is the indicator useful for monitoring the output/impact of action(s)?	[yes/no] ?
If yes, which action and impact pathway is it relevant for?	Built environment
Data requirements	
Expected data source	Heat planning (eneka tool or theta calculations, later continued data expected from Leipzig Energy Twin)
Is the data source local or regional/national?	local
Expected availability	?
Suggested collection interval	biannual

Indicator name	# of companies participating in the climate city contract
Indicator Unit	# Number
Definition of	Companies having signed the Leipzig climate city contract and handed in measures
Calculation	counting
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	/
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Partnerships for the goals
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	other/engagement
Data requirements	
Expected data source	Climate city contract documents
Is the data source local or regional/national?	local
Expected availability	daily
Suggested collection interval	biannual

Indicator name	Reported climate city contract GHG savings
Indicator Unit	t CO^2 equ.
Definition of	GHG emission equivalents reported to have been saved by companies through measures in the climate city contract
Calculation	Adding up all the reported emissions
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes; well; reported GHG savings, so no
If yes, which emission source sectors does it measure?	7
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Adaptation of the economy to the upcoming transformation
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	other/engagement
Data requirements	
Expected data source	Climate city contract documents
Is the data source local or regional/national?	local
Expected availability	daily
Suggested collection interval	biannual

Indicator name	# number of participants in energy efficiency and climate action network
Indicator Unit	# Number
Definition of	The number of companies that took part at least twice in meetings of the energy efficiency and climate action network in Leipzig (led by LKE)
Calculation	Counting companies that took part at least twice
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	/
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Cooperation for the goals
Is the indicator useful for monitoring the output/impact of action(s)?	yes
If yes, which action and impact pathway is it relevant for?	Other / engagement
Data requirements	
Expected data source	Under elaboration - expected from LKE
Is the data source local or regional/national?	local
Expected availability	daily
Suggested collection interval	biannual

Indicator name	# of municipal buildings with smart energy monitoring
Indicator Unit	%
Definition of	Total number of municipal buildings in which energy use is not monitored by pen and paper, or with the help of an individual excel sheet, but with the help of an automated monitoring of consumptions.
Calculation	Count them
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	/
Does the indicator measure indirect impacts (i.e., co-benefits)?	yes
If yes, which co-benefit does it measure?	Digitalisation to improve energy management
Is the indicator useful for monitoring the output/impact of action(s)?	[yes/no]
If yes, which action and impact pathway is it relevant for?	Other / engagement
Data requirements	
Expected data source	Under elaboration - Municipal building management unit or Smart City Challenge / Sebastian Graetz
Is the data source local or regional/national?	local
Expected availability	annual
Suggested collection interval	biannual

Indicator name	Yearly number of strategies and measures based on digital twin
Indicator Unit	number of strategies and measures
Definition of	This indicator assesses in a quantitative manner how intensely the urban data platforms and its digital twin operated by the City of Leipzig is being used a basis for the development or update of strategies and measures addressing climate protection and climate adaptation.
Calculation	Average Users of Urban Data Platforms per Day = Average Users per Data Platform 1 + Average Users per Data Platform 2 + ... + Average Users per Data Platform N
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	
Does the indicator measure indirect impacts (i.e., co-benefits)?	no
If yes, which co-benefit does it measure?	Digitalisation and esp. Urban Data platform and Digital Twins as accelerators for climate neutral urban planning
Is the indicator useful for monitoring the output/impact of action(s)?	[yes/no] yes
If yes, which action and impact pathway is it relevant for?	other/engagement
Data requirements	
Expected data source	City internal survey on use of digital twins, regular exchanges with other city departments
Is the data source local or regional/national?	local
Expected availability	Internally available
Suggested collection interval	biannual

Indicator name	Total number of people involved in capacity building activities (i.e., awareness campaigns for increasing awareness of social innovation for climate neutrality (citizens, urban stakeholders, etc.).
Indicator Unit	Number of people
Definition of	This indicator assesses in a quantitative manner how many people used the digital services developed in the framework of the EnAct4CleanCities Pilot City Mission project

Calculation	Number of people involved in EnAct 4CleanCities acitivites
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it measure?	
Does the indicator measure indirect impacts (i.e., co-benefits)?	no
If yes, which co-benefit does it measure?	Digital tools and services as a way to engage and activate citizens towards climate friendly behavior
Is the indicator useful for monitoring the output/impact of action(s)?	[yes/no] yes
If yes, which action and impact pathway is it relevant for?	other/engagement
Data requirements	
Expected data source	Tbd. E.g. participants in campaigns, no. of downloads of climate challenges in Leipzig App
Is the data source local or regional/national?	local
Expected availability	To be confirmed
Suggested collection interval	Once, 2025 (project duration 2024-2026)

Timeline:

An update of the CCC is planned every two years. The CCC will be monitored in connection with the preparation of the biennial implementation report on the ECSP. It will therefore be carried out for the first time in mid-2026.

4 Part C - Enabling Climate Neutrality by 2030

4.1 Module C -1 Governance Innovation Interventions

C-1.1: Description or visualisation of the participatory governance model for climate neutrality

Governance structures within the city administration

In order to accelerate implementation**,** the Office for Sustainable Development **and Climate** Protection was founded in **2020** following the declaration of the climate emergency in 2019. The Office for Sustainable Development and Climate Protection coordinates the city's climate protection process in a co-creative process involving political actors, academia, businesses, civil society and citizens. The backbone is formed by the **Climate Protection Core Team**, which is currently made up of six climate protection managers in the departments of Urban Development, Mobility, Building Management, Urban Greenery and Water, Digitalisation and Internal Organisation, Sport, Environmental Protection, Economic Development, Strategic Cultural Policy and the Sustainable Development and Climate Protection Department. The core team implements cross-sectional, integrated and agile working methods on climate protection and sustainability issues throughout the administration. With the **climate protection steering group**, integrated specialist planning is coordinated at departmental management level with the Head of Environment, Climate, Order and Sport. The newly established **Climate Council** involves a wide range of interest groups from politics, business, science and civil society as an advisory body to the City Council. Strategies and measures for climate protection are decided by the **city council** as a politically elected representative body. These are then implemented under the responsibility of the respective **specialised mayors**. We are committed to a close partnership with our **region** in the structural change that has been taking place in the Central German lignite mining region for several years.

The Office for a Digital City acts as a coordination unit for the implementation of digitalisation projects in the fields of data, networks, economy and urban society. The department initiates and manages digitalisation projects in the city of Leipzig and networks the relevant stakeholders from administration, business, civil society and research. The Office for a Digital City is also responsible for the development, monitoring and further development of the Digital Agenda and is the service point for the development of digitalisation concepts for the specialist departments and divisions. The department acquires funding for innovative projects and implements them. The department is also the point of contact for digitalisation issues, both internally within the administration and externally for urban society, science and companies. As part of the EU's "Climate-neutral and smart cities" mission, the Office for a Digital City specifically supports the development and implementation of digital solutions that contribute to reducing CO_2 emissions and improving the quality of life in Leipzig. This includes the promotion of smart city initiatives, the integration of digital technologies into sustainable mobility and energy systems and the use of data platforms for monitoring and the efficient planning and management of urban resources. Through close collaboration with various stakeholders and an interdisciplinary team of use case managers, the department is driving the digital transformation of the city to achieve climate neutrality while shaping the city as a liveable and sustainable space. The Offive for a Digital City builds on project results and collaborations from EU and federal projects.

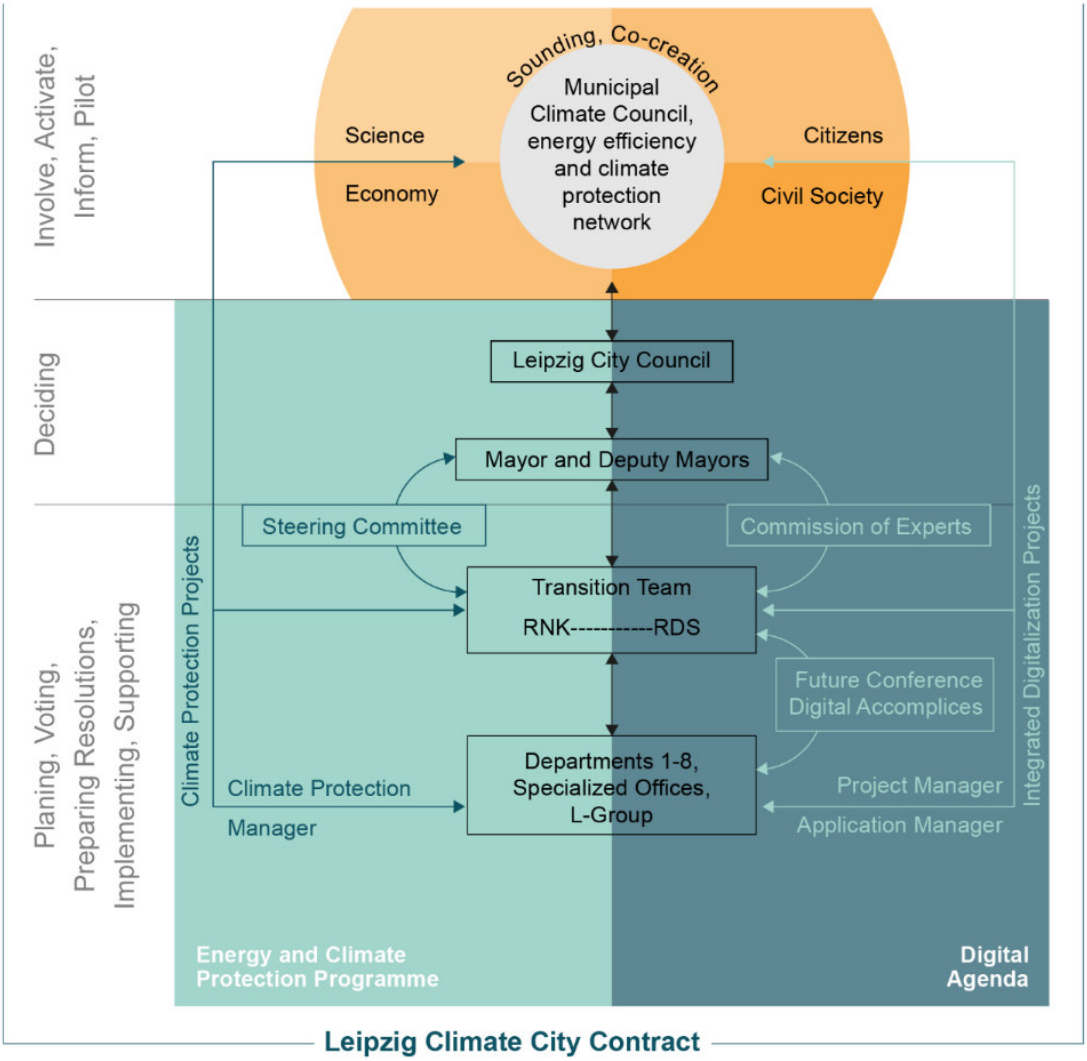
In addition, the department is the point of contact for digitalisation issues both within the administration and for urban society, science and companies and is the contact point for ideas and projects. In recent years, the department has worked intensively with other local partners on the development and implementation of climate-neutral neighbourhoods in Leipzig (EU project Office for City PlanningRCS) and is currently developing the city's digital twin together with specialist departments, the initial use cases of which cover the topics of energy and climate in particular.

The Leipzig City Administration (Digital City Unit) is supported by the **Digital City Expert Commission** in the management, coordination and co-creative implementation (see figure below) of integrated digitalisation projects. The **Expert Commission** is a 16-member committee appointed by the Lord Mayor and consisting of members from the key areas of business, administration, science, society and services of general interest. Since 2019, the committee has been advising the City of Leipzig on all topics relating to digitalisation within the city administration and is guided by the fields of action and guidelines of the Digital Agenda. Within the city administration and with the L-Group, formats such as the Future Conference or Digital Complices have been used for many years to find

ideas and develop a common direction. The contribution of digital applications to climate neutrality and climate adaptation in the sense of a green smart city are regularly on the agenda here

Against the background of the responsibilities and tasks described above, the **Department for Sustainable Development and Climate Protection** and the **Office for a Digital City** in the EU mission assume the overall city coordination role as a tandem

Figure 9 governance structures and processes in the City of Leipzig and interfaces to the governance sectors of urban society



The Transition Team of the Climate City Contract is made up of employees from both departments, also to drive forward the increased linking of the key topics of climate protection and digitalisation.

Cooperation non-governmental actors & Civil society:

Leipzig has established cross-sectoral working structures on specific specialist topics such as heat planning, the transport transition, food and consumption. These structures enable a coordinated approach to reducing emissions in various sectors.

Non-governmental organisations, private companies and academic institutions are involved in the climate protection process. The city involves these stakeholders through regular exchanges in forums such as the Leipzig Economic Development Clusters and the Netzwerk Energie und Umwelt e.V. The involvement of the public and other interest groups is emphasised through workshops, online platforms and public events to ensure broad support and participation in climate initiatives.

The city is also a partner or member of various national and state networks. There are also various local initiatives and committees, some of which were initiated by the city administration or of which it is a member. These include, for example

- Heat transition project advisory board
- Climate Council
- Digital City Expert Commission
- Future conference and digital accomplices
- Climate protection steering group
- Sustainable Leipzig Forum

Heat transition project advisory board

External interest groups were involved at an early stage in the process of drawing up the municipal heating plan. In addition to the existing project structure, an advisory board was set up. This advisory board has the task of supporting the project team with expert knowledge and comprehensively evaluating the results. The early involvement was expressed by the participating institutions with a regular positive response to the invitation at management/executive board/presidium level. At the advisory board meetings held in 2023, the approach to municipal heat planning in particular was presented and the initial interim results were discussed.

Table 3 Parties involved in Heat transition project advisory board

Trade associations	**Environmental and consumer protection**
IHK Leipzig	Verbraucherzentrale Saschsen e.V.
Handwerkskammer zu Leipzig	Mieterverein Leipzig e.V.
SHK-Innung	BUND Leipzig
Sächsische Ingenieurskammer	Energiegenossenschaft Leipzig
Housing industry	**Science**
Lipsia eG	HTWK Leipzig, Professur vernetzte Energiesysteme
Kontakt eG	Kompetenzzentrum Komunale Wärmewende
BUWOG	**Public authorities**
Vonovia SE	Regionaler Planungsverband Leipzig-Westsachsen
Haus & Grund Leipzig	Landesdirektion Sachsen, Dienststelle Leipzig

Climate Council

The City of Leipzig will set up a climate advisory board consisting of representatives from various interest groups, including companies, organisations and institutions. This advisory board will advise the city administration on climate protection issues and ensure close cooperation between the various stakeholders.

Digital City Expert Commission

The great potential of the expert commission's work lies in the fact that the digital transformation not only permeates the economy, but society as a whole. That is why the commission's recommendations are intended to shape the digital transformation in the interests of citizens, pool the experience of business, administration and universities and develop a coherent overall concept for the entire city.

