

SPARCS

T4.5.2: Development of a standard model for climate-friendly district development: concept and tools

T4.5.2 Report

June 2024

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242

Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities

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Dissemination level

PU	Public	x
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Deliverable administration

No & name	Report for T4.5.2		
Status	final	Due	M60
Date	2024-00-01		
Author(s)	Irene Müller, Nadja Riedel		
Description of the related task and the deliverable. Extract from DoA	<p>T4.5.2 Standard model for energy positive districts (LPZ) M1 -60</p> <p>T4.5 Planning of Energy Positive Communities (LPZ, FHG, WSL, LSW) [M1-M60]</p> <p>This subtask will demonstrate solutions for innovative planning of future energy positive communities. Actions include:</p> <p>Subtask 4.5.1 Energy Positive District Planning (LPZ, WSL, LSW) [M1-M60] [...]</p> <p>Subtask 4.5.2 Standard model for smart cities (LPZ) [M1-M60]</p> <p>- Assessment of a standard model for the Leipzig replication districts in close collaboration with partners, stakeholders and the responsible city departments and the synchronisation with similar aspiration in Espoo; this includes a survey on resulting benefits for citizens, the city and the possibilities to effect the creation of new smart and clean city solutions (Action L20-1, LPZ, FHG)</p>		
Participants	City of Leipzig		
Comments			
V	Date	Authors	Description
	20.12.2023	Irene Müller	second draft
	10.01.2024	Nadja Riedel	correction
	24.04.2024	Lena Lowitzki	editing
	29.04.2024	Irene Müller	third draft
	03.06.2024	Nadja Riedel	correction
	20.06.2024	Irene Müller	final version

About SPARCS

Sustainable energy Positive & zero cARbon Communities demonstrates and validates technically and socioeconomically viable and replicable, innovative solutions for rolling out smart, integrated positive energy systems for the transition to a citizen centred zero carbon & resource efficient economy. SPARCS facilitates the participation of buildings to the energy market enabling new services and a virtual power plant concept, creating VirtualPositiveEnergy communities as energy democratic playground (positive energy districts can exchange energy with energy entities located outside the district). Seven cities will demonstrate 100+ actions turning buildings, blocks, and districts into energy prosumers. Impacts span economic growth, improved quality of life, and environmental benefits towards the EC policy framework for climate and energy, the SET plan and UN Sustainable Development goals. SPARCS co-creation brings together citizens, companies, research organisations, city planning and decision making entities, transforming cities to carbon-free inclusive communities. Lighthouse cities Espoo (FI) and Leipzig (DE) implement large demonstrations. Fellow cities Reykjavik (IS), Maia (PT), Lviv (UA), Kifissia (EL) and Kladno (CZ) prepare replication with hands-on feasibility studies. SPARCS identifies bankable actions to accelerate market uptake, pioneers innovative, exploitable governance and business models boosting the transformation processes, joint procurement procedures and citizen engaging mechanisms in an overarching city planning instrument towards the bold City Vision 2050. SPARCS engages 30 partners from 8 EU Member States (FI, DE, PT, CY, EL, BE, CZ, IT) and 2 non-EU countries (UA, IS), representing key stakeholders within the value chain of urban challenges and smart, sustainable cities bringing together three distinct but also overlapping knowledge areas: (i) City Energy Systems, (ii) ICT and Interoperability, (iii) Business Innovation and Market Knowledge.

Partners



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SUMMARY

What can be understood by climate-friendly neighbourhood development and how can neighbourhoods in Leipzig be developed in a climate-friendly way as standard?

In line with the German Climate Protection Act, Leipzig is striving to become climate-neutral by 2040. The Energy and Climate Protection Programme (EKSP Leipzig 2030) adopted by the City Council in 2022 with its implementation plans is the City of Leipzig's guiding programme for action. The fifth defined success factor is "climate-friendly neighbourhood development". This report presents the tools developed for this purpose as part of the SPARCS project funded by the EU under the Horizon 2020 programme.

Initially, needs were identified in workshops with offices involved in energy neighbourhood concepts. Three questions proved to be central: What goal is meant when we talk about climate-friendly neighbourhood development? How can the process be accelerated? And can the availability of data be improved? This report presents the tools that have been developed to answer the first two questions.

The key finding is that clarity about objectives, available resources and responsibilities are highly relevant for climate-friendly neighbourhood development. In this report, climate-friendly neighbourhood development is understood to mean compliance with the Paris Agreement, taking into account socially equitable implementation in the neighbourhoods.

To this end, fields of action are identified that are considered necessary for complete decarbonisation. It also differentiates between three levels of climate-friendly development of existing neighbourhoods, which can serve as a guide for cities on the way there. The report also contains suggestions for process improvements, various funding resources and methods and shows the scope for action for local authorities.

1. INTRODUCTION

This chapter examines why a standard model, i.e. a more standardised approach, can be helpful for climate-friendly neighbourhood development and presents how the concept and the working tools for it were developed.

1.1 Background

Leipzig has set itself the goal of being climate-neutral by 2040.

"The 2-degree target and the decarbonisation derived from it therefore represent the central points of reference for a climate-friendly policy. The somewhat unwieldy term decarbonisation has one major advantage: it can be translated into very concrete images [...]. It means no more and no less than [...] that from 2050, if possible, no more electricity will be generated from fossil fuels, no more cars will run on petrol or diesel and no more industrial processes will rely on fossil fuels."

*Uwe Schneidewind: The Great Transformation
- An introduction to the art of social change
(Schneidewind, 2018)*

The City of Leipzig has defined various success factors in the EKSP 2030, including the aspect of "climate-friendly neighbourhood development". This report is intended to serve as a standard model, i.e. as a concept proposal for the standard climate-friendly development of neighbourhoods, which can be used to identify the need for action in the neighbourhoods for decarbonisation by 2040. The planning and development of energy-positive neighbourhoods is one of seven areas of work in Leipzig as part of the SPARCS project. In addition to the *standard model*, the *Energy Map* was developed, which integrates energy and building data into an urban data platform. In order to ensure that the results are utilised after the end of the project, the content was prepared in such a way that it can be used for the long-term further development of urban structures.

Using the tools presented, it is possible to systematically evaluate the energy efficiency of Leipzig's neighbourhoods and identify where the quickest successes can be expected and where lengthy change processes can be expected. Whether strategies can be developed for all neighbourhoods in Leipzig or only those neighbourhoods whose climate-neutral heat transformation has not been sufficiently clarified in the heat plan remains to be seen. This depends, among other things, on the personnel resources of the supporting offices and the funds available to implement the measures.

This report is initially aimed at the **project team working** on climate-friendly neighbourhood development, the **Leipzig city administration**, which can use this report as a basis for standardised terminology to communicate the shared vision, the wider urban public and (potential) **neighbourhood stakeholders**, and other **municipalities**, which can adopt the tools developed in their work processes. The standard model is intended to promote a common understanding of objectives and processes within the city administration with contractors. A standardised approach based on a standard procedure such as the "standard model" presented here enables the exchange of experience and can increase transparency. In the long term, an established model helps to utilise resources such as personnel, time and money effectively. As part of the standard model, existing energy data for neighbourhood development is also made more easily available with the help of the Energy Map Leipzig.

1.2 Procedure

To date, energy-efficient neighbourhood concepts have been based on the requirements of the KfW 432 funding programme for the creation and implementation of energy-efficient neighbourhood concepts. In Leipzig, these concepts have been developed and implemented since 2014, e.g. the Neulindenau neighbourhood, in which the SPARCS demo district Duncserviertel is located.

In order to build on the experience gained with KfW procedure 432 to develop a standard model for climate-friendly neighbourhood development, the participating authorities and their respective needs were identified.

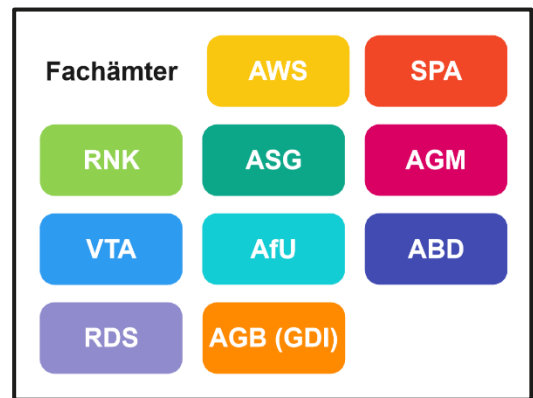


Figure 1: Offices and departments involved

Source of illustration: own illustration

Table 1: Roles of the offices and units involved

Abbreviation	Office	Involved as responsible for:
AWS	Office for Housing and Urban Renewal	Urban renewal and neighbourhood development, preservation of affordable housing
RNK	Department for Sustainable Development and Climate Protection	Climate protection, heat planning
SPA	Urban planning office	Urban planning
ABD	Office for Land Organisation and Monument Protection	Monument protection, partly also authorisation of solar systems
AGM	Office for Facility Management	Municipal buildings
VTA	Traffic and civil engineering office	Transport and road construction
ASG	Office for Urban Greenery and Water	Green spaces, heat protection and water management
AfU	Office for Environmental Protection	Environmental protection and urban greenhouse gas balance (GHG balance)
AGB (GDI)	Geodata Infrastructure Department in the Office for Geoinformation and Land Organisation	Leipzig Geo-Information System
RDS	Digital City Unit	Urban development with regard to digitalisation; SPARCS project

Subsequently, several workshops were held with the offices that are currently or potentially involved in climate-friendly neighbourhood development in Leipzig:

Table 2 Workshops for the development of a standard model

Timing	Location	Focal points
July 2022	East Passage Theatre	Agree on basic principles, use other cities' approaches as examples
November 2022	Pögehaus	Climate-friendly neighbourhood development, prioritising urgent issues, data
February 2023	Online	Presentation of the "Energy Caravan"
May 2023	Tour, Baumwollspinnerei, Duncker district	SPARCS solutions in the neighbourhood
July 2024	Online	Presentation of the work aids at AWS, core team climate protection, heat planning

In the workshops, diagrams were developed that correlate the content of the various objectives under discussion: energy-efficient neighbourhood concepts, energy-positive neighbourhoods, making climate-friendly living easy. The diagrams were developed and iteratively adapted with the participating departments. The City of Leipzig has thus begun work on working aids for a standard model.

The tools created were presented and made available to the participating offices in mid-2024.

1.3 Results

In the workshops, the objectives, the process and the availability of the data basis for climate-friendly neighbourhood development were discussed. The result was that the current processes of energy-efficient neighbourhood development must be accelerated and made more implementation-oriented in order to achieve standard climate-friendly neighbourhood development.

For this reason, working aids were developed following the workshops, which

- identify possible **goals** of climate-friendly neighbourhood development in view of municipal possibilities,
- visualise and analyse current **processes** and identify potential for improvement and
- improve the **data basis** for analysing and planning energy-related neighbourhood development.

The following tools were developed as part of the standard model:

To create clarity about goals:

1. a breakdown of climate-friendly neighbourhood development into different levels (2.2)

2. Fields of action (2.3) and an assignment of the fields of action to the levels (2.4)
3. a model table of contents and a standard measures sheet (3.3)

To create clarity about actual and target processes:

4. Schematic and detailed overview of the process context (3.1)
5. A proposal for improving the monitoring of concept development (3.2)
6. Method for neighbourhood selection (**Error! Reference source not found.**)

To make data more easily available for neighbourhood analysis and the development of measures:

7. Leipzig Energy Map including building module (see SPARCS report D5.14)¹

The standard model of climate-friendly neighbourhood development presented below is made up of these tools. They are available to those involved online in a Miro-Board, among other places. In the sense of *living documents*, they are to be adapted to current needs as *living instruments*. These tools are also supplemented by a literature review on the fields of action for climate-friendly neighbourhood development and the options for municipal action. The Energy Map Leipzig, which is presented in report D5.14, was developed to improve the availability of data.

