Energy Framework Strategy 2030 for Vienna

City of Vienna

Energy Framework Strategy 2030 for Vienna

Administrative Group
for the Environment
and Vienna Public Utilities

Administrative Group
for Urban Planning, Traffic & Transport,
Climate Protection, Energy and
Public Participation

Contents

Preface

The Energy Framework Strategy for Vienna makes the energy policy of our city fit for the future until 2030 and adapts it to current and future challenges. For several years, climate change, the liberalisation of electricity and gas markets, and the necessary massive increase in the use of renewable energy sources have presented completely new challenges for energy policy and the energy sector.

Therefore, the Energy Framework Strategy lays out a clear path towards decarbonisation. Its strategic areas are considered of equal importance. Decarbonisation and using domestic resources is a sustainable and socially beneficial approach, particularly with a view to future generations.

Already, our city has a sustainable, efficient energy system with a high degree of supply security. With Vienna Public Utilities and its subsidiaries, including energy provider Wien Energie, grid infrastructure provider Wiener Netze, and Vienna Public Transport, some of the most important and active players in Vienna's energy transformation process are fully owned by the city. In addition to increasing the share of renewables in electricity and heating, the Energy Framework Strategy emphasises the use of existing waste heat potentials.

A forward-looking energy policy for our city must continue to develop our energy supply system and ensure supply security and stable, affordable energy prices while making it even greener. The Energy Framework Strategy 2030 shows us how we can get there and contributes to ensuring that Vienna remains the city with the best quality of living worldwide.

Maria Vassilakou

Ulli Sima

© Lukas Beck

Maria Vassilakou,
Vice Mayor of the City of Vienna and Executive City Councillor for Urban Planning, Traffic & Transport, Climate Protection, Energy and Public Participation

© PID/Jobst

Ulli Sima,
Executive City Councillor for the Environment and Vienna Public Utilities

Policy environment

The environment in which energy policy is made has undergone massive changes in the last two decades. Climate change and the resulting energy and climate policies at European (EU 2020/2030 targets) and national levels, as well as demographic developments, economic processes and the liberalisation of the gas and electricity markets in particular present completely new challenges for energy policy and the energy sector. The City of Vienna does not consider nuclear energy a sustainable form of energy supply nor a sound option for combating climate change.

The city's energy policy is at the intersection of the at times divergent areas of supply security, impact of the energy transition, increasing the share of renewables, system security, social impact, new business models, public acceptance, etc. The situation is complicated additionally by digitisation, heavy fluctuations in supply and consumption, and the price volatility on the energy markets. And Vienna continues to grow: A net growth of approx. 20,000 inhabitants annually is expected for the coming years.

A demand-oriented, secure, affordable and environmentally sound energy supply is one of the main requirements for economic development and a prosperous society. A forward-looking energy policy must, therefore, implement effective measures for energy efficiency and the use of renewables.

Strategic framework

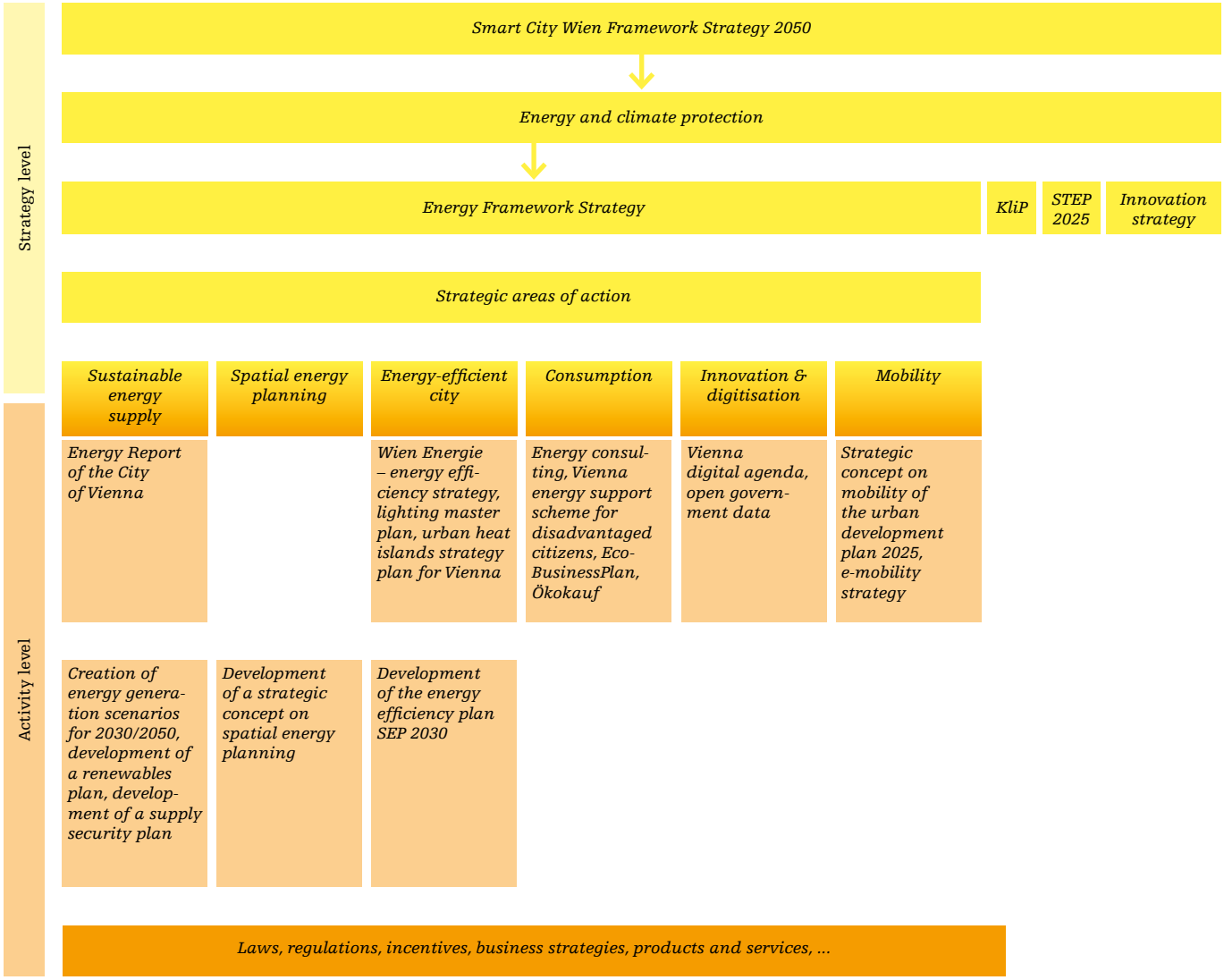
The Energy Framework Strategy 2030 lays the foundations for the implementation of the energy and climate goals of the City of Vienna. It forms the basis for specific, detailed implementation programmes in the energy sector. The Vienna Energy Framework Strategy connects the different objectives of the Smart City Wien Framework Strategy and its long-term decarbonisation plan with the operative short-term plans and measures of the relevant departments and institutions that are owned by or have close ties to the city. The goal is to reduce CO_2 emissions dramatically by 2050 by means of development and transformation processes in the energy, mobility, infrastructure and buildings sectors.