Future forum/conference and digital accomplices

In order to strengthen the exchange on digitalisation topics at employee level both in the city administration and in cooperation with the companies of the Leipzig Group, the Offive for a Digital City organises the format of the Digital Complices once or twice a year - each time with a different focus topic. Projects on various fields of action of the Climate City Contract, such as traffic/transport,

energy and digital twins to accelerate planning and approval processes, are regularly discussed and further developed across departments.

Climate protection steering group

The Climate Protection Steering Group meets regularly to coordinate climate-relevant concepts and projects across departments within the city administration. It consists of relevant specialist departments (Office for Mobility and Civil Engineering, Office for Digitisation and Organisation, Office for Building Management, Office for City Planning, Economic Development, Office for Environmental Protection) and the Office for Sustainable Development and Climate Protection, which is responsible for moderating, documenting and following up on the work packages discussed.

Sustainable Leipzig Forum

The Sustainable Leipzig Forum (formerly Leipzig Agenda 21) is an open movement of Leipzig citizens as well as private and public institutions. There is no legal entity and no membership. The Forum is largely supported by the City of Leipzig, which is also part of the Forum. The forum also receives support from a number of companies. Representatives from associations and organisations, companies and chambers, universities and scientific institutions, churches, trade unions, political parties and the City of Leipzig are involved in the forum. It organises networking events, public forums and workshops and brings all these stakeholders together to discuss sustainability issues.

Further development of the governance structures for the Climate City Agreement:

For the development of the first version of the Climate City Agreement, the Transition Team relied on public events, such as the Future Day 2023 and the Saxon Energy Days, to involve organisations and companies in the implementation of the agreement and encourage them to sign the Leipzig Preamble to the Climate City Agreement. In addition to thematic workshops for specific target groups (e.g. social associations, higher education institutions) and a networking event in April 2024, over 100 organisations and companies were approached and involved. Some of the organisations activated in this way participated directly in the first version of the Leipzig Climate City Contract with their own measures.

As in its climate protection work to date, the City of Leipzig is also relying on existing (specialised) networks for the continuation of the Climate City Contract. In particular, networks such as the Leipzig Energy Efficiency and Climate Protection Network (EEKN) help to stabilise the participation process.

Leipzig Energy Efficiency and Climate Protection Network (EEKN)

This network was founded in cooperation with Leipzig municipal utilities and the Chamber of Industry and Commerce. It offers private sector players advice on effective climate protection measures, points out ways of sustainable corporate management and actively supports them in their energy efficiency endeavours (LINK).

Promoting and initiating climate protection projects and measures in Leipzig are key instruments for encouraging many citizens to protect the climate. With the so-called climate protection offensive, the city administration wants to actively support this commitment and encourage direct action through various approaches. The measure is part of the EKSP and is already being implemented with the following components:

- City homepage, official gazette, information flyer, etc.
- Events, campaigns, specialist days (e.g. European Mobility Week, car-free day)
- Competitions, tenders for funding (edited)

In addition, topic-specific and target group-oriented climate education activities (information and awareness-raising programmes, events, campaigns and advice for businesses and private households) are carried out.

In the update of the Climate **City** Contract, greater emphasis is placed on the **participation of citizens**. This will again be based on the existing stakeholder structures and the climate education measures already anchored in the EKSP. In future, more use will be made of both analogue and

digital measures to inform citizens online about the current status of climate protection efforts and encourage them to engage in dialogue.

This includes, for example, a climate portal with storytelling functions, which will be launched from the end of 2025.

Various digital information and participation tools are also being developed and tested as part of the EU mission pilot project EnAct4CleanCities. These include, for example, the further development and opening up of the data (i.e. improved preparation and explanation) of the Digital Energy Twin in order to make the topics of energy transition and climate protection and the implementation status in Leipzig transparent. In addition, challenges on climate-neutral behaviour are being developed for the existing Leipzig app and the option for citizens to submit digital commitments to the Climate City Contract and the climate neutrality target by 2030 is being developed on a pilot basis (completion by the end of August 2026).

The City of Leipzig's annual **Smart City Challenge** is to focus even more strongly on the topic of "digital solutions for the climate" in future. Founders, start-ups, students and established companies are invited to take part in the annual innovation competition to find innovative digital solutions for given municipal and civil society issues. From all the ideas submitted, three solutions are selected for each issue, which are further developed with the city administration and one is implemented as a pilot. The competition is being organised in cooperation with the Smart Infrastructure Hub Leipzig.

The working structures that have already been established, particularly with the municipal companies (L-Group), make it possible to organise planning and implementation processes more quickly and efficiently. A cross-organisational team (consisting of employees from various departments of the city administration, Netz Leipzig, Leipzig municipal utilities and Leipziger Wasserwerke) has already been entrusted with preparing the implementation of the first pilot districts for heat planning. At the same time, the Leipzig Energy Twin is also being further developed in order to have a uniform and up-to-date data basis for the planning process across all organisations and to be able to make investment decisions more quickly.

C.1.2: Sample Table: Relations between governance innovations, systems, and impact pathways				
Intervention name	Description	Systemic barriers / opportunities addressed	Leadership and stakeholders involved	Enabling impact
Bündnis Verkehrswende	the participation of citizens in the transport transition and promotes awareness of more sustainable and environmentally friendly mobility solutions	Cultural orientation towards MIV	▪ Ökolöwe - Umwelt-bund Leipzig e.V., ▪ ADFC Leipzig e.V., ▪ VCD Leipzig ▪ Leipziger Straßenbahnfreunde e.V. ▪ Citizens' initiatives and neighbourhood groups	contributes to climate neutrality by reducing car traffic in the city and promoting alternative, environmentally friendly forms of mobility such as cycling, public transport and walking
Sustainable Leipzig Forum	Platform and a network that is committed to promoting sustainability and climate protection in Leipzig. It brings together stakeholders from various sectors such as environmental organisations, companies, administration and civil society to jointly develop projects and initiatives that support sustainable urban development.		local NGOs, including environmental NGOs, municipal authorities, educational institutions and citizens' initiatives	The project promotes the exchange of knowledge and best practices and initiates joint projects to reduce CO2 emissions and promote sustainable lifestyles in the city. Innovative solutions for urban challenges are developed and implemented through cooperation between the various stakeholders.
Hydrogen Scout	Promoting the use of green hydrogen in the region Supporting SMEs to implement hydrogen technologies and realise specific projects.	Technical availability of hydrogen	City of Leipzig with Hypos e.V.	contribution to climate neutrality by promoting the use of green hydrogen, which can significantly reduce CO2 emissions in industry and transport. This supports Leipzig's goal of establishing itself as a leading hydrogen city and accelerating the transition to a climate-neutral economy.

Intervention name	Description	Systemic barriers / opportunities addressed	Leadership and stakeholders involved	Enabling impact
Municipal heating strategy	The aim is to cover the city's heating requirements in a climate-neutral way by gradually decarbonising the entire heating sector, promoting district heating, the use of renewable energies such as geothermal and solar thermal energy, and increasing energy efficiency in buildings.	Municipal utilities in municipal ownership Digital twin	L-Group companies, City of Leipzig	Reduce CO2 emissions in the heating sector
EnAct4CleanCities	In coordination with the municipal strategies for a sustainable heating transition, the vision of the EnAct4CleanCities pilot project is to provide clear and relevant information and support property owners and other stakeholders in their decision-making journey.	Use of digital tools to increase involvement of stakeholder groupd (e.g. via Digital Energy Twin, Leipzig App)	City of Leipzig, L-Group, user groups: Citizens, property owners, business owners	Provide comprehensible information on energy transition and climate neutrality processes Involve key players Increase acceptance and activation of stakeholder groups for active participation, e.g. in energetic refurbishment
Climate protection steering group	Centralised committee that monitors the implementation and coordination of the city's climate protection measures and works on climate protection in an integrated, interdisciplinary manner as a cross-cutting issue		Office and unit head level of the city administration	Coordinated management and implementation of climate protection measures
StronGER Cities	StronGER Cities is the association of German mission cities	▪ Regulatory uncertainties ▪ Unclear responsibili-ties ▪ Insufficient/not custo-mised support framework	Coordination board among the 8 German Mission Cities	Representing the interests and helping to shape the mission cities at state, federal and EU level Knowledge transfer between the cities and to cities outside the EU mission

Intervention name	Description	Systemic barriers / opportunities addressed	Leadership and stakeholders involved	Enabling impact
Climate Protection and Sustainability Unit	responsible for the planning, coordination and implementation of measures that contribute to the reduction of CO emissions and the promotion of sustainable development in the city. Development of strategies to achieve climate neutrality, the integration of sustainability principles into urban processes and the promotion of climate protection initiatives in various sectors		works closely with various stakeholders, including other city departments and divisions, municipal companies, scientific institutions, NGOs and citizens' initiatives. It acts as an interface between administration, civil society and business	Unit contributes to climate neutrality by coordinating and initiating measures to reduce greenhouse gas emissions
Energy Efficiency and Climate Protection Network (EEKN)	Initiative aimed at reducing energy consumption in companies and simultaneously promoting climate protection The exchange of best practices, the implementation of joint projects and ongoing advice are intended to support companies in increasing their energy efficiency and reducing their CO emissions.		Network is coordinated by Leipzig municipal utilities n/LKE It consists of a large number of players, including local companies from various sectors, municipal institutions and organisations, as well as energy consulting firms	network contributes to climate neutrality by increasing energy efficiency in companies and thus reducing the city's overall energy consumption. The joint development and implementation of climate protection measures reduces the CO emissions of the participating companies.
Heat transition project advisory board	supports the city of Leipzig in developing and implementing a sustainable heating strategy advises on key issues relating to the heating transition and ensures that the various perspectives of urban society are incorporated into strategic planning.		Representatives of the city administration, energy suppliers, science, the housing industry and civil society organisations	Project Advisory Board makes a significant contribution to climate neutrality by developing measures and strategies to reduce CO emissions in the heating sector

Intervention name	Description	Systemic barriers / opportunities addressed	Leadership and stakeholders involved	Enabling impact
Smart City Challenge	Initiative of the City of Leipzig, which aims to find and implement innovative and digital solutions to the challenges of urban development. The focus is on the development of technologies and concepts that improve the quality of life while promoting climate neutrality	Innovation events and technology development	invites start-ups, companies and citizens to submit creative ideas and projects that contribute to making Leipzig a smart, sustainable and liveable city.	Smart City Challenge contributes to climate neutrality by promoting innovative projects that reduce energy consumption, improve mobility and increase the efficiency of urban infrastructure
Smart City Lab	serves as a platform for trialling and implementing smart technologies and digital solutions in urban areas. The lab offers space for experimentation, collaboration and exchange between different stakeholders in order to turn innovative ideas into concrete projects that contribute to improving the quality of urban life.	Lack of acceptance of energy transition measures on site Lack of suitable spaces for co-creative development and participation processes	Experimental/exhibition and co-working space for innovative solutions for the digital city	At SCLL, it is possible to develop new technologies for urban challenges in an interdisciplinary manner, test them under real conditions and evaluate their potential for scaling up to the entire city and other municipalities.
Data Week	Annual series of events on data, digital innovation and its application Promoting dialogue between experts, companies, researchers and civil society		City of Leipzig in cooperation with various partners, including local and international companies, universities, research institutes and networks from the technology and data sector. Participating stake-holders include municipal institutions as well as private companies and civil society organisations involved in data and digitalisation.	Addresses the use of data-driven solutions and technologies that can help to reduce CO□ emissions and use resources more efficiently. Through the exchange of knowledge and best practices in the field of data analysis and application, the event supports projects that deal with the optimisation of energy consumption, transport systems and urban services.

4.2 Module C- 2 Social Innovation Interventions

C-2.2: Description of social innovation interventions

The following table shows a comprehensive analysis of barriers and possible measures to achieve climate neutrality in the context of the city of Leipzig. It combines specific challenges with practical ideas and their potential positive effects, including the reduction of emissions and other co-benefits such as increased quality of life and economic competitiveness. The proposed measures range from technological innovations, some of which are already in operation/being implemented in Leipzig with the help of funding, to legal adjustments aimed at efficiently overcoming existing obstacles. The relevant organisational units are committed to the needs of the city administration and its partners in the Climate City Contrac via interest groups such as the German Association of Cities or the Stronger Cities alliance.

The importance of integrated and digitally supported approaches for improving and accelerating planning and implementation processes is particularly worth emphasising.

It is already clear that targeted and coordinated measures can not only achieve climate targets, but also have numerous positive side effects for society and the economy. An interdisciplinary approach is crucial in order to promote both climate neutrality and urban resilience.

How do these innovations empower and enable stakeholders and citizens to embark on the path to climate neutrality?

These innovations promote the participation of stakeholders and citizens through transparent and accessible information platforms, such as the Leipzig data portal (under development) and associated communication and participation tools, e.g. for owners and business owners (EnAct) in the energy transition. They enable data-supported decision-making and create incentives for broader participation through innovative approaches such as citizen energy cooperatives and crowdfunding projects. Pilot projects and local initiatives raise awareness and promote trust in climate-friendly technologies and processes, which encourages active participation.

How do these innovations lower the barriers for marginalised groups to participate?

The advocacy efforts of the City of Leipzig and other mission cities (Stronger Cities) aim to overcome existing barriers through flexible and adapted regulations (EU and federal level) that also facilitate access to climate-friendly technologies and initiatives for marginalised groups. Funding programmes (EU, federal, state, city) and subsidies for low-income households as well as educational and training opportunities help to make participation more accessible for these groups. Digital solutions such as central planning portals and climate protection management systems simplify participation and at the same time offer support for disadvantaged population groups. The Leipzig App is already being used by around 28,000 Leipzig residents and therefore offers low-threshold access to urban issues such as climate protection initiatives and the energy transition.

How can the long-term influence be secured and the existing/planned innovation activities be scaled?

The long-term influence and scaling of innovations can be ensured through close networking of projects and continuous adaptation to changing conditions. For example, it is in the nature of digital applications such as the Leipzig App and digital twins that they are continuously developed, expanded or replicated for other topics and users.

The integration of innovation funds and the promotion of pilot projects create a financing basis from which personnel, material and investment funds can be successively stabilised over the coming budget periods.

In addition, by creating standardised and flexible regulations and using digital platforms such as the Urban Data Platform and the Climate Data System, best practices can be transferred to other cities and regions.

This ensures that the successes achieved are sustainable in the long term and can be further expanded.