2. GOALS AND FIELDS OF ACTION FOR CLIMATE-FRIENDLY NEIGHBOURHOOD DEVELOPMENT IN THE CONTEXT OF MUNICIPAL OPPORTUNITIES

The objectives and fields of action of climate-friendly neighbourhood development from the perspective of the municipality are discussed below.

2.1 Climate-friendly neighbourhood development

2.1.1 Definition of

The term neighbourhood development can either be used descriptively to mean that a neighbourhood is changing or that someone is intentionally shaping the neighbourhood. For climate-friendly development, it is necessary to achieve climate neutrality. This is essential in terms of the common good and the "Leipzig Strategy" urban development concept as well as the UN *Sustainable Development Goals* (SDGs), to which the Leipzig goals refer. In this context, climate-friendly development means achieving the fairest possible distribution of benefits and burdens in all decisions and developing solutions that are as fair as possible for local people, with regard to affected people elsewhere in the world and with regard to future generations. Special consideration must be given to particularly affected and marginalised groups. Climate-smart development means meeting the 1.5° target in accordance with the Paris Agreement. This means decarbonising the current way of life and economy. Decarbonisation means "*that from 2050, if possible, no more electricity will be generated from fossil fuels, no more cars will run on petrol or diesel and no more industrial processes will rely on fossil fuels*" (Schneidewind 2018: 144). This requires a transformation of the current way of life and economy. There

¹ Reports can be found on the project website: <https://sparcs.info/en/deliverables/> in section WP4, Demonstration Lighthouse City Leipzig. 4.6.2024

are various ways to achieve this; making the transformation climate-friendly is a normative commitment that is formulated at various points in the Leipzig EKSP. As a normative concept, climate justice points to the connections between justice and climate protection, which result in a challenging field of activity for neighbourhood development. These connections are contained in the definition of sustainability in the Brundtland Report of 1987, which coined the term:

"Sustainable development is development that meets the needs of the present without jeopardising the ability of future generations to meet their own needs." (Translated from Brundtland, 1987)

The German Ethics Council's statement on climate justice is based on a similar understanding of climate justice (German Ethics Council, 2024). As the opinion was only recently published, the recommendations cannot be fully incorporated into this report. Nevertheless, reference is made to the principles formulated. Two central principles are that

- a) Measures should be based on communication processes
- b) everyone has a right to the possibility of a good, successful life and therefore those who fall below certain thresholds deserve the most consideration.

These principles are adopted below for neighbourhood development.

These conditions mean that the city administration has the task of integrating the decarbonisation of neighbourhoods into its development strategy by improving their carbon footprints. Climate balances depend on existing infrastructures and the behaviour of citizens in these infrastructures. City administrations cannot influence the behaviour of citizens, but they can lay the foundations for climate-friendly or harmful behaviour when planning the infrastructure. The claim of climate-friendly neighbourhood development means that justice at global, local and intertemporal level is taken into account as a criterion for the design of measures in neighbourhoods. This requires a way of working that integrates various interests into neighbourhood development. Climate-friendly neighbourhood development adds to this the fact that global and intertemporal effects must also be weighed up when designing decarbonisation measures.

Against this background, necessary changes in the neighbourhoods and differences between urban and neighbourhood-specific strategies are outlined using the example of the city of Leipzig.

2.1.2 Prerequisites

Energy-efficient neighbourhood development affects many areas and stakeholder groups, for example electricity supply, heat supply, mobility, supply options in the neighbourhood, climate adaptation of green spaces, urban planning, citizens and various specialist departments. If measures are planned with external support, there are also contractors.

The definition of common objectives for different stakeholders is the basic prerequisite for successful planning, implementation and evaluation of measures. The target matrix developed for the standard model (Figure 5), which distinguishes between three levels that lead to climate-friendly neighbourhoods. Furthermore, various fields of action were identified that should be taken into account in neighbourhood development (assignment of fields of action to levels: Figure 16). Context-specific goals should be defined for each

level in each field of action. The objectives should be formulated as *SMART goals*, i.e. specific, measurable, attractive, realistic and time-limited.

"Goals without implementation plans are just wishes"
SpinLab Leipzig

To achieve climate neutrality, cities should focus in particular on transforming existing neighbourhoods.

While it is comparatively easier to consider and implement energy efficiency, a climate-neutral heat supply and renewable energies in new buildings during the planning stage, it is necessary to develop decarbonisation strategies that can be applied in existing neighbourhoods. For this reason, the SPARCS demo neighbourhoods are existing neighbourhoods in which research has been carried out into how a transformation to climate neutrality can be implemented. The Duncckerviertel demo district was used to study the characteristics of a residential neighbourhood; the Baumwollspinnerei commercial and artists' area represented commercial use in a listed building. Developing existing urban neighbourhoods in a climate-friendly way is necessary for climate neutrality for the following reasons:

1. **High emission potential:** Existing urban neighbourhoods are often responsible for a significant proportion of urban greenhouse gas (GHG) emissions, as they were not historically developed in a climate-neutral way. If these neighbourhoods are redesigned and modernised, emissions can be significantly reduced.
2. **Less land consumption:** Converting and upgrading existing urban districts minimises the need for additional land and thus protects valuable natural and agricultural areas.
3. **Social and economic inclusion:** Revitalising existing neighbourhoods offers the opportunity to promote social and economic equality. Climate neutrality measures can improve quality of life, health and job opportunities, allowing the city to be developed inclusively.
4. **Optimising infrastructure utilisation and resources:** Existing infrastructure, such as roads, supply networks and public facilities, can often be used more efficiently by retrofitting and modernising instead of creating new infrastructure.
5. **Visibility and awareness:** Transforming existing neighbourhoods serves as a visible example. It raises awareness of the opportunities for climate adaptation in the local community.
6. **Grey energy:** As existing neighbourhoods already exist, no energy is required to create them. Although the modernisation of existing buildings is often costly and new urban areas are often easier to organise in a climate-neutral way, the old neighbourhoods and their emissions do not disappear with new buildings. Additional materials are needed for new buildings.

Useful links

Tools for municipalities of the Saxon Energy Agency

SAENA 2023

SAENA provides local authorities with examples, experts and checklists for new and existing buildings, lets them search for subsidies and provides an overview of the legal situation.

<https://www.saena.de/kommunen.html>

2.1.3 Initial situation of the City of Leipzig

Leipzig is pursuing the goal of being completely climate-neutral by 2040 at the latest, with the year 2030 being the target (EKSP 2030, decision to participate in the EU mission "100 climate-neutral and smart cities by 2030").

The fact that the City of Leipzig is pursuing climate-friendly development of existing neighbourhoods is defined by the fifth success factor of the EKSP mentioned above,

"climate-friendly refurbishment of existing neighbourhoods"². At a higher level, the necessity arises from the climate targets adopted by the City of Leipzig and the federal government.³ For the city as a whole, the City Council has set targets for development in Leipzig in the integrated urban development concept (INSEK) "Leipzig Strategy 2035". The central aim is for the city of Leipzig to grow sustainably and serve the common good. It also states that Leipzig should contribute to the global goals of the SDGs.

The activities of the city administration should contribute to the objectives set out in the INSEK and must not contradict them. The following Figure 2 shows the objectives of the Leipzig Strategy 2035. The objectives to which the climate-friendly development of existing neighbourhoods contributes are highlighted in yellow.



Figure 2: Objectives in the Leipzig Strategy to which climate-friendly neighbourhood development contributes

Source: Leipzig Strategy 2035

The SPARCS team used the Wikipedia entry "Climate justice" (as of 10 August 2023) as the basis for the content of the workshops in Leipzig and the standard model. The following is a version that was rewritten for a different project module so that it is easier to read.

² "Climate-friendly" is also mentioned elsewhere in the EKSP, e.g. in relation to heat planning, urban planning, nutrition and campaigns for "climate-friendly action at all levels". It is therefore an overarching goal.

³ Classification of various climate target years: In the 2015 Paris Agreement, it was decided to decarbonise by 2050 in order to limit global warming. In the Climate Protection Act, the German government decided to implement this by 2045. The city of Leipzig has decided to become climate-neutral by 2040 and, by participating in the EU mission "100 smart and climate-neutral cities by 2030", is expressing its intention to do so by 2030. This report refers to the achievement of the target by 2040, as this target corresponds to the city's current action plan.

Climate justice is a concept that understands the current man-made climate change not just as an environmental issue or a purely technical challenge, but as an **ethical and political problem**.



Figure 3: The climate crisis is a political problem

Image source: Pixabay

The consequences of global warming are unevenly distributed today. The population groups, mostly in the Global South, that contribute the least to climate change often suffer the most from its consequences and are the least protected.

Climate justice aims to ensure that the consequences of global warming are offset in such a way that those who have contributed the most to global

warming must help the most to solve the problems. This is called the **polluter pays principle**: Whoever has caused a problem must solve it.

On the one hand, climate justice demands that all people worldwide should be allowed to emit the same amount of greenhouse gases, whereby emissions caused in the past are included. These are called **historical emissions**. On the other hand, climate justice calls for the effects of climate change to be linked to concepts of justice.

The climate justice movement assumes that two facts are causing humanity to heat up the climate: on the one hand, the unequal distribution of wealth in society, **social inequality**, and on the other, the **economic system**, which is structured in such a way that it continues to grow and must continue to grow.

The climate justice movement assumes that **some groups are particularly affected by** global warming: for example, women, black people, indigenous people, young, older and poorer people. A special focus is placed on these groups.



Figure 4: Justice?

In order to limit global warming, it is assumed that **society** must be **structurally changed**.

Climate justice advocates argue that the **social impacts of** these changes must be **taken into account** because otherwise there will be profound economic and social tensions that can delay the changes. Climate justice advocates believe that it is possible to reduce GHG emissions in a socially just way. This is desirable because it is **more ethical** and **potentially more effective**. This approach is referred to as a '**just transition**'.

2.2 Level

The various meanings and associations with the term climate justice were discussed in the workshops. For the majority of workshop participants, climate justice is understood as a transformation that leads to the decarbonisation of local lifestyles while safeguarding the legitimate rights of people elsewhere and at other times. Formulated as a statement with actors and verbs, this is understood as "making life easy in neighbourhoods in a climate-just way, i.e. climate-neutral and socially just, not at the expense of other people".

At the same time, it also became clear in the workshops that the representatives of the authorities do not see themselves in a position to initiate or accompany such a transformation with the current resources and do not see the role of the city administration as being to enforce a transformation. The role of the city administration is to design the infrastructures shaped by the city administration in such a way that they **make life easy in a climate-friendly way**. Furthermore, all neighbourhood development measures must be designed in such a way that they contribute to climate-friendly neighbourhood development. Other terms under discussion are **climate-neutral or energy-positive neighbourhoods**. Climate-neutral neighbourhoods have at least a neutral GHG balance despite their energy consumption, while energy-positive neighbourhoods produce more energy than is needed on site. These terms and the English term *Positive Energy District (PED)* are commonly used in the EU context, for example in the SPARCS project.

On this basis, three levels of climate-friendly development in neighbourhoods were identified, which make it easier for municipalities to define their goal more clearly in view of municipal possibilities, as well as to assess the current situation in the neighbourhood and conditions for its climate-friendly improvement.

These levels can be visualised as follows:

How do others do it?

Climate-neutral neighbourhoods and areas: final report

dena/Fraunhofer ISE, 2021

Are there examples of climate-neutral neighbourhoods? What implementation options are there?

The study by the German Energy Agency analyses urban areas that have the goal of becoming climate-neutral.

