



## Climate City Contract

# 2030 Climate Neutrality Action Plan

## 2030 Climate Neutrality Action Plan

City of Heidelberg





## Disclaimer

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## Summary

An abstract **summarizes the content** of the 2030 Climate Neutrality Action Plan (Action Plan) that is developed jointly by local authorities, local businesses, and other stakeholders.

Textual element
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## List of figures

The list of figures **identifies the titles and locations** (page numbers) of **all visual elements**: figures, drawings, photos, maps, etc. used in the Action Plan.

Figure №	Figure title	Page №
Figure 1	...	...

## List of tables

The list of tables **identifies the titles and locations** (page numbers) of **all tables** used in the Action Plan.

Table №	Table title	Page №
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## Abbreviations and acronyms

The list of abbreviations and acronyms **identifies the abbreviations** (a shortened form of a word used in place of the full word) **and acronyms** (a word formed from the first letters of each of the words in a phrase or name) used in the Action Plan.

Abbreviations and acronyms	Definition
...	...



# 1 Introduction

The introduction should outline the local policy context in which the Action Plan is being developed and describe the gap it is addressing in broad terms.

With its climate protection concept adopted in 1992, the city of Heidelberg was one of the first cities in Germany to have a systematic plan for climate protection at the local level, backed up by measures. Under the motto "think globally - act locally," decisive steps were taken in the 1990s to set the course for municipal climate protection. In 1997, this also included the establishment of a local energy consulting service, which today has expanded its sphere of activity as the Heidelberg and Rhine-Neckar District Climate Protection Agency and supports municipalities and the citizens of the entire region in their climate protection efforts.

Influenced by the international sustainability debate, the Enquete Commission of the German Bundestag, and the conferences in Aalborg and Rio, the goals of Heidelberg's climate protection and CO<sub>2</sub> reduction were also incorporated into the city's sustainability strategy, the Urban Development Plan, in 1997.

Supplemented by the energy concept and the transport development plan, as well as numerous updates, Heidelberg has succeeded in anchoring climate protection programmatically and financially in many of the city's departments, as well as motivating external actors to actively protect the climate. Most recently, the establishment of a separate department for climate protection, the environment and mobility in 2020 strengthened the organizational anchoring of climate protection in the administration.

An important milestone in Heidelberg's climate protection process is the "100 % Climate Protection Master Plan" adopted by the municipal council in 2014 and updated in 2019. In this approach to climate neutrality 2050, which was funded by the German Federal Ministry for the Environment and developed in exchange with 40 municipalities, Heidelberg was able to adopt climate protection strategies as a model municipality, which had previously been developed in a comprehensive participation process.

Other innovative approaches and bundles of measures complement Heidelberg's efforts towards climate protection and sustainability. These include, for example, the Sustainable Business Network with its focus on small and medium-sized enterprises, the city administration's energy concept for its own properties, the heat transformation path, and green district heating.

In 2019, the climate emergency was declared and the Climate Action Plan 2020 was adopted. This accelerated the implementation of measures and politicians set the financial course for consistent climate protection.

Heidelberg started the process of "Green recovery" as part of the C40 network 2020.

Heidelberg's brought-forward climate neutrality target arose from the target debate surrounding the Paris Climate Agreement of 2015 and the updated neutrality targets of the German federal government and the state of Baden-Württemberg. The climate protection law of the Federal Republic of Germany was brought forward to the year 2045 with the decision in June 2021. The climate protection law in Baden-Württemberg aims to achieve net greenhouse gas neutrality gradually by 2040.

In July 2022, the Heidelberg City Council passed the following resolution: The City of Heidelberg undertakes to work consistently towards the goal of climate neutrality by 2030 in all fields of action and to give priority to climate protection in line with its participation in the EU mission "climate-neutral and smart cities". Complete climate neutrality according to the municipal BSKO accounting is to be achieved by 2040 at the latest. For the city administration, in particular the municipal properties, the aim is to achieve the greatest possible climate neutrality by 2030.

Heidelberg's climate neutrality policy is embedded in the historical and environmental policy context described here, on which the membership and activities in the EU mission project "100 climate-neutral and smart cities" are based.

The decision of the municipal council to participate in the EU-Mission project leads to an acceleration of the implementation of measures in the municipality, the closing of ranks of local actors, the linking of fields of action and thus a restructured and systematic approach to the transformation of society combined with the reduction of greenhouse gas emissions.



## 2 Work Process

This section should list the working steps carried out, for example along the NZC Climate Transition Map, or related steps planned as well as outline timeline and milestones for future iterations for the continuous development of the Action Plan.

### Build a strong mandate

The City of Heidelberg has a long history of climate action since its first climate protection concept in 1992. However, being part of the EU Mission “100 climate neutral and intelligent cities” is of great importance for the City to accelerate climate action. The first step was the council’s decision in June 2022 to work consistently towards the goal of climate neutrality by 2030 in all fields of action and to give priority to climate protection. After that, the municipality was in a position to start. The first step was to set up a steering committee within the city administration to ensure that climate protection is mainstreamed across key departments. The steering committee now meets on a regular basis. Secondly, the already existing Mayor’s Climate Action Group, which includes some of Heidelberg’s key stakeholders, was informed and involved in the mission’s process. In addition, a broader range of companies and organisations are planned to be involved in the mission’s process. Therefore, the city offered the opportunity to sign a cooperation agreement to be part of the mission and to signal the will to pull together.

The City of Heidelberg is active in many networks on regional, national and international levels, such as for example Städtetag Baden-Württemberg, deutscher Städtetag, Klimabündnis, C40, GCM or Energy Cities (<https://www.heidelberg.de/hd/HD/Leben/Netzwerke.html>). The exchange between these cities is important to learn from each other and to have a political representation at different levels of government. The EU Mission is another essential network that allows Heidelberg to build strong relations with other European and German lead cities, especially on the Mission Platform and at personal meetings. The nine German cities have set up a bi-weekly call in order to share their experiences and progresses in the mission. Moreover, there is an exchange between the German mission cities and the German Government.

### Understand the system

The City of Heidelberg monitors its GHG emissions on a regular basis by a BSKO CO<sub>2</sub>-balance. For the Climate City Contract, Heidelberg uses the data from 2019 to not take advantage of the outlier Corona-years. The CO<sub>2</sub>-balance shows the gap of the different sectors to reach climate neutrality.

As climate protection had been a major topic in Heidelberg since the 1990s many connections and relationships have been made across administration departments and other stakeholders. However, there still exist some systemic barriers that need to be unveiled. This is what the climate city contract is helpful for. Furthermore, Heidelberg will identify within the contract the most important levers of change to reach climate neutrality by 2030. The contract also unpacks the strategy for financing the actions needed.

### Co-design a portfolio

Cities and municipalities play an important role in the development and implementation of climate protection measures. This applies to their own administrative organisation, but also to other areas within their own sphere of influence.

There are many fields of action that municipalities can influence directly and indirectly, for example in the area of municipal infrastructure or municipal enterprises. Furthermore, municipalities are the interface to citizens, the local economy or social and cultural institutions. In addition to their own climate neutrality, the provision of climate-friendly supply and transport infrastructures, urban development, refurbishments or information and funding offers are possible levers. Overall, municipalities have a great influence on greenhouse gas emissions. They occupy a key position in climate protection.

Within the fields of action in climate protection, a municipality can take on various roles. They can be active as consumers and role models, suppliers and providers, planners and regulators, as well as advisors and promoters. Depending on the role of the municipality, its influence on greenhouse gas reduction potentials differs: as a consumer, for example, it is the cause of greenhouse gas emissions and can exert direct influence on the future consumption of its own properties, while in other areas it can exert influence more through regulation and consultation.



In July 2022, the municipal council passed a resolution for a climate-neutral administration for Heidelberg in 2030.

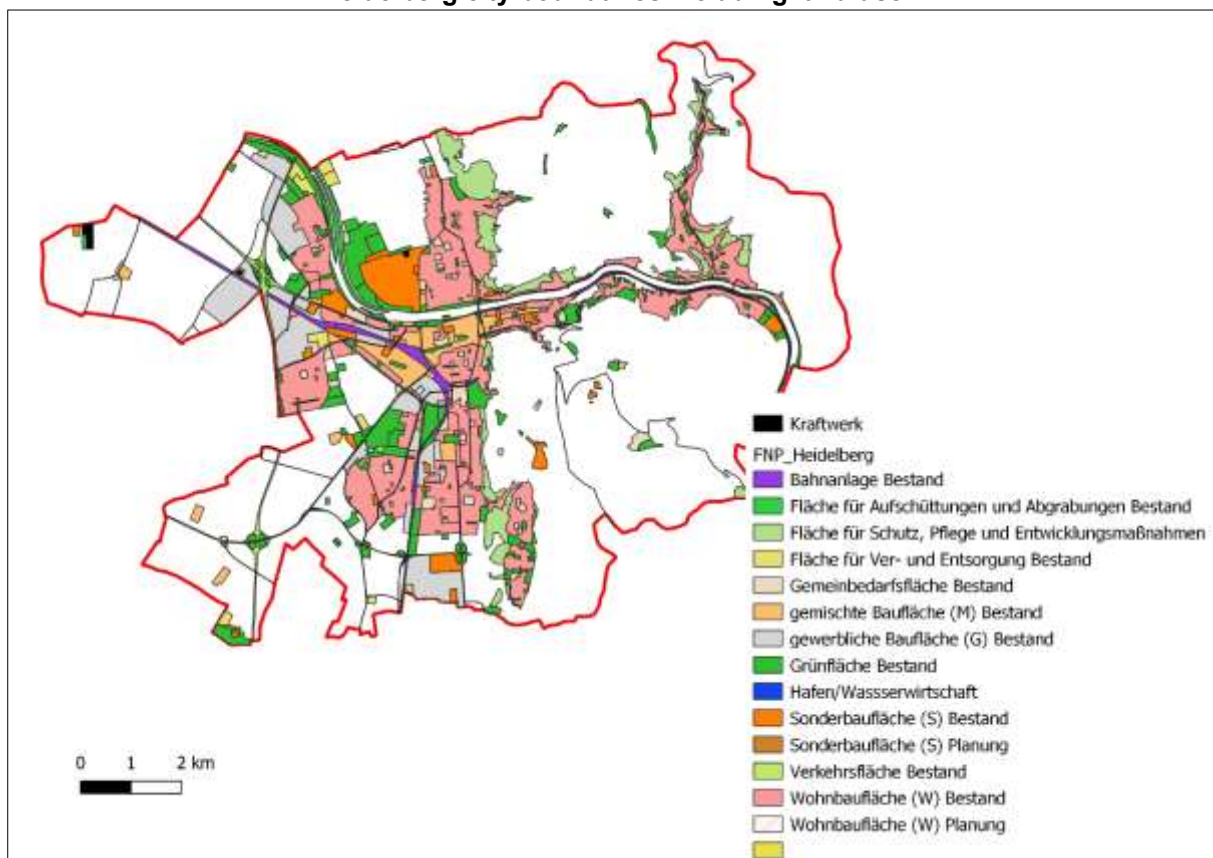
In the case of city properties such as schools, administrative buildings, day-care centres and other operational facilities such as the professional fire brigade, the positive effects of Heidelberg's climate protection over many years are becoming apparent. Final energy consumption has already been reduced by 65 percent.

The EU Mission is thus not a task only for the municipality but also for all civil stakeholders, organisations and companies in Heidelberg. Therefore, there will be an accompanying transition group with all these stakeholders to start and implement climate protection measures and interventions. The contract shows financing options and allows to estimate co-benefits and impacts. To ensure long-term implementation it is important that Heidelberg simultaneously adapts policies and regulations.

The Climate City Contract is regularly updated so that an iteration process takes place every two years. By regularly renewing the Climate City Contract, new findings, adapted framework conditions and regulations as well as technological developments can be taken into account. In particular, measures from other planning processes, such as the Climate Mobility Plan, are incorporated. In this way, a dynamic plan is created that can be developed together with existing and new actors and citizen participation.

The map below shows Heidelberg's city boundaries, covering around 109 m<sup>2</sup>. This area is addressed by the action plan. Moreover the land use is pictured (subdivided into Power plant, railroad facility (existing), area for fillings and excavations (existing), area for protection, maintenance and development measures, area for supply and disposal (existing), area for public use (existing), mixed construction area (existing), commercial construction area (existing), green area (existing), harbor/water management, special construction area (existing), special construction area (planning), traffic area (existing), residential construction area(existing), residential construction area (planning)).

**Heidelberg city boundaries including land use**







The following map supplements the land use map. Here it becomes visible where district heating already exists and where gris expansion for district heating is planned until 2030. The figure also shows the existing and planned green energy power plants until 2030.

**How can the heating sector become climate neutral?**



### 3 Part A – Current State of Climate Action

Part A “Current State of Climate Action” describes the point of departure of the city towards climate neutrality, including commitments and strategies of key local businesses, and informs the subsequent modules and the outlined pathways to accelerated climate action.

#### 3.1 Module A-1 Greenhouse Gas Emissions Baseline Inventory

Module A-1 “Greenhouse Gas Emissions Baseline Inventory” should detail and describe the city’s latest GHG inventory to establish the emission baseline and to establish the emissions gap to 2030 climate neutrality according to the inventory specifications defined in the Cities Mission’s *Info Kit for Cities* and the process outlined in the Action Plan Guidance and Explanations.

A-1.1: Final energy use by source sectors				
Base year	2019			
Unit	MWh/year			
	Scope 1	Scope 2	Scope 3	Total



<b>Buildings</b>	<b>767.219</b>	<b>1.388.341</b>	-	<b>2.155.559</b>
Electricity	-	649.959	-	649.959
Oil	83.538	-	-	83.538
Natural gas	662.363			662.363
District heating		738.381	-	738.381
Coal	29	-	-	29
Heat from renewable sources	21.289	-	-	21.289
<b>Transport</b>	<b>910.130</b>	<b>22.595</b>	<b>0</b>	<b>932.725</b>
Gasoline fossil	325.365	-	-	325.365
Gasoline bio	14.031	-	-	14.031
Diesel oil fossil	531.636	-	-	531.636
Diesel oil bio	30.231	-	-	30.231
Natural gas	1.517	-	-	1.517
Biogas	620	-	-	620
LPG	6.731	-	-	6.731
<b>Transport</b>	<b>910.130</b>	<b>22.595</b>	<b>0</b>	<b>932.725</b>
<b>Waste</b>	Energy-related activities in waste management (vehicles, grid-supply) are included in the commercial and transport sector			
<b>Industrial Process and Product Use (IPPU)</b>	-	-	-	-
<b>Agricultural, Forestry and Land Use<sup>2</sup> (AFOLU)</b>	Energy-related activities in Agriculture, Forestry and Land Use (fuel combustion, vehicles, grid-supply) are included in the commercial and transport sector			

<b>A-1.2: Emission factors applied (from economic model data inputs)</b>		
Base year	2019	
<i>Greenhouse gas emissions from CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O are included (CO<sub>2</sub> equivalents)</i>		
<b>Sector</b>	<b>Primary energy/ energy source</b>	<b>Carbon Dioxide and eq. (CO<sub>2</sub>-eq)</b>
<b>Transport</b>	Passenger cars + motorcycles (g/km)	188
	Buses (g/km)	260
	Light duty trucks (<3.5 t) (g/km)	261





	Heavy duty trucks (>3.5 t) (g/km)	740
<b>Buildings &amp; Heating</b>	Heat production (district heating) (g/kWh)	130
	Heat production (local heating) (g/kWh)	204
<b>Electricity</b>	Electricity generation (g/kWh)	430

For the year 2030 0.270 t CO<sub>2</sub> equivalent per MWh final energy is assumed (<https://www.kea-bw.de/waermewende/wissensportal/technikatalog>). Based on historical data and forecasts, assumptions are made about how the energy mix for electricity generation will evolve by 2030. This includes expectations for increased use of renewable energy sources (wind, solar, hydro) and reduced use of fossil fuels (coal, natural gas). Nevertheless, this is accompanied by risks in case the assumption is not being met. If the emission factor remains higher than expected Heidelberg's climate neutrality goals might not be met. Therefore it might become indispensable to reevaluate the city's emission reduction strategies to still meet the goal. Moreover, if the city relies on country-wide renewable energy sources, a failure to achieve the emissions factor target may require a reassessment of the feasibility of local sufficiency concepts. Consequently, Heidelberg has to reassess its renewable energy potential and consider expanding renewable energy capacity to compensate for higher emissions from grid electricity.

<b>A-1.3: Activity by source sector (from economic model data inputs)</b>			
Base year	2019		
	Scope 1	Scope 2	Scope 3
<b>Transport</b>			
Transport need - passenger cars + motorcycles (M km/year)	895		
Transport need - buses (M km/year)	4		
Transport need - trains/metro (M km/year)	2		
Transport need - light duty trucks (<3.5 t) (M km/year)	38		
Transport need - heavy duty trucks (>3.5 t) (M km/year)	392		
<b>Buildings &amp; Heating</b>			
Heating demand (space heating + domestic hot water) (GWh/year)	1581		
<b>Electricity</b>			
Electricity demand within city boundaries (GWh/year)		780	
<b>Waste</b>			
Collected waste within city boundaries (tonnes)			71.000
<b>Other</b>			



<b>A-1.4b: GHG emissions by source sector (from economic model inputs)</b>					
Base year	2019				
Unit	t CO <sub>2</sub> equivalent/year				
	Scope 1	Scope 2	Scope 3	Total	% of Total
<b>Transport</b>	288.340			288.340	31%
<b>Buildings &amp; Heating</b>	264.010			264.010	29%
<b>Electricity</b>		343.208		343.208	37%
<b>Waste*</b>			20.220	20.220	2%
<b>Agricultural, Forestry and Land Use (AFOLU)</b>	2.500			2.500	0%
<b>Total</b>	<b>554.850</b>	<b>343.208</b>	<b>20.220</b>	<b>918.279</b>	<b>100%</b>

\* Includes Scope 1 Waste emissions (produced and processed in the city) and Scope 3 (produced by the city but processed outside the city border)

<b>A-1.4b: GHG emissions by source sector (from economic case)</b>					
Base year	BAU 2030 (Business as Usual 2030)				
Unit	t CO <sub>2</sub> equivalent/year				
	Scope 1	Scope 2	Scope 3	Total	% of Total
<b>Transport</b>	249.041			249.041	26%
<b>Buildings &amp; Heating</b>	263.742			263.742	27%
<b>Electricity</b>		446.949		446.949	46%
<b>Waste*</b>			10.031	10.031	1%
<b>Agricultural, Forestry and Land Use (AFOLU)</b>	2.500			2.500	0%
<b>Total</b>	<b>515.284</b>	<b>446.949</b>	<b>10.031</b>	<b>972.264</b>	<b>100%</b>

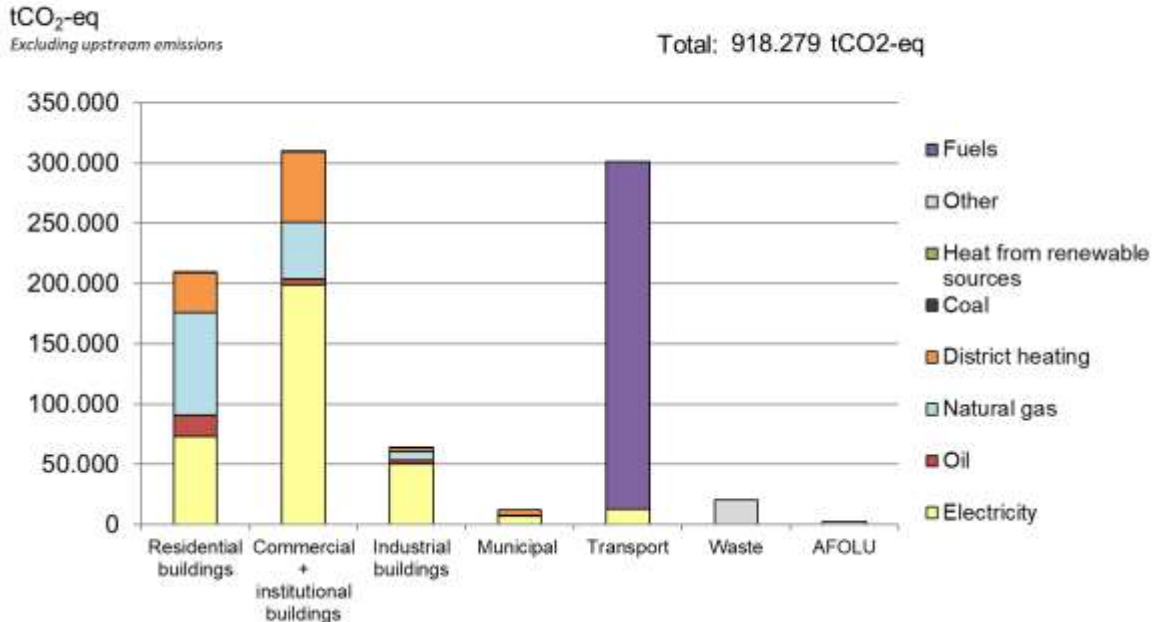
\* Includes Scope 1 Waste emissions (produced and processed in the city) and Scope 3 (produced by the city but processed outside the city border)

In table A-1.4b it is not possible to distinguish between Scope 1 and 2 emissions in district heat as well as in emissions from waste as there is no more detailed data available.