The Energy Framework Strategy takes these overarching goals and specifies strategic areas of action until 2030. Other important documents that contribute to the strategic framework, such as the climate protection programme of the City of Vienna, are listed in the Annex.

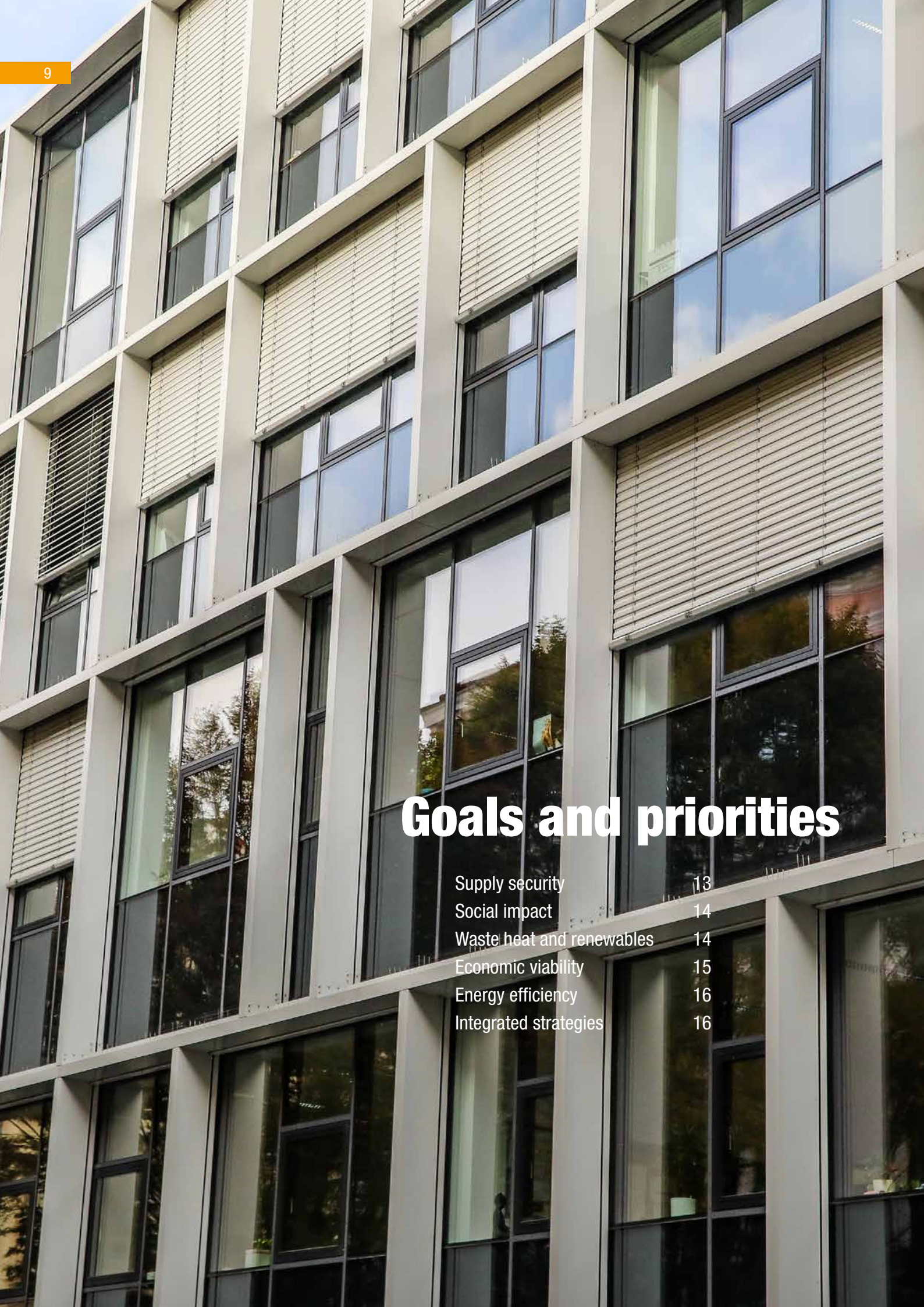
Energy Framework Strategy - overlap with other strategies