<https://www.dena.de/themen-projekte/projekte/projektarchiv/klimaneutrale-quartiere-und-areale/>

Examples of neighbourhoods:

https://www.dena.de/fileadmin/dena/Dokumente/Pdf/Urbane_Energiewende/FINAL-KNOA-Praxisbeispiele-Paket.pdf

Minimum realisation: The city of Leipzig is not alone in finding it difficult to establish a standard process that makes neighbourhoods climate-neutral.

What should be achieved developing existing districts in a climate-friendly way?

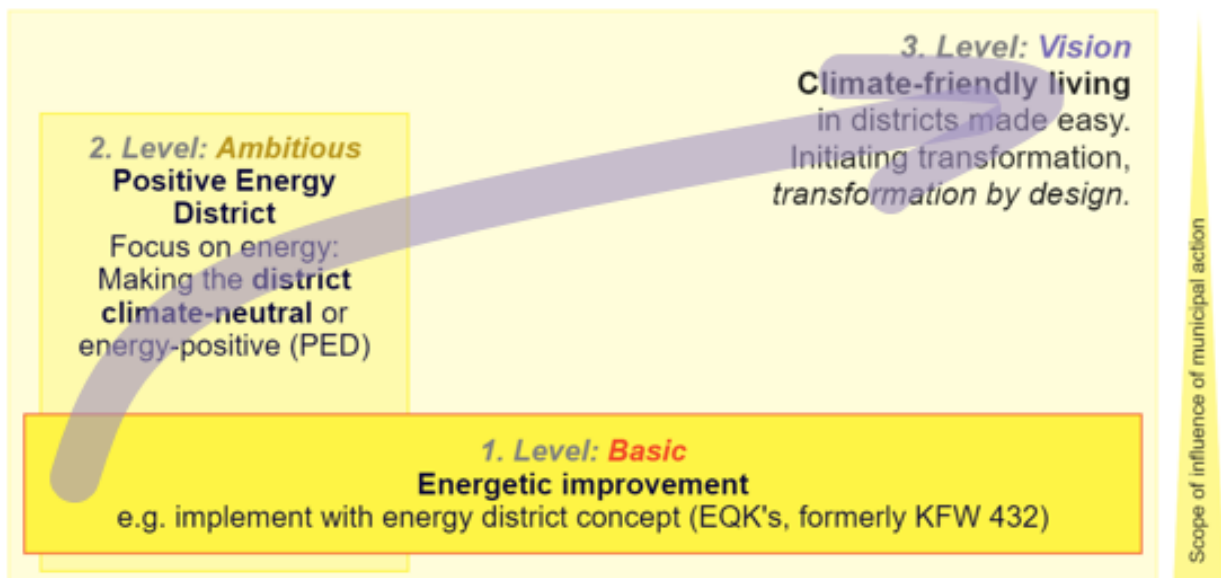


Figure 5: Climate-friendly neighbourhood development divided into three levels

Source: own illustration

Level 1, basic: Energy improvements by means of energy-efficient neighbourhood concepts - with or without KfW funding - were identified as the basis and first level of climate-friendly neighbourhood development. This level was identified as the central scope for the city administration, with energy-efficient neighbourhood concepts as the central instrument.

Level 2, Ambitious: Energy-positive neighbourhoods are at the second level. Depending on the selected balance limits, these can be processed with a technical focus on the fields of electricity, heat and refurbishment. Mobility is sometimes included; material flows are rarely taken into account. This is the second level of climate-friendly neighbourhood development, as a positive renewable energy balance is often challenging.

Level 3, Vision: Making climate-friendly living in neighbourhoods easy, was identified as the vision and third level of climate-friendly neighbourhood development. Achieving this level requires measures in all areas until all areas of life in the neighbourhood can be easily managed in a climate-neutral way. Necessary fields of action were derived from this level.

Measures such as those previously implemented as part of the KfW 432 funding programme can serve as an energy basis and are therefore classified as Level 1. The German Energy Agency (DENA) distinguishes between minimum and maximum requirements for climate-neutral neighbourhoods. While the energy improvements at Level 1 do not achieve climate neutrality, Level 2 is based on the minimum requirements outlined by DENA and Level 3 on the maximum requirements. The possible balance limits are shown in the following figure.

Aspekte der Definition klimaneutraler Nachbarschaften

Aspekt	Minimalanforderung	Maximalanforderung
Betrachtete Energiesektoren	Elektrizität, Wärme, Kälte	+ Mobilität
Räumliche Grenzen des Energiebedarfs	Energiebedarf, der innerhalb der Nachbarschaftsgrenzen auftritt	Energiebedarf der Bewohnenden und Nutzenden (inklusive genutzter Güter)
Räumliche Grenzen der Energiequellen	Energiequellen aus dem Gebiet und aus der umliegenden Region	Nur Energiequellen aus dem Gebiet
Zeitliche Auflösung des energetischen Ausgleiches	Selbstversorgung im Jahresdurchschnitt (Netto-Null)	Selbstversorgung in jeder Stunde des Jahres
Betrachteter Teil des energetischen Lebenszyklus	Betriebs-Energie	Energiebedarf des ganzen Lebenszyklus (Bau, Betrieb, und Abbau/Recycling/Entsorgung)

Figure 6: Possible balance limits of "climate-neutral" neighbourhoods

Source: German Energy Agency 2011

2.3 Fields of action for Neighbourhood development in the context of transformation

2.3.1 Derivation

Research into fields of action for climate-friendly neighbourhood development shows that many publications focus on new buildings (see (Deutscher Städte- und Gemeindebund, 2022; Hansestadt Hamburg, 2023; NRW.Energy4Climate, 2022; SAENA, 2023; Umweltbundesamt, 2022a). However, the majority of formative infrastructure and buildings already exist. Decarbonising these is more complex. Here, municipalities can primarily initiate, motivate, moderate and advise. In the past, renovation rates without municipal campaigns were around 1 %. Authorisations are only required for major renovations. However, building components age and become obsolete in typical cycles, around every 30 years. Local authorities can address this by taking into account the age of the building and the last renovation wave of a neighbourhood when planning measures.

Changes are needed in many areas of work and life: many collective actors must make changes so that no GHGs are emitted in society as a whole. For this reason, the definition of the fields of action is based on publications that deal with classic municipal climate protection (German Association of Towns and Municipalities, 2022; German Institute of Urban Affairs, 2023; Federal Environment Agency, 2023) as well as publications that describe this major transformation (Schachtschneider & Adler, 2017; Schneidewind, 2018).

Reading tip

The Great Transformation. An introduction to the art of social change

Uwe Schneidewind, 2018

The book sets out what is needed to make society climate-neutral and how this can be achieved.

Among other things, it presents how social change works, analyses the relationship to current capitalism and outlines an expanded understanding of prosperity. It then discusses the arenas in which change is needed: the energy, prosperity, resource, mobility, food, urban and industrial transitions. It concludes with specific chapters for actors from politics, civil society, entrepreneurship, science and for pioneers.

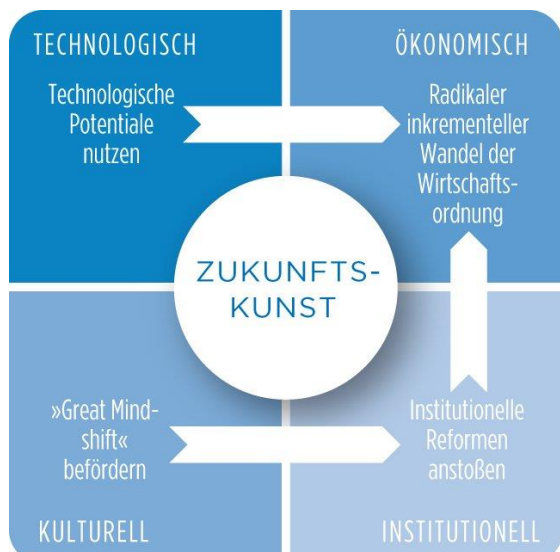


Figure 7: How social change is shaped

Source: Schneidewind 2019,
<https://pbs.twimg.com/media/DxF3IIQXQAAAw6V?format=jpg&name=small> (29.04.2024)

in the neighbourhood and in local neighbourhood economic development. As neighbourhoods are the actual places where people live and work, it makes sense to work towards making climate-friendly living easy there. With neighbourhood development, economic development and waste disposal as well as cultural promotion and district budgets, city administrations have an influence on this and are responsible in accordance with the principle of subsidiarity.

The combination of the idea that a change in values is necessary and should be promoted with publications that deal with climate protection in municipalities and climate-friendly neighbourhood development (German Association of Towns and Municipalities, 2022; German Institute of Urban Affairs, 2023; NRW.Energy4Climate, 2022) and the fields of action from the (currently dormant) KfW Programme 432 for energy-efficient neighbourhood development illustrates the following: Firstly, in order to achieve zero GHG emissions, there are technical **fields of action** (1-8) that need to be decarbonised. Secondly, the process and the process skills of the initiators have a decisive influence on whether and how quickly decarbonisation can be achieved. The **process** (9) is therefore also listed as a field of action. Thirdly, the framework conditions structure the possibilities. If restrictive **framework conditions** prevent the achievement of climate-friendly neighbourhoods, these must also be adapted.

Researchers at the Wuppertal Institute are working on solutions to the current sustainability challenges. They have published a comprehensive book called *The Great Transformation*, which provides an introduction to "the art of social change" (Schneidewind, 2018) gives.

They understand climate-friendly development to mean the decarbonisation of the way we live and do business in order to meet the 1.5° target set out in the Paris Agreement.

Schneidewind et al. are of the opinion that the necessary change requires a cultural change as a basis. Changes in technologies and institutions reflect ideas and values and must be adapted accordingly. Schneidewind et al. emphasise that a broader understanding of prosperity is central. This analysis must be taken into account both in strategic communication

Reading tip

Practical guide

Climate protection in municipalities

German Institute of Urban Affairs, 2023

The practical guide provides a clear and practical overview of what can be done for climate protection in municipalities.

The first part describes the basic principles of implementation: Climate protection as a cross-sectional task, personnel, participation, co-operation, accompanying changes, financing, urban and regional development.

The second part deals with climate protection concepts and the third presents challenges and solutions in various fields of action.

<https://backend.repository.difu.de/server/api/core/bitstreams/ed93210e-05d1-45e8-bbbc-cd36c32a704b/content>

2.3.2 Fields of action

The technical fields of action consist of electricity, heating, mobility, climate adaptation, internal development and material cycles. In the context of municipal climate protection, the focus is particularly on refurbishing and increasing building efficiency combined with the expansion of renewable energies and fossil-free heating solutions. These are listed separately, but must be considered in close connection with the others.

Mobility and climate adaptation can sometimes be dealt with separately. There are also other topics that can be assigned to the fields of action in different ways: One example of this is compact, ideally threefold internal development that contributes to climate-friendly mobility as well as climate adaptation and low resource consumption (German Institute of Urban Affairs, 2023). It is listed here as a separate field of action so that it can be better allocated to the stakeholders.

Depending on capacities and needs, stakeholders can decide whether further areas need to be addressed. From the perspective of climate-friendly neighbourhood development, it is necessary to work out how to achieve complete decarbonisation by 2040 at the latest for all areas of action, taking into account the city's overall planning and timelines. The fields of action are shown in Figure 8 below.

The fields of action are presented in detail below, and the co-benefits of processing are explained.