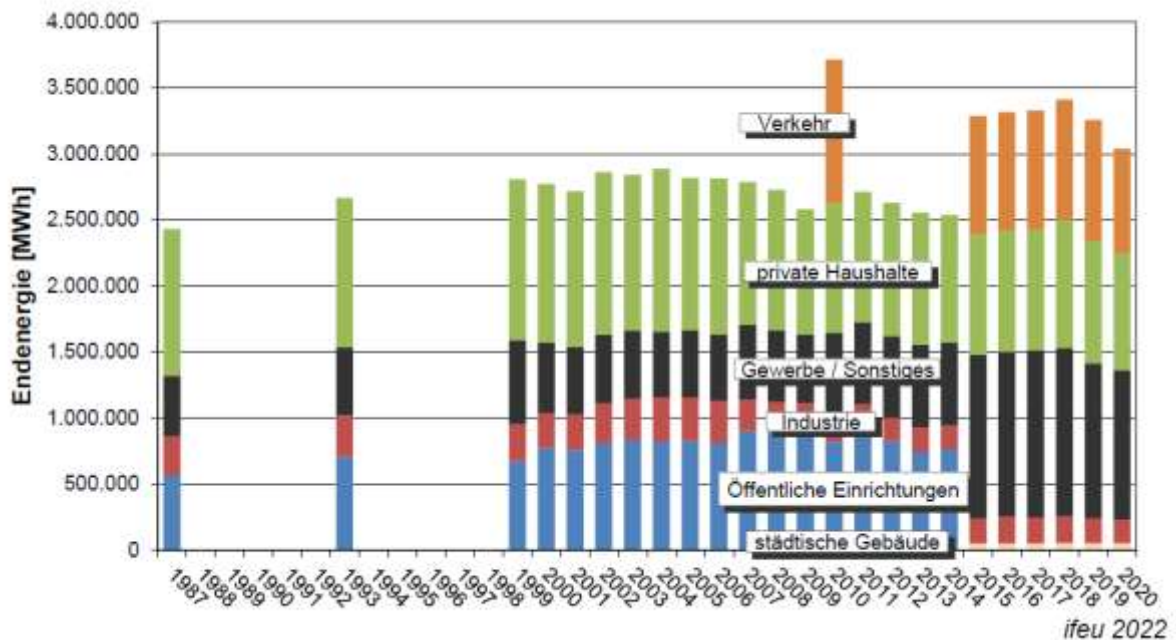


**A-1.5: Graphics and charts**

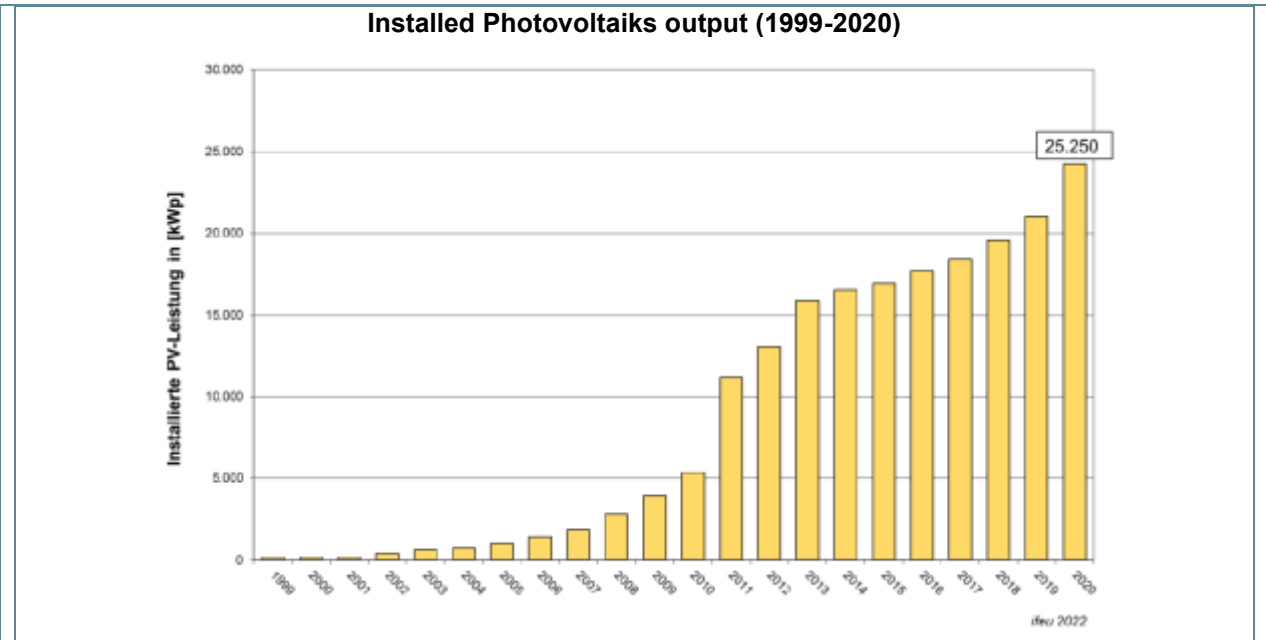
**GHG emissions by source and sector 2019**



**Development of stationary final energy in Heidelberg from 1987 to 2020 by sector**

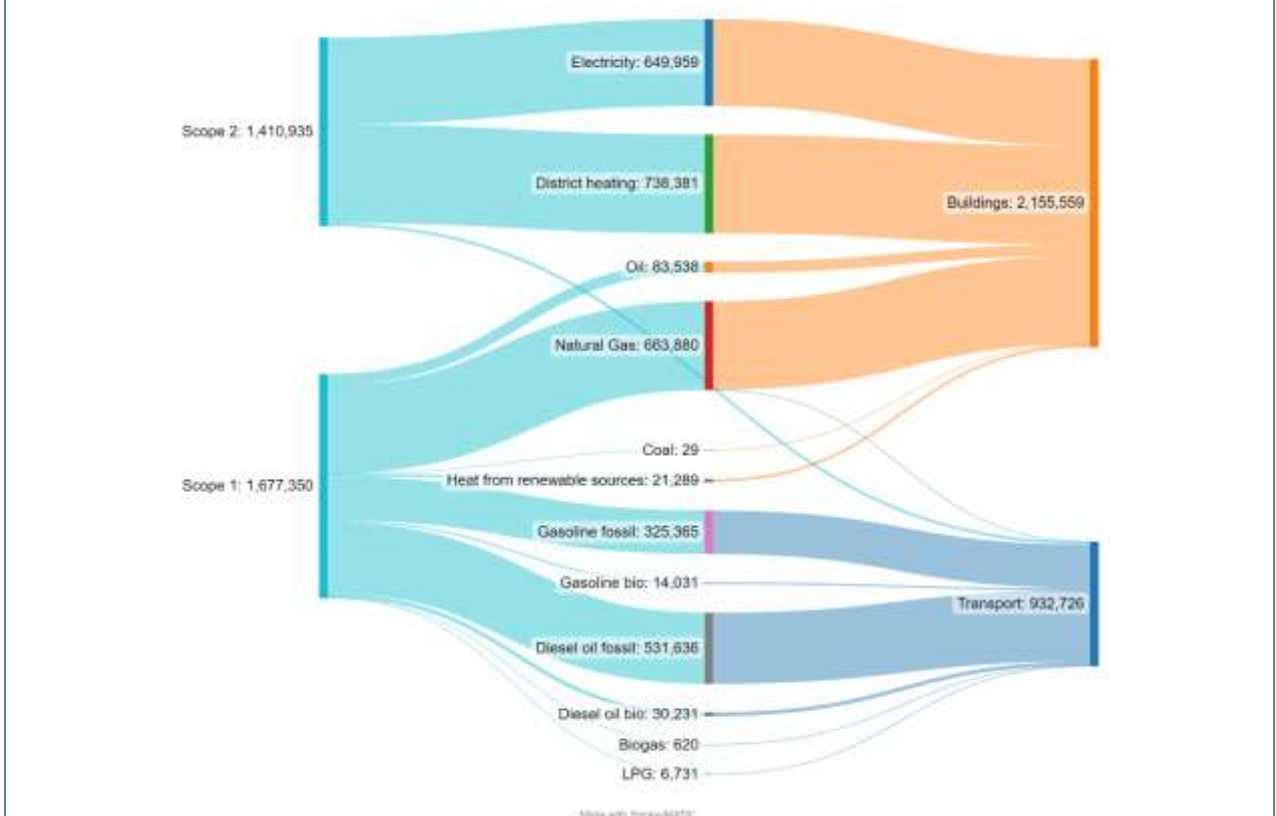


The above figures show the GHG emissions by source and sector 2019 and the development of stationary final energy in Heidelberg from 1987 to 2020. There is no data available for final energy by source and sector.



The above figure shows the development of the installed photovoltaics output in Heidelberg from 1999-2020. There is no data available how much of this produced solar power is selfconsumed and how much is fed into the grid.

**Sankey diagram: relationship between emissions (scopes), energy sources (fuels), and energy use (sectors)**



**A-1.6: Description and assessment of GHG baseline inventory**

. The majority of Heidelberg's GHG emissions are energy-related and fall into the areas of buildings (65%) and transportation (33%). Heidelberg's electricity supply accounts for 37% of emissions and its heat supply for 29%. Fuels are responsible for 31% of emissions. Waste and Agriculture, Forestry and Other Land Use (AFOLU) account for a total of 2.5% of Heidelberg's emissions.



## 3.2 Module A-2 Current Policies and Strategies Assessment

Module A-2 “Current Policies and Strategies” should list relevant policies, strategies, initiatives, or regulation from local, regional, and national level, relevant to the city’s climate neutrality transition.

A-2.1: List of relevant policies, strategies & regulations					
Type	Level	Name & Title	Description	Relevance	Need for action
(regulation/ policy/ strategy/ action plan	(Local, regional, national, EU)	(Name of policy/ strategy/ plans)	(Description of policy/ strategy/ plans)	(Describe relevance/ impact on climate neutrality ambition)	(List any suggested action in relation – to be further picked in Module C- 1)
law	Regional	Climate Protection Act Baden- Württemberg	Cities with more than 100,000 inhabitants are obliged to submit the first municipal heating plan by 31.12.2023 and to update it regularly.	The heating plan forms the basis for the climate-neutral heating supply of a city. The focus is on phasing out fossil fuels.	Expansion of the district heating network, increase in the share of green district heating, network densification
law	Regional	Climate Protection Act Baden- Württemberg	Municipalities are obliged to enter the energy consumption data of their properties in a central database.	Energy controlling, is the basis for prioritising refurbishments	Establishment of an energy controlling system
Action plan	local	Climate Protection Action Plan	At the municipal council meeting on 9 May 2019, Mayor Lord Mayor Prof. Dr. Eckart Würzner declared the climate emergency for Heidelberg. In doing so, he	These 30 measures in conjunction with the strategies of the strategies of the "100 % Climate Protection Master Plan", Heidelberg should Heidelberg should achieve its climate	Participation of the entire urban society





			<p>emphasised the necessity and urgency of committed and concrete action to limit the climate crisis.</p> <p>action to limit the climate crisis.</p> <p>As a result, discussions were held within the administration and with key social and economic actors in a climate action and economic key players in a climate action group, how climate protection in Heidelberg can be advanced more quickly and ambitiously.</p> <p>At the same time, the municipal council adopted a The 30-point plan, the Climate Action Plan, contains the targets, priorities for action and concrete measures that have been collected since the declaration of the climate emergency.</p>	<p>neutrality goals more quickly.</p>	
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			since the declaration of the climate emergency, as well as from the ranks of the Heidelberg City Council.		
law	national	Climate Protection Act Germany	Germany is to be greenhouse gas neutral by 2045.	Target is too unambitious compared to the EU mission's goal	Are defined in the accompanying climate protection programme. Laws must now be drafted and adopted
law	national	wind on land law	The law enables the accelerated expansion of wind energy	Expansion of renewable energies	By the end of 2032, 2% of the federal territory must be designated for wind energy.
law	national	Renewable Energies Act		the share of renewable energies in gross electricity consumption is to increase to at least 80 percent by 2030.	
law	regional	Climate Protection Act Baden-Württemberg	PV obligation for new buildings and roof renovations	Accelerated expansion of renewable energies	PV Obligation Ordinance
	regional	Targets for transport turnaround by 2030 in Baden-Württemberg	By 2030, transport should produce significantly less CO2. To achieve this, the Ministry of Transport has set concrete targets.	In concrete terms, the targets should make it possible to reduce emissions in the transport sector by at least 55 per cent by 2030 compared to 1990.	By 2030
	regional Voluntary	Climate Mobility Plan	Climate mobility		Plan für Heidelberg



	<p>instrument of the Baden-Württemberg Climate Protection Act</p>		<p>plans define specific projects in the mobility sector at the municipal level to achieve a lasting and significant reduction in greenhouse gas emissions. The measures defined in these plans must be the responsibility of the municipality or coordinated with the other public authorities involved. The measures, which must also take into account the mobility needs of the population and the economy and be oriented toward the goals of regional planning.</p>		<p>ist gerade in der Bearbeitung</p>
<p>Strategy</p>	<p>Regional</p>	<p>Modell Räumliche Ordnung Model Spatial order 2035+ model of special order (MRO)</p>	<p>The MRO is the spatial strategy for Heidelberg and aims to develop a model for urban development that coordinates the various usage requirements in the</p>	<p>The MRO is being developed by the City Planning Office with the support of planners from landscape architecture and urban planning as well as other specialized offices of the</p>	<p>In particular, the chapters on climate and mobility are relevant for EU mission. The previous concept from 1999 is currently being</p>



			urban space in such a way as to ensure sustainable and resource-saving settlement development .	City of Heidelberg. The interdependencies are shown, which are of importance for spatial development due to population growth, new mobility needs and climate change, among others.	updated with the participation of the citizens, among other things because of the population development. The aspects and goals of climate neutrality will be included in the update.
Strategy	Local	Stadtentwicklungskonzept – city development concept (STEK)	The Urban Development Concept (STEK) sees itself as a guide for the sustainable development of Heidelberg up to the year 2035. In the STEK, the goals of urban development are worked out together with the urban community and their implementation is initiated.	The central point is to keep all topics of urban development in view. Thus, the STEK pays particular attention to considering ecological, social and economic developments in equal measure and to thinking about the diverse topics together.	In the update of the STEK, the concerns of climate protection and climate change adaptation were included and integratively linked with all other fields of action. Finalization will take place in 2023 and adoption by the municipal council in 2024.
Strategy/action plan	local	Biodiversity Strategie -	In 2019, the objectives and measures of the strategy were developed in seven key points with municipal offices, nature conservation	Healthy and resilient ecosystems are essential to our well-being because they provide food, clean water, protection from natural disasters, and are carbon sinks.	The Climate Protection Action Plan and the Climate Neutrality Concept include the planting of CO2-absorbing trees as important



			<p>associations and other institutions. The Heidelberg City Council unanimously adopted the goals and measures of the Heidelberg Biodiversity Strategy on Thursday, March 18, 2021. Financing for the individual building blocks is to be generated primarily through funding from the state, the federal government and calls for tenders as part of nature conservation projects. In this way, the city joins many other municipalities in supporting the goals of the federal government's national biodiversity strategy and the nature conservation strategy of the state of Baden-Württemberg. The city's goal is to permanently preserve and promote species and habitats. The</p>	<p>The crises in climate protection and biodiversity (also known as the twin crisis) are among the major challenges for preserving the Earth as a habitat. They must be thought of together.</p>	<p>measures. Likewise, the preservation of green belts and fresh air corridors as well as open spaces as climate change adaptation measures.</p>
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			implementation of the biodiversity strategy will extend over at least the next 20 years.		
policy	Regional and national	Deutscher Städtetag und Städtetag Baden-Württemberg	<p>The German Association of Cities is the largest association of municipalities in Germany. It represents the interests of all independent cities and most cities belonging to a district. It brings together over 5,700 cities and municipalities with a total of 51 million inhabitants.</p> <p>The Association of Cities of Baden-Württemberg is a municipal state association based in Stuttgart[1], to which 198 cities of the state of Baden-Württemberg with a total of about 6.6 million inhabitants belong.</p>	Representatives of the city of Heidelberg (mayor, deputy mayor) are represented on the board and the environmental committees of the German Association of Cities and the Association of Cities in Baden-Württemberg. As a result, Heidelberg has a not inconsiderable influence on the programs of German cities and the municipalities in Baden-Württemberg.	Current climate neutrality issues are discussed at all levels in the meetings and committees. The expertise of the cities plays a major role. Active influence is exerted on environmental and climate protection policy decisions by the German and regional governments.
Strategy	Local	Cycling strategy 2030	The Cycling Strategy 2030 will focus on		





			<p>individual areas of action. On the basis of these individual sub-concepts, a list of concrete measures is to be drawn up after evaluation on the basis of key figures (CO2 reduction), backed up with a rough cost estimate and necessary personnel resources. These measures are then to be implemented according to the developed priority. The sub-concepts:</p> <p>Definition of standards and key objectives          Cycle path network:          Planning of the main and secondary axes, type of cycle routing (separate cycle path, sidewalk/cycle path, cycle lane), integration of the cycle fast connections, dimensionin</p>		
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			<p>g of the cycle paths to meet demand, and upgrading of field paths on commuter routes, among other things (already decided by the municipal council).          Bicycle parking facilities:          Determine demand and define locations          Interchanges between cycling and public transport:          identify needs and determine locations          Review and adapt signage systems          Communication and public relations          Plan service offerings, for example pump and repair stations, (e-bike) charging stations, drinking water taps</p>	
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**A-2.2: Description & assessment of policies**

Federal and state regulations provide the framework for municipal action. Climate protection and climate adaptation must be given strong weight in all sectoral laws and planning directives, with clearly defined goals and instruments to support municipal efforts and enable legally secure implementation. An intensive dialogue between the federal, state and local governments on the legal framework and legal changes in sectoral laws and ordinances is necessary for the reduction of barriers and effective climate protection.







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

Module A-3 “Systemic Barriers and Opportunities to 2030 Climate Neutrality” should document the results of the stakeholder, systems and ecosystem mapping and identification of systemic barriers and opportunities.

A-3.1: Systems & stakeholder mapping				
(Fill out according to Action Plan Guidance and Explanations)				
System description	Stakeholders involved	Network	Influence	Interest
Nachhaltiges Wirtschaften	... Craftsmen unions and energy agencies	... Several hundred enterprises are already part of the Network "Sustainable management in Small and Medium sized Enterprises". The aim of the network, which has been coordinated by the Office of Environmental Protection, Trade Supervision and Energy since 2001, is to support small and medium-sized enterprises with 5 to 250 employees in implementing an environmental management system. This includes the investigation of internal processes and optimization potentials, in particular with regard to resource consumption and disposal as well as occupational safety for the protection of employees and the environment. Questions of social sustainability, such as new forms of personnel management or corporate social responsibility are also addressed. With about 200 involved companies and around 10.000 employees this network is one of the largest sustainability networks of companies in Germany.	Business Industrials: Emissions reduction Energy Transport (Mobility) Waste Water	... Entrepreneurship support programmes
HD Kreis	Regional government Academia Climate initiatives/networks Residents/community groups NGO and associations Education sector	The "Heidelberg-circle climate protection and energy" has been supporting climate protection projects for years from conception to implementation. It is made up of representatives from administration, science, business, NGOs, education and experts from various disciplines in the energy industry.	Civil society Climate initiatives/networks Collaborative initiative: Emissions reduction	Collaborative initiative



	Consumer Staples Energy Industrials Real Estate Utilities			
Expertenrat/Klimaschutz-Aktionsgruppe	Academia Climate initiatives/networks NGO and associations Energy Financials	In the Climate Protection Advisory Board headed by the Lord Mayor key players of Heidelberg's energy and emission related institutions reflect and discuss their strategies for climate protection. These are i.a. the rector of the university, the managing directors of the municipal utilities and the student union as well as the responsible deputy mayors and scientists. At the request of the municipal council, this group was recently supplemented by other groups, e.g. Klimaentscheid Heidelberg.	Academia Climate initiatives/networks NGO and associations Energy Financials	develop and adjust climate neutrality targets
Kliba				
Regionalmarketing	Regional government Climate initiatives/networks Consumer Discretionary	With the label "Genial Regional", regionally produced and processed products will be labelled. Regional marketing is intended to make consumers aware of regionally produced food, which results in shorter transport distances and support for local producers. The network of farmers, winegrowers and vegetable and fruit growers implemented a common trading platform, new marketing channels and its own pick-up and delivery system.	Business Consumer Staples Climate initiatives/networks Consumer Discretionary	Food
Bildung für nachhaltige Entwicklung	Climate initiatives/networks Residents/community groups Vulnerable population groups NGO and associations Education sector Health Care	With the program "education for sustainable development" the city of Heidelberg cooperates with kindergartens, schools, universities and sport clubs to educate people in different age groups. In the juncture it shows citizens how important responsible consumption and economical consumption of resources is. The program includes many projects like workshops for teachers, lectures or excursions for students.	Civil society Education sector	Collaborative initiative Knowledge or data sharing
Städtetag Baden-Württemberg		Representatives of the city of Heidelberg (mayor, deputy mayor) are represented on the board and the environmental committees of the German Association of Cities and the Association of Cities in Baden-Württemberg.	Policy and regulation development/implementation Nationally Determined Contribution (NDC)	Adaptation Agriculture Ecosystem restoration





		<p>As a result, Heidelberg has a not inconsiderable influence on the programs of German cities and the municipalities in Baden-Württemberg</p>	<p>development/ implementation of local/regional adaptation plans, National Adaptation Plans and/or National Adaptation Programmes of Action (NAPAs)</p>	<p>Emissions reduction Energy Forestry Natural environment Public health Resilience Transport (Mobility) Waste</p>
<p>ICLEI Include Projekt</p>		<p>In 2023 in Heidelberg, a cooperation has been set up at the district level to analyse the effects of the Rational Use of Energy funding programme on low-income households. The Framework is the ICLEI-project INCLUDE, which is financed by the Mercator Foundation. For example, opportunities for improvement in the promotion of solar balcony modules for low-income households were identified</p>	<p>In the municipal health conference (annual conference), all stakeholders from the climate change and health sector are networked and develop strategies for municipal implementation in the region (county). The aim is to derive strategies and measures for the cities and municipalities. For more information see the link below:  <a href="https://www.rhein-neckar-kreis.de/site/Rhein-Neckar-Kreis-2016/get/params_E-1119474999/3139208/Veranstaltung%C3%BCbersicht%2012.KGK%202023.pdf">https://www.rhein-neckar-kreis.de/site/Rhein-Neckar-Kreis-2016/get/params_E-1119474999/3139208/Veranstaltung%C3%BCbersicht%2012.KGK%202023.pdf</a></p>	


**A-3.2:**

A significant increase in population is forecast for the city of Heidelberg. More than 25,000 additional citizens are expected by 2035.

The city of Heidelberg decided on the future development of housing construction with the Building Land Programme Housing (2017). This programme sets a target of 800 flats per year. The areas actively controlled by the city include the former military properties as well as Bahnstadt. In total, more than 12,000 new flats are planned. This means that significant increases in residential space can be expected in the coming years compared to the years before.

One important reason why absolute CO<sub>2</sub> emissions in Heidelberg are not falling more significantly is precisely this growth in population. It is obvious to analyse this by looking at the per capita emissions. In 1987, these were just under 9.8 tonnes per capita, in 2017 they were 6.8 tonnes per capita. This corresponds to a reduction of 30 %. A great success, but it must be taken into account that CO<sub>2</sub> emissions do not increase or decrease linearly with the number of inhabitants. The number of public facilities, such as the size of the university, municipal buildings, such as the state buildings, or the number of commercial and industrial enterprises is also responsible for the level of CO<sub>2</sub> emissions, and does not directly depend on the influx of new citizens. Furthermore, all sectors continue to be equipped with electrical consumers. Increasing air-conditioning of buildings and increasing digitalisation with decentralised IT equipment are still causing a slight increase in electricity consumption. Nevertheless, the high per capita reduction also shows the success of Heidelberg's climate protection policy to date.

An increase in the number of inhabitants from 2017 by a further 15,000 to 175,000 would, according to a simple calculation, cause an additional 100,000 tonnes of CO<sub>2</sub>. After differentiated consideration (taking into account efficient housing), there would still be approx. 38,000 tonnes of CO<sub>2</sub> emissions if calculated on the basis of 2017. The additional emissions of new residents can only be drastically reduced through consistent plus-energy standards for new neighbourhoods and flats, reduction of living space and extensive use of environmental transport.

Necessary framework conditions for successful climate protection in municipalities

In order to achieve the goal of climate neutrality, the creative power of municipalities is not sufficient. Additional support from outside is necessary, and framework conditions must be created by the EU level, the federal government and the federal states to support municipalities in effective climate protection. Targets for energy and environmental policy are set at the EU level. Clear, reliable regulations help national policy and thus also the municipalities. Beyond the targets, various directives also set the course for climate protection at the municipal level. At present, the EU's framework is still quite broad; significantly more ambitious targets for the EU member states would lend greater weight to climate protection.

The German government advocates a target triad of greenhouse gas reduction, expansion of renewable energies and energy efficiency. A climate policy should strengthen the municipalities in their role as central shapers of the energy transition. The federal and state governments should support municipal decision-makers in consolidating the success of municipal climate action. It needs political willingness and explicit support at all political levels - without bypassing the principle of subsidiarity. This manifests itself not only in long-term goals, but also in concrete measures that set the energy and climate policy framework.

Tax incentives for investments in energy efficiency and renewable energies create suitable economic incentives in conjunction with a further design of the financial support programmes. This benefits energy efficiency in particular (e.g. building renovation), which has so far lagged significantly behind the targets. The promotion of renewable energies should be given a reliable long-term framework. At the municipal level, the simplification for owner-users of solar electricity is a driver for the further expansion of solar energy. There is still a lot of potential here. An amendment to the Renewable Energy Sources Act is needed that abolishes the burden on self-consumption of renewable electricity. A federal 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 the building sector, urban development and spatial planning, the energy industry, mobility and agriculture.