The Vienna Energy Framework Strategy defines the goals of the city's energy policy, the central strategic areas of action, and the related qualitative goals and implementation tasks. It is based on existing strategies and acts as a roadmap for measures to be taken by the relevant departments and institutions that are owned by or have close ties to the city. It provides the larger framework for the many existing plans and defines requirements for the development of other plans and strategic concepts.

Fig. 1: *Strategic positioning of the Energy Framework Strategy 2030*



Source: Own illustration



Goals and priorities

A future-proof energy policy for Vienna requires the development of a sustainable energy system characterised by a high degree of supply security, stable and affordable energy prices, a significantly reduced level of environmental impact, and a clear commitment to decarbonisation.

The Paris Agreement is a binding commitment to decarbonisation. The objective is to achieve a carbon-neutral economy and society by 2050. This requires a long-term transformation process, and we must reinforce our efforts now.

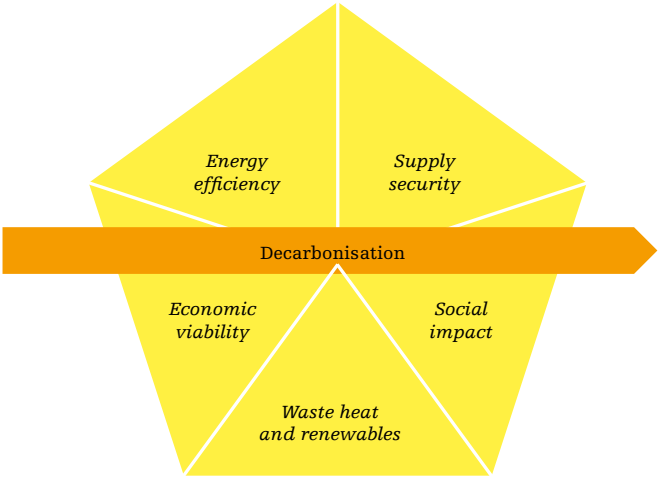
Deciding on the optimum path to reaching that goal poses an enormous challenge. We must initiate this transformation rapidly and steer it clearly and consistently to avoid supply shortages, serious price increases, and irreversible environmental damage. It is paramount that no decision be taken whose long-term impact could jeopardise these goals. Existing infrastructure should be used in the transformation process as best possible and developed for better climate protection.

In its Smart City Wien Framework Strategy, Vienna aims to reduce per capita carbon dioxide emissions by at least 35% by 2030 and by 80% by 2050 (from 1990 levels) in the sectors not covered by emissions trading.

On the way to decarbonisation, the strategic priorities for Vienna are the sensible use of energy, the use of waste heat[1] in the city, and the integration of renewable energy, all while using the grid infrastructure in an efficient manner.

The Vienna Energy Framework Strategy lays out the five energy policy goals of the city.

Fig. 2: *The five energy policy goals of the City of Vienna*



Source: Own illustration

[1] *Waste heat is heat that is generated as a by-product in various processes. In particular, this includes waste heat from waste incinerators, high-efficiency cogeneration plants, and industrial and business processes.*

Supply security

Supply security means ensuring both reliable energy supply for the population and business (qualitative supply) and uninterrupted energy supply, especially during peak times (quantitative supply security).

Long-term secure energy supply is a prerequisite for Vienna's economy and society. To ensure this, flexible production facilities, a coordination between different energy vectors, and safe, secure, stable and sufficient grid infrastructures are needed. Considerable investments are required for building, expanding and maintaining generation and distribution infrastructure to prepare for blackouts and mitigate their impact. The importance of these investments must be evaluated and their costs distributed using a fair causer pays model, and they must be considered in negotiations on framework conditions at the Austrian and international levels.

In terms of supply security for Vienna, we must distinguish between different forms of energy (electricity, heat) and energy vectors (such as natural gas and fuels).

Key strategic issues:

- Maintaining and securing supply security for electricity has the highest priority, as a lack of electricity would cause the most serious damage in the event of a black out.
- The supply of consumers with district heating must be ensured even at peak load times.
- Priority must be given to securing the gas supply for strategically important electricity and heat generating plants.

[2] *District heating is the delivery of heat via a heating network to supply buildings with hot water. District heating is usually generated in high-efficiency cogeneration plants, smaller combined heat and power plants, waste incinerators, peak load boilers and renewable sources like geothermal energy, heat pumps, biomass, and solar energy.*

Social impact

The City of Vienna wants to ensure that consumers (in particular private households and businesses) can meet their energy demand now and in future at affordable prices.