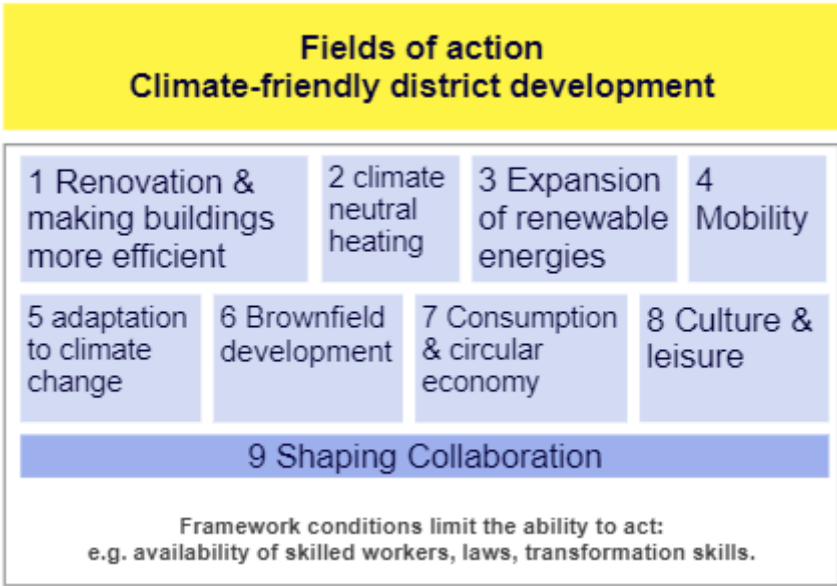


Figure 8: Fields of action for climate-friendly neighbourhood development

Source: own illustration

(1) Refurbishment and increasing building efficiency

The less renewable heat that has to be produced, distributed and offered throughout the year, the easier it is. Reducing energy consumption is sometimes easier than providing more renewable energy. This would require land for which there are conflicts of use: in urban areas between photovoltaics, solar thermal energy, green roofs and sometimes listed buildings or green spaces; in non-urban areas, for example, between agriculture, nature conservation and energy production. The efficiency potential of all buildings should therefore be utilised and brought up to the highest possible energy standard.

Target values that are compatible with the Climate Protection Act and a climate-neutral energy system in 2045 are provided by DENA⁴. In doing so, the currently applicable requirements under monument protection law and social conservation statutes must be observed. Furthermore, the effects on rents must be kept in mind and support programmes created where necessary.

Building efficiency can be increased, for example, through waste heat recovery or, as demonstrated in the SPARCS project, through dynamic heating control.

Cases: In order to support the refurbishment and energy-efficient development of buildings, different measures make sense for the different types of actors, as structurally different offers are attractive to them. These measures are summarised in the adjacent **Error! Reference source not found.** opposite. Some fall into several categories: all of the respective measures make sense for them. For example, owners of large type buildings can also be public owners. As the operators of public buildings and companies are often not familiar with energy management, it makes sense for them to outsource energy-saving measures via contracting. It therefore makes sense to address them with contracting offers.

Under the "Energy Caravan" programme, owner-occupiers are offered on-site energy advice unless they object. This is a successful way of motivating people to carry out energy modernisation. The energy caravan reverses the usual decision-making architecture: instead of waiting for citizens to come to the consultation (*opt-in*), an on-site consultation is offered if there is no objection (*opt-out*).

Owners of large standard buildings can benefit from serial refurbishment based on the Energiesprong principle. Using digital scanning and prefabrication, this principle shortens the refurbishment phase on site. In addition, economies of scale can be realised for large similar buildings. The principle is still in the development phase.

Yield-orientated building owners from the financial market and stock exchange, such as equity funds, banks, insurance companies and large property owners, usually have no direct connection to the properties and therefore have little interest in high energy quality. This is where standards and laws can help.

Co-benefits: If houses are better insulated, they are more pleasant to stay in when it is cold, as there are fewer temperature differences indoors (draughts) and the air does not dry out. In hot weather, the coolness of the night can be better kept indoors through targeted ventilation. In addition, the energy supply is independent of other countries. Operating costs for energy are reduced.

(2) Heat

In the heating sector, it is necessary to work out how to make the heating supply completely climate-neutral by 2040. By law, municipalities with a population of 100,000 or more must draw up heating plans by June 2026 that clarify which heating supply option

Actor	Action
Public buildings, businesses	Energy-saving contracting
owner-occupied residential property	Power caravan
Owners of large type buildings	Serial renovation - Energiesprong
Return-oriented building owners	Regulation through standards and laws; lobbying

Figure 9: Homeowner types and what helps them to renovate

Source: own illustration

⁴ Target values for non-residential buildings: <https://www.dena.de/newsroom/publikationsdetailansicht/pub/factsheet-studie-fit-fuer-2045-handlungsempfehlungen-fuer-kommunen/> (10/09/2023)

is suitable in which areas. The city of Leipzig is currently drawing up such a heating plan. This will determine which neighbourhoods should be connected to district heating and in which neighbourhoods decentralised solutions should be implemented.

Cases: District heating can be decarbonised centrally. If it is clear from the heating plan that an area is not suitable for district heating, another solution must be developed that makes economic and ecological sense in the neighbourhood in view of the expected development of the neighbourhood. In the case of an individual solution, this can in principle be solar thermal energy from the roof, geothermal energy from the property, a supply from heat pumps, or heating with biomass or other climate-neutral fuels. Local heating or building networks are options for collective solutions other than district heating, which can also be supplied in different ways. The different heating solutions sometimes result in different requirements for refurbishment.

Co-benefits: The quality of living increases, which should improve health in currently more basic residential areas. Costs for energy imports fall; the energy supply becomes independent of other countries. In some cases, this improves local air quality.

(3) Expansion of renewable energies

The aim of expanding renewable energies must be to (doubly) utilise all larger and sealed areas in the city for renewable energies in order to use as little previously unsealed land as possible (Agora Energiewende, 2023). Local authorities can provide support here

- by means of an energy caravan,
- by means of energy contracting campaigns,
- by acting in an exemplary manner,
- by designating areas,
- by leasing their own roofs in order to have them built on quickly,
- by striving for a threefold internal development in urban planning and
- by using a heating plan to clarify in which areas there is a particular need for heat production.

To this end, it should be examined which areas can be used multiple times. In the neighbourhood, it should be examined whether it is possible to supply the neighbourhood (on balance) entirely with renewable energy or whether energy can also be produced. Designing and promoting neighbourhoods as energy-positive neighbourhoods can strengthen local dynamics (ambition, pride, identification with the neighbourhood). This can be used in a targeted way to achieve the goal (e.g. the visibility of a solar installation increases the likelihood of other installations being set up in the neighbourhood). If this is not possible, regional energy partnerships can be used to strengthen neighbourhood identities. Often, the initial aim is to produce enough energy over the course of the year; the timing is often disregarded. The next step is to determine how potential production and current demand fit together. Particular attention must be paid here to the times at which all sectors require energy at the same time, e.g. for electricity, for heat (pumps) and for mobility. This results in favourable times and the need for regulation. Various methods can be used to encourage people to consume energy when there is a lot available. Apps that visualise consumption and the times when large quantities of renewable energy are available, automatic switching and tariffs that reward grid-friendly consumption are all conceivable. At the same time, energy storage systems can be useful for making energy available outside of these times. It should be checked whether forms of energy can be shifted appropriately between the different sectors.

Cases: There are several addressees: Owners of owner-occupied buildings should be encouraged to install renewable energy systems. All municipal buildings should realise

their potential for renewable energies. In the same way, economic players should be encouraged and supported to utilise their potential.

As part of inner city development, the purpose for which derelict buildings and areas could be utilised in the future should be examined. A municipal pool of pop-up modules, for example, is conceivable for temporary open spaces.

The economic development agency has identified the 50 largest roofs in Leipzig that are suitable for solar energy and the heritage conservation organisation has also suggested identifying roof areas that are unproblematic from a heritage perspective on a district-by-district basis. A start should be made on this.

Co-benefits: Costs for energy imports fall; the energy supply becomes independent of other countries. Neighbourhood identification can be strengthened.

These three fields of action form the core of the practical guide to climate protection in municipalities (German Institute of Urban Affairs, 2023) (see previous reading tip). Around 30% of emissions per inhabitant are generated here in Leipzig (City of Leipzig, 2021). Not least because of this potential, the three fields of action for energy development in Leipzig have been prioritised. In future, it will be important to link them with other fields, such as monument protection.

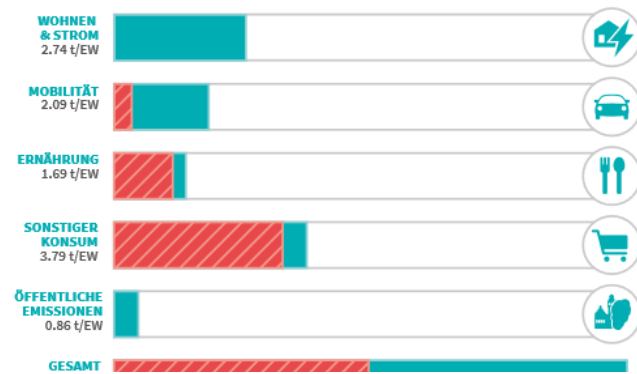


Figure 10: GHG emissions in Leipzig in 2019 by consumption sector

Source: City of Leipzig 2021, https://static.leipzig.de/fileadmin/mediendatenbank/leipzig-de/Stadt/02.3_De3_Umwelt_Ordnung_Sport/38_Referat_Nachhaltige_Entwicklung_und_Klimaschutz/Europaeische_Energie-_und_Klimaschutzkommune_Abschlussbericht_2019_2020.pdf

(4) Mobility

A process of climate-friendly neighbourhood development should ensure that a plan to switch to climate-neutral mobility by 2040 exists and is implemented for the neighbourhood. Aspects of equity must be taken into account. In addition, Section 1 of the Road Traffic Act was amended in 2021; since then, the basis for all traffic measures has been that there should be no road deaths or serious injuries. The road safety of all road users takes priority over the fluidity of traffic. This results in new mandates and justifications for the creation of good conditions for active transport (Schürmann & Mischer, 2024).

Check for each neighbourhood whether the specifications and implementation plans from the Mobility Strategy 2030 (Leipzig City Council, 2020) are sufficient for climate-friendly

development. If this is not the case, specifications can be drawn up with the help of neighbourhood mobility concepts.

The guidelines can be developed separately from fields of action 1-3, but should not contradict them. To this end, a scenario must be developed and set out how mobility is to be changed overall in Leipzig and in Germany: How much should the number of cars be reduced, how many vehicles should be replaced by electric cars or other alternative drive technologies and at what speed and by what means? This will determine how much charging infrastructure, roads and parking spaces, possibly in neighbourhood garages and parking spaces or rental stations for cargo bikes, bicycle garages, etc. need to be provided. This is one of the key challenges, as such a scenario does not yet exist at federal level; support from the Ministry of Transport is unclear. In order to be able to develop neighbourhoods accordingly, a trend assumption and a target scenario for the city as a whole may need to be specified.

It can then be worked out for neighbourhoods whether the focus should be on public transport, dense neighbourhood infrastructures or active transport, for example, and which measures should be used for the changeover.⁵

Cases: In addition to private transport, delivery traffic must also be taken into account. Emergency traffic and the inclusion of people with limited mobility must also be taken into account.

Co-benefits: Although changes to mobility infrastructures are much discussed, their climate-friendly adaptation has many positive short and medium-term effects in other areas. Cities with low noise pollution are fairer overall, as poor people in particular tend to live in neighbourhoods with high noise pollution. In traffic-calmed cities, air quality is also better, which benefits all residents, especially disproportionately polluted groups. Moving more in everyday life thanks to improved traffic conditions is good for health. Many groups benefit from urban spaces with fewer edges and fewer hazards: active traffic, people with limited mobility, children and anyone travelling with children. Unsafe road users are also more likely to venture into active traffic. Contrary to popular expectations, the retail sector also benefits in most cases. These effects should be utilised and emphasised.