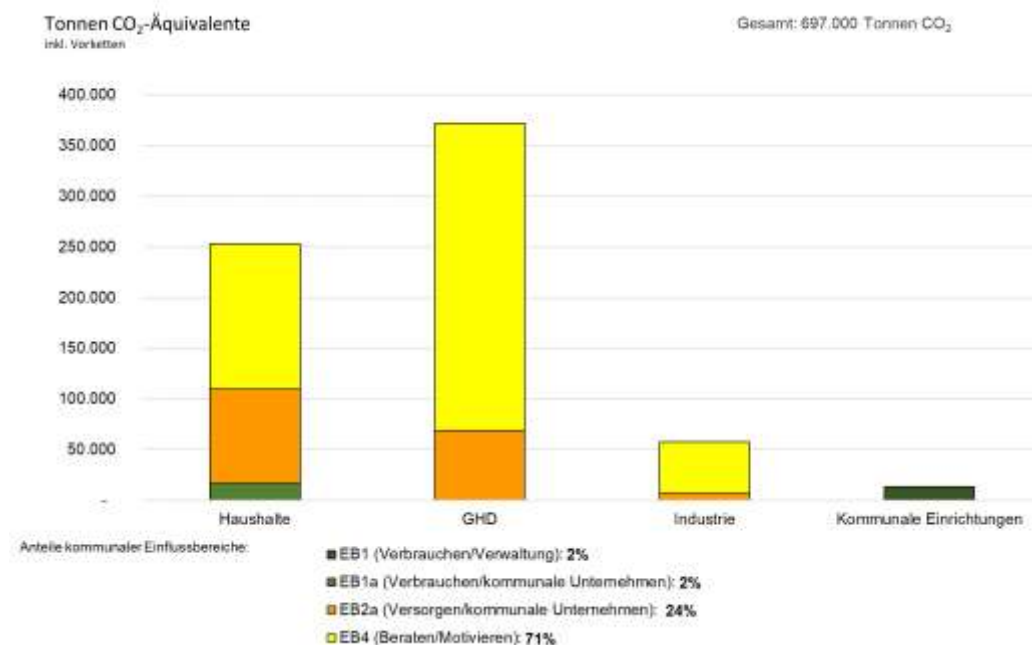
The federal states can make specifications through state legislation that directly affect municipalities and cities. For example, they could declare climate protection as a goal for municipalities within the framework of municipal ordinances (or municipal constitutions) or within the framework of state climate protection concepts (NRW, Baden-Württemberg). It would be possible and sensible to stipulate climate protection as a mandatory task (at least for precisely defined areas) at the state level, but in the political discussion the danger is often pointed out that federal funding programmes (municipal guidelines) can then no longer be used, as mandatory tasks may not be funded. In the



case of wind power, on the one hand the obstacles in the approval procedures are too high, on the other hand the resistance from the citizens is a great challenge. Here, a simplified participation model for citizens' wind farms and guaranteed financial returns for site communes could ensure new acceptance.

Achieving the climate protection goals does not only depend on the municipality. An interplay of different levels (EU, federal government, state, municipality) is necessary to achieve climate neutrality in Heidelberg. As part of a research project commissioned by the Federal Environment Agency on the impact potential of municipal climate protection measures, ifeu investigated the possibilities for municipalities to influence CO2 reduction. The research project showed that the proportion of emissions that can be influenced depends strongly on the circumstances of the municipality, e.g. its size, existing actors (e.g. municipal utilities, housing associations) and the energy infrastructure. Within the framework of the project, four areas of influence were defined, each of which was graded by the strength of the possibility of influence.

However, it is essential for municipalities to better assess in the future which possibilities they have to reduce their own energy and CO2 balance.



71 percent of the emissions are in area 4 (advising & motivating). The emissions in this sphere of influence can be addressed in particular through measures such as neighbourhood concepts, information campaigns and support programmes. Around 1/4 of the emissions are in area 2a (supply & offer). The implementation of heat planning is the central measure to reduce CO2 emissions in this area. Another 4% of the emissions are in areas 1 and 1a (consumption and example). The total emissions in these areas can be directly influenced by the energy refurbishment of the municipal properties and the residential buildings of the GGH..

**A-3.3: Description or visualisation of participatory model for the city climate neutrality – textual and visual elements**

**Successful participation in climate protection**

To achieve sustained success climate protection needs to be an integral aspect in all decisions on investment, purchase and management of companies, public organisations and private households. This needs knowledge and awareness about relevance and chances of individual action. Opportunities for climate protection include, in particular, cost savings, security of supply, improvements in the quality of life, employee motivation, public image and new market opportunities. Thus awareness raising and participation processes play a key role in the successful planning and implementation of municipal climate protection measures in Heidelberg. The main goals are motivating for climate action, develop common strategies, identify best solutions and develop new business cases for sustainable products and services.



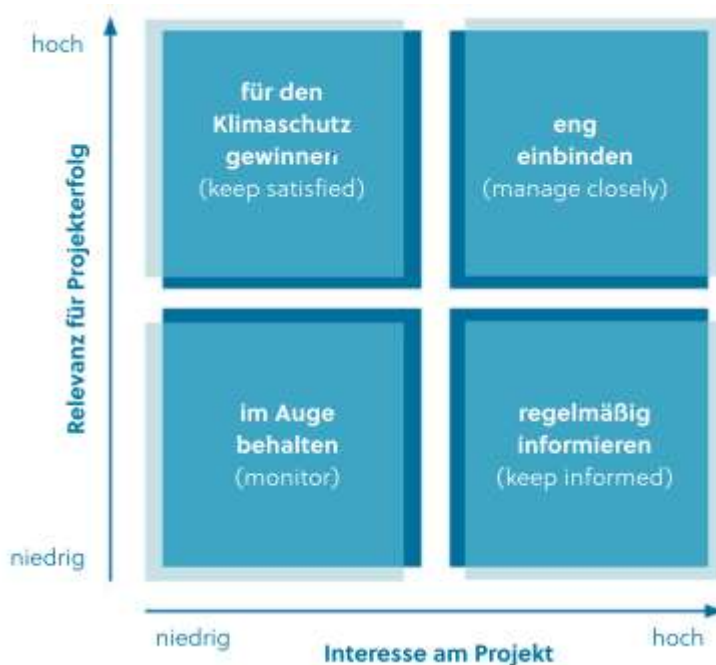
Further aims are to integrate the technical and economic know-how of selected social stakeholders in order to close knowledge gaps and improve the quality of concept and measure planning. On the other hand, the active involvement of the various stakeholders raises awareness of the municipality's climate protection goals and measures at an early stage, and their concerns and suggestions are incorporated into the design of the measures. In this way, the subsequent implementation of the measures is promoted. Acceptance or even identification with the climate protection goals and measures of the municipality are thus central goals of participation processes.

For the selection of the formats and the addressing of the actors it is also important, which motivation / which self-interest has the target group

in the topic of climate protection? For example:

- Cost savings through energy efficiency measures,
- positive image in the public,
- Increase of awareness,
- improvement of their own quality of life

When addressing stakeholders, Heidelberg prioritises according to the following criteria.



High relevance / High interest:

These stakeholders are closely involved in the process, as described below. The cooperation in the different formats builds on close contacts and a trusting cooperation in which objections or wishes are taken seriously and discussed together.

- High relevance / Low interest: As this group of actors is crucial for the success of the project, this group of actors is specifically addressed with topics through which they can gain access to climate protection. It is also important to develop an awareness of which of their interests are contrary to the municipality's climate protection efforts and why this is the case. one example is the Climate Action Group led by the Mayor is the Goal. He is a door opener and motivator for participation, especially for this group of actors. Stakeholders with high interest but low relevance are regularly informed by the City of Heidelberg about climate protection activities (e.g. climate protection newsletter) and have the opportunity for low-threshold participation in suitable circumstances. Examples here are events with participatory offers (e.g. quizzes). This ensures that they feel included and recognised as actors in the process. This in turn helps to prevent any resistance to planned measures.

Low relevance / Low interest: For these actors, we make a point of keeping them in mind and informing them about the process or project as soon as they show interest.

Depending on the competencies and responsibilities, stakeholders are involved in accelerating the reduction of greenhouse gas emissions in all sectors. This means:

- Emissions from fossil fuel combustion in all buildings and facilities (so-called "stationary energy"). This includes residential, commercial and industrial buildings as well as municipal buildings, properties and



public lighting within the city limits; climate neutrality, as defined by ifeu, requires the complete replacement of all fossil fuels for heat supply, primarily through district heating and heat pumps.

- Emissions from fossil fuel combustion for all vehicles and transport within the city limits; a focus must be on measures to reduce emissions from commuter traffic, especially a strong expansion of public transport in the region, incentives to switch to zero-emission drives and bicycles, but also city tolls or vehicle/parking space levies must be investigated.

- Emissions from consumption of electricity and district heating/cooling within the city boundary, from power plants within or outside the city boundary;

- Massive expansion of renewable energies for electricity and heat production.

in the following, priority is given to formats in which the actors are addressed as consumers and are to learn about and learn behavioral changes via the various methods. We also attach great importance to target-group-specific stakeholder participation. For this purpose, some formats are presented under A-3.1.

### **Social innovation through stakeholder participation**

The current ecological, economic and social challenges necessitate a comprehensive societal transformation toward sustainability. It is now clear that committed goals, scenarios and individual Instruments and technological developments alone are not enough. A process of adaptation and change is required throughout society.

One important contribution, as described, is the participation of those affected in the implementation of climate protection measures. However, far-reaching social changes are also necessary. Energy cooperatives are a good example here. They bring together what often falls apart in our society: entrepreneurial commitment on the one hand and measures for environmental and climate protection on the other. Energy cooperatives benefit from their local roots, often in the form of the voluntary commitment of their active members. It is therefore natural to ask whether energy cooperatives Energy cooperatives can strengthen their impact for climate protection by developing further climate-relevant business areas and by winning over their members and the public for concrete climate protection measures.

Heidelberg energy cooperative builds and operates climate-friendly infrastructure (especially photovoltaic systems) and thus makes climate protection a local experience. It offers commercial and non-commercial non-commercial services that enable climate-friendly lifestyles.

It participates in cooperations and promotes the transfer of knowledge between

actors in order to bring climate protection out of the niche and into the mainstream. The cooperative thus performs its original tasks of managing the economy

for its members and, in addition, sets itself forward-looking goals with a clear focus on with a clear focus on shaping a future worth living.

### **Participation formats in Heidelberg**

Citizens and civil society actors are important sources of ideas for the specialised administration and for the municipal council. They are also important actors in the implementation of measures. The city of Heidelberg therefore aims to strengthen citizen participation far beyond the legal framework. It wants to involve all interested and affected parties in current urban projects such as sustainability, climate protection and mobility. In the Heidelberg Guidelines for Co-designing Citizen Participation, citizen participation is reliably and bindingly regulated. This was unanimously adopted by the municipal council in 2012.

The origin of this was the Aalborg Charter, on the basis of which Heidelberg began participatory co-creation of development processes in many administrative areas as early as the 1990s. The participatory culture created on this basis in administration, politics and society also led to the participatory



development of the climate protection and energy transition with the citizens and experts.



Interaction between citizen and stakeholder participation

Administrative participation

Interdisciplinary cooperation in the administration of the City of Heidelberg is part of the successful administrative reform of the past 30 years. In project or agile groups, groups in the area of environment and climate protection also work together on an ad hoc basis for a project. This is also the case with the "100 % Climate Protection Master Plan" and the Climate Protection Action Plan or in the preparation of the new Urban Development Plan 2035.

Working groups on various topics bring the expertise of the specialised departments and the municipal enterprises into the planning process.

The management of the city administration also has the administrative conference as a steering instrument. All managers meet once a week and, if necessary, issues relevant to climate protection are discussed at topic tables and implementation options are sought. In special cases, task force groups are also set up.

„Masterplan 100 % climate protection“

During the development of the strategy and measures package of the "Master Plan 100 % Climate Protection", the involvement of the city society was a condition set by the Federal Ministry for the Environment for project participation within the framework of the National Climate Protection Initiative Program.

The environmental office of the city of Heidelberg implemented this process in two ways: on the one hand, experts from business, science, finance, the energy industry, churches, and associations were involved in the result-finding process in the "Heidelberg Climate Protection & Energy Circle" throughout





the entire duration of the project.



**The Masterplan process at a glance**

In addition, a multi-stage participation process for citizens took place, which had a significant influence on the packages of measures. Young people were also able to contribute their concerns to the Master Plan and beyond, through the regularly held Youth Climate Summits.

One challenge of multi-year processes is to maintain the commitment of all stakeholders. After the motivating work of developing visions and ideas, the phase of concrete implementation of projects is characterised by detailed work and overcoming hurdles. In addition, there are externally induced processes that challenge the city of Heidelberg, such as conversion, general economic development and political decisions.

In the process, the topic of climate protection expanded to other areas of action. In particular, the role of consumption and nutrition play a major role in the public discussion. The number of initiatives dedicated to these issues has risen sharply. Due to this expansion, some actors who are active in the "classic" areas such as energy supply and efficiency no longer feel exclusively addressed. The city of Heidelberg faces the challenge of permanently uniting, motivating and integrating all important and newly added actors. One strategy of the city administration is to involve important actors such as the housing associations, the crafts community and the university by directly addressing them in a thematically focussed way.



The three-stage model of citizen participation in the "Masterplan 100% Klimaschutz" (100% Climate Protection Master Plan) (see also final report on the "Masterplan 100% Klimaschutz" 2014)

After the adoption of the "Master Plan 100% Climate Protection" in 2014, attempts were made to involve the Heidelberg Climate Protection & Energy Group and the citizens in the implementation of the



measures. This was successful with the Stadtwerke Heidelberg, the churches and the environmental associations.

**Climate Emergency and Climate Action Plan**

Following the declaration of a climate emergency in May 2019, the administration was commissioned to draw up a climate protection action plan.

Building on the experience gained from the "Master Plan 100 % Climate Protection", the identification of measures that contribute significantly to the reduction of CO2 emissions and resource consumption was carried out by involving key organizations from the energy industry, administration and science. The climate protection action plan also incorporates many proposals and measures from the political arena.

An action group headed by the Lord Mayor was set up in 2019 specifically for the Climate Protection Action Plan. Department heads, managing directors of municipal companies, and representatives of the university, business, and research have since been exchanging ideas and making strategic decisions regarding the goals and implementation of climate protection in Heidelberg. Civil society groups are also represented.

A steering committee made up of representatives of the departments that are particularly affected by the climate protection action plan is adjusting the implementation and further development of strategies and measures..

**Participation process in the urban development concept 2035**

The urban development concept for sustainable development in Heidelberg forms the umbrella for all development processes in the city and is currently being updated in line with the 17 Sustainable Development Goals.

Like the STEP, the STEK 2035 is also being developed in a participatory manner. The entire Heidelberg citizenry is given the opportunity to participate in the development of the new concept. Non-governmental organizations have joined forces under the leadership of the One World Center, the Adult Education Center and the Paritätischer Wohlfahrtsverband to form an action alliance "Sustainable Heidelberg" in 2019 and are actively contributing to the design of the urban development concept.

The STEK is being developed in two phases: First, the status report will be prepared (phase 1). This is followed by the development of a catalog of objectives (phase 2). Citizens and other key stakeholders are involved in both phases, both in the preparation of the status report and in the formulation of goals for the urban development concept. The participation format was adopted by the municipal council in May 2020 and is currently being implemented.

<b>Inhalte</b>	<b>Analyse, Wesentliche Zukunftsthemen, Synergien und Konflikte, Handlungserfordernisse</b>	<b>Zieldefinition (Konfliktlösungen), Handlungsmöglichkeiten, Modellproj</b>	<b>Monitoring</b>
	Format: STEKbriefe und Statusbericht	Format: Stadtentwicklungskonzept, Nachhalti	
<b>Beteiligung</b>	<b>5 Verwaltungsrunden</b>	Sep/Okt 2022	<ul style="list-style-type: none"> <li>- Arbeitskreis STEK 2035</li> <li>- Aufsuchende Formate</li> <li>- Öffentliche Veranstaltungen</li> <li>- Kinder- und Jugendbeteiligung</li> <li>- Onlinebeteiligung</li> </ul>
	<b>5 Workshops</b> - Interessensvertretungen Zivilgesellschaft - Zufallsbürger*innen - Verwaltung	Jan / Feb 2023	
	<b>1 Öffentliche Veranstaltung</b>	Mär / Apr 2023	

Overview urban development concept 2035 with timeline





## 4 Part B – Pathways towards Climate Neutrality by 2030

Part B represents the core of the Action Plan, shaped by local authorities, local businesses, and stakeholders, comprising of the most essential elements: scenarios, strategic objectives, impacts, action portfolios and indicators for monitoring, evaluation, and learning.

### 4.1 Module B-1 Climate Neutrality Scenarios and Impact Pathways

Module B-1 “Climate Neutrality Scenarios and Impact Pathways” should list impact pathways, early and late outcomes and direct and indirect impacts (co-benefits) according to and adapted from the NZC Theory of Change and the AP Guidance – clustered by fields of action.

<b>B-1.1: Impact Pathways</b>					
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 Energy supply heat; Power supply electricity and renewables; energy efficiency	long planning process	CO2 neutral heat and power supply	CO2 Reduction	Creation/securing of jobs
		High costs			
		Major construction work/ Traffic obstructions	Displacement of fossil fuels Expansion of renewable energies; Cost resilience	supply security - CO2-Reduction;	Prevention of energy poverty
	Governance and policy (z.B. Municipal heat planning, climate protection law ; PV obligation ; energy conception)	Short-term planning start Data preparation Provision of funds and support, Provision of personnel	Systematic and updatable concepts	Determination of CO2 reduction potentials	Strengthening local municipal utilities and energy cooperatives
	Social innovation (z.B. Funding programs)	incentive to implement climate protection measures more quickly,	Long-term CO2 savings	CO2 reduction	Promotion of the local economy, knowledge of the economy of innovative solutions
	Democracy/ participation z.B. Energy properties	Information and sensitization of the population	Local value creation	CO2 reduction Reduction of final energy	Energy self-sufficiency in residential projects



				consumption	
	Learning & capabilities	Energy supply with renewable energies is possible	Promoting research on new technologies ; Thinking in global contexts	Reduction of the energy consumption of fossil fuels	Climate justice ; responsibility for sustainable energy supply.
	Finance and funding	High costs, federal, state, EU funding required	High maintenance costs	Burden on municipal budgets	Less funds for other investments
(Apply structure above for each emission domain)					
Mobility & transport	Technology and Infrastructure: Expanding the environmental alliance; limiting private transport; alternative drives; city of short distances	Higher number of passengers in public transport; Reduction of parking space; High proportion of citizens on bicycles;	Increase in infrastructure (cycle paths, railways); equal distribution of transport space for all road users; increase in vehicles with alternative drive systems and expansion of the charging infrastructure.	Emissions reduction; redistribution of land in urban areas;	Health promotion; road redesign as a climate change adaptation measure; inclusive access to climate-neutral mobility.
	Governance & policy: Parking space management; public transport pricing; traffic regulation	Shifting and avoiding traffic flows	Permanent avoidance of MIV; Reduced registration of vehicles	Emission reduction; cost fairness in transport;	Health promotion; traffic safety
	Social Innovation : funding program	Facilitating the switch to environmental transport	Behavior change	Emissions reduction	Cost reduction with changed mobility behavior
	Democracy /participation	Increased mobility offer	More mobility justice	Relief for households	Increased acceptance of forms of mobility ; transformation of mobility behavior.
	Finance & funding	High funding requirement of public funds	More revenue through parking space management	Redistribution of funds for different modes of transport	Less maintenance costs for roads
	Learning & capability	Frontrunners are required	Cities are role models for rural areas	More traffic safety, deceleration	Creation of a livable city



Waste & circular economy	Technology/infrastructure: Waste management concept; biogas utilization; Green waste utilization; urban mining	Avoidance of resource consumption; Creating a digital material building Data base	Qualitative and quantitative reduction of waste flows; Reduction of landfill and treatment areas	Making the construction industry more climate-friendly; Reduce dependence on imported raw materials Substitution of pollutants with less hazardous substances	Change in consumer behavior; transport routes of waste are reduced
	Governance & policy	New fee schedule	Introduction of material-saving services and efficient product service systems ; Development, production and use of resource-efficient and durable products that can be easily repaired.	Reduction of raw material consumption Cleaner Production ; Production of durable products	Awareness raising. Other composition of materials in construction
	Social innovation	Behavioral change in consumption and construction	Establishment of new building materials/materials	Steering of consumer behavior via disposal costs/strategies	No transport of waste to third world countries
	Democracy & participation	Waste consulting, education for sustainable development ; campaigns	Awareness	Steering of consumer behavior	Community cleaning actions
	Finance and funding	Support the establishment of new drop-in centers such as Repair Cafe.	Promotion of a sustainable lifestyle	Waste prevention	Less littering of the environment
	Learning & capability	Repair and Re-use Containment of littering of the environment			
Green infrastructure &	Technology & infrastructure:	Immediate expansion of the online	Places shading	improved quality of stay	Contribution to biodiversity



nature-based solutions	Cool map ( digital city map which identifies cool places) Klimakompass( bio climatological data available for the public) Heal project (navigation system only for heat protection) Blue and green infrastructure	information offering on climate-adapted behavior.			and health care
	Governance & policy Climate Protection Act (climate change adaptation)	Fulfillment of the duty to inform	Precautionary adaptation measures in urban planning and urban land use planning	Improved quality of stay	Health care
	Social innovation	General availability of data All city districts are surveyed/surveyed across the board	Changed housing behavior (ventilation behavior, consideration of shading possibilities when looking for housing))	Improved quality of living and stay	Reducing disparities in access to recreation areas.
	Democracy & participations Involvement of citizens in tree care/sponsorship, development of measures	Simple measures can be quickly implemented	Unsealing and redesign of public areas with the participation of the population	Improved quality of living and s	Strengthening of local responsibility, participation in the community
	Learning & capabilities	Simple measures such as tree planting have a quick and noticeable effect	Rethinking urban planning/architecture	Higher importance of green spaces and ventilation in the city	Involvement of schools and kindergartens in tree planting campaigns
Built environment	Technology/infrastructure Energy-efficient building and retrofit, Investment in renewable energies (solar energy use in buildings)	Fast realization of PV plants Long planning phase for new construction and renovation	Reduction of energy consumption and emissions	Improvement of energy standards in construction	Promotion of new forms of housing e.g. housing projects for community building
	Governance & policy PV obligation, energy concept,	Binding specifications for energy-efficient construction	Permanent energy saving	Less energy consumption (electricity and heat)	Dissolution of renovation backlog



	urban development contracts				
	Social innovation Funding program	Financial support for building owners and thus investment incentive	Faster increase in refurbishment rate and proportion of energy-efficient new buildings	Resource Conservation	Strengthening of local crafts
	Democracy & participation	Involvement of the skilled trades to provide better advice to builders	Networking of the actors	Public relations and knowledge transfer	Strengthening of local crafts
	Finance & funding Local Climate protection and consulting agency	Free consultation offer	Faster increase in refurbishment rate and proportion of energy-efficient new buildings	Resource Conservation	Strengthening of local crafts
	Learning & capabilities	Best practice and benchmarking	New urban planning co	Motivation of the builders and architects	Behavioral change in the use of energy

### B-1.2: Description of impact pathways– textual and visual elements

(Describe, visualise, and contextualise pathways listed above)

## 4.2 Module B-2 Climate Neutrality Portfolio Design

Module B-2 “Climate Neutrality Portfolio Design” should contain a project description for **each intervention planned**, including interventions by local businesses and industry, according to the template B-2.1, including actions those interventions targeted at enhancing carbon sinks to address residual emissions. Narrative analysis and comments can be provided in B-2.2. A summary of how residual emissions are addressed, should be provided in B-2.3.