Ensuring that all parts of the population can afford their basic energy needs is one of the energy policy goals of the city. Another important aspect is societal acceptance: The pricing of energy services should be as transparent as possible. Anyone interested should have easy access to information, advice and training.

Key strategic issues:

- Combating energy poverty through ongoing improvements of energy efficiency and information services.
- Distribution of the costs for the transformation of the energy system using the causer pays principle.
- Pilot projects for structural improvements rather than financial equalisation measures.
- Strengthening the integration of modern, affordable energy solutions in subsidised housing.
- Target group-oriented interaction with citizens via the relevant Municipal Departments and energy supply companies (e.g. ombuds office of Wien Energie GmbH).

Waste heat and renewables

The Smart City Wien Framework Strategy states that by 2030, over 20%, and by 2050, over 50% of Vienna's gross final energy consumption should be met from renewable sources.

The increased use of waste heat and the use of renewable energy sources are important components of a sustainable and forward-looking energy policy.

Key strategic issues:

- Increasing the share of hot-water heating systems using waste heat (including high-efficiency cogeneration plants and thermal waste treatment) and renewable sources in both centralised and decentralised solutions.
- Development and sustainable use of energy sources in the city to increase the share of renewable energy in Vienna. This includes, in particular, deep geothermal energy, near-surface geothermal energy use with high-efficiency heat pumps, use of solar energy with photovoltaics and solar thermal installations, and the large-scale generation of biomethane from biological waste and by-products.

- Maintaining and developing existing facilities for the generation of renewable energy.
- To reach these goals, Vienna will also increase the use of renewable energy sources outside the city limits by constructing plants or entering into cooperation agreements. Vienna participates in the expansion of renewables via the electricity imported to the city.

Economic viability

The development of a sustainable energy system will require considerable ongoing investments in technologies, infrastructure, production and distribution systems, equipment and facilities.

It will be easier to generate these investments if there are clear, reliable framework conditions. A forward-looking energy policy can contribute to job creation and enable technology leadership in strategically important areas, thus securing the competitiveness of the city.

Key strategic issues:

- Integrated heating supply planning (spatial energy planning, optimisation of grids with long-term plans for their expansion and dismantling, use of waste heat and renewables).
- Reduction of distribution losses through the optimisation of the grid and of heating systems in buildings, cost-optimised refurbishment measures and requirements for new housing construction (joint optimisation of energy supply and buildings).
- Creation of a framework that allows the increased provision of new digital energy services such as smart home services or load management.

Energy efficiency

Consistently improving energy efficiency in all relevant sectors is an important component of a sustainable energy policy.

The Smart City Wien Framework Strategy aims to increase energy efficiency and reduce final energy consumption per capita by 40% by 2050 (from 2005 levels), reducing per capita primary energy input from 3,000 to 2,000 watt.

An ambitious strategy based on a considerably lower energy consumption and an increase in energy efficiency is the logical way to reduce dependence on energy imports and lower greenhouse gas emissions. Energy efficiency increases must be achieved in particular in buildings (reducing space heating and cooling energy demand), households and businesses (focus on reducing electricity consumption and increased use of waste heat) and in mobility (promotion of energy-efficient modes of transport and electromobility).

Key strategic issues:

- Implementation of high energy standards and quality in new buildings and promotion of the sustainable refurbishment of the building stock by means of incentive systems.
- Promotion of public transport and other energy-efficient modes of transport. In addition to increasing the modal share of walking and cycling, the aim is to achieve a high share of new energy-efficient propulsion technologies (such as electromobility).
- Expanding the model function of the City of Vienna with activities in its own sphere of influence, such as the energy-efficient and resource-conserving refurbishment of buildings owned by the city and the use of innovative, highly efficient systems for public lighting, and the provision of the resources necessary for such measures.

Integrated strategies

The energy policy goals described above are all equally important. No goal is given fundamental preference over the others in the event of conflicts. For successful decarbonisation, it is important to develop strategies that serve several goals at the same time, creating win-win situations.

Improving energy efficiency is a prerequisite for reaching the goals for renewables and the necessary reduction of greenhouse gases. It is in the interest of both environmental protection and supply security. Therefore, this strategy has special priority. To meet all the goals of the Smart City Wien Framework Strategy, areas such as sustainable energy supply, increasing the share of renewables, energy-efficient city, consumption, mobility, and innovation and digitisation must be examined holistically and operationalised, e.g., in the context of spatial energy planning for the City of Vienna.

Strategy areas

Sustainable energy supply

In keeping with the goal of decarbonisation by 2050, electricity, heating and cooling in Vienna should come primarily from renewable sources and waste heat, and conserve both the environment and resources. The order of priority is:
1) energy efficiency,
2) use of waste heat and waste, and
3) developing renewable energy sources.

Supply security for electricity and heat must always be ensured. Energy services for consumers and businesses should be attractive and affordable.

Ongoing development of the Vienna Model

An important task in establishing the future energy supply for the City of Vienna is developing the "Vienna Model" further. The "Vienna Model" is the intelligent use of cogeneration and waste treatment for generating electricity and heat, combined with the use of waste heat, energy services, and an increased use of renewables. The volatile market for electricity and natural gas presents one of the main challenges. The current international oversupply of power plants and the lack of an effective CO_2 price in EU emissions trading create a difficult environment for the current plants in Vienna.