Explanation of the following table:

	Digital applications are part of the social innovation
	Active role: City of Leipzig (implements)
	Active role EU/Federal Government/Free State > City Representation of interests

C.2.1 Sample Table: Relations between social innovations, systems , and impact pathways					
Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Limited suitable areas in Leipzig's urban area for large-scale renewable energy plants	Development of a land register	Integrated urban development with digital twins, networking with surrounding areas	Local level: Liegenschaftsamt, Offive for a Digital City	Increasing the installed capacity of renewable energies and reducing CO2 emissions through efficient land utilisation.	Lower electricity emissions, local production of green energy.
Necessity of co-operation with the Leipzig region	Establishment of regional energy partnerships Establishment of an inter-municipal energy network.	Networking, piloting regional cooperation models and digital energy management platforms	City administration: Regional co-operation group, cooperation with surrounding municipalities such as Partheland	Strengthening regional renewable energy projects, reducing transport losses and improving energy efficiency in the region.	Lower electricity emissions, local production of green energy.
Grid capacity and integration	Pilot projects for smart grids. Realisation: EU project Sparcs	Digital solutions, representation of interests	Federal government/EU/Free state level/L-Group/Leipzig city administration	Enables the integration and utilisation of more renewable energy capacities, which leads to a reduction in fossil fuels.	Lower electricity emissions.
Lack of acceptance of energy transition measures on site	Citizen participation and awareness campaigns with the help of the Leipzig app, campaigns and analogue/digital participation; Initiation of citizen energy cooperatives and crowdfunding projects.	Social innovation, networking with citizens' initiatives	Federal government/EU/free state level, Leipzig city administration/Leipzig Freedom Network	Increases acceptance and participation in renewable energy projects, thereby accelerating the expansion of renewable energies.	Local production of green energy, strengthening social cohesion.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Infrastructure heavily reliant on lignite; climate-neutral conversion requires massive investment	Support programmes for structural change Establishment of a transformation fund. Heat transition: Pilot area Südvorstadt, decision and planning support through digital twins	Representation of interests, Piloting transformation projects, digital twins	Federal government/EU/free state level/ City administration L-Group	Promotes the phase-out of fossil fuels and the transition to renewable energies.	Lower electricity emissions, less company GHG.
Long planning, approval and implementation periods	Accelerating planning processes through digitalisation; Introduction of a central planning portal.	Digital solutions Representation of interests	Federal government/EU/free state level, Leipzig city administration	Reduces the time it takes to implement climate protection projects and accelerates the expansion of renewable energies.	Quick identification and reaction to irregularities, lower electricity emissions.
Technical availability of hydrogen as a fuel not yet determined	Promotion of research and development; Pilot projects for hydrogen technologies. Expansion of district heating pipeline to Leuna.	Piloting, networking with research institutions and future production sites	Federal government/EU/Free state level/L-Group/Leipzig city administration	Supports the development and implementation of hydrogen as a climate-neutral energy carrier.	Lower electricity and heat emissions.
Complex and lengthy planning and authorisation procedures	Simplification and harmonisation of procedures; Introduction of a digital one-stop shop for authorisations.	Representation of interests, digital solutions	Federal government/EU/free state level, Leipzig city administration	Facilitates and accelerates the implementation of renewable energy projects and thus the reduction of greenhouse gas emissions.	Lower electricity and heat emissions.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Nature conservation and species protection regulations	Development of compensation areas; integration of nature conservation concerns into the planning and design of renewable energy systems. Planning and decision-making support through energy twins	Integrated urban development, networking, digital twins	Leipzig city administration	Enables environmentally friendly realisation of renewable energy projects and protects biodiversity at the same time.	CO2 storage in trees and plants, preservation of biodiversity.
Land availability and spatial planning	Adaptation of spatial development plans; dual utilisation of land for agriculture and PV systems (agrophotovoltaics).	Integrated urban development, representation of interests	Federal government/EU/free state level, Leipzig city administration	Maximises the use of existing land for the production of renewable energy, which leads to a reduction in CO2 emissions.	Local production of green energy, CO2 storage through sustainable agriculture.
Delayed electricity grid expansion	Legislative acceleration of grid expansion; Utilisation of best practice examples from other countries.	Representation of interests at federal level Digital solutions	Federal government/EU/Free state level/Leipzig city administration	Enables faster integration of renewable energies into the grid, thereby reducing the proportion of fossil energy sources.	Lower electricity emissions.
Legal disputes and citizen participation	Mediation and conflict management; Creation of participation platforms to involve citizens at an early stage. > Example: Matthäikirchhof and Lausen solar thermal plant	Social Innovation Networking	Leipzig city administration	Promotes social acceptance and supports the faster implementation of climate protection projects.	Local production of green energy, strengthening social cohesion.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Regulatory uncertainties	Long-term definition of funding programmes; Climate Protection Advisory Board to advise policymakers.	Representation of interests, piloting of new regulations	Federal government/EU/free state level Leipzig city administration	Creates planning security and promotes the continuous expansion of renewable energies.	Lower electricity emissions, less company GHG.
Unclear responsibilities between the federal and state governments	Clarification of competences and better coordination; Coordination centre: Department for Sustainable Development and Climate Protection	Representation of interests, networking	Federal government/EU/Free state level/Leipzig city administration	Increases efficiency in the implementation of climate protection measures, leading to a faster reduction in greenhouse gases.	Lower electricity emissions, less company GHG.
Barriers to innovation and technology development	Promotion of start-ups and innovation centres in the Smart City Lab and as part of the Smart City Challenge Leipzig; Creation of an innovation fund for RE technologies.	Piloting, Networking with start-ups Representation of interests at federal level	Federal government/EU/Free state level/Leipzig city administration	Supports the development and dissemination of new technologies that contribute to CO2 reduction.	Lower electricity emissions, less wasted energy.
Political and lobbying influences	Transparency obligations for lobbying: Open Data Platform; Free State Transparency Platform Introduction of citizens' forums for broader participation.	Representation of interests, networking; provision of data	Federal government/EU/Free state level/Leipzig city administration/L-Group	Strengthens democracy and the acceptance of climate protection measures through transparent decision-making processes.	Promotion of an inclusive and transparent policy, reduction of emissions through improved regulations.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Energy market regulation and design	Reform of energy market regulation; Piloting of new market models, e.g. tenant models of LEIPZIGER HOUSING AND BUILDING SOCIETY (LWB) in the EU Sparcs project	Representation of interests, Digital solutions	Federal government/EU/Free state level/Leipzig city administration/L-Group	Promotes the integration of renewable energies into the energy market, enabling fossil fuels to be replaced.	Lower electricity emissions, local production of green energy.
The expansion and modernisation of transport infrastructure are associated with high investments and have long cycles	Prioritisation of projects with high sustainability potential, decision-making and planning support with the help of digital twins Development of PPP models (Public-Private Partnership)	Integrated urban development Piloting new mobility concepts	Federal government/EU/Free state level/Leipzig city administration/L-Group	Supports the expansion of sustainable transport infrastructure, which reduces CO2 emissions in the transport sector.	Lower transport emissions, promotion of sustainable mobility.
Long planning, approval and implementation cycles for electric vehicles and charging infrastructure	Establishment of fast-track authorisation corridors > Planning tool for charging infrastructure (Smart City Challenge 2024) Funding programmes for charging infrastructure	Digital solutions Representation of interests	Federal government/EU/free state level, Leipzig city administration	Accelerates the expansion of the charging infrastructure, which promotes the use of electric vehicles and thus the reduction of CO2 emissions.	Lower traffic emissions, less wasted energy.
Low awareness and acceptance of sustainable mobility options	Realisation of awareness campaigns, also using the Leipzig App, Leipzig Move Introduction of incentive systems such as mobility points, e.g. via climate challenges.	Social innovation, networking with educational institutions, digital solutions	Federal government/EU/free state level, Leipzig city administration	Increases the use of sustainable means of transport and thus reduces CO2 emissions.	Lower transport emissions, promotion of sustainable mobility.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Strong cultural focus on motorised private transport	Introduction of car-free zones (Example: Superblock Leipzig) Promotion of car sharing and micromobility: teilauto GmbH as a partner of Leipzig public transport company	Social innovation, integrated urban development, cooperation	Federal government/EU/free state level, Leipzig city administration, Leipzig public transport company	Lowering CO2 emissions by reducing motorised private transport and promoting alternative forms of mobility.	Lower traffic emissions, less wasted energy.
Path dependencies due to the long half-life of the built environment	Adaptation of the urban development plans: Leipzig 2035 urban strategy Promotion of pilot projects for building refurbishment and land conversion > Building on existing support and advisory structures in neighbourhoods (e.g. neighbourhood management) Digital platforms for advising and supporting owners with approvals (EnAct project)	Networking, piloting adaptation strategies	Federal government/EU/Free state level/Leipzig city administration	Promoting climate-friendly urban development, which reduces energy consumption and emissions in the long term.	Lower transport emissions, promotion of sustainable mobility.
Direct tendering of organic and regional food not expedient due to lack of European criteria	Adaptation of the tender criteria; Introduction of pilot projects for gradual changeover: e.g. SV canteen	Representation of interests, networking with other municipalities	Leipzig City Council/Free State/Federal Government	Promotes the use of sustainable food, which reduces CO2 emissions in the supply chain.	Lower electricity emissions, local production of green energy.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Increase in purchasing costs when replacing organic food, risk of misallocation due to limited availability	Creation of support programmes for regional marketing; Introduction of purchase guarantees for producers.	Social Innovation, Networking with producers	Leipzig city administration	Supports the availability of regional organic products and reduces transport emissions.	Lower electricity emissions, climate-neutral heating requirements, less wasted energy.
High costs for establishing and expanding regional processing capacities and organic certification	organic certifications and regional networks; Introduction of co-operation models for the joint use of processing capacities.	Piloting, representation of interests	Federal government/EU/free state level, Leipzig city administration	Facilitates access to regional and organic food, which improves the carbon footprint.	Lower electricity and heat emissions, climate-neutral heating requirements, less wasted energy.
Lack of willingness and expertise for organic certification and lack of trained staff	Training and further education programmes, e.g. via the Employment Policy Unit Establishment of competence centres for organic food.	Social innovation, networking	Federal government/EU/free state level, Leipzig city administration	Promotes the switch to organic food production and thus reduces the CO2 footprint of agriculture.	CO2 storage, improvement of air quality, promotion of biodiversity.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Declining willingness of broad sections of the population to spend more money on bioregional products	Price stabilisation through subsidies Introduction of loyalty programmes for organic products. Utilisation of the Climate Challenge	Representation of interests Social Innovation Awareness campaigns	Federal government/EU/free state level, Leipzig city administration	Promotes the consumption of sustainable products and reduces CO2 emissions through more environmentally friendly agriculture.	CO2 storage, improvement of air quality, promotion of social cohesion.
Lack of information and misconceptions reduce the willingness to spend more on bioregional products	Information campaigns, e.g. using the Leipzig app Organisation of workshops and events to educate consumers. Analogue and digital participation	Social innovation, awareness campaigns	Leipzig city administration	Increases demand for environmentally friendly products, making production more sustainable and reducing CO2 emissions.	CO2 storage, improvement of the microclimate, promotion of biodiversity.
Financing of green area projects due to high costs for planning, implementation and maintenance	Utilisation of funding and cooperation models; Crowdfunding campaigns for local green area projects, e.g. using the Leipzig app. Analogue and digital participation in co-creative formats	Integrated urban development, representation of interests	Federal government/EU/free state level, Leipzig city administration	Promotes the creation of green spaces that help to store CO2 and improve the urban climate.	Climate-neutral heating requirements, less energy wastage, promotion of social housing.
Availability of space in densely populated urban areas	Utilisation of interim uses and roof areas; Introduction of urban gardening initiatives.	Integrated urban development, networking	Leipzig city administration	Increases green spaces in cities, which helps to store CO2 and improve the urban climate.	Climate-neutral heating requirements, less energy wasted.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Awareness of the importance of green-blue infrastructure needs to be raised among citizens and decision-makers	Realisation of awareness campaigns, e.g. using the Leipzig App and the Climate Challenges; Development of demonstration projects in cities.	Social innovation, networking	Leipzig city administration	Raises awareness of the importance of green spaces, which helps to support climate-neutral projects in the long term.	Promotion of jobs, lower electricity and heat emissions.
Loss of trees due to increasing heat stress	Preservation and maintenance of existing trees; monitoring with the help of sensor data Creation of heat islands and planting of heat-resistant tree species.	Piloting, integrated urban development, digital applications	Leipzig city administration	Preservation and expansion of CO2 sinks in urban areas.	Promotion of social cohesion, climate-neutral heating requirements, less energy wastage.
Ensure affordability of housing, although financing measures is difficult for owners with low incomes	Introduction of social housing programmes using housing subsidies; implementation of further housing policy instruments Promotion of co-operative housing models via the Leipziger Freiheit network	Representation of interests, Social Innovation	Federal/state level, Leipzig City Council/ Affordable Housing Round Table, Leipzig Freedom Network	Enables climate-friendly refurbishment and new builds for all income groups.	Climate-neutral heating requirements, preservation of cultural heritage.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
High costs for new construction and refurbishment measures (integration of new technologies into existing buildings is costly)	Pilot projects for modular construction methods. Digital platforms for advice and authorisation support for owners (EU project EnAct)	Digital solutions, piloting	Federal government/EU/free state level, Leipzig city administration	Reduces energy consumption and CO2 emissions in the building sector.	Less land consumption, climate-neutral heating requirements, less wasted energy.
Shortage of skilled labour for the implementation of new construction and renovation measures	Training campaigns and recruitment from abroad > Long Night of Training and similar formats organised by the Employment Policy Unit Promotion of training co-operations.	Networking, representation of interests	Leipzig city administration	Accelerates the expansion of climate-neutral buildings by securing the necessary labour force.	Promotion of an informed public, lower electricity and heat emissions.
Heterogeneous ownership structures in the existing neighbourhoods	Foundation of owners' associations, Leipziger Freiheit network Introduction of neighbourhood management programmes based on existing support and advisory structures in neighbourhoods (e.g. neighbourhood management), digital platforms for advice and approval support for owners	Integrated urban development, social innovation	Leipzig city administration	Facilitates the joint implementation of climate-friendly measures in residential neighbourhoods.	Promotion of jobs, lower electricity emissions.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Obstacles under monument protection law	Adaptation of the monument protection regulations; Integration of modern technologies in monument protection concepts. Digital platforms for advising and supporting owners with authorisation (e.g. EU project EnAct and others)	Representation of interests, integrated urban development, digital applications	Federal government/EU/free state level, Leipzig city administration	Enables climate-friendly modernisation without jeopardising the cultural substance.	Lower electricity emissions, local production of green energy, less energy wastage.
Growing city with housing needs	Development of new construction areas; Promotion of high-density construction and redensification. Consistent implementation of housing policy instruments	Integrated urban development, piloting	Federal government/EU/free state level, Leipzig city administration	Prevents urban sprawl and minimises additional energy consumption and CO2 emissions.	Promotion of private commitment, lower electricity emissions.
Climate protection is part of populist debates in regional elections	Promotion of technical discussions through expert forums, e.g. on Stronger Cities Use of climate challenges and formats such as citizen dialogues on the Climate City Contract	Social innovation, representation of interests Digital applications	Federal/state level, Leipzig city administration	Promotes a fact-based climate policy and prevents delays in the implementation of climate protection measures.	Promotion of coherent urban planning, lower electricity emissions.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Shortage of skilled labour for the development and maintenance of RE technologies	Expansion of training and qualification programmes, e.g. via the employment policy unit Development of RE skills fairs.	Networking, representation of interests	Federal government/EU/free state level, Leipzig city administration	Ensuring the expansion and operation of renewable energies with sufficient skilled labour.	Fewer delays in projects, lower electricity emissions.
Non-economic viability of RE technologies	Introduction of support programmes and subsidies Pilot projects to improve economic efficiency, such as tenant electricity models from LEIPZIGER HOUSING AND BUILDING SOCIETY (LWB)	Representation of interests Piloting	Federal/EU/free state level, local level	Increasing competitiveness and the expansion of renewable energies.	Promotion of innovation, lower electricity emissions, local production of green energy.
Lack of knowledge about the opportunities to capitalise on climate investments	Information campaigns and counselling services for business and urban society, including the Climate City Contract campaign Using the Leipzig app as a channel Introduction of a climate investment calculator for citizens.	Social innovation, awareness campaigns, Digital applications	Federal government/EU/free state level, Leipzig city administration	Increases the participation of private investment in climate-friendly technologies.	More efficient monitoring, lower electricity and heat emissions.