### B-2.1: Description of action portfolios - textual or visual

Fields of action	Portfolio description	
	List of actions	Descriptions
Energy systems	Municipal heat planning	Concept for the realization of climate-neutral heat supply
	Expansion of district heating supply	Contribution to climate-neutral heat supply
	Conversion of heat supply to renewable energies (biomass, environmental heat, waste heat, deep geothermal energy)	Contribution to climate-neutral heat supply
	Testing us exploitation of the geothermal potential	Expansion of renewable energies,
		Expansion of renewable energies to increase the share of green district heating



	Abwärmenutzung aus Müllverbrennung und Identifizierung weiterer Quellen aus Industrie und Gewerbe	
	Erection of wind turbines in the Heidelberg area	Expansion of renewable energies,
	Shareholding in Trianel Wind und Solar GmbH	Expansion of renewable energies, promotion of regional cooperation
	Strengthening electricity grids	Making grids ready for e-mobility and e-heat pumps
	Implementation storage systems and load management	In the course of the energy transition and the shift in transport towards electrified drives, the demands on increasingly decentralised energy systems and the associated grid infrastructure are rising. However, through increasing digitalisation and the coupling of different sectors such as electricity, heat and mobility, it is possible to operate decentralised energy systems efficiently, economically and cost-effectively.
Mobility & transport	Expansion of cycle paths	Increasing the attractiveness to switch to bike
	Environmentally friendly mobile" funding program	Promotion of the switch to the environmental mode of transport
	Increase parking fees	Increase in prices may cause vehicle owners to abandon the vehicle
	Establishment of express bus lines	Transfer of commuters from surrounding communities to the environmental network
	Process acceleration for the expansion of cycling infrastructure and public transport.	Modal shift – increasing the attractiveness to switch from individual car to public transport or bike
	Park+Ride facilities at central access roads	Transfer of commuters from surrounding communities to the environmental network
	Corporate mobility management	Advice and incentives to switch to the environmental mode of transport
	Parking space statutes and area-wide parking space management	Reduction of parking areas
	Further stabilize the transformation of roads	Reduction of parking areas
Waste & circular economy	Participation in the InnoReduX research project  Development of a concept for the reduction of packaging in the retail sector	Research, development and implementation of innovative packaging solutions in online and stationary retail. Within the framework of a "real laboratory", a practical implementation of packaging solutions in retail was developed with stakeholders. The project was funded by the German Federal Ministry of Education and Research (BMBF) under the research priority "Plastics in the environment - sources, sinks, solutions".
	Fermentation	The existing biowaste composting plant in Heidelberg already recycles biowaste from the cities of Mannheim and Heidelberg. In the future, the plant is to be expanded to include a fermentation stage for



		additional energy recovery from the biowaste, and a "biowaste utilization" special-purpose association is to be founded jointly with the city of Mannheim. The biogas obtained in a fermentation process will be used in a combined heat and power plant to produce electricity and heat. This high-quality utilization of biowaste improves the energy balance and CO2 emissions
	Digitalisierung	Introduction of the electronic file, goal paperless office. Digitalisation of complaints management. Digitalisation of all orders to the garbage crews. Online portals. Permanent offer of home office to reduce investments, resources and travel, appointments only in hybrid. Introduction of an employee app for all corporate communications. Fee notices, waste calendar online in the future.
Green infrastructure & nature-based solutions	creation of pocket parks	Small parks and horticulturally designed green spaces Diversity of green spaces  Improvement of the quality of stay in summer
	Shading in public space	Trees, shrubs or canopy
	Shading of parking spaces	Trees, shrubs or canopy
	Shading of buildings	Facade greening, trees, structural measures
	Unsealing	Lawns or partial sealing
	Backyard greenery	Vegetation and unsealing
	Increase of surface albedo and use of appropriate building materials.	Light-colored building materials, light building colors, building materials that store little heat
	Water surfaces in public space	Ponds, fountains, water playgrounds
	Green roof	extensive or intensive roof greening
	Facade greening	Soil-bound or system-bound facade greening
	Networking green spaces	Greening of paths, small parks as stepping stones for cold air
	Cool places	Heat protection in public spaces
	Replanting concept of large-crown trees for public places	Improvement of the quality of stay in summer
Built environment	Energetic building renovation	Implementation of high energy standards, increase in energy efficiency
	Optimization of the building orientation and the building density	Increase energy efficiency
	Heat concept for urban land use planning	
	Tenant energy consulting	Consulting, contribution to climate justice
	Rational use of energy" support program	Incentive for energy refurbishment with high ENergy standards
	New construction quarters become plus-energy quarters	Energy concepts with high energy standards





	Promotion of a craft initiative	Craftsmen can thus implement higher energy standards in their consulting services
	Promotion of area- and resource-saving construction	Increase energy efficiency
	Cost-saving building refurbishment through serial refurbishment	Increases the speed of remediation and reduces costs
	Neighborhood concepts	Development of measures within a neighborhood
	Renovation campaign in existing buildings	Advice for homeowners
	Solar Campaign	Promotion and advice on photovoltaics
	Lighthouse project for Agr	Expansion of renewable energies,
	-	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Overall concept for a climate-neutral heat supply
	Action type	Energy Systems
	Action description	Technology/infrastructure
Reference to impact pathway	Field of action	Overall concept for a climate-neutral heat supply
	Systemic lever	Energy Systems
	Outcome (according to module B-1.1)	Systematic concept for the entire city area for CO2 neutral heat supply
Implementation	Responsible bodies/person for implementation	Stadtwerke Heidelberg, municipal administration
	Action scale & addressed entities	Homeowners, residents, housing associations,
	Involved stakeholders	public utilities, civil engineering office, citizens
	Comments on implementation	Legal task according to climate protection law Baden Württemberg
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	District heating from coal-fired power plant is successively produced with renewable energies
	GHG emissions reduction estimate (total) per emission source sector	If all the conditions inside and outside Heidelberg are right, CO2 emissions in the heating sector will fall by 90 percent by 2040 (reference year 2020).
	Total costs and costs by CO2e unit	The total investment for the heating turnaround is estimated at around EUR 3 billion.

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Expansion of district heating supply
	Action type	
	Action description	Network expansion, network connections
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	Technology /infrastructure
	Outcome (according to module B-1.1)	Implementation of a CO2 neutral heat supply





Implementation	Responsible bodies/person for implementation	Municipal utilities, municipal administration
	Action scale & addressed entities	Homeowners, residents, housing associations
	Involved stakeholders	Municipal utilities, civil engineering department, residents
	Comments on implementation	Heidelberg is one of the first German cities to have a municipal heating plan in place
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Target share of more than 70% of heat demand
	GHG emissions reduction estimate (total) per emission source sector	Buildings
	Total costs and costs by CO2e unit	500 million by 2040

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Conversion of district heating supply to renewable energies
	Action type	
	Action description	Expansion of combined heat and power,
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Displacement of fossil fuels, expansion of renewable energies
Implementation	Responsible bodies/person for implementation	Municipal utilities, municipal administration
	Action scale & addressed entities	Homeowners, housing associations, condominium associations
	Involved stakeholders	Municipal utilities
	Comments on implementation	Heidelberg is one of the first German cities to have a municipal heating plan in place
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Replacement of natural gas heating and district heating from coal. The large power plant in Mannheim emits 5-7 million tons of CO2 per year.
	GHG emissions reduction estimate (total) per emission source sector	buildings
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Testing and exploitation of geothermal potential
	Action type	
	Action description	Deep geothermal energy contributes to green district heating
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	Technology and infrastructure



	Outcome (according to module B-1.1)	Local value creation
Implementation	Responsible bodies/person for implementation	GeoHardt, EnBW, Mannheim VV
	Action scale & addressed entities	Regional, Municipalities in the metropolitan region Rhein-Neckar
	Involved stakeholders	Energy suppliers such as Stadtwerke Heidelberg (public utility company)
	Comments on implementation	Citizens' initiative against the use of deep geothermal energy. Utilization is therefore not yet certain
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	19% of fossil district heating
	GHG emissions reduction estimate (total) per emission source sector	buildings
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Waste heat utilization from waste incineration and identification of further sources from industry and commerce.
	Action type	
	Action description	The Mannheim combined heat and power plant incinerates 700,000 tons of waste per year. This generates electricity and valuable heat. Since 2019, this has been fed into the district heating network. The aim is to replace coal-fired power with biomass, industrial waste heat and river heat, among other sources.
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	Displacement of fossil fuels
Implementation	Responsible bodies/person for implementation	Operators of the large power plant in Mannheim : RWE Generation SE (40 %), EnBW Energie Baden-Württemberg AG (32 %) and MVV RHE GmbH (28 %) and Stadtwerke Heidelberg (municipal utilities)
	Action scale & addressed entities	Regional, municipalities supplied with district heating by the large power plant Mannheim
	Involved stakeholders	Energy suppliers, industrial companies,
	Comments on implementation	Already implemented
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	Heidelberg heat st 51.3 percent CO2-free and consists of 27.5 percent renewable energies
	Total costs and costs by CO2e unit	



<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Erection of wind power plants on Heidelberg's territory
	Action type	
	Action description	Within the framework of the regional plan, 1.8 percent of the area has been designated for wind energy use. In addition, the state of Baden-Württemberg has put out to tender an area in the Heidelberg area for wind energy use.
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	infrastructure
	Outcome (according to module B-1.1)	Production of renewable electricity
Implementation	Responsible bodies/person for implementation	Heidelberg municipal utilities, energy cooperatives, city administration
	Action scale & addressed entities	Regional,
	Involved stakeholders	
	Comments on implementation	Citizens' initiatives against wind turbines in Heidelberg in the forest
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Renewable electricity, improves the emission factor for electricity
	GHG emissions reduction estimate (total) per emission source sector	a wind turbine with 7 MW capacity and 2200 full load hours can produce 15.400 MWh of electricity.
	Total costs and costs by CO2e unit	



B-2.2: Individual action outlines		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Expansion of cycle lanes
	Action type	
	Action description	Bicycle expressways in the region to make it easier for commuters to switch from car to bike
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Infrastructure
	Outcome (according to module B-1.1)	Permanent avoidance of motorized individual traffic
Implementation	Responsible bodies/person for implementation	Municipalities bordering the route, regional governments
	Action scale & addressed entities	Regional, surrounding municipalities
	Involved stakeholders	
	Comments on implementation	Determination of the routes requires a high degree of coordination,
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	<b>Transport Heidelberg is currently developing a climate mobility plan. As soon as this plan is available, the measures in the transport sector can be presented in more detail.</b>
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

B-2.2: Individual action outlines		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Environmentally Friendly Mobile" funding program
	Action type	
	Action description	With this support program, the city of Heidelberg encourages people to switch to local public transport and cycling, as well as to alternative drive systems and fuels in order to protect the environment and the climate.
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Social Innovation
	Outcome (according to module B-1.1)	Behavioral change
Implementation	Responsible bodies/person for implementation	Public sector
	Action scale & addressed entities	Residents and/or commuters
	Involved stakeholders	Municipality
	Comments on implementation	Funding programs support and accelerate behavior change
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	



	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	200,000 was available for this grant program in 2019

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Increase parking fees
	Action type	
	Action description	Parking management that better reflects the cost of providing parking and more consistently penalizes parking violations.
Reference to impact pathway	Field of action	Mobility and transport
	Systemic lever	Finance and funding
	Outcome (according to module B-1.1)	Facilitate the shift to environmental transport
Implementation	Responsible bodies/person for implementation	Municipality
	Action scale & addressed entities	Commuters, tourists, residents
	Involved stakeholders	Parking garage operators, employers
	Comments on implementation	Prices for residents' parking cannot be increased
Impact & cost	Generated renewable energy (if applicable)	Increase parking fees
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Establish rapid bus routes
	Action type	
	Action description	Identify the actual commuter flows and develop the necessary modal shift measures towards public transport and cycling.
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Infrastructure and Governance
	Outcome (according to module B-1.1)	Facilitate the shift to public transport, cooperation between municipalities
Implementation	Responsible bodies/person for implementation	surrounding communities, public transport operators
	Action scale & addressed entities	Commuters in and out of Heidelberg
	Involved stakeholders	Employers
	Comments on implementation	Inter-municipal cooperation required
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Reduction of trips with combustion engine,



	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Process acceleration for the expansion of cycling infrastructure and public transport.
	Action type	
	Action description	Faster planning procedures, expansion of services for cyclists and public transport
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Governance and infrastructure
	Outcome (according to module B-1.1)	Improved environmental services
Implementation	Responsible bodies/person for implementation	Municipality, surrounding municipalities, transport operators,
	Action scale & addressed entities	Planning agencies
	Involved stakeholders	Municipalities, transport operators, legislators
	Comments on implementation	The change of planning processes must be regulated by law
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Faster changeover to the environmental alliance
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Corporate mobility management
	Action type	
	Action description	As many employees as possible should commute between work and home in the most environmentally friendly way possible and thus contribute to achieving the mobility turnaround
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	governance
	Outcome (according to module B-1.1)	Support for behavioral change
Implementation	Responsible bodies/person for implementation	Administration, employers, transport authority, transport operators
	Action scale & addressed entities	Businesses, employers, commuters
	Involved stakeholders	Car sharing providers
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	



	Removed/substituted energy, volume, or fuel type	Reduction of trips with combustion engine,
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Parking space statute
	Action type	
	Action description	By means of the parking space statute, a municipality can regulate the number of parking spaces for cars and bicycles and reduce the number of parking spaces compared to the state regulation...
Reference to impact pathway	Field of action	Mobility and transport
	Systemic lever	Finance and funding
	Outcome (according to module B-1.1)	Avoidance of individual traffic
Implementation	Responsible bodies/person for implementation	Municipality
	Action scale & addressed entities	Homeowners, residents
	Involved stakeholders	
	Comments on implementation	Reducing the number of parking spaces per housing unit can also reduce construction costs.
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Reduction of the number of registered vehicles in the urban area, thus fewer trips by car
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Further perpetuate the redesign of streets
	Action type	
	Action description	Equal distribution of road space
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Infrastructure
	Outcome (according to module B-1.1)	Create incentives for the use of the environmental alliance
Implementation	Responsible bodies/person for implementation	Urban planning, traffic planning
	Action scale & addressed entities	All road users
	Involved stakeholders	All planning levels
	Comments on implementation	Continuous but protracted



Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Supporting the shift to the environmental network
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

B-2.2: Individual action outlines		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Reduction of packaging waste
	Action type	Waste and circular economy
	Action description	Reusable containers, sustainable education, #andersbechern projects, "Innoredux" research project
Reference to impact pathway	Field of action	Research, development and implementation of innovative packaging solutions in online and stationary retail. A practical implementation of packaging solutions in retail was developed with stakeholders as part of a "real lab".
	Systemic lever	The project was funded by the German Federal Ministry of Education and Research (BMBF) as part of the research focus "Plastics in the environment - sources, sinks, solutions".
	Outcome (according to module B-1.1)	Waste and Circular Economy
Implementation	Responsible bodies/person for implementation	Infrastructure, governance and learning
	Action scale & addressed entities	Reduction of material flows, reduction of landfill areas
	Involved stakeholders	Stdt administration, schools, commerce
	Comments on implementation	commerce, consumers
Impact & cost	Generated renewable energy (if applicable)	Food service, schools,
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	Waste
	Total costs and costs by CO2e unit	

B-2.2: Individual action outlines		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Fermentation
	Action type	Waste and circular economy
	Action description	The existing biowaste composting plant in Heidelberg already recycles biowaste from the cities of Mannheim and Heidelberg. In the future, the plant is to be expanded to include a fermentation stage for additional energy recovery from the biowaste, and a "biowaste utilization" special-purpose association is to be





		founded jointly with the city of Mannheim. The biogas obtained in a fermentation process will be used in a combined heat and power plant to produce electricity and heat. This high-quality utilization of biowaste improves the energy balance and CO2 emissions.
Reference to impact pathway	Field of action	Waste and circular economy
	Systemic lever	infrastructure
	Outcome (according to module B-1.1)	Avoidance of resource consumption
Implementation	Responsible bodies/person for implementation	Waste management
	Action scale & addressed entities	Regional, Heidelberg and Mannheim want to use fermentation together,
	Involved stakeholders	Administrations of the municipalities of the Zweckverband
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Production of biogas
	GHG emissions reduction estimate (total) per emission source sector	Waste Emission factor 0.097t/MWh (ifeu 2018).
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Digitalisierung
	Action type	Waste and circular Economy
	Action description	Introduction of the electronic file, goal paperless office. Digitalisation of complaints management. Digitalisation of all orders to the garbage crews. Online portals. Permanent offer of home office to reduce investments, resources and travel, appointments only in hybrid. Introduction of an employee app for all corporate communications. Fee notices, waste calendar online in the future.
Reference to impact pathway	Field of action	Waste and circular economy
	Systemic lever	governance
	Outcome (according to module B-1.1)	Avoidance of resource consumption
Implementation	Responsible bodies/person for implementation	Administration, employees
	Action scale & addressed entities	Local, city administration, all employers
	Involved stakeholders	IT experts in the facilities,
	Comments on implementation	Electricity consumption of IT infrastructure must also be taken into account
Impact & cost	Generated renewable energy (if applicable)	Additional electricity demand must be replaced by renewable energies
	Removed/substituted energy, volume, or fuel type	



	GHG emissions reduction estimate (total) per emission source sector	Waste
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Creation of pocket parks
	Action type	
	Action description	Creation of small parks and horticulturally designed green spaces
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	
	Outcome (according to module B-1.1)	Improved quality of stay
Implementation	Responsible bodies/person for implementation	Municipality,
	Action scale & addressed entities	Local, population, companies designing green spaces
	Involved stakeholders	Urban planning, companies,
	Comments on implementation	Creation of pocket parks
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	Waste
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Shading in public spaces and parking lots
	Action type	
	Action description	Trees Shrubs and Canopies
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	infrastructure
	Outcome (according to module B-1.1)	Improved quality of stay, especially in summer
Implementation	Responsible bodies/person for implementation	Municipality
	Action scale & addressed entities	Municipality, passangers, tourists
	Involved stakeholders	Municipality
	Comments on implementation	Selection of suitable locations Conflict of aims in land use
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	Transport



	Total costs and costs by CO2e unit	
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<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Shading of buildings
	Action type	
	Action description	Consideration of shading in planning through shading systems, façade greening; retrofit heat protection on buildings
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	
	Outcome (according to module B-1.1)	Improved indoor quality of life, protection of vulnerable groups
Implementation	Responsible bodies/person for implementation	City administration, health department,
	Action scale & addressed entities	urban society, architects,
	Involved stakeholders	housing associations,
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	buildings
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Unsealing/backyard greening
	Action type	Infrastructure
	Action description	Creation of new green areas, area for infiltration
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	infrastructure
	Outcome (according to module B-1.1)	Improved quality of stay
Implementation	Responsible bodies/person for implementation	Urban society, homeowners,
	Action scale & addressed entities	local, residents
	Involved stakeholders	Homeowners
	Comments on implementation	Choice of areas is voluntary in the private sector
Impact & cost	Generated renewable energy (if applicable)	Unsealing/backyard greening
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	



	Total costs and costs by CO2e unit	
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<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Increase of surface albedo and use of appropriate materials
	Action type	Adaptation
	Action description	By increasing the surface albedo, more of the sun's rays are reflected, so that the interiors are heated less.
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	governance
	Outcome (according to module B-1.1)	Higher quality of stay, less need for cooling
Implementation	Responsible bodies/person for implementation	Developers, urban planning
	Action scale & addressed entities	Local, urban planning, architects, developers,
	Involved stakeholders	Building materials manufacturers
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Water surfaces in public space
	Action type	Adaptation
	Action description	Plan more ponds, fountains, water playgrounds as part of urban planning
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	Social innovation
	Outcome (according to module B-1.1)	Creation of cool places, more quality of stay
Implementation	Responsible bodies/person for implementation	City administration
	Action scale & addressed entities	Local, urban community, residents, tourists,
	Involved stakeholders	City planners
	Comments on implementation	Selection of areas, monitoring water quality (algae problem)
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	



	Total costs and costs by CO2e unit	
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<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Green roof
	Action type	Adaptation, compensation
	Action description	Creation of roof gardens
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	Governance and finance
	Outcome (according to module B-1.1)	Improvement of the microclimate,
Implementation	Responsible bodies/person for implementation	urban planning, homeowners
	Action scale & addressed entities	Local, homeowners
	Involved stakeholders	Urban planning
	Comments on implementation	Land competition with photovoltaics
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Facade greening
	Action type	Adaptation
	Action description	Soil-bound or system-bound facade greening
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	democracy
	Outcome (according to module B-1.1)	Heat protection, increase of the quality of stay
Implementation	Responsible bodies/person for implementation	Homeowners
	Action scale & addressed entities	Local, homeowner, urban planning
	Involved stakeholders	Urban planning
	Comments on implementation	Support program planned
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	



<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Networking of green areas
	Action type	Adaptation
	Action description	Greening of paths, small parks as stepping stones for cold air
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	governance
	Outcome (according to module B-1.1)	Improvement of the quality of stay in the city
Implementation	Responsible bodies/person for implementation	City government,
	Action scale & addressed entities	Local, citizens,
	Involved stakeholders	urban planning
	Comments on implementation	Selection of suitable areas
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO <sub>2</sub> e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Map cool places
	Action type	Adaptation
	Action description	Identification of cool places in the city
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	Social innovation
	Outcome (according to module B-1.1)	Health prevention, heat protection in public spaces, information about places with high quality of stay
Implementation	Responsible bodies/person for implementation	Municipality
	Action scale & addressed entities	Local, urban society, vulnerable groups
	Involved stakeholders	Specialized offices,
	Comments on implementation	Information is "only" available digitally.
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO <sub>2</sub> e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		



Action outline	Action name	Replanting concept
	Action type	Adaptation
	Action description	Replanting of large-crowned trees in public areas/plazas
Reference to impact pathway	Field of action	Green infrastructure
	Systemic lever	Social innovation
	Outcome (according to module B-1.1)	Improvement of the quality of stay in summer
Implementation	Responsible bodies/person for implementation	Municipality
	Action scale & addressed entities	Local community, passers-by, tourists,
	Involved stakeholders	Specialized agencies
	Comments on implementation	Selection of suitable locations
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Energetic building retrofitretrofit
	Action type	Built environment
	Action description	Increasing the renovation rate, consulting, support programs, setting standards
Reference to impact pathway	Field of action	Built environment
	Systemic lever	governance
	Outcome (according to module B-1.1)	Implementation of high energy standards
Implementation	Responsible bodies/person for implementation	Municipality, savings bank, trades
	Action scale & addressed entities	Local, homeowners
	Involved stakeholders	architects, craftsmen
	Comments on implementation	High demand for consulting, little influence of administration
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	Up to 7.6 % (BISKO balance)
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Optimization of building orientation and density
	Action type	Built environment