(5) Climate adaptation

As part of the process of climate-friendly neighbourhood development, it must be ensured that the neighbourhood is prepared for at least the climate scenarios that are currently most likely, both for **everyday life** and for

Reading tip

Website:

What road traffic authorities should do for road safety!

(2024)

<https://kommunaltopinform.de/2024/07/08/interview-mit-wolfram-mischer/> Interview by Deutsche Umwelthilfe, which lists legal justifications for good transport infrastructure for active transport.



Figure 11: People use combined transport and green infrastructure

Image source: Pixabay

⁵ As the Transport and Civil Engineering Office (VTA) signalled that the mobility strategy was sufficient, the urban situation in this field of action was not researched in greater depth due to time constraints. Deviations from this assessment may be necessary, even if the basic assessment is based on expertise.

extreme weather events. In terms of everyday life, this relates to heat, drought, storms and heavy rain; extreme weather events are extreme droughts, fires, extreme storms and floods. In addition to structural changes, this is mainly achieved by improving green spaces and bodies of water, the so-called green-blue infrastructure.

Conversion measures are planned in the neighbourhoods as part of the decarbonisation of the heat supply and the expansion of the electricity grid. The minimum requirement is that all neighbourhoods are greener and bluer after the energy conversion measures than before. If there are special requirements, experts should be involved in the planning.

Cases: It should be ensured that people from all walks of life are similarly protected at a minimum level: the needy and the affluent; the mobile and the less mobile (German Ethics Council, 2024). The Federal Environment Agency lists examples in various cities of how this can be implemented (Federal Environment Agency, 2022b). In addition to Leipzig, there are exemplary implementations in Potsdam and Dresden. Leipzig's heat action plan initially prioritises vulnerable groups such as senior citizens and young children. Leipzig is also developing a climate adaptation concept in which the heat action plan drawn up in 2023 will be embedded.

Climate adaptation also includes disaster preparedness. Disaster preparedness plans must be adapted to current extreme scenarios. In disaster scenarios, special consideration should be given to people in need and people with disabilities.

In the event of extreme weather, wild animals, farm animals and pets living in the neighbourhood should also be taken into account. Animal welfare dictates that vertebrates dependent on humans should be protected from suffering. The concept of "biophilic design" is also used in urban planning to make neighbourhoods more pleasant (Beatley, 2016). Here, for example, planning is based on representative species: in the knowledge that, for example, neighbourhoods designed to be pleasant for hedgehogs are better for foxes, lizards, local plants, etc., plans are made to be hedgehog-friendly.

Co-benefits: Improving green spaces and bodies of water is good for the quality of life and health of residents. For example, it has been proven that people who live with a view of green spaces or the countryside are less likely to become depressed. Green spaces and bodies of water also filter the air and lower the temperature in hot weather.

Improving the quality of green spaces and bodies of water has positive effects on health and animal welfare.

Climate adaptation can also be dealt with independently of fields of action 1-3, but should not contradict them. Climate adaptation must be well coordinated centrally with the fields of action 4 Mobility and 6 Internal development.

(6) Inner city development

In the process of climate-friendly neighbourhood development of existing neighbourhoods, it should be examined in the respective neighbourhood which areas and buildings are not being used or can be used multiple times. Multiple use is possible, for example, for active transport and green-blue infrastructure, renewable energy, roof or car park areas that can be used for multiple purposes and brownfield sites that can be used temporarily.

Cases: Where possible, buildings should continue to be used in order to utilise the grey energy that has already been used. In the case of land, the purpose for which it is to continue to be used should be checked.

In order to save space, e.g. for short distances, for green spaces and to utilise resources for as long as possible, inner-city potential should be exploited. The aim here is to achieve threefold inner-city development (German Institute of Urban Affairs, 2023). According to this, "a structural and functional inner-city development, which acts in the sense of a compact city of short distances, should be combined with a supplementation and qualification of green spaces and an increase in climate-friendly mobility options".

If the entire neighbourhood is to be restructured, other instruments are available than for individual area or building renovations (see 2nd reading tip). Standards for climate-friendly new development should be applied to new buildings (see 3rd reading tip).

Co-benefits: In a city that reuses derelict land and buildings in a multifunctional way, it is not only grey energy that is saved. A wide range of positive side effects can be expected: If short distances strengthen active forms of mobility, this is good for the health of residents because it is quieter and they move around. If derelict buildings and areas are reused, the area is usually already easily accessible, which can be fairer. Existing infrastructure is better utilised and costs are reduced. Upgraded green spaces can serve as a water reservoir during heavy rainfall and for local recreation for residents. Keeping buildings in use preserves the cultural identity of areas and stimulates creativity for new uses.

Reading tips for new builds

Website:

Climate-friendly building in Eimsbüttel (2023)

<https://www.hamburg.de/eimsbuettel/klimaschutz/16863040/klimagerecht-bauen/>

The website clearly summarises fields of action and web resources for building managers. It is therefore primarily aimed at new build and renovation projects and can serve as inspiration.

Climate protection & climate adaptation in municipal planning.

A guide for practice

German Association of Towns and Municipalities (2022)

The guide clearly lists the legal possibilities and instruments of urban development law for urban planning, divided into new planning and existing neighbourhoods.

Reading tips for new builds

KlimaQuartier.NRW planning guidelines

(2022)

The guideline lists requirements in various areas and can therefore serve as a guide.

https://www.energy4climate.nrw/fileadmin/Waerme_Gebaeude/planung/sleitfaden-klimaquartiernrw-cr-nrwenergy4climate.pdf

(7) Consumption & circular economy

In order for society's way of life and economy to become climate-neutral, emissions must be reduced by minimising the consumption of resources. Materials must be used for as long as possible before they are recycled or destroyed at great energy expense. In the context of climate-friendly neighbourhood development, the need for action and the respective responsibilities must be clarified. This point has so far been given little consideration in traditional documents on climate protection in neighbourhoods. It arises from the fact that the "resource turnaround" is one of seven central arenas that need to be changed according to Schneidewind et al.

cases: This concerns the private use of resources and resources used by businesses. This document focusses on the private use of resources. It is assumed that commercial actors mainly take care of their own material flows. However, there are cases in which larger quantities of material are regularly left over (e.g. trade fairs). Whether such cases exist should be determined in the development of the existing neighbourhood.

There are various strategies for using materials more sustainably. These strategies are summarised as the 6 R's, based on the English terms. These are:

Reduce:	Reduce consumption
Reuse:	Passing things on and reusing them
Repair:	Repair things
Recycle:	Reuse materials
Rethink:	designing products in such a way that they can be reused and recycled
Refuse:	Do not use materials that cannot be reused



Figure 12: Strategies to reduce energy and material consumption

If things are used longer or more sparingly, less needs to be produced. This reduces the use of materials and energy. In the case of private consumption, places are needed close to home or work where the first 3 R's are possible. As part of climate-friendly neighbourhood development, it should be checked whether there are places for this in the neighbourhood, whether they are accessible to everyone and whether this can be supported by the municipality.

Local authorities can support this process by providing areas for collecting, repairing, reusing and exchanging materials. In some cases, this involves very small areas for swap racks, for example. They can also promote and strengthen initiatives or tradespeople in the neighbourhood who provide space for this, repair things themselves or pass on skills. As waste is generated in such places and municipalities are responsible for disposing of waste, they should co-operate to facilitate the existence of such places.

Co-benefits: Using, maintaining and repairing things for longer promises not only cost savings but also a greater sense of self-efficacy. This is both intrinsically valuable and necessary in order to cope with the upcoming changes. Another conceivable result is a cultural shift towards a greater appreciation of things and a better understanding of how they work. This cultural change seems necessary to ensure that society emits no GHGs by 2050.

(8) Culture & Leisure

Climate-friendly neighbourhood development must change neighbourhoods in such a way that climate-friendly living is feasible for everyone. Like field of action 7, the field of

Source:

<https://www.quicklets.com.mt/blog/63/building-the-recycling-habit-at-home> (4.9.2023)

action culture and leisure is not represented separately in traditional documents; however, as Schneidewind et al. see culture as the basis for the decarbonisation of society, this point has been included.

In order to change the environment in line with this goal, it is important to promote those dimensions of high quality of life in neighbourhoods that are not linked to GHG emissions. To do this, these must be identified. The Organisation for Economic Co-operation and Development distinguishes between 11 dimensions (OECD, 2020):

- Income and prosperity
- Labour and working conditions
- Living
- Health
- Knowledge and skills
- Quality of the environment
- Subjective well-being
- Security
- Balancing life and work
- Social connections
- Social commitment



Figure 13: Dimensions of a good life according to the OECD

archive.oecd.org/2020-03-19/91674-OECD-Better-Life-

Within these eleven dimensions, traditional economic development relates to the first three dimensions. Some of these dimensions are dealt with in other fields of action (e.g. housing, quality of the environment) or are not subject to municipal responsibility (income and prosperity, labour and working conditions, health or subjective well-being). With regard to the dimensions of knowledge and skills, social connections, social engagement and work-life balance, municipalities can exert influence by promoting climate-neutral activities in the neighbourhood. This can be done, for example, by revising existing sports, cultural, volunteer and neighbourhood support programmes, promoting cooperation with adult education centres and museums with regard to climate education or through competitions. Examples include allotment gardening, boules, skating, lace-making, knitting, street art, social engagement, card games, sport and language learning. The core of the respective activity is not climate neutrality; in order to avoid accusations of manipulation, the reason for the promotion should be communicated. It should be checked that there are different opportunities and suitable areas in the neighbourhood for different target and age groups.

Cultural events - from football matches to concerts and opera performances - also cause GHG emissions. In order to minimise this, all larger, locally based cultural institutions should be encouraged to balance their GHG emissions and implement decarbonisation measures as part of climate-friendly neighbourhood development.⁶

Neighbourhood concepts should also clarify whether there is a need for action in other dimensions, e.g. in the area of security, and if so, in whose area of responsibility this lies. The background to the promotion of climate-neutral leisure activities is that people need social identities in which they are recognised. In addition, people want to distinguish themselves from each other subculturally. Social identities are linked to activities. If some

⁶ Leipzig can use the CO2 calculator for cultural institutions. <https://www.leipzig.de/news/news/leipzig-und-dresden-entwickeln-co2-rechner-fuer-den-kulturbetrieb> (25.04.2024)

activities have to be reduced or given up because they cause GHG, it is important that each person has other parts of their identity available in which they can continue to exist socially as a person. It is assumed that every person has subcultural parts in which there are climate-neutral activities.

This field of action is an attempt to support all stakeholders in managing the transition on a social level in order to proactively counteract justified resistance to measures.⁷

Cases: Climate-neutral leisure activities in the neighbourhood should appeal to different people. Different target groups should therefore be distinguished. A segmentation according to Sinus-Milieus is possible; a differentiation according to different age groups and political orientations is also conceivable. A certain diversity of offers should be aimed for in the neighbourhood. All people should be able to develop different identities so that they can adapt more easily when things change.

Co-benefits: Strengthening of communities; less resistance to the necessary change in the medium term if individuals do not lose their identities in the course of change. In addition, places with good social structures are better able to organise themselves in the event of disasters and not forget anyone.

(9) Shaping cooperation

A neighbourhood does not become climate-neutral on its own. Even if the framework conditions exist or are changed in such a way that the conditions for this are given, it usually takes impetus for a transformation to begin. Care must also be taken to ensure that the processes are inclusive, participatory, constructive and fair. Municipalities can take on or commission this role in neighbourhood development initiatives in accordance with the principle of subsidiarity as part of their voluntary duties. Specific competences are required to integrate these aspects into processes. For this reason, the area of cooperation is listed as a separate field of action in the standard model. The selection of the actors involved and the type of cooperation have a decisive influence on the outcome. Local authorities should be aware of this when planning neighbourhood development processes, both for their own management and for tenders. As a great deal can be achieved through process design, this is a separate field of action here.