In developing the Vienna Model, it is important not to promote any developments that would run counter to the long-term energy and climate protection goals. For the city's energy generation and distribution, this means that the use of fossil energy sources must be reduced consistently while increasing efficiency and the use of renewable energy sources and waste heat, always keeping in mind affordability.

Hot-water heating systems should be preferred for buildings, as they are flexible and can be used with centralised district heating, decentralised heating networks, or renewable solutions, depending on available supply. This decreases the climate impact of the heating system.

- This results in a diversification of sources for district heating and decentralised heating networks: in addition to waste heat from highly-efficient cogeneration plants and other sources, various renewable energy sources can be used, such as near-surface and deep geothermal power, solar energy, etc.
- In order to benefit from an integrated view of energy-related sectors[3], more storage systems, both centralised and decentralised, and the flexible and efficient supply of heat and electricity will be made incorporated into the energy system. This allows the efficient and economical meeting of peak demand and load balancing (e.g. in cases of divergent demand and generation, such as in the case of fluctuating generation from renewable sources).

[3] *"Integrated energy" is a holistic view of the three sectors electricity, heating and transportation that aims to optimise them together. This makes it possible to use synergies, particularly in the integration of large shares of renewables, making it one of the key elements of decarbonisation.*

- Another way of increasing the efficiency of systems is to lower the temperature level and increase the temperature difference between supply and return flow in both centralised and decentralised hot-water heating systems. This will also improve the recovery of low-grade heat, especially in the building sector and the secondary grid.
- Switching existing buildings over to district heating is an important measure of energy policy. Centralised district heating should use the existing infrastructure where possible. New investments must be tested for cost effectiveness and climate impact. Duplicate infrastructure in the heating sector (district heating and natural gas) should be avoided and gradually dismantled.
- Criteria and strategies must be developed for the use of natural gas in new urban development areas, taking into account Austrian and European legal requirements.
- Frameworks must be created that allow the increased use of renewable energy (e.g. making administrative procedures easier).

Supply security

In addition to the operation and maintenance of energy infrastructure installations (operative supply security), the area of supply security also encompasses the expansion and development of energy infrastructure (long-term supply security). The diversification of resources and their sourcing as well as the replacement of fossil energy sources contribute to resource independence.

It will become increasingly important to adapt energy demand to the supply through load management and new services. Long-term secure energy supply is a prerequisite for Vienna's economy and society.

The availability of power plants that can be placed into operation quickly is of strategic importance for Vienna's citizens and economy. The following criteria must be considered in securing these plants:

- Ensuring n-1 security[4] in the power grid.
- Plants that can be placed into operation quickly and safely to ensure high supply security.
- Availability of energy vectors for electricity and heat supply (storage).
- Significant output that can ensure electricity supply for the city.
- Ensuring n-1 security for district heating. Due to their enormous importance for supply security for electricity and heat supply, large-scale cogeneration plants are indispensable in the city. Renewable energy sources in the city will be developed continually.

[4] The criterion of n-1 security is used in electricity grids, substations and power plants. An n-1 secure system remains operational even if one component is lost or switched off.

Spatial energy planning

Spatial planning and urban planning influence the energy use of society and industry. They have a considerable impact on how we use resources in the city (e.g. compact urban structures, efficient construction models, maintaining a high share of green spaces). This means that planning tools are important when it comes to climate protection. Spatial energy planning that contributes to meeting the energy and climate protection goals by carefully considering the spatial dimension of energy consumption and supply and the necessary infrastructure and its development should become an integral part of urban development.

In the interest of energy-efficient urban development, spatial energy planning should define energy standards for districts and neighbourhoods and climate-friendly energy supply systems, and the areas of urban development, consumers, energy, and energy systems must be considered jointly. New buildings in Vienna are already being planned and built to very high energy efficiency standards (low-energy standard and follow-up developments). Building services, energy and heating systems must make even more use of locally available energy sources, and technologies must be implemented in an efficient, resource-conserving and economical manner. To this end, processes in urban planning, infrastructure planning, grid planning, spatial planning, and energy planning have been developed further over the last years. In cases in which these processes are a prerequisite for reaching Vienna's energy policy goals, they should be made mandatory.

Spatial energy planning for Vienna has the following overarching goals:

- Reducing energy demand for infrastructure, mobility, and the construction and refurbishment of buildings.
- Energy demand should be met as sustainably and efficiently as possible. This entails using locally available energy sources and waste heat and adapting and optimising energy services to match the available resources and technologies.
- Optimising and expanding infrastructure, and developing future uses for the gas grid.

The many planning instruments used at the city level in Vienna need to be integrated into a reliable process management procedure for developers, the departments of the City Administration, and Vienna Public Utilities for use at the level of development sites, neighbourhoods, and urban development areas. Integrated energy concepts resulting from spatial energy planning should be used in making zoning, infrastructure investment and subsidy decisions. The focus is on energy supply for space heating and hot water, as well as the necessary infrastructure and integration of storage systems.