	Action description	Determination in development plans
Reference to impact pathway	Field of action	Built environment
	Systemic lever	governance
	Outcome (according to module B-1.1)	Increasing energy efficiency
Implementation	Responsible bodies/person for implementation	Municipality,
	Action scale & addressed entities	Local, urban planning
	Involved stakeholders	specialized departments, architects, craftsmen
	Comments on implementation	Optimization of building orientation and density
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Heat concept for urban land use planning
	Action type	Adaptation
	Action description	Development of resilient urban quarters with high quality of life
Reference to impact pathway	Field of action	Built environment
	Systemic lever	governance
	Outcome (according to module B-1.1)	Checklist for heat protection and climate adaptation in the preparation of urban land use plans
Implementation	Responsible bodies/person for implementation	All departments involved in urban land use planning
	Action scale & addressed entities	Local, construction companies,
	Involved stakeholders	architects, investors, housing associations
	Comments on implementation	Conflict of objectives in land use
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Tenant energy advice
	Action type	
	Action description	Project Electricity Saving Check: The Electricity Saving Check is a free offer for





		recipients of social benefits and low incomes. Trained electricity savers visit households, replace energy guzzlers and thus reduce energy costs.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	Social innovation
	Outcome (according to module B-1.1)	Education, reduction of energy consumption
Implementation	Responsible bodies/person for implementation	Social organizations, city administration
	Action scale & addressed entities	Low-income households
	Involved stakeholders	Social associations
	Comments on implementation	Project is federally funded
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Rational use of energy" funding program
	Action type	
	Action description	Since 1993, the City of Heidelberg has been promoting energy-saving measures with the "Rational Use of Energy" funding program. Since then, the program has been continuously updated, expanded and evaluated. With the funding program, the city provides incentives for climate protection measures - including the renovation of buildings, the installation of photovoltaic systems and the construction of new passive houses. Around 1.5 million euros are made available each year.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	Social Innovation/Finance and funding
	Outcome (according to module B-1.1)	Renovation of existing buildings, reasilation of high energy standards in new buildings
Implementation	Responsible bodies/person for implementation	Municipality
	Action scale & addressed entities	Homeowners, investors, developers
	Involved stakeholders	trades, architects,
	Comments on implementation	Funding programs must be heavily promoted when introduced
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	



	GHG emissions reduction estimate (total) per emission source sector	the eligibility criteria are regularly adapted and expanded, so no figures can be forecast. In 2019 (this year is the reference year in the IP), 47 applications were submitted and a total of 117 t of CO <sub>2</sub> was saved with the measures.
	Total costs and costs by CO <sub>2</sub> e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	New construction neighborhoods become plus-energy neighborhoods
	Action type	
	Action description	100 % climate neutrality for the growth of the city
Reference to impact pathway	Field of action	- Pattrik-Henry-Village (conversion area) and all new buildings from 2020 onwards will be
	Systemic lever	PlusEnergy Neighborhoods. Since full energy supply in the area is not achievable for urban neighborhoods from today's perspective, this means that in addition to decentralized
	Outcome (according to module B-1.1)	solar energy use, renewable potentials will be tapped elsewhere in the course of the development of the area.
Implementation	Responsible bodies/person for implementation	
	Action scale & addressed entities	Built environment
	Involved stakeholders	governance
	Comments on implementation	Long-term CO <sub>2</sub> savings
Impact & cost	Generated renewable energy (if applicable)	Departments involved in planning and construction
	Removed/substituted energy, volume, or fuel type	Regional, urban society
	GHG emissions reduction estimate (total) per emission source sector	Construction industry, architects, urban planning
	Total costs and costs by CO <sub>2</sub> e unit	

<b>B-2.2: Individual action outlines</b>		
(Fill out one sheet per intervention/project)		
Action outline	Action name	Promotion of a crafts initiative
	Action type	
	Action description	The aim of the measure is to involve craft enterprises from Heidelberg and the region in the strategic implementation of the climate protection strategy.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	learning
	Outcome (according to module B-1.1)	Area-wide implementation of high energy standards
Implementation	Responsible bodies/person for implementation	Municipality



	Action scale & addressed entities	Trades, guilds
	Involved stakeholders	Craftsmen, business development, climate protection agency Kliba
	Comments on implementation	In order to achieve the goal, it is assumed that the regional crafts can take on the role of implementing the measures. This measure supports the increase of the renovation rate
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Promotion of area- and resource-saving construction
	Action type	
	Action description	Increasing the height of existing buildings, taking gray energy into account, simple building structures
Reference to impact pathway	Field of action	Built environment
	Systemic lever	Infrastructure / governance
	Outcome (according to module B-1.1)	Increasing energy efficiency
Implementation	Responsible bodies/person for implementation	KLiBA, Administration, Housing associations
	Action scale & addressed entities	Local, building trade
	Involved stakeholders	Architects
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Serial refurbishment
	Action type	
	Action description	A model project for serial refurbishment is launched together with actors from the building industry. A cost-saving building refurbishment is implemented by standardized refurbishment



		elements on one or more buildings of the same type.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	infrastructure
	Outcome (according to module B-1.1)	Acceleration of the refurbishment,
Implementation	Responsible bodies/person for implementation	neighborhood management, Kliba, administration
	Action scale & addressed entities	City neighborhood - residents, homeowners
	Involved stakeholders	
	Comments on implementation	Despite numerous subsidy programs (also from the city of Heidelberg), one challenge for the increased energetic refurbishment of the building stock lies in the cost-driving individual planning and implementation of the concrete refurbishment steps.
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	Buildings, Ecological building techniques and new climate-friendly building materials can save a lot of energy.
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Neighborhood concepts
	Action type	
	Action description	To achieve the ambitious climate protection targets, however, it is more important to place the new construction and refurbishment process beyond the individual buildings on a broader urban planning basis.
Reference to impact pathway	Field of action	This is where integrated neighborhood concepts come in, which are developed and implemented to increase the energy efficiency of buildings and infrastructure, especially for heat supply. They are derived from the municipal climate protection concept of the city of Heidelberg, taking into account the municipal energy targets. Ideally, neighborhood concepts take into account all other relevant urban planning, monument preservation, building culture, housing, and social aspects to show what technical and economic energy-saving potential exists in the neighborhood and what concrete measures can be taken or standards formulated to reduce CO2 emissions in the short, medium, and long term.
	Systemic lever	Built environment
	Outcome (according to module B-1.1)	governance



Implementation	Responsible bodies/person for implementation	Increasing energy efficiency
	Action scale & addressed entities	Quatier management, Kliba, city administration
	Involved stakeholders	Local, residents, homeowners of a quartier
	Comments on implementation	Quatiersmanagement
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	In Heidelberg, there is a neighbourhood concept for one neighbourhood. In this neighbourhood, the heat demand of the buildings can be reduced by 40% compared to the current level through high-quality refurbishment, and the electricity demand can be reduced by around 36% by replacing old appliances with efficient new ones. new appliances by around 36%. The potential of solar power generation is around 46% of the current electricity consumption in the neighbourhood.
	Total costs and costs by CO2e unit	

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Retrofit campaign for existing buildings
	Action type	
	Action description	Existing information modules for promoting energy-efficient refurbishment are to be coordinated and supplemented in a joint public relations concept for optimized interaction in order to significantly increase their effectiveness.
Reference to impact pathway	Field of action	The building blocks include: Expansion and simplification of the subsidy program, training programs in the trades, expansion of consulting through district consulting, expansion of district concepts, outreach consulting, energy checkbook, target group-specific campaigns on renovation for seniors, new citizens and other stakeholders, "labeling" for exemplary renovated buildings. Above all, the appropriate times for renovation must be addressed: New citizens, relocation, house purchase, inheritance, other. Redevelopment
	Systemic lever	Built environment
	Outcome (according to module B-1.1)	governance
	Implementation	Responsible bodies/person for implementation
	Action scale & addressed entities	Building law office, housing associations GGH, neighborhood management, KLiBA, environmental office



Impact & cost	Involved stakeholders	Local, residents, homeowners of a neighborhood
	Comments on implementation	Kliiba
	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	Initially, the CO2 savings amount to 8,500 tons in the private households. After five years, up to 40,000 tons per year can be expected (renovation rate of 2-3% must be achieved for this to happen)
Total costs and costs by CO2e unit		

### B-2.2: Individual action outlines

(Fill out one sheet per intervention/project)

Action outline	Action name	Solar campaign
	Action type	
	Action description	Numerous rooftop PV systems and two large ground-mounted systems (Feilheck landfill, Wolfsgärten) have been installed to date. A solar campaign of the city of Heidelberg motivates citizens to install PV systems. Important actors are the Stadtwerke Heidelberg, the Heidelberger Energiegenossenschaft and the city of Heidelberg.
Reference to impact pathway	Field of action	In addition, the roof surfaces of the municipal housing companies are primarily covered with photovoltaic systems. In addition, buildings with PV are promoted with an innovative tenant participation model.
	Systemic lever	Built environment
	Outcome (according to module B-1.1)	technology
Implementation	Responsible bodies/person for implementation	Expansion of renewable energies
	Action scale & addressed entities	Municipal utilities, municipal administration, Kliiba
	Involved stakeholders	Local, urban society, municipal housing association
	Comments on implementation	Energy cooperatives
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Production of renewable electricity
	GHG emissions reduction estimate (total) per emission source sector	For every kWh of solar power generated, an average of 690 g of CO2 is saved.
	Total costs and costs by CO2e unit	Investment requirement approx. 1.3 million euros

### B-2.2: Individual action outlines



(Fill out one sheet per intervention/project)		
Action outline	Action name	Agri-PV Lighthouse Project
	Action type	
	Action description	Agri-PV represents the combined use of agricultural land for the benefit of both target fields of food supply and electricity generation. Very suitable for the use of photovoltaic are the roofs of greenhouses and the combination of photovol-taik as a superstructure of espalier orchards. The promotion of the city should be extended to this in order to be able to use this potential as a priority (potential of espalier fruit: 11 MWp; greenhouses: 2.4 MWp). The use of Agri-PV in the area is a high overbuilding of classically used fields (e.g.: cereal cultivation), whereby a good dual use of agriculture and power generation is aimed for as an overriding goal .This reduces the pressure to use agricultural land for pure open space photovoltaic systems. In close cooperation with the agricultural sector, the pilot project will examine in detail the economic conditions of both types of use as well as the advantages and disadvantages of this still new technology.
Reference to impact pathway	Field of action	Built environment
	Systemic lever	Infrastructure /learning
	Outcome (according to module B-1.1)	Expansion of renewable energies
Implementation	Responsible bodies/person for implementation	Public utilities, administration, farmers
	Action scale & addressed entities	Local, showcase for farmers
	Involved stakeholders	Farmers
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

### B-2.3: Summary strategy for residual emissions

(Detail how residual emission will be offset, if applicable)

Offsetting: GHG offsetting is a market-based instrument that aims to compensate for GHG emissions "cost-effectively" through reduction measures or CO<sub>2</sub> storage elsewhere. Against the background of the Paris target, however, it is necessary that all nations follow the ambitious abatement path. Moreover, studies show that many projects would have been implemented even without "compensation subsidies". The offsetting measures therefore rarely fulfil the criterion of additionality (meaning that the reduced emissions would not have been saved without the offsetting payment). Support for the countries of the Global South should be provided anyway, without





offsetting in the industrialised countries (offsetting takes away the pressure to act, even though everyone has to reduce their GHG emissions locally).

## 4.3 Module B-3 Indicators for Monitoring, Evaluation and Learning

Module B-3 “Indicators for Monitoring, Evaluation and Learning” should contain a selection of indicators taken from the Comprehensive Indicator Sets developed by NZC. The following should be provided: An overview table listing the indicators selected per outcome and impact including targets and evaluation points (B-3.1); and a metadata table for each indicator selected, as specified in the Comprehensive Indicator Sets (B-3.2).

B-3.1: Impact Pathways						
Outcomes/ impacts addressed	Action/ project	Indicato r No. (unique identified )	Indicator name	Target values		
				2025	2027	2030
(List early changes/ late outcomes and impacts to be evaluated by indicator)	(List action/ pilot project if applicable)	(Indicate unique identifier )	(Insert indicator name)	(List one value per indicator)	(List one value per indicator )	(List one value per indicator )
Energy consumption reduction	Heidelberg energy concept for residential and non-residential buildings	(1)	Share of passive houses in m2	Heidelberg has not defined any target values		
Energy consumption reduction	Funding programme	(2)	Share of subsidised properties in new construction in m2			
Energy efficiency	Testing space-saving, ecological and energy-efficient housing models in new buildings	(3)	Living space per person in new buildings			
Motivation and support of retrofiting	Achieving synergy effects: Linking climate protection, climate adaptation, health and urban development in energy-related neighbourhood concepts	(4)	Number of neighbourhood concepts per year; Inhabitants reached via neighbourhood concepts; Number of building screenings; Proportion of initial applications per inhabitant; Energy consumption per inhabitant			



Energy consumption reduction	Make more intensive use of housing potential: Promote flexibility of use at neighbourhood level	(5)	Reduced living space per capita after consultation; Changed living situation per consultation			
Energy efficiency	Energy consulting	(6)	Number of consultations per institution per inhabitant			
Raise retrofitting rate	Support programme "Rational use of energy"	(7)	Proportion of subsidised properties/of the existing stock; proportion of subsidised properties in refurbishments (via building applications.)			
Raise retrofitting rate	Energy retrofit projects with selected homogeneous target groups	(8)	Proportion of persons addressed in the target group			
Raise share of renewable Energy	Implementation of climate protection measures in municipal properties	(9)	Savings energy/THG per euro investment; energy parameters (GWh/m <sup>2</sup> existing building)			
Raise share of renewable Energy	Expansion of photovoltaics	(10)	Share of own generation/power consumption; share of PV coverage on possible roofs			
Raise share of renewable Energy	"Green heat" - expansion of renewable energies in heat supply	(11)	Share of RE in the city's heat consumption; number of buildings converted			
Connect and motivate local stakeholders in retrofitting	Cooperatively advancing building-specific priority topics in new construction and the renovation of old buildings	(12)	Documentation of network activities (meetings, number of participants, addressed); enquiry about satisfaction and wishes of participants (--> monitoring); approaching and developing new working groups			



<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(1)Share of passive houses
Indicator Unit	m2
Definition	Share of passive houses compared to non-passive houses m2 per unit (quarter, district, city as a whole)
Calculation	Compared to legal standards: Saved Energy; Saved GHG; Saved energy costs
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	technology
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
Data requirements	
Expected data source	Building authorities, applications for subsidies if subsidies are requested
Expected availability	good
Suggested collection interval	3-5years
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(2)Anteil geförderter Objekte am Neubau
Indicator Unit	2)Share of subsidized objects in new construction
Definition	m2
Calculation	Share of passive houses compared to non-passive houses in new buildings m2 per unit (neighborhood, district, city as a whole)
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	-
Can the indicator be used for monitoring impact pathways?	yes



If yes, which NZC impact pathway is it relevant for?	Built environment
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Building authorities, subsidy applications if subsidy is requested
Expected availability	good
Suggested collection interval	3-5 years
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(3)Living space per person in new construction
Indicator Unit	m2
Definition	Promote housing models with less m2 per person
Calculation	Compared to average Baden-Wuerttemberg/Germany or past
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Avoided living space, less land consumption for building development, more green areas
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	Governance and policy
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Developer
Expected availability	Medium
Suggested collection interval	5-10 years
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(4)Number of neighborhood concepts per year; Inhabitants reached via neighborhood concepts; Number of building screenings; Proportion of initial approaches/EW; Energy consumption per inhabitant



Indicator Unit	Number of concepts, number of reached citizens or households, number of buildingscreening, number of consultations/inhabitants
Definition	Neighborhood concepts to increase the renovation rate
Calculation	Qualitative recording of the consultations and, if applicable, calculation of the primary energy saved and CO2 reduction
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings and Transport
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	-
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	Technology and infrastructure, social innovation, demoeocracy/participation, funding
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Quatier management, funding applications
Expected availability	good
Suggested collection interval	5 years
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(5)Reduced living space per capita after consultation; Changed living situation per consultation
Indicator Unit	m2
Definition	Changed housing situation with less m2 per person
Calculation	Determination of reduced living areas after change of housing situation
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it impact?	Buildings, learning and capacity
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Reduction of energy consumption and CO2 emissions per person
Can the indicator be used for monitoring impact pathways?	no
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no



<b>Data requirements</b>	
Expected data source	Energy Agency, Förderanträge, Quartiersmanagement, surveys
Expected availability	good
Suggested collection interval	5-10 years
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(6)Number of consultations per institution per inhabitant
Indicator Unit	Number
Definition	Energy consultations with the aim of reducing energy consumption
Calculation	Derivation of savings on the basis of available information (e.g. via on-site energy consulting)
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	-
Can the indicator be used for monitoring impact pathways?	no
If yes, which NZC impact pathway is it relevant for?	Technology and infrastructure, funding
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Energy Agency
Expected availability	good
Suggested collection interval	3-5 years
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(7) Percentage of subsidized properties/of existing stock; percentage of subsidized properties in refurbishments
Indicator Unit	percentage
Definition	Subsidies for refurbishment of existing buildings
Calculation	Number of refurbished houses/parts of buildings, number of savings achieved
<b>Indicator Context</b>	



Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	-
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	Technology and infrastructure, funding
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	About building applications
Expected availability	good
Suggested collection interval	3-5 years
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
<b>Indicator Name</b>	(8)Percentage of target group addressed
<b>Indicator Unit</b>	Number
<b>Definition</b>	Energy consultations with the aim of reducing energy consumption
<b>Calculation</b>	Number of events, participants in events, satisfaction with offer/information (monitoring necessary)
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it impact?	
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	-
Can the indicator be used for monitoring impact pathways?	no
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to - according to Module B-1
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Organizer of the offers
Expected availability	good
Suggested collection interval	fortlaufend
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	





<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(9)Savings energy/THG per euro of call of subsidies
Indicator Unit	Euro, CO2
Definition	Energetic refurbishments in municipal properties lead to reduction of energy consumption
Calculation	Annual savings through renovations, savings CO2
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings, transport,
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	-
Can the indicator be used for monitoring impact pathways?	no
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
Data requirements	
Expected data source	Administration evaluation and data of the municipal utility
Expected availability	good
Suggested collection interval	annual
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(10)Proportion of own generation/power consumption; proportion of Pv coverage on possible roofs.
Indicator Unit	percentage
Definition	CO2 emission reduction through production of own renewable energy
Calculation	m <sup>2</sup> solar panels on roofs, energy production on municipal roofs, energy savings
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings/electricity
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	-



Can the indicator be used for monitoring impact pathways?	no
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Administration evaluation and data of the municipal utility
Expected availability	good
Suggested collection interval	annual
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(11) Share of renewable Energy in the city's heat consumption; number of buildings converted.
Indicator Unit	Percentage, number
Definition	Extension of renewable energy in municipal buildings
Calculation	Saved tons through renewable energy
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	-
Can the indicator be used for monitoring impact pathways?	no
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to - according to Module B-1
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Administration evaluation and data of the municipal utility
Expected availability	good
Suggested collection interval	annual
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>B-3.2: Indicator Metadata</b>	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	(12) Documentation of network activities
Indicator Unit	Number



Definition	Energy consultations with the aim of reducing energy consumption
Calculation	Number of meetings, number of participants, satisfaction survey (monitoring)
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it impact?	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?	Awareness and motivation of climate neutrality engagement
Can the indicator be used for monitoring impact pathways?	no
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Organizer
Expected availability	good
Suggested collection interval	ongoing
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

## 5 Part C – Enabling Climate Neutrality by 2030

Part C “Enabling Climate Neutrality by 2030” aims to outline any enabling interventions, i.e., regarding organizational setting or collaborative governance models or related to social innovations – designed to support and enable the climate action portfolios described in Module B-2 as well as aiming to achieve co-benefits outlined in the impact pathway (Module B-1).

### 5.1 Module C-1 Organisational and Governance Innovation Interventions

Module C-1 “Organisational and Governance Innovation Interventions” consists of a summary table, listing organizational and governance interventions and describing their impact (C-1.1) and a section for more detailed descriptions and comments (C-1.2).

<b>C.1.1: Enabling organisational and governance interventions</b>					
Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
(Indicate name of intervention)	(Describe the substance of the intervention)	(Indicate responsible)	(List all stakeholder involved and affected)	(Describe how intervention enables climate neutrality)	(Indicate how intervention helps achieve impact listed)



					in Module B-1)
Climate protection as a cross-sectional task	Climate protection must have top priority in all areas of responsibility in the administration and be implemented independently	The entire city administration, municipal council.	All employees of the administration, members of the municipal council.	If climate protection is the top priority in all decisions, measures can be implemented at the required speed.	CO2 savings
National networks	Participation in national NETworks for exchange and strengthening the role of municipalities in climate protection.	Lord Mayor	Lord mayor, mayors, heads of offices	Exchange of best practice projects, strengthening of claims against the state and federal government	Improved legal framework and access to funding
International networks	Exchange and strengthening of municipalities in the international context	Lord mayor	Lord mayor, mayors, heads of offices	Exchange of best practice projects, strengthening of demands towards the EU's	Improved legal framework and access to funding
National monitoring process by the ministries	The German cities of the EU mission are involved by different ministries and supported in their work in climate protection.	Transition Team,	Employees in the ministries, German Association of Cities and Towns,	Design of legal framework conditions	Improved legal framework
Reduction of legal barriers (higher priority of climate protection)	Creating a legal framework that prioritizes climate protection	Governments (federal, state)	Responsible ministries	Reduction of barriers to the implementation of climate protection measures	For example, dissolution of refurbishment backlog

### C-1.2: Description of organisation and governance interventions – textual and visual elements

However, the opportunities and barriers to reducing greenhouse gas emissions vary greatly from sector to sector. Taking sectoral differences into account would allow global governance and international cooperation to identify the most promising course of action. particularly important are regulations with the following characteristics: orientation and signalling, establishment of rules to facilitate collective action, and means of implementation,



## 5.2 Module C-2 Social and Other Innovation Interventions

Module C-2 “Social and Other Innovation Interventions” consists of a summary table, listing organizational and collaborative governance interventions and describing their impact (C-2.1) and a section for more detailed descriptions and comments (C-2.2).