Cases: (a) shaping individual and collective decision-making situations, (b) integrated working and weighing up, (c) strategic communication and participation and (d) controlling.

⁷ There will still be protests against having to give up GHG-intensive activities. It may help to recognise the sadness and possibly anger about this. Municipalities are only the right contacts for this to a limited extent; municipal representatives can act favourably here by taking this into account and adopting a corresponding, benevolent attitude.

a. Shaping individual and collective decision-making situations

People do not act solely on the basis of facts. Climate-friendly neighbourhood development must be based on this fact. Various factors influence decisions, as shown in **Error! Reference source not found.** In addition to personal ecological norms, social norms, (behavioural) costs and benefits, current emotions and habits all play a role in the weighing-up process that leads to a certain environmental behaviour. In the climate sector, the gap between knowledge and action is large. Processes should therefore be designed that address the target group-specific obstacles to climate-friendly behaviour. This applies not only to private environmental action, but also to people who make decisions in organisations.

Many decisions need to be made for a neighbourhood to become climate neutral. It is important to find out what shapes behaviour and how relevant aspects (e.g. personal or social norms, costs, habits and emotions) can be addressed or changed in order to provide the impetus for decisions and influence consideration processes in a targeted manner.

Every neighbourhood is shaped by other actors, e.g. municipal housing associations, cooperatives, neighbourhood initiatives, church institutions, schools, citizens' associations or energy supply institutions. In this document, they are all summarised as **neighbourhood stakeholders**. Cooperation must be organised differently depending on the **constellation**.

Stakeholders must be identified, addressed and motivated. This can be prepared in a stakeholder analysis. Depending on the situation, they must enter into dialogue with each other and the situation must be designed and moderated for this. In some cases, it is necessary to ensure that everyone understands the issue to be decided and that decisions are made. In the context of neighbourhood development, municipalities can take on a role as *hosts* for the process. As they cannot decide many things, they are dependent on cooperation with the neighbourhood stakeholders. This is why cooperation should be **collaborative**.

Because local authorities are predominantly hierarchically structured, employees may not be familiar with collaborative working in voluntary settings. In order to achieve the desired results, the process controllers should use working methods that match the decision-making structure (*cooperation and codesign*)

Reading tip

Psychology in environmental protection

Karen Hamman, Anna Baumann, Daniel Löschinger (2016)

The handbook explains which elements influence sustainable behaviour. It contains a clear model (see Figure 14 below) including a canvas for practical use.

<https://www.oekom.de/buch/psychologie-im-umweltschutz-9783865817990>

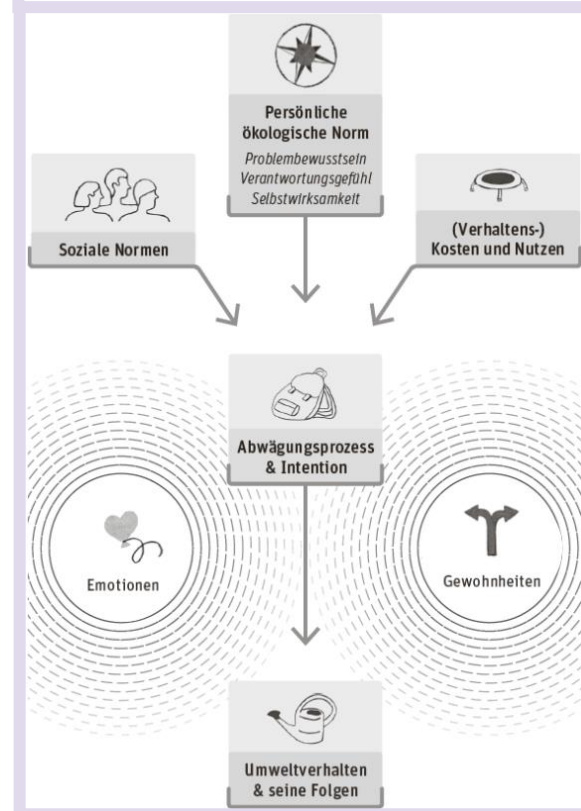


Figure 14: Model of the process of weighing up sustainable action

Illustration source: Hamman/Baumann/Löschinger 2016, <https://wandel-werk.org/materialien> (11.10.2023)

and take care not to mix methods from other decision-making architectures across processes (*command and control*).

An illustrative process model is the co-creation rhombus, shown in the figure below. It describes the group dynamics in voluntary cooperation settings.

In order to work together effectively, meetings should be prepared and moderated. In

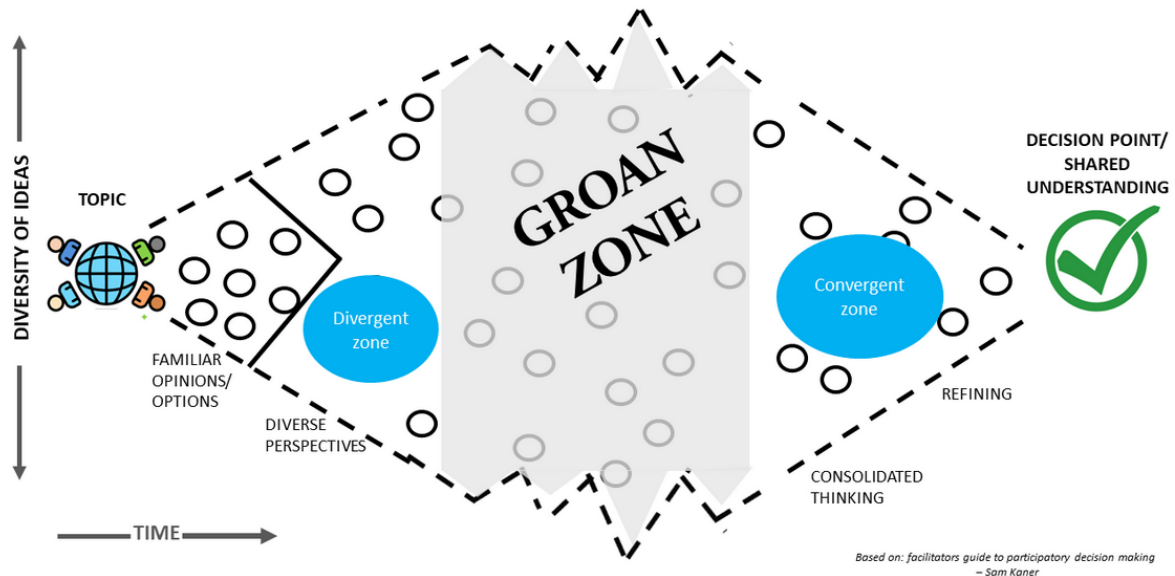


Figure 15: Group processes in voluntary decision-making settings

Source: <https://www.scrum.org/resources/blog/rollercoaster-group-dynamics-decision-making>(7.8.2023)

order to make a well-founded and satisfactory decision, differences must be discussed. The decision-making process typically first goes through a divergent phase in which the original question is expanded and the different perspectives are brought together. This is followed by a phase in which it is important to keep the room open long enough to present all aspects. The various positions and opinions must be exchanged and differences must be tolerated. This is necessary so that a common understanding of the problem can emerge, on the basis of which joint decisions can be made. If the exchange is characterised by respect and equality, a convergent phase occurs: decision-making and a jointly supported decision is possible.

A moderator should suggest suitable methods for the needs of the various phases, work towards goal-orientation and ensure that everyone can participate.

A further development of this model focusses on entire processes and can be found in Appendix 8.1 can be found in Appendix 8.1. This perspective assumes that successful collaborative processes can generally be divided into seven steps:

1. Invitation to work together on a problem or question
2. Clarification of the question in the core team
3. Invitation of stakeholders
4. Meeting with all participants
5. Analysing the results
6. Act
7. Reflect

The model assumes that each sub-step follows the group dynamics described in the previous model. Municipalities are dependent on different, hierarchically independent

offices working together and neighbourhood stakeholders collaborating. This is a collaborative setting for which the use of a collaborative model is recommended.

Co-benefits: Process skills have a positive effect on other areas of work in the medium term. These include, for example, inclusive processes based on understanding that value the contributions of all those involved. In this way, peaceful societies can emerge in the long term.

b. Integrated mode of operation

In urban development, the term integrated urban development has become established for the simultaneous processing of different development needs and the balancing of different interests. A goal-finding phase before the actual goal is defined and later feedback between different processes in the sense of the counter-current principle is often central. Climate-friendly urban development builds on this. When designing climate-neutral neighbourhoods, strategies are sought that meet all needs. In the spirit of climate-friendly neighbourhood development, applied standards of justice and other criteria for consideration should be made explicit. Climate-friendly neighbourhood development is not identical with integrated neighbourhood development as it has been practised to date. Integrated neighbourhood development is based on the overall development needs of the neighbourhood. In line with German and urban objectives, the goal of climate-friendly neighbourhood development is to reduce emissions, as this is necessary to comply with the Paris Agreement, and to pave the way for this. Reducing emissions is the guiding principle for measures. Measures can be implemented in different ways. In terms of integrated neighbourhood development, they should be designed in harmony with other neighbourhood development goals and improve the opportunities of marginalised groups in particular. Equitable design should be achieved by involving those affected in the design of the measures.

Shaping the process of climate-friendly neighbourhood development means that an urban support team initiates the development, implementation and monitoring of strategies together with neighbourhood stakeholders in order to make the respective neighbourhood climate-neutral by 2040. Their task is to ensure equitable development processes: The neighbourhood stakeholders are encouraged to take into account that people in other places and at other times are affected by the decisions. Consideration criteria should be made transparent.

Co-benefits: Conflicting objectives are recognised at an early stage and negotiated or reconciled so that resources are conserved and conflicts avoided. This ensures satisfaction in the medium term.

c. Strategic communication and participation

Citizens are a particularly large group of stakeholders. They must be taken into account when designing the process: They have a right to be informed about planned measures and to help shape them. In order to enable procedural justice, as called for by the German Ethics Council, communication processes on measures must be initiated.

Nevertheless, it is not always possible or sensible to involve citizens at all times, e.g. when basic principles need to be developed first. Due to different levels of knowledge, citizen participation is often time-consuming and resources are limited. Since many independent actors are involved, processes cannot be precisely predicted.

When planning climate-friendly neighbourhood development, it makes sense to consider what role citizens play and when and with what aim they should be informed or involved.

Potential conflicts should also be anticipated.⁸ In particular, consideration should be given to which groups can be reached through which channels. In order to involve citizens effectively and not demotivate them, communication should be strategic and geared towards the medium to long term. **It is** therefore advisable to draw up at least an outline of a communication and participation plan.

Co-benefits: This sub-item of the process design field of action aims to ensure that projects are supported in the long term. If climate-friendly neighbourhood development is reported on honestly, with integrity and inclusively, it can be assumed that this will have a positive impact on other policy areas and trust in democratic institutions.

d. Controlling

Despite existing uncertainties in the climate-neutral transition, e.g. due to legislation, the development speed of technologies or future market changes, decisions must be made. To ensure that neighbourhoods are decarbonised and transformed in a climate-friendly way, the outcome of the sub-processes must be reviewed and corrected if necessary.

Neighbourhood development should therefore work out a) how to check whether the goal is being achieved, b) when, by whom and with what consequences the check is to be carried out and c) how changes are to be planned.

Since monitoring is time-consuming, the following aspects must be taken into account:

- Thinking about monitoring at an early stage
- concentrate on simple, available, meaningful indicators and accept certain imprecision
- Digitise monitoring with simple means where possible

Co-benefits: Monitoring enables the city administration to take targeted action. Resources can be used for effective measures. This strengthens support.