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Lack of standardisation or conflicting objectives between internal city strategies in climate protection and climate adaptation	Development of integrated strategies and standards such as the EKSP; climate protection coordination teams Participation in standardisation committee in the area of sustainability and smart city	Integrated urban development, representation of interests	Federal government/EU/free state level, city administration	Better coordination and effectiveness of climate protection and adaptation measures, which reduces CO2 emissions.	Increased Efficiency: Integrated strategies and standards lead to better coordination between departments and measures Synergy Effects: Coordinating climate protection and adaptation measures creates synergies where actions can reinforce each other Financial Savings: Harmonizing actions prevents duplication and inefficient investments Enhanced Resilience: Integrated approaches that

					include both climate protection and adaptation strategies boost the city's resilience to climate change impacts Coordinated actions simplify decision-making processes, increase transparency, and make it easier to hold authorities accountable to the public. Promotion of Innovation: Participation in standardization committees for smart cities and sustainability fosters the development and implementation of innovative technologies and concepts that support both climate protection and adaptation.

					Strengthened Collaboration: Integrated strategies enhance collaboration between different stakeholders, such as municipal authorities, private enterprises, and civil society. Improved Quality of Life: Measures that reduce CO_2 emissions and promote climate adaptation improve air quality, mitigate urban heat islands, and enhance residents' well-being. Support for International Climate Goals: Better coordination and effectiveness in climate protection and adaptation efforts help the

					city meet national and international climate goals
Bureaucratic hurdles and limited personnel and financial capacities for process coordination/control	Digitalisation of administrative processes Accelerating planning with digital twins Introduction of a centralised climate protection management system (climate and energy twin)	Digital solutions, representation of interests	Federal government/EU/free state level, city administration	Increases efficiency and accelerate the implementation of climate protection measures.	Time Savings: Digitalizing administrative processes and using digital twins significantly reduce the time needed for planning and approvals, allowing faster implementation of climate protection projects. Improved Decision-Making: A centralized climate protection management system provides real-time data and simulations, enabling better-informed decisions and more effective resource allocation. Cost Reductions: Streamlining processes through

					digitalization lowers administrative costs and reduces the need for manual labor. Enhanced Transparency: Centralized systems and digital tools improve the transparency of processes and projects, making it easier to track progress and engage with stakeholders. Better Collaboration: Digital twins and digital application like dashboards or multi touchtable foster improved collaboration between departments, agencies, and external stakeholders

					Scalability: Digital systems and processes can be scaled more easily to accommodate larger projects or expand to other areas or cities. Reduced Human Error: Automated processes and real-time simulations minimize human error in planning, monitoring, and executing climate measures. Data-Driven Innovation: The use of digital twins generates large amounts of data that can be analyzed with help of AI for future innovation, supporting the development of smarter climate solutions. Increased Public Engagement: A

					transparent and accessible digital climate twin can help inform and involve citizens in climate protection efforts, increasing public support for initiatives. Increased Resilience: Digital tools and centralized management systems can adapt more quickly to changing conditions or unforeseen challenges, enhancing the city's overall resilience to climate impacts.
Insufficient legal freedom of action or abstract regulations	Adaptation of legislation Introduction of flexible regulations to support innovation, e.g. via the Smart City Green Challenge	Representation of interests, piloting	Federal government/EU/free state level	Creates a flexible and innovation-friendly legal framework that accelerates the implementation of climate-friendly technologies.	Promoting innovation and accelerating digitalisation through flexible regulations

Systemic barriers / opportunities addressed	Intervention name	Description / Scope of Action	Leadership and stakeholders involved	Enabling impact	Co-benefits
Outdated data basis for transparent decision-making and monitoring	Further development of the urban data platform and digital twins Development of a city-wide climate data system.	Digital solutions, networking	Federation/ Municipality	Improved data analysis Improves decision-making and the effectiveness of climate protection measures through up-to-date and accurate data.	Efficient resource management

5 Outlook and next steps

Plans for next CCC and CCC Action Plan iteration

The development and updating of the Leipzig Climate City Contract builds on the existing cooperation and participation processes as well as existing network structures of the City of Leipzig in the area of climate protection. In addition to the institutionalisation of a climate advisory board in accordance with the Saxon municipal code, companies, organisations and institutions from various industries and sectors are also integrated into the work process. The Leipzig **Energy Efficiency and Climate Protection Network (EEKN)**, which was initiated in 2019 in cooperation with Leipzig municipal utilities and the Chamber of Industry and Commerce, provides an important platform for the implementation of measures and knowledge transfer and advises actors of the private sector on effective climate protection measures and shows ways to achieve sustainable corporate transformation. A Leipzig cohort from the companies participating in the Leipzig Climate City Contract will begin its work after submission in this network.

A holistic approach underlies the **monitoring** of the Climate City Contract, which takes into account all sources of emissions caused by the City of Leipzig or the municipal economy and ties in with the monitoring of the EKSP. Various indicators such as the renewable share of the city's overall energy requirements, modal split indicators and the city's green supply are regularly reviewed to ensure that Leipzig remains on track. Both the measures of the Energy and Climate Protection Programme 2030 and the Leipzig Climate City Contract are subject to a two-year reporting process and are continuously evaluated. The uniform nationwide method of greenhouse gas balancing according to the BISKO standard used in the Energy and Climate Protection Programme 2030 will be taken into account. Furthermore, the city's measures and strategies (e.g. heat planning, mobility strategy) are regularly updated and adapted to current urban developments in order to make the best possible contribution to achieving the climate targets. Findings from other cities as well as national and international bodies (German Association of Cities, Eurocities, Climate Alliance, EU Mission 100 Climate Neutral and Smart Cities, StronGER Cities, Smart City Community model projects) are incorporated to ensure that Leipzig is always at the cutting edge of technological, socio-political and scientific developments.

The city has developed a participation concept that enables the population to be actively involved in the discussion and implementation of climate protection targets and measures. To this end, regular workshops and events (analogue and online) are held to actively involve citizens in the energy and climate protection process. Important platforms include high-profile events such as climate conferences, the Ökofete, Klimafair and the annual city cycling event, as well as cooperation with climate groups and the active urban community. Further close cooperation with civil society players in the sense of the bottom-up approach is being sought.

The concrete participation process for updating the Climate City Contract will be part of Leipzig's application for the EU mission's Enabling City Transformation Programme (submission in October 2024). This participation process will take in consideration formats and approaches of social and technical innovation described above (Table C 2.1).

The Climate City Contract is to be updated every two years and in parallel with the development of the implementation programme for the city's Energy and Climate Protection Programme. This is planned for the first time in 2026.

In the next steps, specialist departments are to be involved even more closely, further organisations and companies are to be won as signatories to the CCC and cooperation with the city society, i.e. the involvement of citizens with concrete commitments in the CCC, is to be sought. In addition, the acquisition of further (subsidised) funds for the implementation of Leipzig's climate neutrality efforts is essential, as well as the continuous communication of legal and organizational barriers (countercurrent principle), which can only be overcome by public institutions at the federal and EU levels.

NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract Leipzig

Together for a future worth living

Stadt Leipzig

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1. Introduction

Introduction

Leipzig is a city of history and culture, but also of decline and environmental destruction in Germany's most devastated brown coal region. The citizens of Leipzig formed the heart of the Peaceful Revolution in 1989 and are regarded the driving force behind the epochal changes in Europe that ultimately paved the way for a united Germany in Europe. Today, it is these rich experiences that guide us to shape a comprehensively sustainable future and to develop our city into a climate-friendly living space that attracts more than 630,000 citizens and 2.5 million people in the metropolitan region.

Leipzig's development is an example for the challenges and potentials of European cities. During the German EU Council Presidency in 2020, cities adopted the New Leipzig Charter as a guiding document for urban development in Europe that is geared towards the common good. Together with the UN Agenda 2030, an action-oriented framework, it promotes further cooperation at local, regional, national and European level to strengthen the interests of cities and municipalities in Europe. With the implementation of our integrated sustainable urban development concept 2030 (INSEK 2030), we therefore strategically focus on the Leipzig Charter principles within the four pillars of our framework for action: quality of life, social cohesion, competitiveness and internationality. In addition, with the financial support of the Free State of Saxony from ERDF funds, we take part in the European Energy Award (eea) competition since 2011 and are proud to be awarded with the gold status twice (2017/2021). This demonstrates our continuous engagement to constantly evaluate and report upon our energy and climate protection activities which we established in our SECAP - the Leipzig Energy and Climate Protection Programme (EKSP) for over 10 years.

With the Leipzig Strategy 2035, we pursue the goal of making a contribution to a sustainable future that is oriented towards the common good, with special focus on climate neutrality, economic growth and social cohesion as a driving force in the network of European cities. In the City of Leipzig's Digital Agenda, we have agreed on goals, fields of action and projects that will help us on our way to becoming a climate-neutral city.

AMBITION

In 2015, the **Paris Climate Protection Agreement** set the goal of limiting the global temperature increase to 1.5 degrees Celsius if possible, and in any case to well below 2 degrees Celsius. As the City of Leipzig, we are committed to this goal, which is why the City Council adopted the Leipzig **Energy and Climate Protection Programme 2030** (EKSP 2030), setting the climate policy goal of a **climate-neutral city by 2040 at the latest**. Furthermore, we aim to cut in half the city's overall greenhouse gas emissions by 2030.

With the participation in the EU mission "100 climate-neutral and smart cities by 2030", the Leipzig City Council and the city administration have jointly committed to significantly reduce greenhouse gas emissions by 2030 (City Council resolution VII-DS-06102). However, to achieve the necessary transformation towards climate neutrality by 2030, we need the engagement and contribution of all stakeholders at all levels of urban governance (local, federal, national, EU) and the citizens of Leipzig.

PROCESS

Our decarbonisation strategies for energy and heat, transport, buildings and economic development focus on ten factor of success:

- **climate-friendly neighbourhood development**,
- **responsible land use** by striving for net zero sealing by 2030,
- **climate-neutral energy and heat supply** and
- a **regional circular economy**, which is supported by our zero-waste strategy and our **local nutrition strategy.**

Our **Sustainable Mobility Strategy 2030** focuses on eco-mobility and our Green City Masterplan ensures a healthy living environment characterized by our vibrant **green-blue infrastructure**. These instruments and plans allow us to promote our rich biodiversity, become climate resilient, ensure socio-spatial access for all and support active mobility and healthy people. As a city administration, we support local projects in our society through our **climate protection campaign** with advice and funding, promote **climate education** and lead by example with our concept for a **climate-neutral city administration in 2035.** This concept aims to raise awareness and to train employees, to transform our procurement system, to convert our vehicle fleet and renovate our municipal buildings with a particular focus on our renovation roadmap for daycare and school buildings.

GOVERNANCE

To accelerate the implementation process, the **Office for Sustainable Development and Climate Protection (RNK)** was founded in 2020 following the declaration of climate emergency in 2019. The RNK coordinates the city's climate protection process in a co-creative process involving political stakeholders, the scientific community, businesses, civil society and citizens. The backbone is formed by the **Climate Protection Core Team**, which assembles ten climate protection managers in the Departments of Urban Development, Mobility, Building Management, Urban Greenery and Water, Digitalisation and Internal Organisation, Sport, Environmental Protection, Economic Development, Strategic Cultural Policy and the Department for Sustainable Development and Climate Protection. The core team implements cross-sectional, integrated and agile working methods on climate protection and sustainability issues throughout the administration.

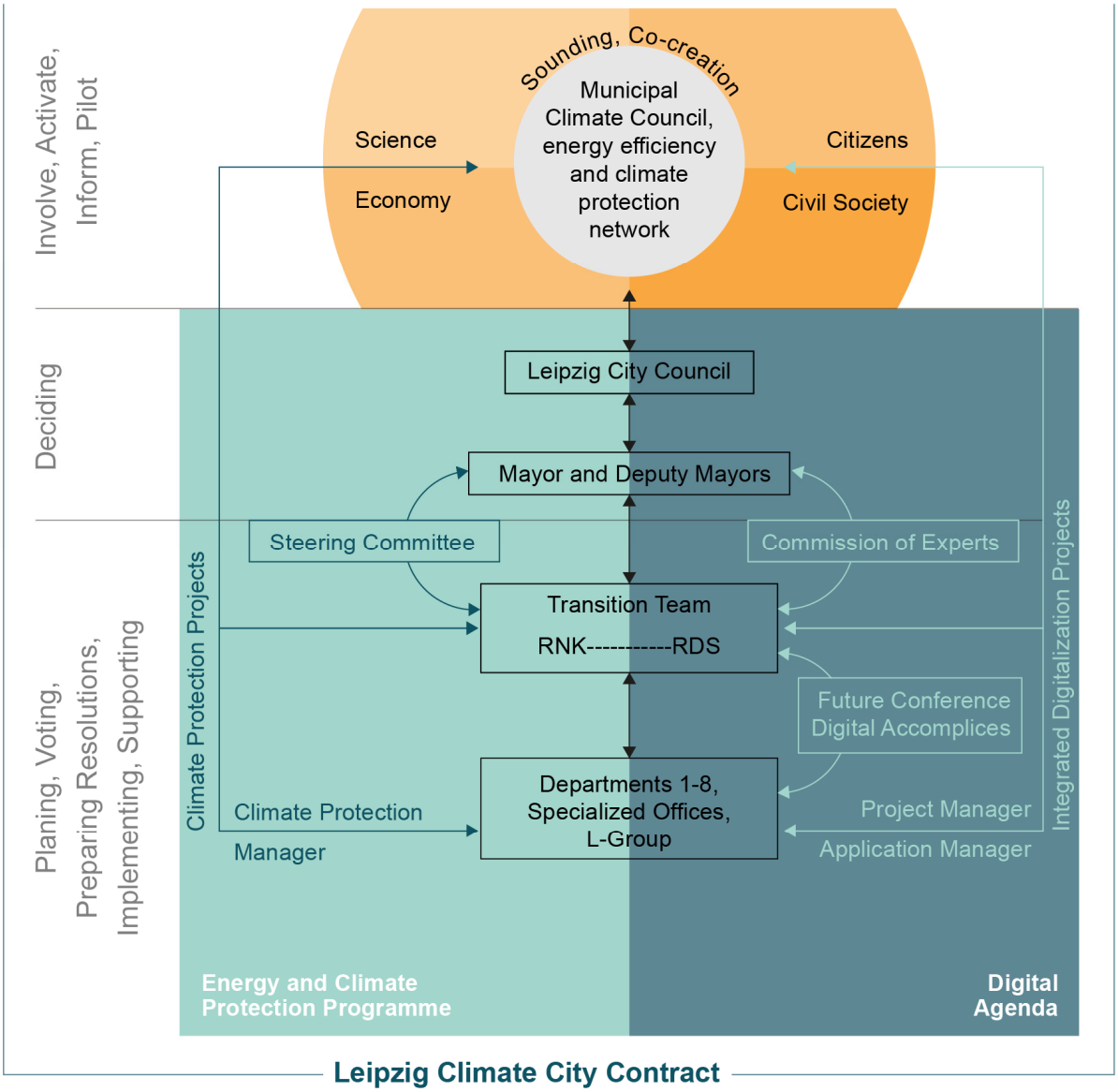
The **Climate Protection Steering Group** headed by the vice mayor of the Department of Environment, Climate, Order and Sport represents the head of divisions and coordinates the integrated planning. The newly established **Climate Council** involves a wide range of interest groups from politics, business, science and civil society. It works as an advisory body to the City Council. Strategies and activities for climate protection are decided by the **city council** as a politically elected representative body. The passed strategies, plans or resolutions are then implemented by the respective **vice mayor**. Furthermore, we acknowledge the importance of a close partnership with our **region to jointly shape** the structural change that has been taking place in the Central German lignite mining region for several years.