C.2.1: Enabling social innovation interventions					
Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
(Indicate name of intervention)	(Describe the substance of the intervention)	(Indicate responsible)	(List stakeholder involved and affected)	(Describe how intervention enables climate neutrality)	(Indicate how intervention helps achieve impact listed in Module B-1)
Mayoral action group (OB-Aktionsgruppe)	Climate protection group under the leadership of the Lord Mayor with stakeholders from science and business as well as society.	Environmental Office, Energy and Climate Protection Section	Lord Mayor and all deputy Mayors, university, municipal utility, housing associations, science (ifeu, EMBL, Max-Planck, HCE...), transportation company, Friday for Future, City departments which are important for climate neutrality	This group is the political and administrative core of the EU mission project. Here, strategies and big points are discussed and the course is set. The predecessor of this group was the Heidelberg Climate Protection & Energy Group, which accompanied the entire process of the "Masterplan 100 % Climate Protection".	Almost all of the members of this group are signatories to the Climate city contract and are multipliers for attracting other partners.
Municipal Working Group for EU-Mission	A working group consisting of members	Office for the Environment – Energy Section	City offices out of all departments relevant to climate neutrality	Coordination of internal administrative processes,	Avoidance of conflicting goals, coordination



	of all important offices and departments was set up to monitor the EU mission process within the administration.			joint approach	of finances and processes
Working group for the development of the new City Development plan (STEK) (STEK-Arbeitsgruppe)	For Heidelberg, the previous urban development plan is being completely revised and adapted to the 17 SDGs. A participation process within the administration will be supplemented by citizen participation, including with regard to climate neutrality.	Office for Urban Development and Statistics	For each of the 6 topics there was a participation process with stakeholders. A list would be too extensive. Documentation can be submitted later.	There are 6 topic areas, all of which are correlated with climate neutrality: - Climate and energy - Environment and nature conservation - Work, economy, science - Housing - Social, living together, education - Culture	Analysis of effects of climate neutrality in all fields of action of the urban society.
Roundtable Education for sustainable development (Runder Tische BNE)	Heidelberg has a wide range of projects in the field of education for sustainable development (ESD). In order to give the multitude of actors an opportunity for direct exchange, the Heidelberg	Environmental office, Agenda section	80 stakeholders like Kindergarden, Schools, University, college of education, enterprises, sport associations, NGOs and municipal offices	The Heidelberg ESD Network brings together the many individual institutions, initiatives and groups that are committed to sustainable development. Education for sustainable	Climate neutrality is communicated as a goal in the overall context of sustainable development and is taught from an early age as well as being considered in many social contexts.



	network was founded under the title "Round Table ESD".			development runs like a thread through all areas of education and can be experienced at formal and informal educational venues for all age groups and includes the targets of climate neutrality.	
The "Network for Sustainable Management for Small and Medium-Sized Enterprises (NAWI)	The aim of the project is to provide small and medium-sized companies with 5 to 250 employees with assistance in introducing an environmental and sustainability management system. This involves examining operating processes, identifying potential for optimization - particularly in resource efficiency and occupational health and safety - and introducing	Environmental Office, Technical Environmental protection section	A commission accompanies the project under the leadership of the environmental office and acts as a jury to decide whether the companies are worthy of an award. In addition to associations (IHK, Kreishandwerkerschaft, BUND) and the Heidelberg municipal utilities, globally active companies in the region that operate certified environmental management systems in accordance with EMAS or ISO 14.001 ff (ABB-Stotz Kontakt GmbH, Henkel KGaA, ADM WILD Europe GmbH & Co. KG) are represented.	Since the project began in 2001, 146 companies with a combined workforce of around 10,800 have taken part. The most recent data collection revealed annual CO2 savings of more than 2,400 tons. This is equivalent to the amount of CO2 generated for the electricity consumption of around 840 four-person households. Operating costs were reduced by a total of 1.3 million euros per year.	Securing jobs, promoting the local economy, supporting small businesses in climate neutrality efforts, companies from this network also participate in the climate city contract.





	new ways of working that save resources and costs.				
Energy Agency (KliBA)	The energy agency advises citizens, municipalities and companies on energy efficiency and energy saving. It is an important player in the energy transition and maintains a large network of politics, business and stakeholders.	Klimaschutz- und Energieberatungsgesellschaft Heidelberg Rhein-Neckar-Kreis	28 Municipalities Chambers of Crafts, Tenants' Association, Housing Associations, Heidelberg Municipal Utilities, Junior Businessmen, NGOs	The goal is to counteract man-made global warming and to contribute to an environmentally and climate compatible, energy-efficient and sustainable world. It is therefore important to raise people's awareness of a responsible approach to nature and the environment and of climate-neutral lifestyles, to inspire them to actively protect the climate, and to motivate them to rethink their approach toward sustainability and sufficiency.	Networking of all customers and stakeholders, emission reduction on a larger and smaller scale, knowledge collection and trans
Center for environmentally conscious mobility Bottom-up (ZUM)	Climate-neutral mobility is at the heart of ZUM's educational and sharing offerings. It also serves	Vereinen Allgemeiner Deutscher Fahrradclub (ADFC) Rhein-Neckar, Ökostadt Rhein-Neckar sowie dem Verkehrsclub Deutschland (VCD)	Allgemeiner Deutscher Fahrrad-Club (ADFC) Rhein-Neckar Ökostadt Rhein-Neckar	Climate change, air pollution and increasing fragmentation of the landscape by private motorized	Creation of a central point of contact in Heidelberg where citizens, companies and institutions



	the networking together with Ökostadt Rhein-Neckar of all NGOs in the transport sector of the environmental network.	Regionalverband Rhein-Neckar	Verkehrsclub Deutschland (VCD) Regionalverband Rhein-Neckar	transport require a rethink of mobility behavior. Yet many people do not know of any alternative to their own car or do not perceive other means of transport as a real alternative. ZUM wants to change that.	can obtain individual advice on sustainable mobility issues.
One World Center Bottom-up  (Eine-Welt-Zentrum)	The One World Center networks initiatives that approach global issues at the local level, including climate neutrality. With educational offers, public relations work and expertise, they are an important networker of NGOs.	Eine-Welt-Zentrum Heidelberg e. V.	49 One World groups, initiatives and organizations	Climate neutrality is communicated as part of the sustainability strategy and is taken to a wider audience in practical projects. Global connections are made clear.	Contribution to climate justice and North-South exchange.
Top-down funding programs	Rational use of Energy  Environmental friendly mobility	Office for environmental protection  Office of Mobility	Energy agency Municipal utility Energy Co-operatives Transport company	Emission reduction, Reduction of fossil energy consumption,	Raising the share of renewable energy production, Just mobility,



	hd4mobility (subsidies ticketing)		Enterprises in the construction and mobility sector	Support environmental friendly modes of transport	Just access to PV-energy production
INCLUDE-ICLEI Project	In 2023 in Heidelberg, a cooperation has been set up at the district level to analyse the effects of the Rational Use of Energy funding programme on low-income households. The Framework is the ICLEI-project INCLUDE, which is financed by the Mercator Foundation. For example, opportunities for improvement in the promotion of solar balcony modules for low-income households were identified.	Office for environmental protection – energy section  Office for city development and statistics  Office for social welfare and senior citizens	various municipal offices Housing association Tenants' association district management	Reduction of energy consumption and increase of energy efficiency.	Access to renewable energies also for low-income households
Network regional	With the label "Genial Regional", regionally produced and processed products	Genial Regional Heidelberg Rhein-Neckar e. V.	farmers, winegrowers and vegetable and fruit growers	Reduction of emissions through sustainable consumption	less waste, less transport, ecological agriculture (Clean production with fewer chemical



	will be labelled. Regional marketing is intended to make consumers aware of regionally produced food, which results in shorter transport distances and support for local producers.				ingredients and thus soil and water protection) Awareness and education for climate neutrality
Climate-neutral procurement	Instruction and training on climate-neutral procurement and event management; Organic catering and increasing vegetarian meals in public institutions	Office for Environmental protection, Agenda-office section	Office for School and Education, Children and Youth office, Procurement section, Student services for the university dining halls	Reduction of emissions caused by procurement, especially in the food sector	Health promotion
StromSparCheck plus	Consulting offer for socially disadvantaged households for energy savings	Welfare association Caritas	Employment agency Public utility Energy agency	Reduction of the energy consumption of the consulting households and thus emission reduction	More environmentally conscious behavior in general in the households concerned, with corresponding savings successes
Corporate mobility management	To support companies in establishing corporate mobility management, the city of	Office of Mobility	Enterprises Transport Company	Reduction of emissions and energy consumption caused by commuter traffic	Air improvement, health promotion



	Heidelberg has initiated a municipal funding program that contributes to climate neutrality.				
Promoting employee mobility at the City of Heidelberg	An incentive program was developed to motivate city employees to switch to buses, trains and bicycles. This includes bicycle vouchers but also making parking spaces for cars more expensive.	Operating Council	Bicycle dealer Transport company	Reduction of emissions and energy consumption caused by commuter traffic	Air improvement, health promotion

### C-2.2: Description of social innovation interventions – textual and visual elements

#### Umweltgerechtigkeit - Sicherung sozialer Frieden

An environmental justice policy combines elements of social policy, health care and ecology. It strives to ensure that all citizens, regardless of their income, origin and place of residence, have equal protection rights against harmful environmental influences and health risks.

In socio-spatial terms, the strategic approach of environmental justice aims to avoid or reduce a concentration of environmental burdens in socially disadvantaged neighborhoods and residential areas, and to provide their residents with access to environmental resources.

District or neighborhood solutions for redevelopment in Heidelberg are already being implemented in some areas. Neighborhood and redevelopment management already exists in various parts of the city. This approach will be increasingly implemented in a redevelopment campaign.

Quantifiable solutions are to be found in the Hasenleiser neighborhood in the south of Heidelberg. Through the ICLEI project ICLUDE, a citizen participation process will begin in June 2023. Measurable variables can be long-term investments made in renovations or solar installations..

Offers such as help with energy poverty from the municipal utilities and the consumer center in Heidelberg help to secure social peace by helping those in need with climate-related problems. The same applies to the Caritas project Stromsparercheck Plus. Indicators of success here are the reduced number of electricity blackouts and the evaluation of the Stromsparercheck for Heidelberg and nationwide (see also <https://www.stromspar-check.de>). The projects in the municipalities were evaluated over their entire duration, e.g. by means of the savings in energy consumption, the number of emergency aids installed and the resulting CO2 reductions).

At this point, the global view of climate protection is appropriate as it is practiced in the One World Center. Climate impacts trigger migration movements worldwide through climate flight. Climate



protection in the countries of origin, e.g. in the global South, can thus reduce migration movements. Less migration alleviates social conflicts caused by lack of resources globally and locally.

### **Climate protection as a social movement and an opportunity for co-design**

The participation wave triggered by Fridays for Future in many population groups (Parents for Future, Scientists for Future..) led with great dynamics to a new social movement and to more citizen engagement and participation in climate-relevant policy areas.

The goal of transformation unites social groups and drives dynamic change for more climate protection. Viewed as part of a democracy movement, this helps local authorities to achieve greater transparency and proximity to citizens - the classic advantages of a culture of municipal participation such as Heidelberg has already been practicing for many years.

### **Climate-neutral mobility as an opportunity for all**

Mobility that puts people first is based on emission-free and safe road traffic. People can use public transport because it is barrier-free and well connected. Cost-effective public transport reduces social and economic differences and leads to greater satisfaction and participation.

People can travel on equal terms, independently, safely and comfortably, regardless of their social background or economic situation.

In addition, the use of environmental transport has proven health benefits. Exercise on foot, by bicycle, or walking to the bus stop provides long-term protection against illnesses caused by lack of exercise and reduces susceptibility to infections.

For this reason, among others, Heidelberg offered free public transportation on weekends in spring 2022 and a heavily discounted ticket for students and seniors since September 2022. An evaluation will be carried out by means of the tickets sold (hd4mobility).

The expansion and optimization of the environmental network thus also has a social objective. In Heidelberg, therefore, comprehensive bus and rail access is guaranteed (radius around stops <500 m). The most recent surveys in this regard were conducted as part of the introduction of flexible, individual passenger shuttles (fips) in selected Heidelberg districts. The densification and expansion of the bus stop network can be quantified.

### **Renovated living and working space as a climate opportunity**

Energy deep building retrofits can be used as a policy measure to simultaneously achieve multiple community policy goals. Improving the energy efficiency of the building stock offers the opportunity to reduce emissions, lower health care costs, and combat energy poverty.

Viewed in this way, retrofits also help to maintain the health of residents and ensure their participation in society. The same applies to the refurbishment of office buildings and workplaces. Healthy workplace conditions reduce sick leave, relieve the burden on the healthcare system, and maintain or increase economic strength.

Access to low-cost energy sources or energy self-sufficiency should not be reserved for homeowners alone. For this reason, the City of Heidelberg's subsidy program explicitly provides greater financial support for low-income households in the photovoltaic balcony module subsidy, among other things. The subsidy program provides a continuous record of the installed PV power, the renovation and the number or power of the balcony modules - including those to households with social support needs. The Heidelberg housing association GGH (17% of all rental apartments in Heidelberg) has committed itself to the climate protection goals of the city of Heidelberg with the GGH Strategy 2035. They make an active contribution to climate protection and sustainability but also to social responsibility. In doing so, it is aware of the challenge of designing climate protection in such a way that it is also affordable for lower- and middle-income households. The guiding parameter for evaluating energy supply and building standards is CO<sub>2</sub> emissions. Evaluation on refurbished housing was carried out at GGH.

## **5.3 Module C-3 Financing of Action Portfolio**

Module C-3 "Financing of Action Portfolio" should contain the list of action portfolios and interventions outlined in Modules B-2, and those from C-1 and C-2 with cost implication to provide a summary list of interventions that need to be unpacked in the Investment Plan.

### **C-3.1: Summary of interventions with cost implication (to be unpacked in Investment Plan)**



B-3-2: Financial indicators by sector							
Sector	Subsector	NPV total investment - CAPEX (MEUR)	NPV OPEX (MEUR)	NPV co-benefits (MEUR)	NPV Return on Investment (ROI) (MEUR)	CO2e reduction (kton)	NPV MEUR total investment per kton CO2e reduction
Transport	Reduced motorized passenger transportation need	€ -	€ 357	€ 95	€ 453	31	€ -
	Shift to public & non-motorized transport	€ (63)	€ 73	€ 125	€ 135	20	€ 3,10
	Increased car pooling	€ -	€ 226	€ 69	€ 295	17	€ -
	Electrification of cars + motorcycles	€ (55)	€ 36	€ 19	€ 0	21	€ 2,57
	Electrification of buses	€ (4)	€ 6	€ 3	€ 5	3	€ 1,32
	Optimized logistics	€ -	€ 262	€ 54	€ 316	49	€ -
	Electrification of trucks	€ (144)	€ 43	€ 20	€ (81)	26	€ 5,49
Buildings & Heating	Building renovations (envelope)	€ (310)	€ 370	€ 15	€ 75	28	€ 11,22
	New energy-efficient buildings	€ (167)	€ 94	€ 4	€ (69)	7	€ 23,74
	Efficient lighting & appliances	€ (179)	€ 274	€ 2	€ 97	41	€ 4,33
	Decarbonizing heating generation	€ (319)	€ 388	€ 44	€ 114	169	€ 1,89
Electricity	Decarbonizing electricity generation	€ (115)	€ 171	€ -	€ 56	358	€ 0,32
Waste	Increased waste recycling	€ 0	€ (0)	€ 0	€ (0)	2	€ (0,03)
<b>TOTAL</b>		€ (1.356)	€ 2.301	€ 450	€ 1.395	772	€ 1,76

\* Note: negative numbers denote outflows of money (investment / cost) and positive numbers denote inflows of money (savings / co-benefits)

C-3.2: Asset Owners - CAPEX / Upfront Investment (MEUR cash)							
Sector	Subsector	Citizens	Businesses	City	Transport Operators	Utilities	Total
Transport	Reduced motorized passenger transportation need	€ -	€ -	€ -	€ -	€ -	€ -
	Shift to public & non-motorized transport	€ (7)	€ -	€ (4)	€ (66)	€ -	€ (78)
	Increased car pooling	€ -	€ -	€ -	€ -	€ -	€ -
	Electrification of cars + motorcycles	€ (53)	€ (5)	€ (0)	€ -	€ -	€ (58)
	Electrification of buses	€ -	€ -	€ -	€ (4)	€ -	€ (4)
	Optimized logistics	€ -	€ -	€ -	€ -	€ -	€ -
	Electrification of trucks	€ -	€ (22)	€ (3)	€ (136)	€ -	€ (161)
Buildings & Heating	Building renovations (envelope)	€ (255)	€ (91)	€ (18)	€ -	€ -	€ (364)
	New energy-efficient buildings	€ (60)	€ (120)	€ (20)	€ -	€ -	€ (200)
	Efficient lighting & appliances	€ (148)	€ (53)	€ (11)	€ -	€ -	€ (212)
	Decarbonizing heating generation	€ (19)	€ (7)	€ (70)	€ -	€ (276)	€ (371)
Electricity	Decarbonizing electricity generation	€ (16)	€ (6)	€ (1)	€ -	€ (115)	€ (138)
Waste	Increased waste recycling	€ -	€ -	€ 0	€ -	€ -	€ 0
<b>TOTAL</b>		€ (558)	€ (303)	€ (128)	€ (206)	€ (391)	€ (1.586)
<b>% of Total</b>		35%	19%	8%	13%	25%	100%
<b>Euros Per Capita (2030 population)</b>		€ (3.230)	€ (1.754)	€ (741)	€ (1.193)	€ (2.262)	€ (9.181)

\* Note: negative numbers denote outflows of money (investment / cost) and positive numbers denote inflows of money (savings / co-benefits)





## 6 Outlook and next steps

This section should draw any necessary conclusions on the Action Plan above and highlight next steps and plans for further refining the Action Plan as part of the Climate City Contract.

### Plans for next CCC and Action Plan iteration – textual elements

The goal of climate neutrality by 2030 is very ambitious. The path consists of many challenges and is constantly being adapted. In principle, the goal is achievable - but it requires an effort by society as a whole: The cities, their entire urban society and the business and scientific communities must pull together with the EU, the federal government and the federal states. With the Climate City Contract, the cities want to set the strategic basis for this process of change in motion.

Heidelberg has set out to make the most innovative possible progress towards climate neutrality locally and to define implementation paths along the transition map of the accompanying NetZeroCities Platform. As part of the EU mission "100 Climate-Neutral and Smart Cities by 2030", Heidelberg will act as a role model for other European cities by developing and implementing action-oriented, innovative solutions with the entire urban community.

## 7 Annexes

**Add any textual or visual material** to the 2030 Climate Neutrality Action Plan in the ANNEX as necessary.

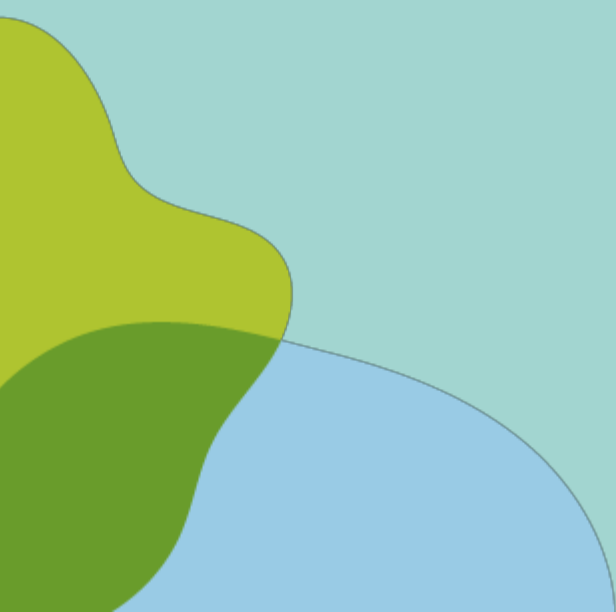


## Climate City Contract

# 2030 Climate Neutrality Commitments

Climate Neutrality Commitments of Heidelberg

 **Heidelberg**





## Disclaimer

The content of this document reflects only the author's view. The European Commission is not responsible for any use that may be made of the information it contains.

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# 1 Introduction

Explain your city's motivation to join the EU Mission "100 climate-neutral and smart cities by 2030" and highlight your city's present commitments to climate action. You may also want to include the aims of this document.

Heidelberg has a long history of climate protection since the 1990s, with the first climate protection concept in 1992 as one of the first cities in Germany. Since then, climate protection became more and more important. In 1997, the City Development Plan 2010 set the frame for sustainable development including climate protection as one of the guidelines for Heidelberg. The City Development Plan is currently updated as the City Development Concept 2035. The Traffic Development Plan was first established in 1994 with several updates over the years. Currently, it is updated as the Climate Mobility Plan 2035, focussing on the reduction of emissions in the transport and mobility sector. In 2014, the Masterplan 100% Climate Protection has been developed in a broad participation process with the administration, major city stakeholders and the civil society. The masterplan provides an important road map of climate actions. It was updated in 2017. In 2019, the city council declared climate emergency, leading to the Climate Action Plan in 2020 with 30 specific measures. An overview of all major milestones to climate neutrality in Heidelberg are presented in figure 1.

Despite all these actions the CO<sub>2</sub> balances show that the greenhouse gas emissions reduce slower than expected and do not meet the previously set goals. Therefore, it is clear that goals need to be re-sharpened and emissions have to be drastically reduced in the following years. The EU Mission was seen as a great opportunity to accelerate Heidelberg's endeavours and actions to reach climate neutrality faster with support from EU-level and keep Heidelberg in a frontrunner position. However, implementing the actions remains the major challenge. Heidelberg's expectation of the EU Mission is to not longer discuss about the target year for climate neutrality but instead to find innovative ways to implement climate actions. The acceptance to the EU Mission led the city council to the decision to work consistently towards the goal of climate neutrality by 2030 in all fields of action and to give priority to climate protection. Thus, being part of the EU Mission enables Heidelberg to accelerate climate actions that already started as well as creating innovative approaches for the urban transition.

The Climate City Contract creates a structured plan that works consistently towards climate neutrality in 2030. It helps to reveal and analyse barriers that impede climate action. This is a further big step to identify where systemic changes are essential to overcome these barriers in the future. Furthermore, developing the Climate City Contract now builds a framework for continuing the process towards climate neutrality with the entire civil society including the city administration, companies, scientific institutions, NGOs etc. in a co-creative approach. Stakeholder engagement has been one of Heidelberg's principles to reach climate goals in the last years, especially with the Masterplan 100% Climate Protection. However, it is difficult to keep up the good work over this long-lasting process. Individual projects are important to keep up the collaboration. The EU Mission is a great opportunity to bring together all stakeholders and set a common goal.

The City of Heidelberg is active in many networks on regional, national and international levels, such as for example Städtetag Baden-Württemberg, deutscher Städtetag, Klimabündnis, C40, GCM or Energy Cities, in which the Lord Mayor of Heidelberg is president, (<https://www.heidelberg.de/hd/HD/Leben/Netzwerke.html>). The exchange between these cities is important to learn from each other and to have a political representation at different levels of government. The EU Mission is another essential network that allows Heidelberg to build strong relations with other European and German lead cities, especially on the Mission Platform and at personal meetings.

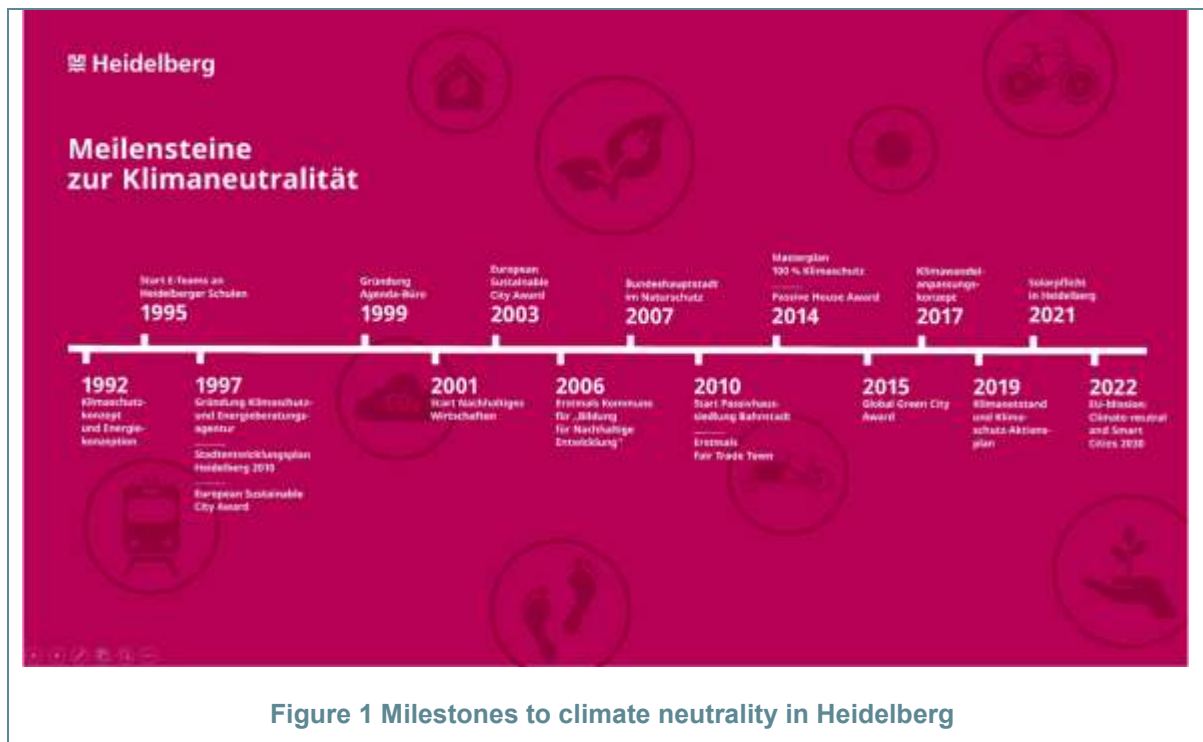


Figure 1 Milestones to climate neutrality in Heidelberg

## 2 Goal: Climate neutrality by 2030

Articulate your 2030 climate neutrality ambition, as expressed and defined in your Cities Mission Expression of Interest (EoI). This should include your ambition and commitment to a 2030 horizon as a whole city, as well as describe any exclusion areas and summarise how these areas would be addressed beyond 2030. (A more detailed plan for exclusion areas should be included in the 2030 Climate Neutrality Action Plan.) Your 2030 ambition should be supported at a minimum by a Council decision, and it is recommended that it is also supported by a wider stakeholder group. We also recommend you to list other co-benefits you aim to achieve when working towards the climate neutrality goal, like well-being, health, equity, justice, financial savings.