In concrete terms, this means
- avoiding and dismantling duplicate infrastructure
- defining planning areas for district heating, natural gas, decentralised or individual heating, depending on criteria such as financial feasibility and local conditions, and
- using energy sources that suit the typology of the neighbourhood in question (existing building stock or development area, high or low density areas).

This results in the following requirements for spatial energy planning:
- considering energy in urban planning processes early on (e.g. in zoning decisions) and promoting compact, mixed-use settlement structures
- considering the demand for heating and cooling jointly in densely built-up development areas, and developing efficient, interlinked energy supply solutions
- implementing legal instruments (e.g. in the Building Code) that reduce the direct use of high-carbon energy sources and promote alternative modes of transport, such as installing empty conduits in garages in urban development areas that can later be used for electric charging infrastructure
- creating suitable tools for supporting long-term investments, decarbonisation, and planning security in the construction of energy supply systems
- assigning the following order of priority with regard to the energy policy goals: 1) efficiency, 2) waste heat, 3) renewable energy.
- adapting legal regulations in other areas to support the use of local waste heat and renewable energy, such as the Water Act and the Mining Act
- applying cost-optimised zero-energy building standards to all new structures, additions and refurbishment from 2018/2020 and continuing to develop future supply systems to be even more climate friendly.

Energy-efficient city

Increasing energy efficiency is of paramount importance for achieving the climate and energy goals set out in the Smart City Wien Framework Strategy. At the same time, it supports social and economic policy goals, improves local value creation, meets the requirement of affordability, and contributes to reducing energy poverty. As the vast majority (nearly 90%) of Vienna's final energy consumption is currently being used for transportation and buildings, these two sectors must be at the centre of efforts to reduce energy consumption, and the City Administration must implement measures in its sphere of influence (cf. Mobility).

Due to demographic developments, new housing must is required for the growing population. The development of neighbourhoods, and the construction and operation of buildings must therefore be made as efficient and affordable as possible. Reducing the energy consumption of existing buildings is an important factor in reaching the city's energy efficiency goals by 2030.

The Smart City Wien Framework Strategy lays out the following goals for buildings: "Cost-optimised zero-energy building standards for all new structures, additions and refurbishment from 2018/2020" and "reduction of energy consumption of existing buildings for space heating/cooling/water heating by 1% per capita and year".

Many approaches for lowering energy consumption are not new but have been used for years. It remains important to continue implementing and financing them, but they must also be re-evaluated and adapted regularly to account for changing conditions.

- The Building Code and, in particular, regulations concerning structural engineering are core instruments for increasing energy efficiency and using highly efficient alternative energy systems. This can help reduce operating costs, thus making housing more affordable. Therefore, building regulations are constantly being adapted to current technological developments. This ensures that buildings being built now that will still be in use between 2050 and 2100 will be nearly emission free.
- Subsidised housing has to meet a number of different goals, from affordability to resource conservation. The housing promotion scheme is regularly being readjusted in keeping with the principles[5] of the Smart City Wien Framework Strategy to ensure a high quality of life for everyone, resource conservation, and the development of new and innovative technologies.
- Existing buildings (both residential and non-residential buildings) are being refurbished and neighbourhoods are being renewed gently and with care for the historical building stock. Existing initiatives and subsidy schemes (such as the thermal energetic refurbishment scheme Thewosan and whole-block redevelopment) are being continued, and new initiatives are being added (e.g. refurbishment of service buildings). The objective is to continue increasing the refurbishment rate and quality of buildings (both residential and non-residential). Refurbishment activity is being increased by promoting the refurbishment of building parts in stages. In this way, the targets for complete refurbishments can be reached gradually.
- Avoiding overheating of buildings (including residential buildings) is becoming increasingly important. Passive measures should be used where possible to reduce cooling demand. Where active cooling and air conditioning is needed, innovative and energy-efficient technologies and technologies that use renewable energy sources and waste heat should be given preference.
- The City of Vienna aims to provide a good example by implementing such energy efficiency measures in its own buildings. In all energy-related decisions, the goal is to avoid unnecessary energy consumption and use energy with maximum efficiency. The energy-efficient and resource-conserving development of the buildings owned by the city while keeping in mind life cycle costs (both in refurbishing existing buildings and constructing new buildings), expanding energy management, and using and procuring efficient and renewable

[5] *The principles of the Smart City Wien Framework Strategy are:*
- Highest possible resource conservation
- Development and productive use of innovations / new technologies
- High, socially equitable quality of life

technologies have a high priority and can act as good practice examples. Additionally, available space (especially on roofs) will be used systematically for solar energy use.
› A switchover of public lighting to innovative high-efficiency lighting systems reduces energy consumption and saves costs.

Consumption

A number of different strategies and measures will be used to reduce energy consumption of households and promote climate-friendly lifestyles. This includes information and advice to raise consumers' awareness for sustainability and increase their understanding of efficient heating, cooling, green mobility and energy-efficient appliances, as well as campaigns encouraging climate-friendly behaviour.

The City of Vienna will also be able to position itself as an internationally recognised trailblazer. Lighthouse and pilot projects[6] will show what intelligent urban development can achieve.