The Digital City Unit (RDS) acts as a coordination unit for the implementation of digitalisation projects in the fields of data, infrastructure, economy, urban society as well as energy and climate. The unit initiates and manages digitalisation projects in the city of Leipzig and interlinks the relevant stakeholders from administration, business, civil society and research. The Digital City Unit is also responsible for the development, monitoring and updating of the Digital Agenda. It is the service point for the development of digitalisation concepts for the specialist departments and divisions. The department acquires and implements funding for innovative projects. The unit is also the point of contact for digitalisation issues, both internally within the administration and externally for urban society, science and companies. As part of the EU's "Climate-neutral and smart cities" mission, the Digital City Unit specifically supports the development and implementation of digital solutions that help to reduce CO_2 emissions and improve the quality of life in Leipzig. This includes the promotion of smart city initiatives, the integration of digital technologies into sustainable mobility and energy systems and the use of data platforms for monitoring, efficient planning and management of urban resources. By working closely with various stakeholders, the department is driving forward the digital transformation of the city to achieve climate neutrality and at the same time to shape the city as a liveable and sustainable environment. The Digital City Unit builds on project results and collaborations from EU and federal projects (see below).

The Digital City Unit is supported by the Expert Commission Digital City in the management, coordination and co-creative implementation (see figure below) of integrated digitalisation projects. Within the city administration and with the L-Group, formats such as the Future Conference or Digital Complices have been used for many years to jointly find ideas and to agree on a common orientation The contribution of digital applications to climate neutrality and climate adaptation in the sense of a Green Smart City are regularly on the agenda here.

Regarding the responsibilities and tasks mentioned before, the **Office for Sustainable Development and Climate Protection** and the **Digital City Unit** take over the overall city coordination role in the EU mission as a tandem in the **Transition Team Leipzig**.

Figure 1 Governance structures and processes inside the administration and interfaces to the urban society



MEASURES

We are already implementing a wide range of measures in which climate-friendly neighborhood development and digital control mechanisms are interlinked and enable the active participation of stakeholders in our city. The Digital Agenda Leipzig provides a key strategic framework for this. The development of digital twins in areas such as energy and climate protection will lead to accelerated planning and implementation of measures, for example in the municipal heat planning (**Connected Urban Twins** project). Experiences from ongoing pilot projects, e.g. in the field of CO2-neutral energy neighborhoods (**Horizon 2020 project SPARCS**) and emission-saving public transport planning (**Interreg project EfficienCE**), create a technical basis and data collection for the city-wide implementation of climate protection activities. These pilot and funding projects take place in close cooperation with municipal energy

and water suppliers, transport companies, research institutions, private companies and civil society actors (**EnAct4CleanCities**).

EU MISSION

The successful application for the EU mission "100 climate-neutral and smart cities by 2030" facilitated the process to launch a **city-wide climate protection programme** which tackles the path to climate neutrality in a targeted manner and with a broad alliance of stakeholders. In addition to the City`s Energy and Climate Protection Programme (EKSP), which is currently being implemented, external stakeholders from business, science and urban society were involved in a participatory process. As a result, **more than 40 stakeholders** from business, science, social institutions, administration and civil society have declared their commitment to **achieve goals and** implement **measures** on the path to climate neutrality **by 2030** in the **first version** of the Climate City Agreement.

At a national level, we have **joined** forces with the seven other German mission cities to form the **stronGERcities** network. The network liaises with the Federal Ministry of Housing, Urban Development and Building. It represents the interests of the German mission cities. Politically, stronGERcities is supported by the German Association of Cities. At state level, we have also campaigned with our state capital Dresden for the Free State of Saxony to get involved in the implementation and financing of measures in our climate city contracts.

We are convinced that this ambitious project, initiated by the EU mission, will only succeed if all stakeholders across all levels of society and politics tackle this task together. Alliances in our city and dialogue with the municipalities of the EU mission "100 climate-neutral and smart cities by 2030" are just as important as the financial support for the cities through EU projects and federal/state funding.

OUR CONTRIBUTION

The EKSP 2030 contains measures and priorities for action that are largely developed and implemented by the City administration and its municipal companies. The Leipzig **Climate City Contract**, in addition to this, documents the ambitious joint efforts of various stakeholders as well as the City administration to implement **over 800 innovative, sustainable measures.** It is a jointly designed programme of Leipzig's citizens, businesses, scientific institutions and civil society that demonstrates the **path to climate neutrality by 2030**. These measures will be implemented by companies or institutions individually or jointly and/or in the neighbourhood. TThe first version of the Climate City Contract includes measures estimated to to result inin savingss of more than **560 tons**ons **of** of **CO2 emissions** and an investment volume of **330 million Euros.**

What we plan to do next:

- to drive forward the further implementation of the measures in network associations,
- to extend the use of digital applications such as digital twins, AI and our Leipzig app for support,
- to win over further partners, enablers and activists for involvement in the next version of the Climate City Contract,
- to act as a driving force for other European cities with our activities and
- to advocate for the removal of the described financial and legal barriers at state, federal and european level.

In this way, we aim to contribute to the implementation of the European Green Deal while preserving the city's quality of life, along with its ecological, social, and economic resilience.

2. Goal: climate neutrality by 2030

Goal

LEIPZIG CLIMATE NEUTRALITY TARGET

In accordance with the Council resolution on the **climate emergency in 2019**, the City of Leipzig is pursuing the goals of the Paris Climate Agreement at municipal level and applies the internationally applied CO2 budget approach as a basic principle. The calculation of Leipzig's remaining CO2 budget is therefore based on a target scenario of a possible **limitation of global warming to 1.75 degrees with a probability of 83%**.

The residual budget still available is determined using the methodology proposed in the 2020 Environmental Report of the German Advisory Council on the Environment (SRU), resulting in a final **residual budget of 29.0 million tonnes of CO2 equivalents** for the city of Leipzig **from 2020**.

The **EU Mission "100 Climate-Neutral and Smart Cities by 2030"** has given the City of Leipzig the opportunity to launch a city-wide climate protection program, aimed at purposefully pursuing the path to climate neutrality in a broad alliance of stakeholders. In addition to the already ongoing implementation of the Energy and Climate Protection Program (EKSP), external stakeholders from business, academia, and civil society are being involved in this process through a participatory approach.

By participating in the EU Mission, the **Leipzig City Council and city administration** have jointly committed to significantly reducing greenhouse gas emissions by 2030 (City Council Resolution VII-DS-06102). A significant intermediate goal is an 80% reduction in greenhouse gas emissions by 2030 compared to the baseline year of 2019 (5.25 tons of CO2 equivalents per capita), assuming the optimal implementation of all measures.

In the **first phase** of the Climate City Contract, stakeholders from business and academia will be involved in the collective path towards climate neutrality. However, given the current conditions and the current level of external stakeholder integration, the ambitious goal of an 80% reduction is unlikely to be fully achieved for the time being, under the current conditions (first version of the CCC), we can realistically expect a **65% reduction in greenhouse gas emissions by 2030**.

The first phase of the Climate City Contract lays the foundation for a city-wide climate protection program. Processes and structures will be refined, and a more comprehensive monitoring system will be established.

In further **expansion stages of the CCC**, additional stakeholders will be integrated into the city-wide climate protection program over the next few years. Additional to this, further external support is needed to break down various existing barriers, accelerate the implementation of climate-protection measures, and bring the city closer to achieving climate neutrality under realistic assumptions.

With the help of the **Climate City Contract**, supported by political decisions at the state and federal levels, and with the promised measures (financial, regulatory, personnel) to reduce existing barriers, the achievement of the climate neutrality goal set by the City Council by **2040** is expected to accelerate. Based on the 2019 baseline, the goal is to close the **emission gap from 1.9 tons per capita to 1.1 tons per capita by 2030**, achieving a significant reduction of 80%.

STRATEGIC MILESTONES

The guideline of a precautionary energy and climate protection strategy has already been incorporated into the interdisciplinary urban development strategy for Leipzig, the **Integrated Urban Development Concept 2030 (INSEK).** The INSEK 2030 was adopted by the City Council in 2018.

With the **Leipzig Strategy 2035** (further development of the INSEK 2030), the strategic objectives and projects of the City of Leipzig were harmonised with the vision "Leipzig grows sustainably and serves the

common good". The climate neutrality target was also included, as were the goals of our sustainable mobility strategy.

Figure 2 Target image Leipzig Strategy 2035

When the climate emergency was declared in October 2019, an **immediate action programme** was set up in **2020** with 24 measures to be implemented directly. This programme includes **investments of 20 million Euro** for:

- the expansion of renewable energies on municipal roofs and open spaces,
- raising building and renovation standards,
- strengthening climate-conscious mobility services,
- setting up an office for sustainable nutrition and agriculture and
- climate accounting for cultural institutions and events.

The many years of climate protection work to date were recognised **in** 2021 with the **European Energy Award in Gold**.

However, it was only with the council resolution on the **Energy and Climate Protection Programme 2030 in October 2022** that we succeeded in translating the energy and climate policy necessities into a municipal programme in such a way that **150 measures** are being implemented **under the collective responsibility of over 20 departments and municipal companies**. The measures of the EKSP are being concretely implemented through **two-year action plans**, supported by **financial backing** to enhance **monitoring**.

In the central **municipal leverage sectors of the transport, energy and heating transition**, we are working closely with municipal companies to provide services of general interest and pursue the development goal of a sustainable, resilient and intelligent supply and disposal structure. In 2023 and 2024 alone, together with the Leipziger Group as a municipal entity, we were able to invest **EUR 305 million per year** in the transport and renovation transition, thereby saving up to **1.1 million tonnes of CO2**.

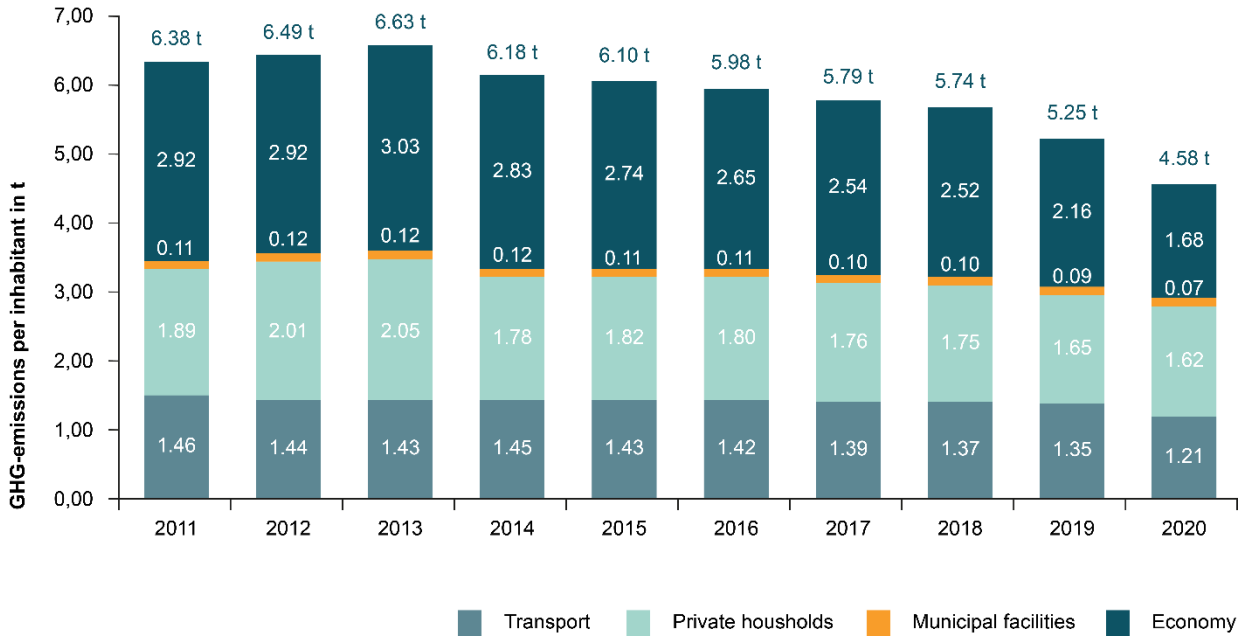
At the same time, we are positioning ourselves as a **local authority** to become **climate-neutral by 2035**. As the second largest employer in the Free State of Saxony, our starting balance sheet impressively demonstrates that by 2021, we were already well on our way to reducing our total emissions of approximately 47,399 tonnes of CO2 equivalent to a minimum. At the same time, the process of

drawing up **municipal heating plans** is underway to make Leipzig's heating supply future-proof, climate-neutral and affordable by 2038.