### Your text

In July 2022, the Heidelberg City Council passed the following resolution: The City of Heidelberg undertakes to work consistently towards the goal of climate neutrality by 2030 in all fields of action and to give priority to climate protection in line with its participation in the EU mission "climate-neutral and smart cities". Complete climate neutrality according to the municipal BSKO accounting is to be achieved by 2040 at the latest. For the city administration, in particular the municipal properties, the aim is to achieve largely climate neutrality by 2030.

According to the expression of Interest from 2022 Heidelberg follows the Cities Mission's climate neutrality definition to address GHG emissions within the city boundaries from stationary energy including buildings and transport (Scope 1) as it is also stated in the BSKO CO<sub>2</sub>-balance which is the standard for German cities. Additionally, waste is also included as stated in Heidelberg's CDP report. Indirect GHG emissions (Scope 2) outside the city boundary due to the consumption of grid-supplied electricity and grid-supplied heat or cold are taken into account in Heidelberg and are also part of the BSKO CO<sub>2</sub>-balance. Out-of-boundary GHG emissions due to disposal and treatment of waste generated are not part of Heidelberg's main climate neutrality goals until 2030. While Heidelberg excludes some of the emission domains, instead a citizen CO<sub>2</sub>-Balance is calculated to take Scope 3 emissions such as outbound travelling, consumption of product and food etc. into account.



Heidelberg is a growing city with the challenge to meet the increased number of citizens, building spaces and services with energy efficiency and transformation to renewables. The City is committed to making all necessary efforts to become climate-neutral and is prepared to mobilize all its resources to this purpose. However, the city has only limited influence on the CO<sub>2</sub> emissions. Therefore it is important to build a strong network with major stakeholders and the citizens to reach climate neutrality. The key levers in Heidelberg are the decarbonisation and expansion of district heating, the development of renewable energies (solar, wind), the increase of energy efficiency and implementing a sustainable transport and mobility system. Still, the influence of these emission domains is limited. Heidelberg is a commuter city, therefore it is important to think more regionally to transform mobility not only within the city boundaries but on a larger scale. Collaboration with the neighbouring cities is crucial. Moreover, Heidelberg is geographically and spatially limited for renewable energies. High wind velocities are only available in few areas that are located in forest land. Therefore only few wind power plants will be able to be implemented. Solar power will be focused on roofs, open space solar plants and agri-photovoltaics.

Heidelberg commits itself to become climate neutral in 2030 with all necessary strengths but also to transform the city socially just. Climate action also provides some positive co-benefits for the city and its residents concerning social, economic, and ecological issues. Social benefits include the improvement of well-being and health conditions by clean air, the reduction of energy poverty by providing green energy and refurbishments as well as affordable public transport. The participation of the citizens plays a major role in creating acceptance for climate actions. These measures will create continuing equity, justice and peace for all residents of the city. Economically, climate action creates opportunities for new jobs for example in craftsmanship, renewable energy systems or science. Furthermore, investing in climate action in the long-term is less expensive than costs for damages due to climate change. Climate action measures also protect the natural environment and improve habitats for flora and fauna. Climate adaptation and the conservation of biodiversity are also important to be considered in all climate activities.

### 3 Key priorities and strategic interventions

This is the core section of the Commitments document that should summarise **at least 3 or 4 systemic strategic priorities** that need to be implemented for your city to become climate neutral by 2030. These should be meaningful changes that will have a profound impact on reducing GHG emissions in your city, like decarbonising the heating system in the city or generating 100% energy from renewables. The individual commitments between your city and other stakeholders should address these key priorities and contribute to reaching them. The annexed 2030 Climate Neutrality Action Plan should describe the all interventions, including those to reach your priorities as well as all further actions, in detail and describe how your city plans to implement them.

#### Your text

Based on the CO<sub>2</sub>-balance Heidelberg has analysed the state of current affairs and identified key priorities that needs to be urgently addressed in order to achieve 2030 climate neutrality goal:

- Decarbonising the heating system in the city by 2030
- Generating 100% energy from renewables
- Increasing energy efficiency by retrofitting buildings
- Transformation to sustainable mobility and transport
- Reducing emissions from commerce and industry

#### Decarbonising the heating system in the city by 2030

The City of Heidelberg has worked out a renewable heat supply concept for the whole city, called municipal heat planning, completely abandoning coal-CHP, heating oil and natural gas. This will be published in fall 2023. The most important pathway for Heidelberg's heat supply are an expansion of the district heating grid, run by the municipal energy company, with simultaneous transforming to "green" district heating. Green district heat will cover about 70% of the heat demand. Those buildings located in city areas, that are not appropriate for district heat (30%), will be supplied



decentrally mainly by electric heat pumps, assisted by solar home systems. A limited share of small scale neighbourhood heat grids, biomass or H2 heaters will be completing supply. For this to succeed, heating consumption must be significantly reduced through appropriate energetic retrofit measures.

#### Generating 100% energy from renewables

A huge expansion of renewable energies is needed nationwide to achieve a climate neutral heating and electricity system. Heidelberg can contribute to this by exploiting all potential as far as possible. This applies to the expansion of photovoltaics, the construction of wind turbines, using environmental heat by heat pumps and the development of deep geothermal potential. The federal government and, to some extent, the state of Baden-Württemberg must create the appropriate framework conditions: strict requirements for the installation and replacement of heating systems, legal foundations for the dismantling of gas grids, funding measures, the creation of legal requirements that remove existing hurdles, simplified procedural paths for the expansion of renewable energies.

#### Increasing energy efficiency by retrofitting buildings

The renovation rate for buildings could hardly be increased in the past. Climate neutrality can only be achieved if the heat demand of all buildings is massively reduced and the remaining demand is covered by renewable energies. The corresponding regulatory framework (energy quality of the refurbishment) must be set up by the federal government. The city of Heidelberg will continue to apply the already stricter limits for its own buildings. For private households or public buildings of the country it lacks the direct access. A policy of direct contact, campaigning and advertising with the city's own standards has to be pursued here. For the planned new buildings on the conversion areas as well as in the Patrick Henry Village, it is essential that no additional CO2 emissions are generated. The building standard and use must therefore be planned in such a way that energy production (from renewable energy sources) and energy consumption balance each other out. For the demand that cannot be met on the site, additional renewable generation facilities must be built elsewhere, preferably by the municipal utilities or energy cooperatives.

#### Transformation to sustainable mobility and transport

Compared to the rest of Germany, Heidelberg already has an exemplary proportion of environmentally compatible modes of transport (walking, cycling, public transport). A high proportion of traffic-related CO2 emissions is caused by commuter traffic. In addition to the electrification of the motorized individual traffic, a significant reduction by half of the car traffic within the city limits of Heidelberg is necessary with a simultaneous doubling of the public transport (rail passenger transport and regular bus service). In order to make environmental transport more attractive than car use in this sense, a combination of pull (improvement of environmental transport) and push measures (reduction of the attractiveness of car use) is essential. Push measures are particularly necessary because the expansion of the environmental alliance is limited due to the associated costs and the space requirements. Moreover, a pure expansion of the environmental alliance mainly leads to newly induced traffic without significantly reducing car traffic. Therefore, for an effective modal shift, the attractiveness of car traffic must be reduced. The decisive factors here are pricing and the amount of space available. The tasks at EU and federal level consist of improving the framework conditions (CO2 fleet regulation, purchase premiums). Heidelberg alone cannot increase the share of electric cars to the required level. However, the city can contribute to an adequate charging infrastructure, which is essential for the changeover.

#### Reducing emissions from commerce and industry

In the commercial sector, the City of Heidelberg has for many years relied on the exchange of information between companies and the Sustainable Business Network for small and medium-sized enterprises in Heidelberg. The network provides support for environmental and sustainability management and concrete assistance in identifying potential for optimization. In 2021, the total number of participating companies was 147 with a total of around 10,500 employees. This number is to be increased significantly by 2030.





The next few years will be crucial to creating the fundamental planning for achieving climate neutrality. This applies particularly to the major measures in the expansion of renewable energies, especially wind power, as well as the climate-neutral heat supply, for which the 2023 heat planning is the basis. In addition, the expansion of PV-plants will continue to be pushed strongly and the expansion rate of the last few years will be further accelerated. The Municipal Energy Concept and other planning strategies will be designed to ensure that future new districts are developed in a climate-neutral manner. Energy efficiency and the use of renewable energies will play a decisive role here. In the area of transportation, the climate mobility plan, which will be completed at the end of 2023, will be the decisive planning tool for redesigning Heidelberg's transportation infrastructure for sustainable mobility.

In order to implement these plans, there needs to be a high level of acceptance among political decision-makers and the involvement of all the key players in the local society. The next city council elections will take place in early 2024, which will be a 5-year legislative period. The composition of the political parties plays a role in how climate protection measures are implemented by 2030. For the planning and implementation of climate protection measures, various departments have to be involved in order to jointly identify conflicting goals at an early stage. A transformation can only be successful if the entire city administration pulls together and declares climate protection to be a priority. However, since the city itself has only a partial direct influence on CO<sub>2</sub> emissions, e.g. in its own buildings, it is necessary to involve further emitters in the process on the way to climate neutrality. Therefore, the city acts together with the university, large and medium-sized companies as well as NGOs and other organizations. The citizens of Heidelberg should also stand behind the city's mission and make their contribution. To ensure equitable participation for all, the city plans to organize various formats for specific target groups and according to their particular topics. It is important to give people the opportunity to contribute their own ideas and initiatives in adequate networks, from which the city benefits at all times. In a process that runs over several years, the challenge will be to keep the motivation of the stakeholders high over the long term and not to lose sight of the common goal.

## 4 Principles and process

Highlight the key principles that will guide your city as it implements its Climate City Contract, like accountability, transparency, or an open attitude to new approaches. The process should encompass principles like **co-creation, innovation, multi-actor and citizen engagement**, and should be **systemic and demand-driven in nature**. It should also be based on **monitoring** and **joint learning**. The Commitments Guidance document provides more specific guidance on how integrate these principles into your own process.

### Your text

The Climate City Contract forms the framework for all existing concepts and strategies in climate protection in Heidelberg and maps the most relevant priorities on the way to climate neutrality. Plans like the Masterplan 100% Climate Protection and its updated version as well as the Climate Action Plan including studies on the measures and goals are brought together in the Climate City Contract. The result of the Climate City Contract is a holistic plan showing the pathway to climate neutrality aligned to Heidelberg's political goals, C40 requirements and the EU Mission's conditions. The Climate City Contract guarantees the consistency of Heidelberg's ambition to climate neutrality. Priorities lie in the fields of action with the highest emissions, namely heating, electricity, transport and commerce/industry. These priorities are guiding goals to which all individual climate protection measures must contribute. Summarizing targets, strategies and priorities in the Climate City Contract emphasises Heidelberg's continuing responsibility for managing climate action in order to transform the city sustainably.

Based on the past CO<sub>2</sub>-balances, it is clear that the speed of action to reduce emissions must be significantly accelerated. This means that previously effective measures must be further expanded and enhanced, but also that the city must create the right framework conditions for new approaches and promote innovative solutions. These innovations need to be facilitated in all sectors, buildings as





well as mobility, and include technical, digital and social dimensions. The complexity shows that interdisciplinary approaches are crucial for succeeding this challenge. This can only be achieved by multi-actor and citizen engagement including all relevant administration departments and stakeholders with high economic and/or political power.

Within the administration climate action can only succeed if it is addressed as a cross-sectoral task in all departments as a matter of priority. To this end, the silo thinking that is still widespread has to be overcome and agile working has to be promoted. In the long term, it would be helpful if climate protection was established as a mandatory task in municipalities by federal law in order to secure human and financial resources permanently.

Politically and economically influential stakeholders can substantially shape the urban environment and willingness to sustainable urban transformation. Therefore, they will be involved in the process to climate neutrality. Target group-specific participation formats for companies and organisations play an important role in the EU Mission in Heidelberg in order to give them the opportunity to participate in shaping the project, but also to increase acceptance of the implemented measures. Over 30 stakeholders followed the Heidelberg mayor's invitation to join the EU Mission by signing a cooperation agreement including their ambition to contribute to the City's objective to climate neutrality and individual back-up measures. New forms of collaboration are intended to be developed over the next years in order to co-create the process.

Citizens play an important role in the implementation and acceptance of climate action. Therefore, citizens must be involved in processes at an early stage and on an on-going basis to give them the opportunity to help shape them. The impetus from the citizens is very valuable for the administration and ensures that climate action is anchored throughout society. The City of Heidelberg therefore aims to strengthen citizen participation beyond the legal framework. The Heidelberg Guidelines for Co-Creative Citizen Participation regulate citizen participation reliably and obligatorily. In addition, target group-specific and topic-specific participation formats will be offered in order to reach as many citizens as possible. In the future, even groups that tend to rarely engage in participation formats will be addressed through outreach programs. This ensures that there is an equitable participation opportunity for all and thus, in a broader sense, also contributes to climate justice by taking into account the concerns of all and leaving no one behind.

The key principle on the way to climate neutrality is to promote the collaboration and participation of all stakeholders. Joint learning and mutual understanding are the drivers for developing new measures. The EU Mission helps the administration to identify barriers that still hinder these collaborations and to find ways to create structures to foster them.

Comprehensive and transparent monitoring will be established in order to regularly review target achievement. This includes both the development of CO<sub>2</sub> emissions and the current status of climate protection measures. On the one hand it is necessary to show the progress of the implementation, on the other hand continuing greenhouse gas inventories validate the reduction in emissions. A comparison between the targets and the actual progress of the measures ensures that the targets are kept in view and enables readjustments to be made if necessary. The monitoring results help to identify successes that can thus be replicated and up-scaled, while obstacles can be revealed and be avoided in the future. In monitoring and evaluation, it is important to ensure that both quantitative and qualitative indicators are used. Quantitative monitoring is possible for the implementation of technical measures, for example through direct measurements of energy consumption data. Other measures, on the other hand, are difficult to measure and the actual impact on CO<sub>2</sub> emissions is therefore difficult to estimate. Nevertheless, such measures are also relevant because, for example, citizens' behaviours and attitudes can change.

Based on the monitoring the Climate City Contract will be updated on a regular basis, creating an iteration process every two years. The regular renewal of the Climate City Contract enables new findings, adapted framework conditions and regulations as well as technological developments to be taken into account. In this way, a dynamic plan is created that can be developed together with existing and new stakeholders and citizen participation.



### Successful participation in climate protection

To achieve sustained success climate protection needs to be an integral aspect in all decisions on investment, purchase and management of companies, public organisations and private households. This needs knowledge and awareness about relevance and chances of individual action.

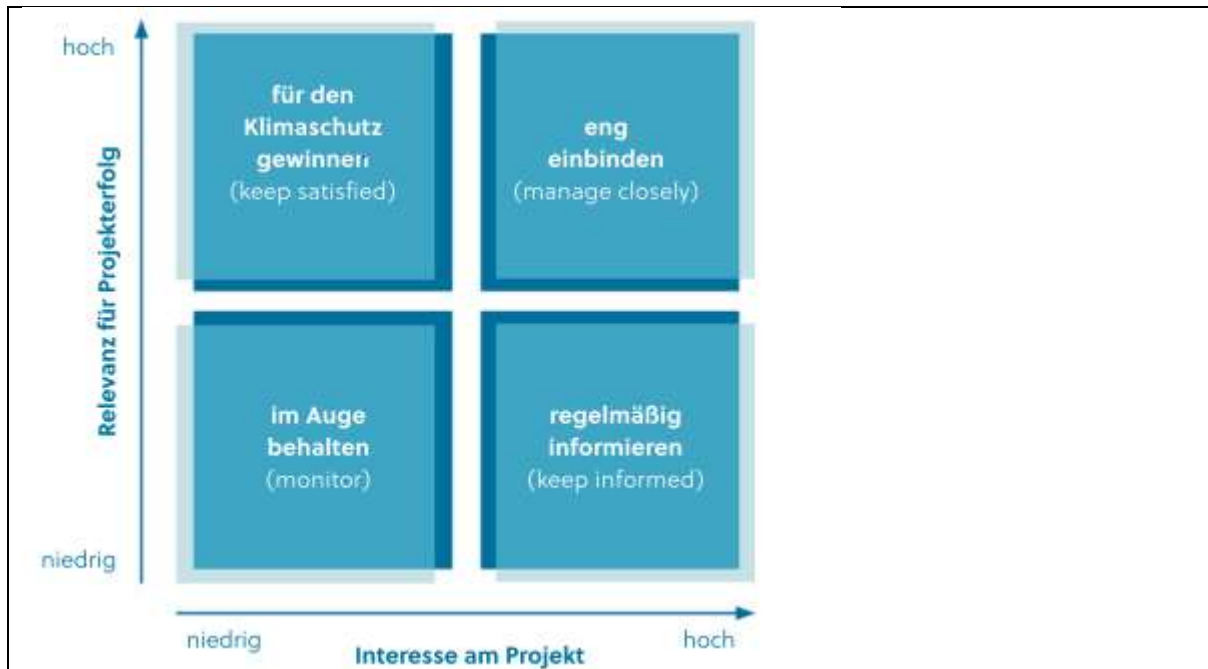
Opportunities for climate protection include, in particular, cost savings, security of supply, improvements in the quality of life, employee motivation, public image and new market opportunities. Thus awareness raising and participation processes play a key role in the successful planning and implementation of municipal climate protection measures in Heidelberg. The main goals are motivating for climate action, develop common strategies, identify best solutions and develop new business cases for sustainable products and services. Further aims are to integrate the technical and economic know-how of selected social stakeholders in order to close knowledge gaps and improve the quality of concept and measure planning. On the other hand, the active involvement of the various stakeholders raises awareness of the municipality's climate protection goals and measures at an early stage, and their concerns and suggestions are incorporated into the design of the measures. In this way, the subsequent implementation of the measures is promoted. Acceptance or even identification with the climate protection goals and measures of the municipality are thus central goals of participation processes.

For the selection of the formats and the addressing of the actors it is also important, which motivation / which self-interest has the target group

in the topic of climate protection? For example:

- Cost savings through energy efficiency measures,
- positive image in the public,
- Increase of awareness,
- improvement of their own quality of life

When addressing stakeholders, Heidelberg prioritises according to the following criteria.



High relevance / High interest:

These stakeholders are closely involved in the process, as described below. The cooperation in the different formats builds on close contacts and a trusting cooperation in which objections or wishes are taken seriously and discussed together.

- High relevance / Low interest: As this group of actors is crucial for the success of the project, this group of actors is specifically addressed with topics through which they can gain access to climate protection. It is also important to develop an awareness of which of their interests are contrary to the municipality's climate protection efforts and why this is the case. one example is the Climate Action Group led by the Mayor is the Goal. He is a door opener and motivator for participation, especially for this group of actors.

Stakeholders with high interest but low relevance are regularly informed by the City of Heidelberg about climate protection activities (e.g. climate protection newsletter) and have the opportunity for low-threshold participation in suitable circumstances. Examples here are events with participatory offers (e.g. quizzes). This ensures that they feel included and recognised as actors in the process. This in turn helps to prevent any resistance to planned measures.

Low relevance / Low interest: For these actors, we make a point of keeping them in mind and informing them about the process or project as soon as they show interest.

Depending on the competencies and responsibilities, stakeholders are involved in accelerating the reduction of greenhouse gas emissions in all sectors,. This means:

- Emissions from fossil fuel combustion in all buildings and facilities (so-called "stationary energy"). This includes residential, commercial and industrial buildings as well as municipal buildings, properties and public lighting within the city limits; climate neutrality, as defined by ifeu, requires the complete replacement of all fossil fuels for heat supply, primarily through district heating and heat pumps.

- Emissions from fossil fuel combustion for all vehicles and transport within the city limits; a focus must be on measures to reduce emissions from commuter traffic, especially a strong expansion of



public transport in the region, incentives to switch to zero-emission drives and bicycles, but also city tolls or vehicle/parking space levies must be investigated.

- Emissions from consumption of electricity and district heating/cooling within the city boundary, from power plants within or outside the city boundary;

- Massive expansion of renewable energies for electricity and heat production.

in the following, priority is given to formats in which the actors are addressed as consumers and are to learn about and learn behavioral changes via the various methods. We also attach great importance to target-group-specific stakeholder participation. For this purpose, some formats are presented under A-3.1.

### **Social innovation through stakeholder participation**

The current ecological, economic and social challenges necessitate a comprehensive societal transformation toward sustainability. It is now clear that committed goals, scenarios and individual Instruments and technological developments alone are not enough. A process of adaptation and change is required throughout society.

One important contribution, as described, is the participation of those affected in the implementation of climate protection measures. However, far-reaching social changes are also necessary. Energy cooperatives are a good example here. They bring together what often falls apart in our society: entrepreneurial commitment on the one hand and measures for environmental and climate protection on the other. Energy cooperatives benefit from their local roots, often in the form of the voluntary commitment of their active members. It is therefore natural to ask whether energy cooperatives can strengthen their impact for climate protection by developing further climate-relevant business areas and by winning over their members and the public for concrete climate protection measures.

Heidelberg energy cooperative builds and operates climate-friendly infrastructure (especially photovoltaic systems) and thus makes climate protection a local experience. It offers commercial and non-commercial

non-commercial services that enable climate-friendly lifestyles.

It participates in cooperations and promotes the transfer of knowledge between

actors in order to bring climate protection out of the niche and into the mainstream. The cooperative thus performs its original tasks of managing the economy

for its members and, in addition, sets itself forward-looking goals with a clear focus on

with a clear focus on shaping a future worth living.

### **Participation formats in Heidelberg**

Citizens and civil society actors are important sources of ideas for the specialised administration and for the municipal council. They are also important actors in the implementation of measures. The city of Heidelberg therefore aims to strengthen citizen participation far beyond the legal framework. It wants to involve all interested and affected parties in current urban projects such as sustainability, climate protection and mobility. In the Heidelberg Guidelines for Co-designing Citizen



Participation, citizen participation is reliably and bindingly regulated. This was unanimously adopted by the municipal council in 2012.