› Reduction of losses at final consumers in general and the promotion of energy efficiency measures in businesses in particular are supported by tailored consulting services (e.g. EcoBusinessPlan, energy consulting as part of Vienna energy support scheme) and information (e.g. handbooks).
› Initiatives, campaigns and websites will help consumers reduce energy consumption at home. This includes the Energy Experience Centre of Wien Energie, information folders with energy-saving tips, platforms for energy-efficient appliances, information on subsidies, films and apps related to saving energy, and join-in activities.
› Active energy saving measures for end customers and services that help users choose eco-friendly products are being developed (cf. Innovation and digitisation).
› The energy performance certificates for buildings help people choose energy-efficient buildings and also serve as an incentive for building owners to refurbish them.
› The function of the ÖkoKauf Wien eco-purchasing programme as a good practice model will be strengthened by increasing the city's ecologically oriented procurement policy for goods, products and services.

[6] like the "Climate street" in Amsterdam
[7] Citizens can borrow current meters to identify electricity hogs and devices that are running idle. This information helps them save energy at home. Schools can borrow electricity saving packages for lessons.

Innovation and digitisation

A central characteristic of a smart city is the integration of the areas of energy, buildings, mobility, urban planning and society, which makes it possible to utilise potentials for optimisation in the environmental, ecological and social spheres. Modern information and communication technologies for intelligent steering of the city's technological systems and infrastructure will be a major component of new developments.

In order to use these systems, new services and attractive products must be offered to customers and businesses. Key elements are the comprehensive integration of social aspects and participation opportunities for citizens. The holistic view of technological and social systems as a single organism combined with interaction and networking will allow the optimisation of individual components and technologies.

Digitisation is both an opportunity and a challenge, as the example of buildings illustrates: The growing share of renewable energy production creates a fluctuating supply of energy with decentralised energy producers. The buildings of the future will not only consume energy but also produce it. Feeding the decentrally generated energy into the grid while ensuring the quality of energy supply creates new challenges for the energy system. Load management (i.e. the intelligent steering of consumers in buildings and households) can decrease the strain on the low-voltage system and support the feed-in of a decentrally generated, fluctuating energy supply.

The City of Vienna supports developments that allow the population, the economy, the administration and institutions that are owned by or have close ties to the city to recognise and utilise the opportunities that digitisation offers:

- Identification and prioritisation of suitable digitisation approaches in Vienna and development of a concrete implementation plan.
- Improving the quality of offered services through cooperation and partnerships.
- Development of an innovation programme for energy technologies and innovative energy services (including IT businesses, urban infrastructure companies, the construction industry, planning, public transport companies, and universities).
- Integration of relevant energy data, such as the potentials of renewable resources, into the open government and open data processes of the City of Vienna.
- Top priority for data and infrastructure security (cyber security).
- Expanding IT infrastructure.

Mobility

Mobility needs transportation that meets the needs of people and the environment. The City of Vienna is therefore creating conditions that will make it possible to meet the mobility needs of the population (passenger transport) and goods transport while pursuing the energy and climate protection goals.

Energy consumption in the transportation sector increased by 50% between 1995 and 2013, mostly due to cars. No other sector has seen such growth. Therefore, mobility is of particular importance.

Both the strategic concept on mobility and the e-mobility strategy of the City of Vienna define goals and packages of measures that can help pave the way for the mobility system of the future. The City of Vienna aims to reduce CO_2 emissions and energy consumption by traffic on Vienna's roads by 20% by 2025 (from 2010).

The City of Vienna prioritises public transport, walking and cycling. Additionally, aspects like the sharing economy, door-to-door multimodal transport and the new mobility culture – which can be seen in new, more social forms of road use such as encounter zones and temporary pedestrian zones – play an important role. The aim is to continue expanding public transport and increasing the share of cycling and walking so that by 2030, eco-friendly modes of transport make up 85% and motorised individual transport just 15% of the modal split.

- Increasing the availability and attractiveness of public transport, walking and cycling.
- Increasing attractive opportunities for ways to live, work and go shopping without owning a car.
- Promoting the development and use of vehicles, technologies, fuels and innovative solutions that reduce energy consumption or contribute significantly to reducing greenhouse gas emissions from traffic and transport.
- Creating incentives for switching to e-mobility: More charging stations, measures such as installing empty conduits in garages that can later be used for e-mobility infrastructure, etc.
- Energy consumption is one of the main criteria in the procurement of vehicles for public transport and the vehicle fleet of the City of Vienna.

Implementation and monitoring

The Vienna Energy Framework Strategy defines the key principles for a reorientation of energy policy for the long term. The strategy areas lay out the actions that must be taken in general terms. The concrete tasks have to be specified, and new data and findings must be incorporated into the implementation process.

The goals can be reached through the use of a number of different tools. A balanced mix of strategic concepts, measures and instruments will ensure that the optimum is reached for the city's energy supply and that the innovations necessary for reaching the goals can be made. Changing (external) factors[8] must also be taken into account. Therefore, an ongoing evaluation and monitoring process is needed to ensure the effective implementation of the measures.

Consistent monitoring and the coordination of implementation steps will help harmonise the activities of everyone involved. A uniform steering and monitoring concept will be applied to the Energy Framework Strategy and the sub-strategies based on it. It is designed to map the energy topics of the city so that the results can immediately be fed into related strategies (such as the Smart City Wien Framework Strategy and the climate protection programme KliP). This includes an annual quantitative evaluation of all energy-related indicators. Every three years, an implementation report on the main measures of all included strategies will be prepared. The monitoring process is mainly based on existing data and processes (e.g. Smart City Wien Framework Strategy monitoring or the Vienna Energy Report). This will simplify energy-related monitoring and prevent redundancies.