THG - BALANCE SHEET

In order to review the impact of the measures taken to achieve the target, the current status on the path to climate neutrality is regularly assessed using the standardised nationwide greenhouse gas balancing method in accordance with the BISKO standard. The **BISKO standard (municipal accounting system)** is based on the final energy-based territorial principle. It includes a list of final energy consumption that occurs within the municipal area, an analysis of the life cycle of all energy sources (including extraction, conversion, transport and use) and a derived greenhouse gas balance. Some data, in particular the consumption of electricity, district heating and gas, is only transmitted by the energy supply companies and network operators two years after the fact for auditing reasons. This means that the publication of a comprehensive greenhouse gas balance is always delayed. All energy-related consumption in the private household, commercial and transport sectors in the Leipzig city area is recorded. Energy consumed outside the city (e.g. for consumer goods) and air travel cannot be recorded. In addition to carbon dioxide (CO2), the most emitted greenhouse gas, the two other most important greenhouse gases methane (CH4) and nitrous oxide (N2O) are also analysed. For reasons of stringency, the emission factor of the overall German electricity mix is used in the BISKO standard. This means that Leipzig's successes in renewable electricity generation plants do not have a direct impact on the balance, but only indirectly via the change in the overall German electricity mix.

Figure 3 Development of GHG emissions per inhabitant in the city of Leipzig



The per capita greenhouse gas emissions of the city of Leipzig in 2011 and 2021 initially increase and then slowly but steadily decrease, followed by a more significant reduction in 2019 and 2020. The population grew by 18.0 % during the period under review.

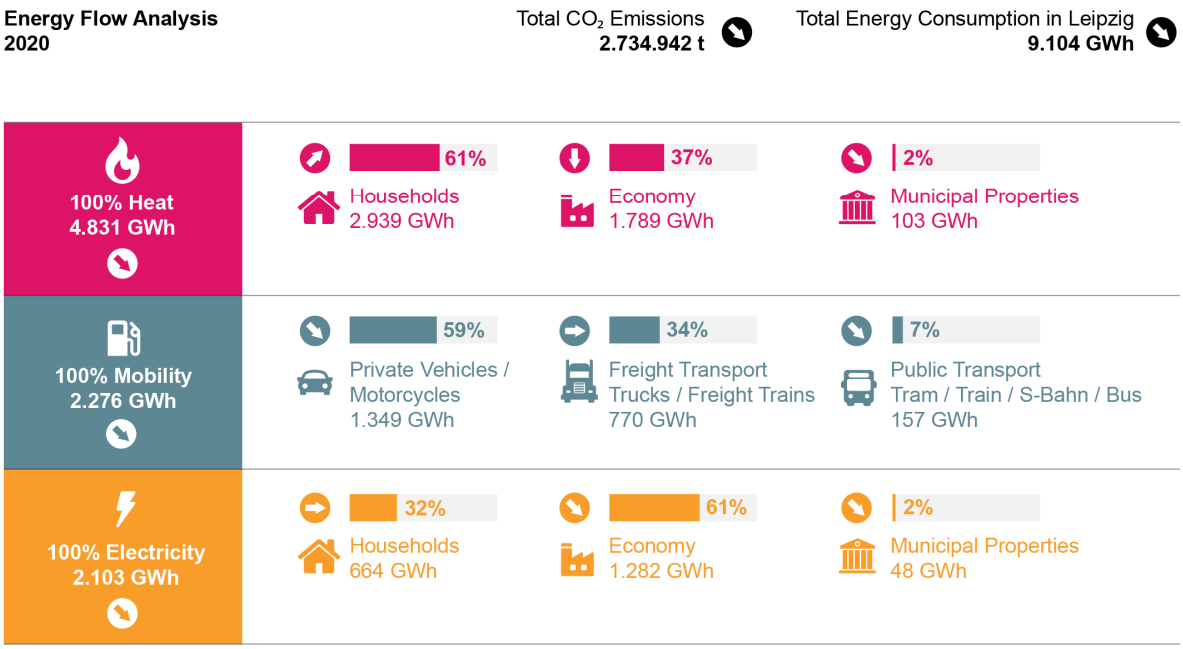
The reduction in greenhouse gas emissions in 2019 is mainly due to lower natural gas consumption in the commercial sector and improved electricity emissions. This is because more electricity was produced using renewable energy sources both locally and throughout Germany. In 2020, total emissions fell sharply, particularly in the transport and economic sectors. The measures to contain the COVID-19 pandemic led to a sharp reduction in traffic volumes and production losses in the economy as a result of delivery difficulties. Climate change also had an impact: Nine of the ten years analysed were significantly too warm, which reduced the need for heating energy. Greenhouse gas emissions fell by 22.1 % over the total period of 11 years (2011 - 2021, with weather correction) (without: 21.3 %). In the business

sector (including all municipal facilities, which account for around 2% of the City of Leipzig's total emissions), emissions fell more sharply (33.7%) than in the household (4.8%) and transport (17.1%) sectors. In 2021, GHG emissions will be 5.02 tonnes per inhabitant.

ENERGY FLOW ANALYSIS

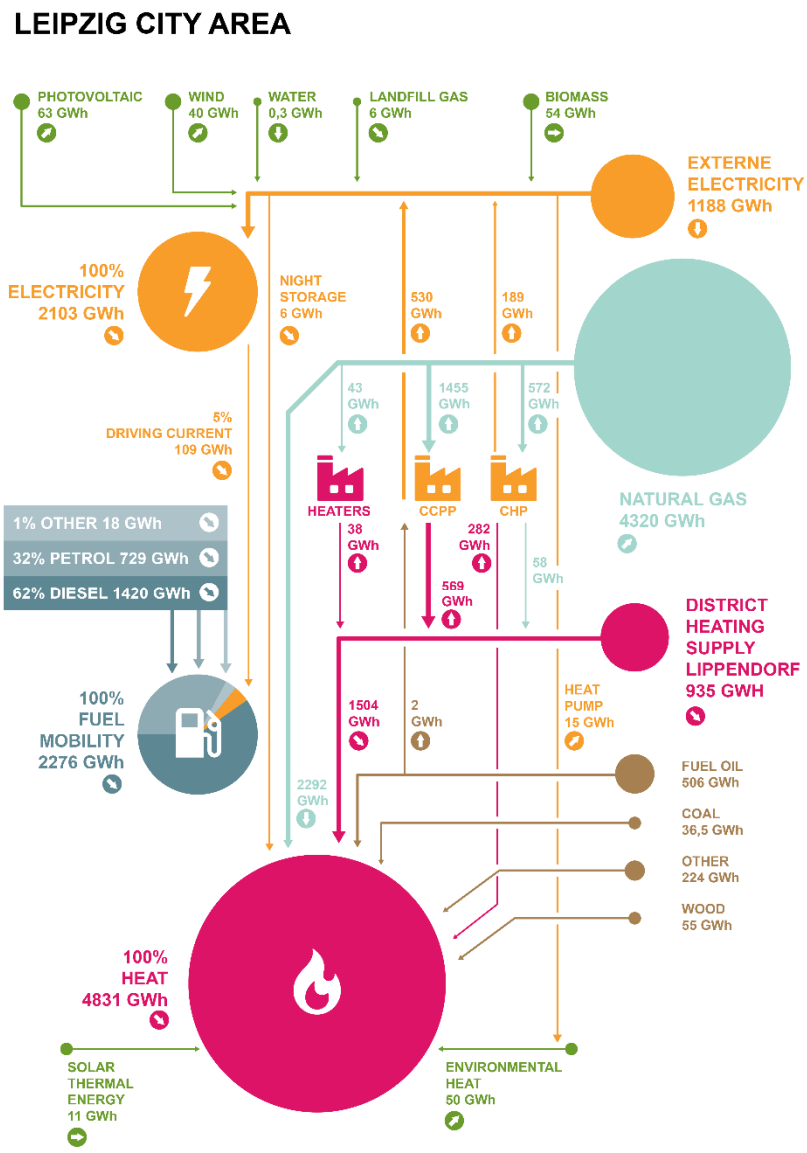
Leipzig's 2020 energy flow analysis shows that total energy consumption in the city of Leipzig has fallen by 10% compared to 2018 (10,187 GWh). Private households were the only sector to record a slight increase in final energy consumption in 2020, which is due to the effects of the coronavirus pandemic.

Figure 4 Energy flow analysis 2020 City of Leipzig - Part I



In addition to the balancing by sector, the breakdown by energy source provides important information for the strategic direction of energy and climate protection work in the city. The main energy sources and energy source groups are therefore presented below in terms of their share of final energy consumption. The total production of electricity from renewable energies was increased and the share of renewable energies in total electricity consumption for the city of Leipzig is 8% in 2020.

Figure 5 Energy flow analysis 2020 City of Leipzig - Part II



Leipzig is pursuing a holistic strategy that combines the reduction of climate-impacting emissions with the goals of integrated urban development. By utilising locally renewable energy sources and improving energy efficiency, the city not only contributes to global climate neutrality, but also strengthens its regional resilience and economic stability. A central component of this strategy is reducing dependence on fossil fuel imports. In a geopolitically dynamic global situation with increasing risks, this not only means greater energy independence, but also a strengthening of regional economic cycles. Revenues remain in the region, circulate locally and thus contribute to economic prosperity instead of being channelled into international trade in fossil fuels.

Leipzig's sustainable energy supply also brings social and environmental benefits. Making transport more environmentally friendly and increasing the use of low-emission vehicles improves air quality, especially in congested urban centres. This leads to a higher quality of life for residents. In addition, targeted climate protection measures contribute to the preservation and promotion of local biodiversity, which not only serves the ecological balance, but also has a positive impact on the urban climate and general well-being. The intelligent linking of centralised and decentralised energy approaches, such as virtual power plants, is of strategic importance. These smart solutions benefit from the many years of cooperation between Leipzig City Council, Stadtwerke Leipzig and partners from science and industry, e.g. as part of EU projects such as Triangulum and SPARCS. These diverse measures and targeted

cooperation not only make Leipzig a pioneer in the energy transition, but also increase the city's attractiveness for sustainable investments. The creation of long-term jobs in innovative industries of the future will further strengthen the city's economy and ensure its sustainable future viability.

Another positive effect is the improvement in air quality due to the reduction in emissions of pollutants such as nitrogen oxides and particulate matter. Good air quality is an important factor for people's quality of life, especially in urban centres with high levels of traffic congestion. Air quality can be significantly improved by making transport more environmentally friendly and using low-emission vehicles and energy sources.

Targeted climate protection measures can also contribute to the preservation and promotion of local biodiversity. Climate change and the scarcity of natural resources pose major challenges for biodiversity. The city of Leipzig is taking targeted measures to preserve or even improve habitats for animals and plants. This not only serves the ecological balance, but also has a positive effect on the urban climate and the well-being of residents.

3. Strategic priorities

3 Strategic priorities

MUNICIPAL LEVERAGE SECTORS

Leipzig, one of Germany's most dynamic cities, wants to play a pioneering role in achieving climate neutrality targets and share its experiences and solutions with other cities. In order to realise these ambitions, the City Council has set the **three municipal leverage sectors** as systemic-strategic priorities that are decisive for the implementation of the Climate City Contract (CCC) by adopting the Energy and Climate Protection Programme 2030.

The main sectors on the way to a climate-neutral city are **transport, electricity and heating**. In the coming years, Leipzig will: focus on reducing CO_2 emissions through,

- increasing the share of renewable energies in the electricity and heating sector,
- the reduction of energy requirements,
- focus on the promotion of sustainable mobility options
- the implementation of technologies and digital applications which help to accelerate the transition process and to operate a climate neutral city.

To this end, we are endeavouring to comprehensively replace fossil fuels with renewable energies in the areas of **electricity, heating and transport**.

The future development of energy consumption and greenhouse gas emissions in the transport sector is heavily dependent on optimised interaction between the various political decision-making levels. Changing existing instruments and creating new incentives for eco-mobility at federal level can reduce the attractiveness of motorised private transport. The resulting increase in the volume of traffic should be redirected to eco-mobility. Accelerating the **transport transition** is therefore at the centre of our strategic priorities. The basis for this is the **sustainability scenario of the Mobility Strategy 2030** with an associated framework plan. The scenario is also aligned with the climate targets of the City of Leipzig. This includes the increased promotion of local public transport and cycling. Transport-related emissions in urban areas will be reduced in the long term through attractive, affordable and inclusive mobility options for Leipzig's population.

Table 1 Development of modal split

Modal split City of Leipzig	2018	Sustainability scenario 2030
PUBLIC TRANSPORT	17,5 %	23,0 %
Foot	27,3 %	24,0 %
Wheel	18,7 %	23,0 %

In quantitative terms, this means achieving a 70 per cent share of eco-mobility, with local public transport accounting for 23 per cent, cycling for 23 per cent and walking for 24 per cent. At the same time, the share of motorised private transport in the modal split is to be reduced to 30 percent. The aim is to increase passenger numbers to 220 million passengers per year and to increase the utilisation of local public transport by expanding the range of services.

The further expansion of **renewable energy** plants in Leipzig is being prepared by the so-called "Framework concept for the planning control of land requirements for the production of renewable energies (Rako-FEE)". The expansion of renewable energies for electricity generation is already being supported by a **solar cadastre** on possible RE potential on roof surfaces, a **funding programme** for the installation of balcony solar modules and a **solar scout** who explicitly advises businesses with large roof surfaces on the expansion of PV systems. In addition, the city administration and its municipal companies, e.g. Leipziger Wohnungs- und Baugesellschaft (LWB), have committed to the further expansion of PV systems on their buildings. By the end of 2023, the LWB had installed 97 photovoltaic systems with a total output of 4.07 MWp. This corresponds to the electricity consumption of around 2,000 two-room flats. PV systems with a total output of 1 MWp will be added in 2024 alone. The systems will be installed and operated by the wholly owned subsidiary WSL Wohnen & Service Leipzig GmbH. Since 2023, the LWB has also been supporting the construction of PV balcony power plants by tenants.

Due to the urban area with limited land potential for renewable energy plants, cooperation with the surrounding municipalities of Leipzig is essential. Here too, planning and coordination processes are already underway with the Leipzig-Western Saxony Planning Association.

The future development of the **heating mix,** i.e. the distribution of final energy consumption across the various energy sources, depends on various factors. Fossil fuels such as heating oil and coal must be almost completely replaced by 2030. In the area of private households and municipal properties, the aim is to replace all systems with climate-friendly heating technology by then. Overall, the proportion of fossil fuels must fall to around 30 % and heating oil, liquid gas and coal must be completely replaced by renewable energies, district heating (using fossil and renewable energy sources) or natural gas.

Switching to a **climate-neutral energy and heat supply** is therefore a major lever for efficiently reducing greenhouse gas emissions in Leipzig. To achieve this, we need to scrutinise existing structures, use digital technologies and social innovations.