The origin of this was the Aalborg Charter, on the basis of which Heidelberg began participatory co-creation of development processes in many administrative areas as early as the 1990s. The participatory culture created on this basis in administration, politics and society also led to the participatory development of the climate protection and energy transition with the citizens and



experts.

Interaction between citizen and stakeholder participation

Administrative participation

Interdisciplinary cooperation in the administration of the City of Heidelberg is part of the successful administrative reform of the past 30 years. In project or agile groups, groups in the area of environment and climate protection also work together on an ad hoc basis for a project. This is also the case with the "100 % Climate Protection Master Plan" and the Climate Protection Action Plan or in the preparation of the new Urban Development Plan 2035.

Working groups on various topics bring the expertise of the specialised departments and the municipal enterprises into the planning process.

The management of the city administration also has the administrative conference as a steering instrument. All managers meet once a week and, if necessary, issues relevant to climate protection are discussed at topic tables and implementation options are sought. In special cases, task force groups are also set up.

„Masterplan 100 % climate protection“

During the development of the strategy and measures package of the "Master Plan 100 % Climate Protection", the involvement of the city society was a condition set by the Federal Ministry for the Environment for project participation within the framework of the National Climate Protection Initiative Program.



The environmental office of the city of Heidelberg implemented this process in two ways: on the one hand, experts from business, science, finance, the energy industry, churches, and associations were involved in the result-finding process in the "Heidelberg Climate Protection & Energy Circle" throughout the entire duration of the project.



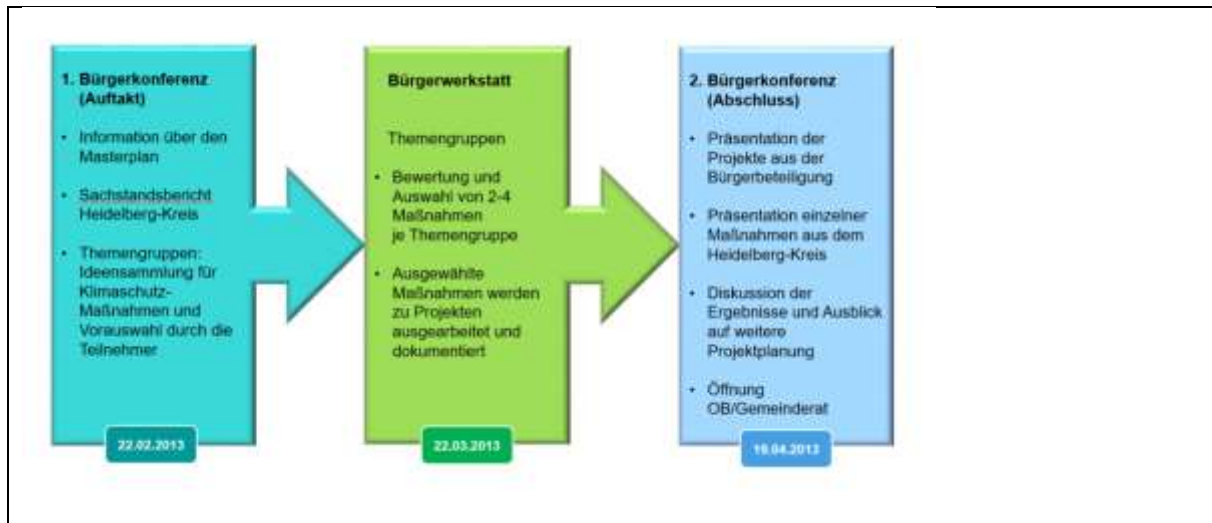
The Masterplan process at a glance

In addition, a multi-stage participation process for citizens took place, which had a significant influence on the packages of measures. Young people were also able to contribute their concerns to the Master Plan and beyond, through the regularly held Youth Climate Summits.

One challenge of multi-year processes is to maintain the commitment of all stakeholders. After the motivating work of developing visions and ideas, the phase of concrete implementation of projects is characterised by detailed work and overcoming hurdles. In addition, there are externally induced processes that challenge the city of Heidelberg, such as conversion, general economic development and political decisions.

In the process, the topic of climate protection expanded to other areas of action. In particular, the role of consumption and nutrition play a major role in the public discussion. The number of initiatives dedicated to these issues has risen sharply. Due to this expansion, some actors who are active in the "classic" areas such as energy supply and efficiency no longer feel exclusively addressed. The city of Heidelberg faces the challenge of permanently uniting, motivating and integrating all important and newly added actors. One strategy of the city administration is to involve important actors such as the housing associations, the crafts community and the university by directly addressing them in a thematically focussed way.





The three-stage model of citizen participation in the "Masterplan 100% Klimaschutz" (100% Climate Protection Master Plan)

(see also final report on the "Masterplan 100% Klimaschutz" 2014)

After the adoption of the "Master Plan 100% Climate Protection" in 2014, attempts were made to involve the Heidelberg Climate Protection & Energy Group and the citizens in the implementation of the measures. This was successful with the Stadtwerke Heidelberg, the churches and the environmental associations.

**Climate Emergency and Climate Action Plan**

Following the declaration of a climate emergency in May 2019, the administration was commissioned to draw up a climate protection action plan.

Building on the experience gained from the "Master Plan 100 % Climate Protection", the identification of measures that contribute significantly to the reduction of CO2 emissions and resource consumption was carried out by involving key organizations from the energy industry, administration and science. The climate protection action plan also incorporates many proposals and measures from the political arena.

An action group headed by the Lord Mayor was set up in 2019 specifically for the Climate Protection Action Plan. Department heads, managing directors of municipal companies, and representatives of the university, business, and research have since been exchanging ideas and making strategic decisions regarding the goals and implementation of climate protection in Heidelberg. Civil society groups are also represented.

A steering committee made up of representatives of the departments that are particularly affected by the climate protection action plan is adjusting the implementation and further development of strategies and measures..

**Participation process in the urban development concept 2035**

The urban development concept for sustainable development in Heidelberg forms the umbrella for all development processes in the city and is currently being updated in line with the 17 Sustainable Development Goals.

Like the STEP, the STEK 2035 is also being developed in a participatory manner. The entire Heidelberg citizenry is given the opportunity to participate in the development of the new concept.



Non-governmental organizations have joined forces under the leadership of the One World Center, the Adult Education Center and the Paritätischer Wohlfahrtsverband to form an action alliance "Sustainable Heidelberg" in 2019 and are actively contributing to the design of the urban development concept.

The STEK is being developed in two phases: First, the status report will be prepared (phase 1). This is followed by the development of a catalog of objectives (phase 2). Citizens and other key stakeholders are involved in both phases, both in the preparation of the status report and in the formulation of goals for the urban development concept. The participation format was adopted by the municipal council in May 2020 and is currently being implemented.

<b>Inhalte</b>	<b>Analyse, Wesentliche Zukunftsthemen, Synergien und Konflikte, Handlungserfordernisse</b>	<b>Zieldefinition (Konfliktlösungen), Handlungsmöglichkeiten, Modellp</b>	<b>Monitoring</b>
	Format: STEKbriefe und Statusbericht	Format: Stadtentwicklungskonzept, Nachh	
<b>Beteiligung</b>	<b>5 Verwaltungsrunden</b>	Sep/Okt 2022	<ul style="list-style-type: none"> <li>- Arbeitskreis STEK 2035</li> <li>- Aufsuchende Formate</li> <li>- Öffentliche Veranstaltungen</li> <li>- Kinder- und Jugendbeteiligung</li> <li>- Onlinebeteiligung</li> </ul>
	<b>5 Workshops</b>	Jan / Feb 2023	
	<ul style="list-style-type: none"> <li>- Interessensvertretungen Zivilgesellschaft</li> <li>- Zufallsbürger*innen</li> <li>- Verwaltung</li> </ul>		
	<b>1 Öffentliche Veranstaltung</b>	Mär / Apr 2023	

Overview urban development concept 2035 with timeline





## 5 Signatories

Include a list of stakeholders who have committed to help your city achieve its goal to reach climate neutrality by 2030. Detailed commitments and agreements between individuals or groups of stakeholders should be appended to this Commitments document. This list will likely increase over time.

Nr.	Name of the institution	Sector/Area	Legal form	Name of the responsible person	Position of the responsible person
1.	cbs Corporate Business Solutions Unternehmensberatung GmbH	Private Sector	Ltd.	Holger Scheel	Managing director
2.	Chemische Werke Kluthe GmbH	Private Sector	Ltd.	Julian Senn	Sustainability & Communication Manager
3.	edataconsulting GmbH	Private Sector	Ltd.	Stephan Lochner	Managing director
4.	j&s-soft GmbH	Private Sector	Ltd.	Tobias Reith	Agent for sustainability
5.	Heidelberg Materials AG	Private Sector	Public limited company	Dr. Dominik von Achten	Chairman
6.	M.E.G. Gottlieb Diaderma-Haus GmbH + Co. KG	Private Sector	Ltd + Co.KG	Dr. Dieter Schmalz	Managing partner
7.	Rhein-Neckar-Verkehr GmbH	Private Sector	Ltd.	Christian Volz	Financial management
8.	Rockwell Collins Deutschland GmbH	Private Sector	Ltd.	Florian Adam	Team Lead Facility
9.	Stadtmobil Rhein-Neckar AG	Private Sector	Public limited company	Miriam Caroli	Principal



10.	Wetzel GmbH + Co.KG Garten und Landschaftsbau	Private Sector	Ltd + Co.KG	Frederick Wetzel	Managing director
11.	Deutsches Krebsforschungszentrum (DKFZ)	Science	public-law foundation	Ursula Weyrich  Prof. Dr. med. Dr. h.c. Michael Baumann	Financial management  Chairman
12.	Ifeu – Institut für Energie- und Umweltforschung Heidelberg gGmbH	Science	gGmbH	Lothar Eisenmann	Managing director
13.	IUWA – Institut für Umweltwirtschaftsanalysen Heidelberg e.V.	Science	Registered association (e.V.)	Sha Xia	Principal
14.	Krankenhaus Salem / Evangelische Stadtmission Heidelberg gGmbH	Health	gGmbH	Florian Kesberger	Managing director
15.	Rehaklinik Heidelberg- Königstuhl	Health		Stephan Hörl	Financial manager
16.	Universitätsklinikum Heidelberg	Health	Institution under public law	Prof. Dr. Ingo Autenrieth  Kathrin Erk	Chairman  Deputy chairman
17.	Max-Planck-Institut für Kernphysik e.V.	Science	Registered association (e.V.)	PD Dr. Günter Sparn	Representative of council
18.	SRH Fachschulen GmbH	Science	Ltd.	Dr. Daniela Ernestus	Management business development



19.	Technologieförderung Heidelberg GmbH	Science	Ltd.	Dr. André H.R. Domin	Managing director
20.	BUND Heidelberg e.V.	NGO	Registered association (e.V.)	Regina Schmidt	Chairwoman
21.	NABU Heidelberg e.V.	NGO	Registered association (e.V.)	Konstanze Läufer-Wiest	Chairwoman
22.	Ökostadt Rhein-Neckar e.V.	NGO	Registered association (e.V.)	Dr. Christina Reinl Sebastian Klassen	Principal Principal
23.	Studierendenwerk Heidelberg Anstalt öffentlichen Rechts	Public-law institution	Public-law institution	Tanja Modrow	Managing director
24.	Baugenossenschaft Familienheim Heidelberg eG	Housing cooperative	European Community	Holger Meid Karin Heil	Principal Principal
25.	Bauhütte Heidelberg Baugenossenschaft eG	Housing cooperative	European Community	Stefanie Höhl Christian Grau	Principal General Manager
26.	die bauwirtschaft baden-Württemberg e.V.	Housing cooperative	Ltd.	Wiebke Zuschlag	Managing director department climate protection and construction
27.	Gesellschaft für Grund- und Hausbesitz mbH	Housing cooperative	Ltd.	Peter Bresinski	Managing Director
28.	Pfälzer Katholische Kirchenschaffnei in Heidelberg	Housing cooperative	Foundation	Fred Wittmann	Principal



29.	Heidelberger DienstleistungsGmbH	Municipal subsidiary company	gGmbH	Nadine Hülten	Managing director
30.	Heidelberger Frühling gGmbH	Municipal subsidiary company	gGmbH	Christian Eckhardt	Business manager
31.	Heidelberg Marketing GmbH	Municipal subsidiary company	Ltd.	Mathias Schiemer	Managing director
	Theater und Orchester Heidelberg	Municipal subsidiary company	public corporation	Holger Schultze Thomas Eisenträger	Director Administration manager
32.	Stadtwerke Heidelberg	Municipal subsidiary company	Ltd.	Rudolf Irscher	Managing director
33.	Tiergarten Heidelberg	Municipal subsidiary company	gGmbH	Thomas Pöschko	Financial manager
34.	Heidelberger Volksbank eG	Bank	European Community	Toralf Weimer Christian Murr	Principal General manager
35.	Sparkasse Heidelberg	Bank	Public-law institution	Heidi Oestringer	Sustainability manager
36.	Evangelische Kirche Heidelberg	Church	Church	Martina Kleinbauer	Head of the Building and Real Estate Department
37.	Vermögen und Bau Baden-Württemberg Amt Mannheim und Heidelberg	State of Baden-Württemberg	State of Baden-Württemberg	Marco Grübbel	Manager of the Department

# **Climate Protection Action Plan**

# Background and Introduction

At the municipal council meeting on May 9<sup>th</sup>, 2019 Lord Mayor Prof. Dr. Eckart Würzner declared the climate emergency for Heidelberg. He thus emphasized the necessity and urgency of committed and concrete action to limit the climate crisis.

As a result, measures have been collected within the administration and with key social and economic players in a climate action group to promote climate protection in Heidelberg faster and more ambitiously.

Heidelberg is one of Germany's pioneers in municipal climate protection. One of the first comprehensive climate protection concepts was adopted back in 1992. Since then, Heidelberg has established climate protection as a voluntary task in a variety of ways in administration, business and society.

It has since been updated several times and last adopted in 2014 as the "Master Plan 100% Climate Protection" with new fields of action and measures.

On November 21<sup>st</sup>, 2019 the municipal council approved a new update of the "Master Plan 100% Climate Protection" on the basis of the current CO<sub>2</sub> balance. This confirms once again that Heidelberg is striving to reduce CO<sub>2</sub> emissions by 95 % and reduce final energy consumption by 50 % until 2050.

At the same time, a 30-Point-Plan, the Climate Protection Action Plan, was adopted by the local council (see appendix). It contains the targets, focal points for action and concrete measures that have been collected since the climate crisis was declared, as well as proposals from the Heidelberg municipal council.

These 30 points, in combination with the strategies of the "Master Plan 100 % Climate Protection", are intended to enable Heidelberg to achieve the 1.5 degree target of the Paris Climate Protection Conference more quickly.

In this context, the administration was commissioned to allocate the measures to the respective objectives and programmes of the departments, to review them and to submit them to the local council for decision within the framework of the decision-making authority.

The points are therefore not definitively decided, but must be examined with regard to the necessary financial and personnel resource requirements and, if necessary, adapted to the existing possibilities.

With the Climate Protection Action Plan, Heidelberg has once again shown that combating climate change is a central task at local level.

# Master Plan 100 % Climate Protection

## Fields of action and strategies



### Mobility

- Further optimize investment and planning practices
- Promote walking and cycling
- Secure and expand quality in public transport
- Manage mobility across the board
- Reduce car traffic in the long term
- Become politically active
- Develop soft tourism

### Energy supply, energy infrastructure and renewable energies

- Expand power generation from renewable energies
- Develop and promote combined heat and power generation and lower CO<sub>2</sub> emissions in district heating provision
- Expand heat supply from renewable energies
- Establish energy storage facilities to increase the use of renewable energies

### Education

- Maintain and further strengthen municipal programmes in the medium term
- Acquire financial support from the State as a best practice city
- Strengthen climate protection education at university and PH
- Strengthen extracurricular and adult education in cooperation with independent providers

### Energy-efficient construction and retrofits

- Increase renovation rate
- Lower insulation restrictions
- Encourage deep retrofits
- Improve new building standards
- Increase share of low CO<sub>2</sub> heat supply
- Design housing more flexibly and reduce living space per capita

#### Climate neutral university

- Increase information and environmental education services
- Introduce user projects
- Implement economic efficiency potentials
- Energy retrofitting of existing buildings
- Optimise energy efficiency of new building projects

#### Consumption and Food

- Reduce meat consumption
- Buy regional and seasonal products
- Create a shift in awareness through example projects
- Facilitate and strengthen sufficiency

#### Energy efficiency in products and services

- Promote information and education on energy-efficient products
- Promote the purchase of energy-efficient products
- Developing new stakeholder constellations

#### New through the 30-Point-Plan:

- Green Spaces and Climate Adaption
- Action Agriculture
- Urban Development and Urban Land-Use-Planning
- Industry and commerce



# Climate Action Plan

## 30-Point-Plan in Fields of action and strategies

### Field of Action Energy-Efficient Construction and Retrofits

1. 100 % climate neutrality for the growth of the city - PHV as well as all new quarters from 2020 on will be PlusEnergy quarters. Since, from today's perspective, it is not possible to achieve a full coverage of energy needs in the urban districts, this means that, in addition to the decentralised use of solar energy, renewable potentials will be tapped elsewhere in the course of territorial development. The creation of 40% subsidised rental housing, 30% threshold households, where no more than 30% is paid for rent including heating, and 30% apartments available on the free market should continue to be implemented.
6. Doubling the retrofit rate for old buildings by 2030. Immediately plan and implement by 2040 an increase in the retrofit rate for Heidelberg private real estate to at least 2.5% annually and for urban real estate to at least 3% and a comprehensive renovation timetable for urban buildings (including the municipal housing company GGH and if possible GGH investments), including reviewing PV retrofitting options. The costs of energetic retrofitting must not increase the rent including heating.

### Field of Action Energy Supply, Energy Infrastructure and Renewable Energies

2. 50% "green", carbon neutral heat for all district heating customers by 2020 and a largely CO<sub>2</sub>-neutral approach to district heating in Heidelberg by 2030. No further district heating from hard coal after 2030.
3. One third self-generated district heating in Heidelberg by 2025.
4. 25 megawatts of additional installed photovoltaic power in Heidelberg by 2025. For this purpose, the City of Heidelberg, the municipal utilities and cooperation partners are developing an active advertising strategy, through which a solar system can easily be installed on one's own roof.
5. 100% "green", carbon neutral electricity until 2025 for the citizens who are obliged to be supplied by the municipal utilities.

### Field of Action Mobility

7. Increase passenger numbers in public transport by 20% until 2025. The city is also seeking negotiations with the state of Baden-Württemberg to create the legal basis for ticketless public transport.
10. Introduce the Job Ticket in 50% of Heidelberg companies by 2025 and application as model city for the introduction of the 365€ ticket at the Federal Government.
11. Extend four further bicycle expressways in the region.
12. Establish 4 or more special bus lines for the reduction of the MIV share of commuter traffic on the basis of a task force consisting of the City of Heidelberg, the surrounding municipalities and the major employers in Heidelberg and the surrounding area, which will record the actual commuter flows and develop the necessary relocation measures towards public transport and cycle traffic.

19. Continue the constant transformation of public and private car parks and underground parking garages into bicycle parking facilities or bicycle traffic facilities.
20. Pavement parking is prevented throughout the city so that people can be safe on the pavement. Misconduct will be consistently punished.
21. Free public transport in the RNV area will be introduced on weekends. At the same time the parking fees for the city car parks and the public space will be increased by 50%.
22. A local transport fee of 365€ will be implemented as soon as the state government has created the legal conditions for this. The association of cities and towns will be responsible for promoting this. The local transport fee will provide all payers with an annual public transport pass.
24. Introduction of a parking space management system that better reflects the costs for the provision of parking space than before and punishes incorrect parking more consistently.

#### Field of Action Consumption and Food

8. Gradual increase in the share of organic lunch options in schools and kindergartens in Heidelberg from 30% to 50% by 2022, without having to increase the parents' share. Due to the declaration of a climate emergency, at least one vegan meal should be offered daily in all public facilities and canteens.
9. Sustainable event management and climate-friendly catering at city festivals, sports events and public festivals: choice of climate-friendly venues incl. climate-friendly energy supply, high proportion of plant-based, regional, seasonal and organic products in catering, avoidance of packaging, communication of climate-friendly offers.

#### **NEW** Field of Action Green Spaces and Climate Adaption

13. Plant a "climate forest" in each city district - 3000 trees by 2025 (500 trees per year), in particular for currently sealed areas.
14. Expansion of the "Green Belt" in Heidelberg.
15. Implementation of climate change adaptation measures for public buildings by 2025.

#### **NEW** Field of Action Agriculture

23. Establishment of an urban dialogue with citizens who use the land in Heidelberg for private or commercial agricultural purposes. Within the framework of this exchange, assistance will be developed and implemented to help people switch to a more ecologically and climatically compatible agricultural use.

#### **NEW** Field of Action Urban Development and Urban Land-Use Planning

16. All future development concepts will focus on climate protection, climate adaptation and biodiversity conservation. Areas with high ecological value would have to be fixed bindingly in the spatial order model, in the land use plan and in the urban development concept. This could establish a so-called "green belt" for Heidelberg.

#### **NEW** Field of Action Industry and Commerce

17. Participation of 20% of all small and medium-sized enterprises in Heidelberg in the "Sustainable Management" network.

## Process and Structure

18. Establish

- a climate protection review for all municipal decisions based on indicators determined in cooperation with a scientific institution,
- an environmental expert committee, advised by association and scientific experts, which must decide on all climate-relevant municipal proposals,
- a mandatory submission of measures for participation and social balance in all municipal climate protection decisions in the municipal decision-making process,
- a participatory instrument that gives voice to future generations.

25. Further development of the "Master Plan 100% Climate Protection" and adoption of a long-term course of action in cooperation with - as before - an independent scientific institute, which describes how the Heidelberg climate targets can be reached. This includes a concrete timetable for measures and a sequence of measures, ensures traceability and verifiability and is regularly evaluated, adapted and made available to the public online.

30. The administration is given the task of allocating the various measures to the specific sectors.

## Monitoring and Evaluation

26. Review of Heidelberg's climate protection targets by commissioning an independent scientific institute to present a report on the measures that would be required to achieve more ambitious climate protection targets, such as accelerating Heidelberg's commitment to climate neutrality from 2050 to the end of the 2030s.

27. The city administration presents a CO<sub>2</sub> balance of the transport sector for Heidelberg and the Rhine-Neckar region, from which the significance of Heidelberg as a regional centre and the interactions between Heidelberg and the surrounding communities in the transport sector can be seen.

28. A study on how a CO<sub>2</sub>-neutral heat supply in Heidelberg can best be achieved from a cost perspective must be conducted out immediately.

29. A prognosis should be given as to how much CO<sub>2</sub> reduction the individual measures will cause. In addition, an indicator set for all implemented climate protection measures is to be developed to show the effectiveness of the measures.

## Climate Action Plan

### 30-Point-Plan in the order as decided by the local council at November 21<sup>th</sup> 2019

1. 100 % climate neutrality for the growth of the city - PHV as well as all new quarters from 2020 will be PlusEnergy quarters. Since, from today's perspective, it is not possible to achieve a full coverage of energy needs in the urban districts, this means that, in addition to the decentralised use of solar energy, renewable potentials will be tapped elsewhere in the course of territorial development. The creation of 40% subsidised rental housing, 30% threshold households, where no more than 30% is paid for rent including heating, and 30% apartments available on the free market should continue to be implemented.
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