- **Steering group**
  The steering group "Energy Framework Strategy 2030" headed by the Administrative Group for the Environment and Vienna Public Utilities and the Administrative Group for Urban Development, Traffic and Transport, Climate Protection, Energy and Public Participation meets once a year with those responsible for the sub-strategies. The steering group discusses, evaluates and, if needed, adapts the implementation progress of the Energy Framework Strategy and the strategies based on it (e.g. the strategic concept on spatial energy planning, the energy efficiency plan SEP 2030, or the renewable action plan RAP).
- **Activity report and updating goals and measures**
  The Energy Framework Strategy will be reviewed and, if necessary, updated by the steering group when needed, in intervals of no more than three years and in line with EU reporting duties. The basis for this will be the activity report that will be issued every three years. This report will measure the progress of the implementation of individual measures in the sub-strategies taken by the relevant municipal departments and institutions that are owned by or have close ties to the city.
- **Further controlling**
  Further controlling for the quantitative goals is done as part of the monitoring process for the Smart City Wien Framework Strategy.

[8] *e.g. changed conditions (economic situation, prices, technologies, EU requirements) and the results of monitoring progress with regard to the effectiveness and economic viability of measures, reviews of the achieved effects, and the option to adjust instruments, etc.*

Annex

Strategic basis of the Energy Framework Strategy

- Smart City Wien Framework Strategy 2050: https://www.wien.gv.at/stadtentwicklung/projekte/smartcity/rahmenstrategie.html
- Urban Development Plan 2025 (including the strategic concepts for green and free spaces, high-rises, mobility and public space, and the detailed concept on electromobility): https://www.wien.gv.at/stadtentwicklung/strategien/step/step2025/index.html
- KLiP II - Climate protection programme of the City of Vienna https://www.wien.gv.at/umwelt/klimaschutz/programm/klip2/index.html
- Energy Report of the City of Vienna (2016): https://www.wien.gv.at/stadtentwicklung/energie/pdf/energiebericht2016.pdf
- SEP – Urban Energy Efficiency Programme (including final report 2015): https://www.wien.gv.at/stadtentwicklung/energie/pdf/sep-programm.pdf
- https: //www.wien.gv.at/stadtentwicklung/energie/pdf/sep-endbericht.pdf
- E-mobility strategy – detailed concept for STEP 2025 https://www.wien.gv.at/stadtentwicklung/studien/pdf/b008435.pdf
- Vienna Public Utilities – Annual report, sustainability report and sustainability programme http://www.wienerstadtwerke.at/eportal3/ep/programView.do/pageTypeId/71282/programId/72285/channelId/-51244
- Vienna Public Utilities: 2013 study by TU Wien on options for the design of Vienna's energy system www.nachhaltigkeit.wienerstadtwerke.at/fileadmin/user_upload/Downloadbereich/Optionen-fuer-die-Gestaltung-des-Wiener-Energiesystems-der-Zukunft-Studie.pdf
- Wiener Netze – current and completed research projects: https://www.wienernetze.at/eportal/ep/channelView.do/pageTypeId/40374/channelId/-45606
- Wien Energie – annual report: https://www.wienenergie.at/media/files/2016/we_jahrbuch2015_geschuetzt_179859.pdf
- Wien Energie – Energy efficiency strategy: https: //www.wienenergie.at/eportal3/ep/channelView.do/pageTypeId/67831/channelId/-47835
- Various studies and publications commissioned by Municipal Department 20 (spatial heating, spatial energy planning, use of solar energy, heat pumps, etc.): https://www.wien.gv.at/kontakte/ma20/publikationen/index.html#studien

Monitoring of the Energy Framework Strategy

is based on the monitoring of the Smart City Wien Framework Strategy using the following indicators:

- per capita emissions
- Final energy consumption per capita
- Primary energy consumption per capita
- Share of renewable energy in gross end energy consumption
- Choice of transportation
- Share of electric and hybrid cars
- Share of electric and hybrid lorries
- Energy consumption of passenger traffic across city boundaries
- Share of energy sources for space and water heating and air conditioning
- Final energy consumption for space heating, air conditioning and hot water per capita

Publishing information

The Energy Framework Strategy 2030 for Vienna was developed by a
joint working group of the Administrative Group for Urban Development,
Traffic and Transport, Climate Protection, Energy and Public Participation
and the Administrative Group for the Environment and Vienna Public Utilities
between August 2016 and September 2017:
(in alphabetical order)
Karl Buchberger
Johannes Jungbauer
Andrea Paukovits
Herbert Pöschl
Beatrix Rauscher
Herbert Ritter
Bernd Vogl

Supported by
brainbows informationsmanagement GmbH
Köllnerhofgasse 6/3/10
A-1010 Wien
Christoph Resch, Christian Nohel, Sandra Gottschall
www.brainbows.com
+43 (0) 1 796 54 44- 0
office@brainbows.com

Design, Illustration, Layout: Erdgeschoss GmbH, www.erdgeschoss.at
Source/Copyright Photos: Alexandra Kromus, Christian Fürthner/MA 20

Vienna, September 2017