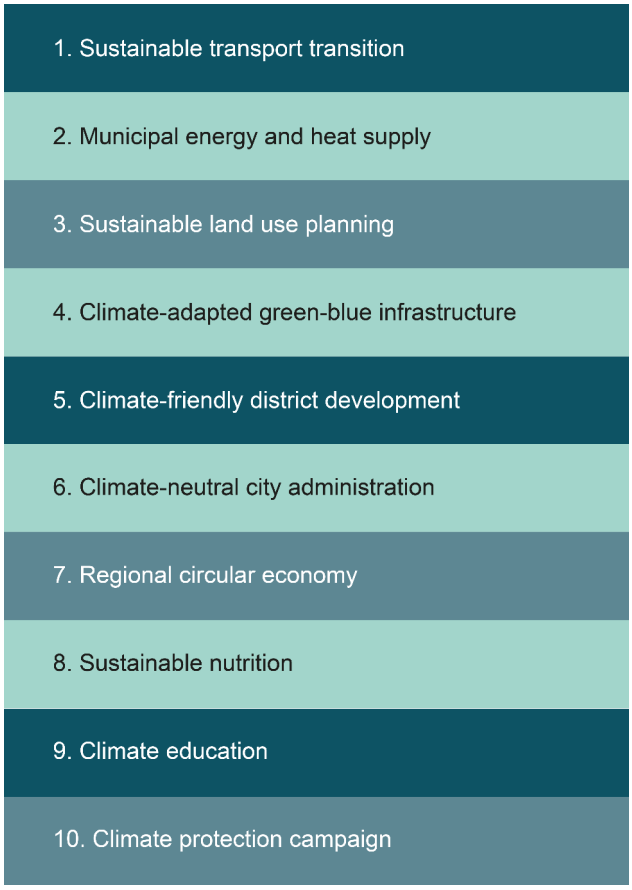
Leipzig City Council is playing a central role in shaping the transformation process of the heating supply and is developing a **municipal heating plan** for this purpose. The administration of the City of Leipzig, Leipziger Stadtwerke, Netz Leipzig and Leipziger Wohnungs- und Baugesellschaft are working together on this. The municipal heating plan aims to take the necessary steps for a sustainable, renewable heat supply in line with the city's climate and energy strategy. The prerequisite for successful implementation of the heating plan is an efficient technical infrastructure.

10 FACTORS OF SUCCESS FOR CLIMATE PROTECTION

In order to significantly reduce CO2 in the municipal leverage sectors and at the same time shape the transformation to a sustainable city with the commitment of the urban society to climate protection, we have identified the following **ten success factors (key areas)** in our energy and climate protection programme. They will guide our future energy and climate protection work until 2030 and integrate further impetus for the implementation of measures together with the urban society. This addresses

key levers of municipal climate protection work and defines strategic milestones for the process towards climate neutrality.

Figure 6 EKSP factors of success



Sustainable and climate-sensitive urban development not only includes the creation of environmentally and climate-friendly living spaces, but also a holistic ecological approach to urban development. Innovative concepts such as neighborhood energy concepts and energy-efficient refurbishment management are being actively promoted. At the same time, projects to increase energy efficiency are being driven forward, such as the refurbishment of municipal building complexes and the introduction of energy-efficient heating and lighting systems. This is accompanied by ongoing user training programmes in municipal administrative, educational and leisure facilities. In addition, Leipzig consistently focuses on the circular economy to minimise the amount of waste and recycle materials as completely as possible. The city's "Zero Waste Strategy", which pools initiatives and stakeholders in waste avoidance and recycling and strengthens them together with Leipzig's municipal waste management organisation, is key to this.

Leipzig is aiming for a **climate-neutral city administration** by 2035. The implementation concept addresses internal processes ranging from employee mobility and climate-neutral administrative buildings to procurement processes. One focus, for example, is the installation of solar systems on **municipal buildings** and roofs. This should help to increase the proportion of clean energy generation in Leipzig and reduce dependence on fossil fuels.

Leipzig is investing heavily in basic research and planning services for heat planning and the **heat transition**. This includes the **development of strategies and measures** for efficient heat utilisation as well as the expansion of heating networks and renewable heat sources. Leipzig is planning and realising the expansion of solar thermal plants (including Germany's largest solar thermal plant in Leipzig-Lausen) in order to generate renewable energy from sunlight and strengthen the local energy

supply. Another focus is the planning of a waste heat pipeline from the Leuna industrial site, which will feed industrial waste heat into the city's district heating network.

In the area of **mobility**, the city also relies on a multidimensional mix of measures, e.g. by implementing the superblock approach. This aims to reduce **traffic** and improve the quality of life in certain neighbourhoods. This is achieved by setting up car-free zones, promoting pedestrian zones and improving local public transport. Another priority is the expansion of cycle paths to promote cycling and to increase the proportion of environmentally friendly modes of transport. This includes the creation of safe cycle paths, bicycle parking facilities and the promotion of bicycle hire systems. Special attention is being paid to the north of Leipzig, where urban development measures are planned that address sustainability and climate protection. These include the creation of green spaces, the promotion of renewable energies and the development of sustainable transport concepts.

The city of Leipzig promotes the **sustainable supply of** regional and seasonal food to the city's population. As part of the Biostädte network, Leipzig promotes the expansion of organic options in communal catering, particularly in school and day-care centre catering. With the local food strategy, we are pursuing the further development of urban-rural partnerships to promote the ecological cultivation of land and to increase regional added value.

In order to be able to clearly localise measures in the EU system, the success factors explained were assigned to the EU system as follows.

Table 2 Merging fields of action & EKSP

Merging fields of action & EKSP	
EU Fields of action	**success factors (= key areas) of the EKSP**
Energy systems	Sustainable energy and heat supply (KSA 2)
Mobility & transport	Sustainable mobility (KSA 1)
Waste & circular economy	Regional circular economy (KSA 7)
Green infrastructure & nature-based solutions	Climate-friendly green-blue infrastructure (KSA 4) Sustainable nutrition (KSA 8) Sustainable land-use (KSA 3)
Built environment	Climate-friendly urban district development (KSA 5)
Other/Engagement	Climate-neutral city administration (KSA 6) Climate education (KSA 9) Climate protection initiative - CCC (KSA 10)

DIGITALISATION AS A TRANSFORMATION ENABLER

The European Green Deal recognises digital technologies as a key prerequisite for achieving the UN Sustainable Development Goals and aims to provide concrete support in line with the European Union's digital strategy with the EU's Digital Compass. Digital solutions and processes will provide support in all fields of action of the EKSP and contribute to more sustainable urban development (Green Smart City). Among other things, resource-saving - because digitalised and optimised - workflows, intelligently controlled mobility and integrated urban development that takes climate protection into account and can model climate impacts will help here. Climate protection measures, for example, can be planned in a more targeted manner, their real impact measured and linked with other influencing factors and data sources external to the city (e.g. weather, traffic) to form a climate protection monitoring system. Energy and resource consumption will be countered by energy-saving technologies and the collection and processing of only the necessary data. By participating in the EU project SPARCS for the development of energy-positive neighbourhoods (PEDs), the City of Leipzig is working with Leipzig's municipal utilities, municipal housing companies and SMEs in the real-world laboratory to test innovative, digital approaches to achieving climate neutrality and the energy transition. Solutions are being developed and tested here, particularly in the two sectors of heat and electricity, which also enable the realisation of virtual power plants in the city area, among other things. As part of the EKSP, the City of Leipzig is also focussing on the development of digital twins in

the areas of energy, heat planning, transport and climate adaptation. By using the twins for planning, scenarios and monitoring urban development processes, these can be accelerated, interactions recognised earlier and more targeted decisions made. The Digital City Unit operates the Leipzig App (City App) and is developing it further. The app is already a communication and transaction tool for around 30,000 Leipzig residents. Alongside leipzig.de, it will play an important role in the further implementation and scaling process of the Climate City Contract.

4. Process and principles

4 Process and principles

PROCESS CONTROL

With the establishment of the **Sustainable Development and Climate Protection Department**, as a concrete consequence of the resolution on Leipzig's climate emergency, a new organisational unit has existed within the Department of Environment, Climate, Order and Sport since 1 July 2020, which is responsible for the systematic implementation of the city-wide sustainability and climate protection process in the city administration. Unique in Germany, the department works together with dedicated climate protection managers in the following relevant specialist departments to steer cross-departmental and cross-sector collaboration through the climate protection core team: Urban Development, Mobility, Building Management, Urban Greenery and Water, Digitalisation and Internal Organisation, Sport, Environmental Protection, as well as Economic Development, Strategic Cultural Policy and the Sustainable Development and Climate Protection Department.

Together with the **Digital City Unit**, the implementation of the EU mission and the development and monitoring of the Climate City Contract is carried out as a **transition team** (see Fig. Governance)**.** This enables the topics of climate neutrality, energy transition and digital transformation to be tackled together as challenges for society as a whole and solutions to be developed in a co-creative process involving political stakeholders, science, business, civil society and citizens.

COOPERATION PARTNER

With the **Leipziger Gruppe** (L-Group) as a wholly-owned municipal subsidiary, the City of Leipzig has far-reaching management options in the business areas of energy and heat supply (Leipziger Stadtwerke LSW), mobility (Leipziger Verkehrsbetriebe LVB) and water (Leipziger Wasserwerke, Leipziger Sportbäder LWW). In addition to the premises of economic efficiency and customer orientation, the original business areas of the L-Group are orientated in particular towards future viability and the city-wide goals of climate neutrality, sustainable development and the common good. This is based on the Group strategy "Secure, sustainable and digital for Leipzig - at home in the transformation", which the Supervisory Board of LVV (as the holding company of the L Group) presented to the City of Leipzig as shareholder in December 2023. The L-Group is driving forward the **energy and heating transition, the transport transition** and **water-sensitive urban development** and sustainably securing services of general interest for the Leipzig region. Leipziger Stadtwerke began phasing out the supply of district heating based on lignite as early as 2022. New generation capacities of around 250 megawatts are being built for this purpose. This includes the Leipzig Süd combined heat and power plant with storage capacities of at least 1,500 megawatt hours. Another strategic approach is the increased utilisation of unavoidable waste heat from the industrial sector. Stadtwerke will continue to drive forward the expansion of renewable energies from wind and solar power in the coming years. The aim is to install half of the city's current load of new renewable capacity. The basis for this is an ambitious transformation plan that sets out the path to a climate-neutral heat supply. In the mobility sector, LVB is a key partner in the mobility transition with public transport passenger numbers of 153.3 million (2023). Therefore, the long-term goal is not only to switch to climate-neutral drives, but also to significantly increase passenger numbers.

With a portfolio of almost 36,700 flats (10.6% of flats throughout Leipzig), the municipal subsidiary **Leipziger Wohnungsbaugesellschaft** (LWB) fulfils a secure and **socially responsible housing**

supply on behalf of the city. In doing so, the LWB sets energy standards and integrates renewable energies in **new construction** and **refurbishment** and contributes to the city's refurbishment target. In order to contribute to the city's climate neutrality target, the LWB is guided by its sustainability scenario, which assumes an energy-efficient refurbishment rate of 2.1 per cent. The aim is to phase out all fossil-fuelled systems and switch to district heating/heat pumps. For buildings with gas systems with low energy efficiency (cat. F-H), the target standard is efficiency house standard EH 85 (61-73 kWh/m 2), for listed buildings EH 100/115 (74-86: 87-99 kWh/m 2), for buildings cat. D (100-130 kWh/m2), E (130-160 kWh/m2) the target is EH 70 (48-60 kWh/m2), for buildings from EH 115 the target is EH 70 + conversion of fossil fuels to heat pumps. This means an investment requirement (including indexed cost extrapolation) of EUR 635 million. At the same time, the focus is on developing a green and intergenerationally fair environment. This includes planting, mobility stations (car sharing, e-bikes), parcel boxes and rainwater retention and infiltration on the site. By the end of 2023, the LWB had installed 97 photovoltaic systems with a total output of 4.07 MWp. PV systems with a total output of 1 MWp will be added in 2024 alone. The systems will be installed and operated by the wholly owned subsidiary WSL Wohnen & Service Leipzig GmbH. Since 2023, the LWB has also been supporting the construction of PV balcony power plants by tenants.

STAKEHOLDER COMMITMENT AND ENGAGEMENT

Cities such as Leipzig are prepared to make a significant contribution to achieving the Paris Climate Agreement, but cannot realise this within the municipal framework alone. A municipality's sphere of influence depends on the accompanying political and economic framework conditions set by the EU, the federal government and the federal states. Together with the City of Dresden as another Mission City, we have also been able to obtain the support of the **Free State of Saxony** with the letter from the Minister President.

In addition, the efforts of all social actors in Leipzig are needed to achieve the vision of climate neutrality. Together with the Leipzig Group, local companies, committed institutions and an active citizenry, the City of Leipzig is a committed driver of climate protection on the ground. During the development process for this Climate City Agreement, various workshops were held with institutional and private sector stakeholder groups (business, science, social organisations) to communicate the idea and aspirations of the EU mission and the city's climate protection goals and to promote joint commitment. Action days with committed civil society (Future Day 2023) and the Saxon Energy Days (2024) in cooperation with the Saxon Ministry of Energy, Climate Protection and Agriculture in cooperation with the Saxony Consumer Advice Centre were also used to motivate a wide range of stakeholder groups to sign the Leipzig Preamble to the Climate City Agreement and to introduce their own measures and to implement a cross-sector network. The signatories of the Climate City Agreement were explicitly asked to document and submit their own measures and strategies in the field of climate protection and adaptation[1].

The participating companies, scientific organisations and social institutions **share a common vision** of an environmentally friendly, climate-protecting and community-oriented city. They see it as their responsibility to promote local quality of life, regional value creation and diversity, while actively involving the people of the city. The motivation of the signatories is to shape the city of Leipzig as a liveable and sustainable place that combines economic prosperity, social justice and ecological responsibility in a sustainable way. They are endeavouring to actively contribute to overcoming the climate crisis through their commitment and at the same time to act as a role model for other cities in Europe.

With the Environmental Research Centre (UFZ) and the German Biomass Research Centre (DBFZ), institutions of national importance are involved in the Climate City Agreement. With DHL, the University Hospital, BMW, Porsche and the state-owned company Sächsisches Immobilien- und Baumanagement, **Leipzig's largest employers** are also signatories to the Climate City Agreement.

[1] Comprehensive documentation of the process of drawing up the Climate City Agreement is provided in the Action Plan.

They act as drivers, multipliers and ambassadors of this ambitious project and want to be part of a European pioneering city that is committed to the local transformation by proposing solutions.

With the large number of measures submitted, the participants have committed themselves to close cooperation with the **activation of private capital for future-oriented investments** to jointly massively increase energy and resource efficiency and significantly reduce overall urban emissions. Research institutions provide important findings for the political decision-making level and accompanied research while the public sector acts as an initiator and implementer of measures. The economy can make a major contribution to achieving sustainability goals through technological innovations and low-resource business models, while civil society acts as a driver for democratic activation and change processes and demands binding climate targets with corresponding measures.

UPDATING AND MONITORING

The development and updating of the Leipzig Climate City Contract builds on the existing cooperation and participation processes as well as existing network structures of the City of Leipzig in the area of climate protection. In addition to the institutionalisation of a climate advisory board in accordance with the Saxon municipal code, companies, organisations and institutions from various industries and sectors are also integrated into the work process. The Leipzig **Energy Efficiency and Climate Protection Network (EEKN)**, which was initiated in 2019 in cooperation with Leipziger Stadtwerke and the Chamber of Industry and Commerce, provides an important platform for the implementation of measures and knowledge transfer and advises private sector players on effective climate protection measures and shows ways to achieve sustainable corporate transformation. A Leipzig cohort from the Climate City Contract will begin its work after submission.