Risk: It is important not to forget to implement things that promote medium to long-term support and, under certain circumstances, make technical implementation possible in the first place.

Reading tip

Neighbourhoods, neighbourhood concepts & CO₂ -monitoring at neighbourhood level

Climate Alliance (2019)

The Climate Alliance has drawn up a recommendation paper that discusses monitoring at neighbourhood level.

https://www.klimabuendnis.org/fileadmin/Inhalte/4_Activities/Projects/CAN/Empfehlungspapier_Quartiersko_nzepte.pdf

.....

In the process design field of action, the aim of climate-friendly development is a) to effectively support decisions by individuals and in collective settings and to effectively design the process by anticipating dynamics and sensible sequences; b) to balance interests; c) to use strategic communication to ensure that climate-friendly

⁸ Some conflicts can be avoided, while other conflicts are worth entering into, as the resulting understanding ensures more broad-based solutions and support in the medium term. However, resources must be available to deal with conflicts.

neighbourhood development is supported in the long term, and d) to ensure that the initiated measures achieve the goal through controlling and follow-up. This is to be achieved through the use of resources in the form of time and expertise for process design.

General conditions

In some areas, existing framework conditions make climate-friendly neighbourhood development more difficult.

Examples of potentially obstructive framework conditions are

- the local availability of skilled labour,
- legal framework,
- people's ability to go along with a far-reaching transformation.

Availability of skilled workers: Skilled workers are required for the necessary technical neighbourhood conversion and operation. For example, skilled labour is needed for solar systems, storage, heat network operation, heat pump maintenance and electricians. If these are not available, this hinders the energy transition in the neighbourhood. To prevent this, city-wide approaches to promoting skilled labour can be developed, for example in cooperation with the economic development agency, the Chamber of Industry and Commerce (IHK), the adult education centre or the employment agency.

laws: In the existing framework conditions, it is difficult or impossible to decarbonise neighbourhoods in many cases (German Energy Agency, 2022). It would be possible to cover Germany's electricity needs if all existing roof surfaces were equipped with PV systems (Agora Energiewende, 2023) but there is a lack of accompanying legislation. Until recently, the regulations on the shared use of electricity from the roof were often an obstacle for both homeowners' associations and apartment blocks - the situation has now improved with the law on shared building supply. The target of the Federal Climate Protection Act is also difficult to implement with the current regulations of road traffic and regional planning law in the area of mobility. Decarbonisation of transport on the current legal basis cannot be achieved in neighbourhoods. Cities cannot adopt the 30 km/h speed limit that is often demanded as a standard speed; providing roads that meet certain standards is a far-reaching requirement. These are just two examples of laws that limit the possibilities for climate-friendly neighbourhood development. If necessary, attention can be drawn to these problems from a neighbourhood perspective via city council committees.

Transformation competences: The extent to which citizens, employees and employers are willing to implement and help shape the far-reaching transformation is currently perceived by municipalities as being outside their sphere of action. In order to promote support for democracy, this area could provide a new field of action for municipalities, as they are the political structure closest to the citizens and are responsible in accordance with the principle of subsidiarity.

2.4 Assignment of fields of action to identified levels

In the previous section, fields of action and municipal influence options were identified for creating the basis for climate-friendly living in the neighbourhood. Nevertheless, it should be noted that a complete handling of this task usually exceeds the resources of a municipality. In order to make the task more manageable, the fields of action were categorised according to the previously identified levels (2.2) of climate-friendly neighbourhood development. The prerequisite for climate-friendly neighbourhood development is an improvement in energy efficiency (Level 1 in the following diagram), which can concentrate on the first 3-4 fields of action as developed. Energy improvements, whose measures are aligned with the vision of climate-friendly neighbourhood development, are therefore identified as an implementation goal. In the following figure, the identified fields of action are assigned to the levels of climate-friendly

Level of climate-friendly district development

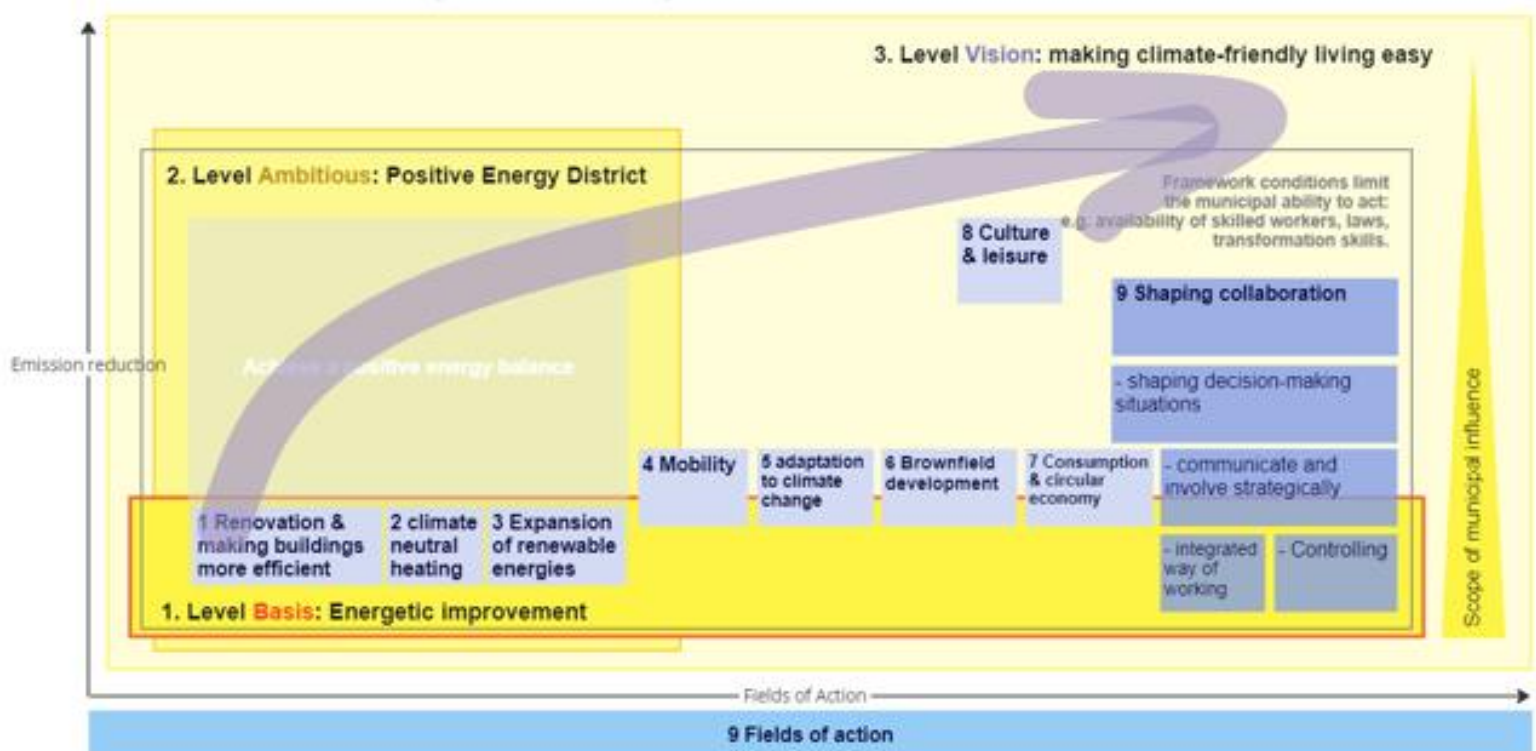


Figure 16 : Fields of action at different levels of climate-friendly neighbourhood development

Source: own illustration

neighbourhood development:

The more areas (1-8) are decarbonised, the more comprehensive the climate-friendly neighbourhood development will be. Field of action 9 supports the achievement of fields 1-8.

It is advisable to use this model to create agreement among the participants at the start of the project on the envisaged level of climate-friendly neighbourhood development and the targeted fields of action. A good time for this is in the proposed accompanying process (3.2) in the pre-sorting and kick-off phase (phases 0 and 1).

3. PROCESS ANALYSIS AND SUGGESTIONS

Parallel to the development of a possible understanding of climate-friendly neighbourhood development, discussions were held with the specialist departments involved in ongoing energy-related neighbourhood development processes in Leipzig on how these could be further improved and which working aids could support standard climate-friendly neighbourhood development.

In 2014, Leipzig began drawing up energy-efficient neighbourhood concepts for selected districts in Schönefeld and Lindenau/Plagwitz. The SPARCS model district *Dunckerviertel* is located in a neighbourhood for which such a concept has been drawn up.

Against this background, graphics were created, discussed and successively improved in order to create process clarity. This is illustrated in this section.

3.1 Development process for an energy neighbourhood concept

In Leipzig, energy neighbourhood concepts are developed under the leadership of an office. They are to be designed in accordance with the city's resolutions. Another department accompanies and supports the process from the perspective of the city's overall climate targets and, if necessary, provides support in terms of content and strategy. This department is responsible for monitoring in line with the climate targets. Measures are developed as follows: First, the current situation is analysed. Then the potential for energy-efficient neighbourhood development measures is determined. Scenarios are developed and weighed up on this basis. A target scenario for the neighbourhood is decided together with other specialist departments. From this, measures are developed with neighbourhood stakeholders and a proposal for implementation is made.

The adjacent figure contains a schematic representation.

In the following section, it is completed with further sub-steps and basic principles. Figure 18 below shows in detail how energy neighbourhood concepts were developed. This diagram can be used in the pre-sorting and kick-off phase (0 and 1) of the accompanying process (3.2) in order to clarify roles and processes.

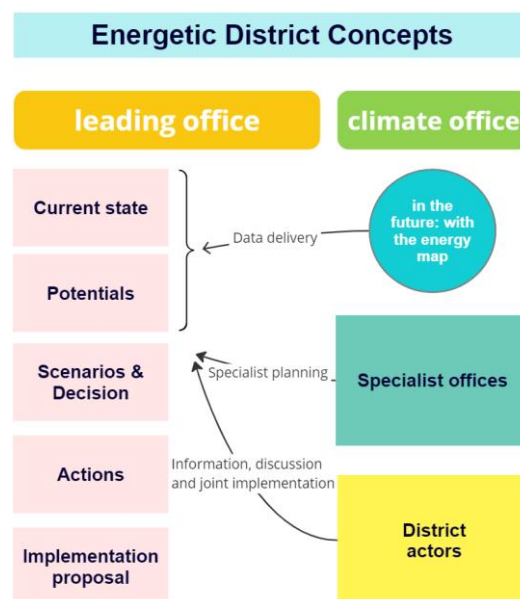


Figure 17: Schematic representation of how energy neighbourhood concepts are created