A holistic approach underlies the **monitoring** of the Climate City Contract, which takes into account all sources of emissions caused by the City of Leipzig or the municipal economy and ties in with the monitoring of the EKSP. Various indicators such as the renewable share of the city's overall energy requirements, modal split indicators and the city's green supply are regularly reviewed to ensure that Leipzig remains on track. Both the measures of the Energy and Climate Protection Programme 2030 and the Leipzig Climate City Agreement are subject to a two-year reporting process and are continuously evaluated. The uniform nationwide method of greenhouse gas balancing according to the BISKO standard used in the Energy and Climate Protection Programme 2030 will be taken into account. Furthermore, the city's measures and strategies (e.g. heat planning, mobility strategy) are regularly updated and adapted to current urban developments in order to make the best possible contribution to achieving the climate targets. Findings from other cities as well as national and international bodies (German Association of Cities, Eurocities, Climate Alliance, EU Mission 100 Climate Neutral and Smart Cities, StronGER Cities, Smart City Community model projects) are incorporated to ensure that Leipzig is always at the cutting edge of technological, socio-political and scientific developments.

The city has developed a participation concept that enables the population to be actively involved in the discussion and implementation of climate protection targets and measures. To this end, regular workshops and events (analogue and online) are held to actively involve citizens in the energy and climate protection process. Important platforms include high-profile events such as climate conferences, the Ökofete, Klimafair and the annual city cycling event, as well as cooperation with climate groups and the active urban community. Further close cooperation with civil society players in the sense of the bottom-up approach is being sought.

The concrete participation process for updating the Climate City Contract will be part of Leipzig's application for the EU mission's Enabling City Transformation Programme (October 2024).

5 Signatories

The following table lists the signatories[2] that have committed to this CCC and are working together with the city to achieve climate neutrality in Leipzig by 2030. Specific agreements setting out the details of the climate measures between the municipality and the signatories are added to the individual contracts in Annex 1 (see sample in Section 6). The number and relevance of the signatories' commitments is expected to increase over time.

Table 3: Overview of signatories Preamble to the Climate City Agreement (as at April 2024)

Name of the signatory (organisation)	Sector / domain / organisation level [9]	Legal form	Name of the responsible person	Position of the responsible person
ETE EmTechEngineering	-	GmbH	Frank Hoferecht	Management Board
European Energy Exchange	-	AG	Peter Reitz, Anja Kiessling, Steffen Köhler, Jens Rick	Management Board
Saat-Gut Plaußig Voges	-	KG	Benedikt Biermann	Management Board
Senec	-	GmbH	Johann Georg von Hülsen, Thomas Augat-Kaiser	Management Board
Sonovum	-	GmbH	Bertram König	Management Board
Mitteldeutscher Rundfunk	-	Anstalt des Öffentlichen Rechts	Ralf Ludwig	Management Board
GISA	-	GmbH	Heino Feige	Management Board

[2] Signatories to the Climate City Agreement can be individuals or organisations. These ideally include national and/or regional governments, for example specific agreements/commitments made as part of the multi-level governance engagement processes supported by NetZeroCities, CapaCities and other emerging initiatives at national level.

Mfi Shopping Center Management	-	GmbH	Holger Bissel, Sebastian Schlegel, Thomas Schurk	Management Board
DHL Group	-	AG	Tobias Meyer, Oscar de Bok, Pablo Ciano, Nikola Hagleitner, Melanie Kreis, Thomas Ogilvie, John Pearson, Tim Scharwath	Management Board
Leipziger Versorgungs- und Verkehrsgesellschaft (LVV)	-	GmbH	Karsten Rogall, Ulf Middelberg, Volkmar Müller, Kerstin Schultheiß	Management Board
Kommunale Wasserwerke Leipzig	-	GmbH	Kerstin Schultheiß, Ulrich Meyer	Management Board
Deloitte Consulting	-	GmbH	Volker Krug, Rainer Bätz, Frank Beine, Stefan Grube, Sandra Mühlhause, Martina Mietzner, Christoph Schenk	Management Board
Energy Exchange Services	-	GmbH	David Jüttner, Mario Muhs	Management Board
Lecos	-	GmbH	Peter Kühne, Sebastian Rauer	Management Board
VSU Vereinigte Sicherheitsunternehmen	-	GmbH	Gunnar Vielhaack, Nora Rauch	Management Board
Porsche Leipzig	-	GmbH	Gerd Rupp, Ruven Weichert	Management Board

Arvato Systems Digital	-	GmbH	Frank Brinkmann, Hansjörg Metzger, Ralf Westhoff	Management Board
RaDoMo Mobilitätskonzepte	-	Einzelunternehmer	Christoph von Radowitz	Management Board
Staatsbetrieb sächsisches Immobilien- und Baumanagement	-	Staatsbetrieb	Oliver Gaber, Falk Reinhardt	Management Board
Helmholtz-Zentrum für Umweltforschung	Research & Development	GmbH	Rolf Altenburger, Sabine König	Management Board
Deutsches Biomasseforschungszentrum	Research & Development	gGmbH	Michael Nelles, Christoph Krukenkamp	Management Board
Universität Leipzig	Research & Development	Körperschaft des Öffentlichen Rechts	Eva Inés Obergfell	Rector
Hochschule für Musik und Theater Leipzig	Research & Development	Körperschaft des Öffentlichen Rechts	Gerald Fauth	Rector
Hochschule für Technik, Wirtschaft und Kultur	Research & Development	Körperschaft des Öffentlichen Rechts	Mark Mietzner	Rector
Biosaxony Management	Research & Development	GmbH	André Hofmann	Management Board
Max-Planck-Institut für evolutionäre Anthropologie	Research & Development	e.V.	Patrick Cramer	President

Fraunhofer-Institut für Zelltherapie und Immunologie	Research & Development	e.V.	Holger Hanselka	President
Kunststoff-Zentrum Leipzig	Research & Development	gGmbH	Matthias R. Jacob	Management Board
Leibniz-Institut für Länderkunde	Research & Development	-	Judith Miggelbrink	Board member
Leibniz-Institut für jüdische Geschichte und Kultur - Simon Dubnow	Research & Development	e.V.	Simon Dubnow, Yfaat Weiss	Board member and Director
Leibniz-Institut für Geschichte und Kultur des östlichen Europas	Research & Development	e.V.	Maren Röger	Board member
Leibniz-Institut für Troposphärenforschung	Research & Development	e.V.	Andreas Macke	Director
SAE Institute Leipzig	Research & Development	GmbH	Christian Müller	Represented by
Impact Hub Leipzig	Research & Development	GmbH	Anja Hirschfelder, Martin Stöhr	Represented by
Spin Lab Accelerator	Research & Development	GmbH	Eric Weber, Marcus Haberstroh	Represented by
Deutsches Rotes Kreuz, Kreisverband Leipzig-Stadt	Social institution	e.V.	Olaf Hagenauer	Board member

Caristasverband Leipzig	Social institution	e.V.	Tobias Strieder	Board member
Diakonisches Werk Innere Mission Leipzig e.V.	Social institution	e.V.	Sebastian Steeck	Board member
Ev. Diakonissen-krankenhaus Leipzig	Social institution	gGmbH	Dirk Herrmann	Management Board
Städtische Altenpflegeheime Leipzig	Social institution	gGmbH	Stefan Eckner	Management Board
Universitätsklinikum Leipzig	Social institution	Anstalt öffentlichen Rechts	Christoph Josten, Robert Jacob	Board member
Johanniter-Dienste Sachsen	Social institution	GmbH	Thomas Mähnert, Christian Meyer-Landrut	Board member

Figure 7 Overview of signatories Preamble to the Climate City Agreement (as at April 2024

6 Annexes

Annex 1 - letter from the mayor

LEIPZIG IST KLIMA BEWUSST

Stadt Leipzig
Der Oberbürgermeister

Postanschrift: Stadt Leipzig • 04092 Leipzig

Akteure aus
Wirtschaft, Wissenschaft, Sozialverbänden
und Zivilgesellschaft

Ihr Zeichen/Ihre Nachricht vom	Unser Zeichen	Telefon/Telefax	E-Mail	Datum
				Dezember 2023

EU-Mission „100 klimaneutrale und smarte Städte bis 2030"
- unser gemeinsames Engagement

Sehr geehrte Damen und Herren,

mit Beschluss des Stadtrates im Oktober 2022 hat sich die Stadt Leipzig das Ziel gesetzt, bis zum Jahr 2040 die Klimaneutralität erreicht zu haben. Meilensteine und Maßnahmen sind dazu im Energie- und Klimaschutzprogramm 2030 der Stadt Leipzig beschrieben.

Ein wesentlicher Baustein zur Realisierung dieses ambitionierten Ziels ist die Mitwirkung an der EU-Mission „100 klimaneutrale und smarte Städte bis 2030". Als Präsident des Städtenetzwerks EUROCITIES freut es mich persönlich sehr, Teil dieser EU-weiten Mission zu sein und als Vorreiterstadt unsere Ideen, Projekte und Lösungsvorschläge einzubringen.

Dieses ambitionierte Vorhaben braucht gemeinsames Handeln und kann dann erfolgreich gelingen, wenn sich alle Akteure miteinander dieser gesamtgesellschaftlichen Aufgabe stellen. Gemeinsam mit Ihnen, als Vorreiter im Klimaschutz, möchten wir den Klimastadtvertrag als das erste gesamtstädtische Energie- und Klimaschutzprogramm erstellen. Mit einer Vielzahl von Aktivitäten wollen wir so – Stadtverwaltung und Unternehmen, Verbände und Forschungseinrichtung, Zivilgesellschaft und Bürgerschaft – unseren Beitrag für ein klimaneutrales Leipzig leisten.

Unter Leitung der städtischen Referate – Referat für Nachhaltige Entwicklung und Klimaschutz und Referat Digitale Stadt – wird bis September 2024 in einer Vielzahl von Mitwirkungsformaten der Leipziger Klimastadtvertrag erarbeitet. Diesen wollen wir, nach gemeinsamer Unterzeichnung, nach Brüssel zur Bewertung senden. Sollten wir eine positive Bewertung durch die EU-Kommission erhalten, ermöglicht uns das verliehene Mission-Label einen erleichterten Zugang zu EU-Fördergeldern.

Wir möchten Sie gerne dafür gewinnen, Ihre Perspektive, Ihre Ideen, Gestaltungsmöglichkeiten und praktischen Ansätze zur wirksamen Einsparung von Treibhausgasen in den Arbeitsprozess zum Klimastadtvertrag einzubringen.

Nutzen Sie unsere gemeinsame Mission, um – künftig dann mit dem offiziellen Mission-Label der EU – Ihr Engagement mit der Unterzeichnung der beiliegenden Präambel und mit der Einstellung auf der Leipziger Online-Plattform „Klimaneutrale und smarte Stadt Leipzig" sichtbar zu machen.

Neues Rathaus – Martin-Luther-Ring 4 - 6 – 04109 Leipzig
Bürgertelefon: +49 341 123-0 – Internet: www.leipzig.de

Profitieren Sie von der Gemeinschaft, die wir als Wissens- und Kooperationsplattform aufbauen, engagieren Sie sich in Netzwerken wie dem Energieeffizienz- und Klimaschutznetzwerk, um sich auf dem Weg zur Klimaneutralität begleiten, beraten und inspirieren zu lassen.

Ich bin überzeugt, dass Leipzig als ein europäisches Innovationszentrum – wie Paris, Barcelona oder Kopenhagen – von der Vernetzung profitiert und als Vorbild für andere Städte wirkt.

Über Ihr Mitwirken und Ihre Rückmeldung würde ich mich sehr freuen!

Mit freundlichen Grüßen

Burkhard Jung
Oberbürgermeister

Annex 2 - Preamble to the Climate City Contract

Der Leipziger Klimastadtvertrag – gemeinsam in eine lebenswerte Zukunft

Umweltverträglich, klimaschonend und gemeinwohlorientiert – mit der Transformation zur klimaneutralen Stadt wollen wir Leipzig für die Herausforderungen der Zukunft wappnen.

Das Ziel

Im Pariser Klimaschutzabkommen wurde 2015 das Ziel ausgerufen, den weltweiten Temperaturanstieg möglichst auf 1,5 Grad Celsius, auf jeden Fall auf deutlich unter 2 Grad Celsius zu beschränken. Diesem Ziel fühlt sich die Stadt Leipzig verpflichtet und hat mit Beschluss des Leipziger Energie- und Klimaschutzprogramm 2030 das klimapolitische Ziel einer klimaneutralen Stadt bis 2040 festgelegt. Bereits bis zum Jahr 2030 wird damit eine Halbierung des gesamtstädtischen Treibhausgas-Ausstoßes angestrebt.

Der Weg

Gemeinsam wollen wir für die Gesundheit und Lebensqualität aller Bürgerinnen und Bürger in unserer Stadt eine naturnahe Urbanität schaffen, die Teilhabe und Vielfalt fördert und regionale Wertschöpfung generiert. Nachhaltige Flächennutzungsplanung, regionale Ernährungs- und Kreislaufwirtschaft und eine klimaneutrale Energie- und Wärmeversorgung in einer Stadt der kurzen Wege sind nur einige Ansätze, die wir im intensiven Austausch weiterentwickeln. Dabei setzen wir schon heute unterschiedlichste Maßnahmen um, bei denen eine klimagerechte Quartiersentwicklung und digitale Steuerungsmechanismen ineinandergreifen. Die aktive Beteiligung der Menschen in unserer Stadt ist uns dabei ein besonderes Anliegen, denn nur gemeinsam finden wir die besten Lösungen für die Herausforderungen unserer Zeit.

Die EU-Mission

Unser ambitioniertes Vorhaben kann dann erfolgreich gelingen, wenn sich alle Akteure miteinander dieser gesamtgesellschaftlichen Aufgabe stellen – in unserer Stadt, wie im Austausch mit den Kommunen der EU-Initiative „100 klimaneutrale und smarte Städte bis 2030".

Unser Beitrag

Wir freuen uns, Teil dieser EU-weiten Mission zu sein und als Vorreiterstadt unsere Ideen, Projekte und Lösungsvorschläge einzubringen um die notwendige Transformation lokal zu gestalten. Als klimabewusste Leipziger möchten wir mit dem Klimastadtvertrag das erste gesamtstädtische Energie- und Klimaschutzprogramm vorlegen. Mit einer Vielzahl von Aktivitäten wollen wir so einen Beitrag für ein klimaneutrales Leipzig leisten und werden diese gemeinsam mit der Stadtverwaltung vereinbaren und dokumentieren. Leipzig wird damit – wie Paris, Barcelona oder Kopenhagen – ein europäisches Innovationszentrum, das von der Vernetzung profitiert und als Vorbild für andere Städte wirkt.

(Ort, Datum) (Name, Vorname, Funktion, Unterschrift)