Source: own illustration

Development steps of district energy concepts* in their context

* City Council resolution: min. three renovation concepts per year

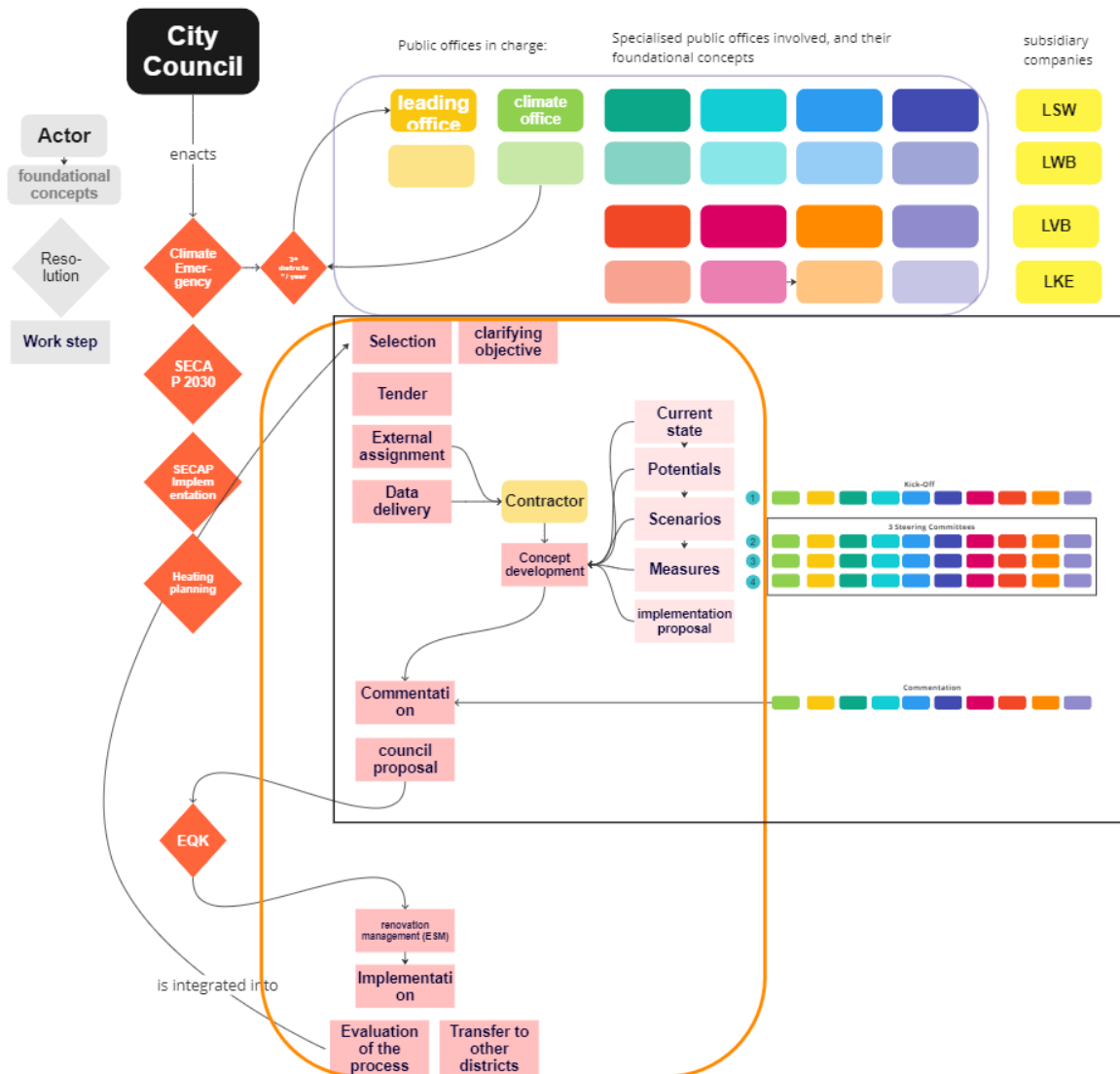


Figure 18: Detailed illustration of the context and development of energy neighbourhood concepts in Leipzig

Source: own illustration

The orange diamonds on the left represent resolutions on which the current energy neighbourhood concepts are based. In the immediate action programme for the 2020 climate emergency, the city council set the goal of creating energy-efficient neighbourhood concepts for at least 3 neighbourhoods per year. This was updated in the implementation programme of the EKSP.

The offices involved and their strategic principles are outlined in purple at the top right. Neighbourhood concepts are drawn up under the leadership of one office. It managed the neighbourhood selection process, put the contract out to tender and commissioned experts. Data was handed over to them. The development process is outlined in orange below. A specialist office developed the current situation, potentials, scenarios, measures and an implementation proposal and, together with the lead office, informed and involved

the neighbourhood stakeholders. During the development process, coordination was sought with specialist departments and municipal subsidiaries via the steering committees. They commented on the final proposal and the lead office prepared a template for the city council to take note of the concepts and confirm the proposals for further implementation. In a final step, the process can be evaluated and improved before further concepts are developed. On the right-hand side, the participants in the steering committees are shown in colour and will be discussed in more detail in the next section.

This graphic should help to visualise the process for the stakeholders involved in order to optimise the process. Especially when new stakeholders are involved, an up-to-date graphic at the beginning can ensure that there is agreement on the sequence and context of the individual steps. If something has changed, it makes sense to adapt this graphic to the current situation. In this way, a common understanding of the objectives of each step can be established. It becomes clear how many steps are involved in energy-efficient neighbourhood development.

Used in the evaluation, potential improvements to the current process can be recognised and discussed.

3.2 Proposal for official support of the concept development process

The concept development is supported by the authorities and is based on a communication process among the stakeholders in the neighbourhood. These are presented below.

When a concept is drawn up for a neighbourhood, the urban measures that are developed must be coordinated with the offices concerned so that they fit in with the measures already adopted and current objectives. In order to achieve this with contractors, the support provided by the authorities is structured in the form of an accompanying round. The aim of this round is to

- to find out the status of the contractors' work (reporting),
- coordinate within the offices in this regard (coordination) and
- to provide the contractor with instructions for further processing (control).

To ensure that the finalised concepts are quorate, the lead department requires the active cooperation of the departments, for example through the respective climate protection managers, to ensure that climate issues are adequately taken into account. Those involved in the specialist departments should manage cooperation and participation within "their" specialist departments. A proposal for the municipal support of energy neighbourhood concepts is shown in the following diagram.

Accompaniment of the concept development by the public offices

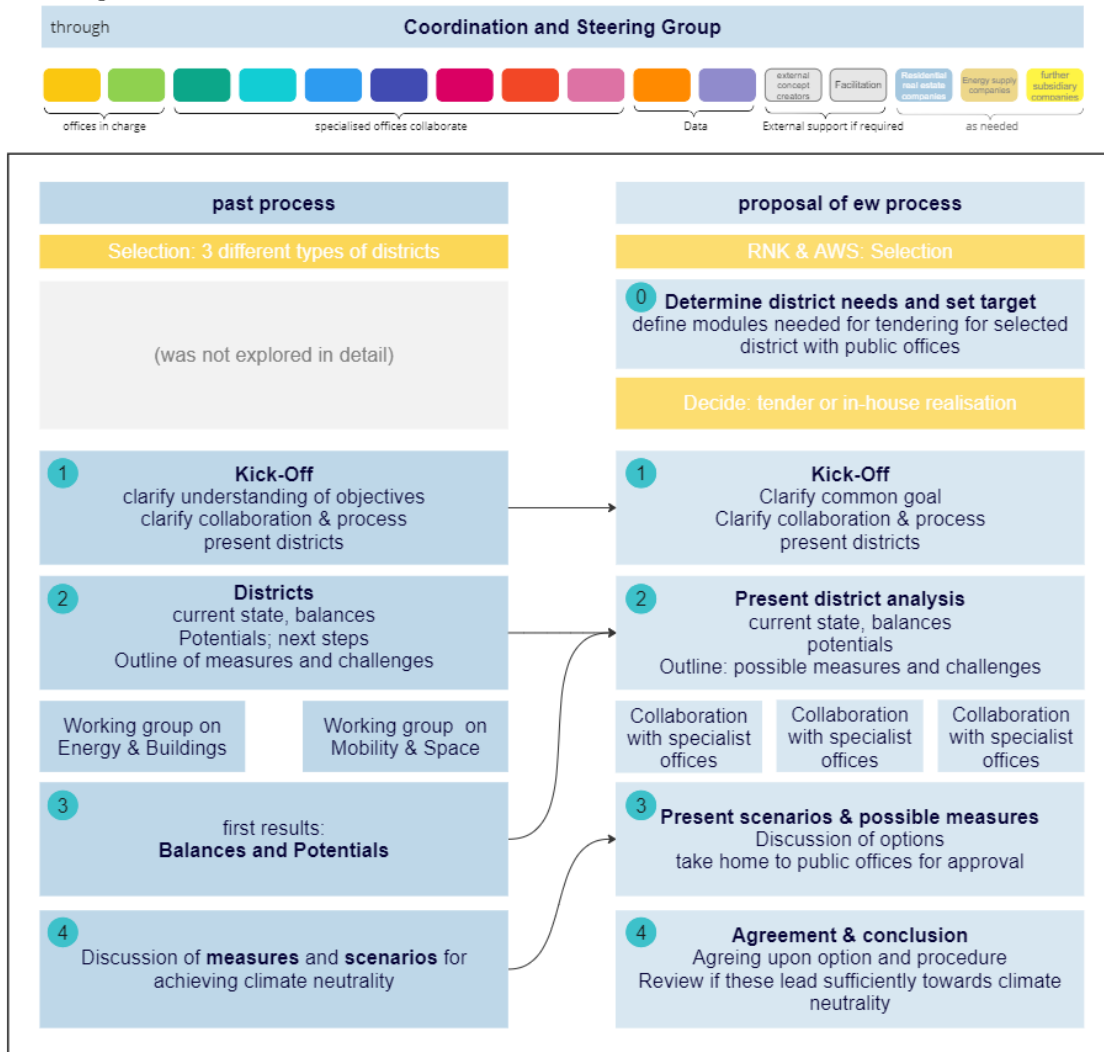


Figure 19: Proposal for urban monitoring of energy neighbourhood concepts

Source: own illustration

In order to provide clarity about the content and procedures of the meetings of the monitoring committee, the old status is shown on the left and a proposal for improvement is formulated on the right. This proposal was developed with the office in charge of the process and the unit responsible for the content and with the help of interviews with participants.

The parties involved are shown at the top of the graphic (coloured). Energy supply companies or housing companies are involved depending on the area and phase, e.g. if they have large holdings in the area under review.

Preparing the rounds, inviting the necessary participants, compiling and sending out preliminary information for preparation, moderating the rounds and paying attention to frequent speakers and deciding which meetings can be held online if necessary are identified as separate tasks.

As the contractors report in the rounds and the offices should then coordinate in order to be able to provide further information, it is suggested that the organisation of the meetings be assigned together with the concept tender, but as a separate component in terms of personnel. This way, concept creators do not have to moderate the coordination of their work results and their further tasks themselves; this would be a conflict of roles. In particular, it is considered helpful to enable content preparation, for example through documents sent out in advance or online presentations, in order to be able to use the meetings to clarify questions and coordinate complex issues across departments. The target process is therefore as follows:

(0) The goal of energy-efficient neighbourhood development is explored in advance with the offices involved in order to be able to issue a suitable invitation to tender. Once the invitation to tender has been issued, a (1) kick-off meeting is held to clarify the objectives and the process with all those involved. (2) Until now, data procurement has taken a lot of time. This process can be accelerated through improved, inter-agency data storage and processing of, for example, energy consumption data or geothermal and solar potential, as in the Leipzig Energy Map. If data is available, the neighbourhood analysis with potential considerations can already be discussed at the second meeting of the coordination and steering committee. Subsequently, the contractors should develop options for measures and pre-coordinate these with the specialist departments through the office representatives in order to discuss various technical variants and proposed measures for decarbonisation together in the third (3) coordination and steering round. The favoured solutions are to be coordinated by the office representatives in their offices so that they can then be confirmed. (4) The purpose of the final coordination and steering round is to agree on one of the variants and to agree on the steps to follow up.

The results are to be recorded in the energy neighbourhood concept. The following templates have been drawn up for this purpose:

3.3 Model table of contents and standard measure sheet

In order to clarify and standardise what is to be developed by concept developers, an annotated model table of contents was drawn up, which can be used, for example, in the service description for the external commissioning of concept development. This should also limit the scope. The list was based on the KfW 432 programme and notes on processing were added (in the appendix, 0). As there is currently still disagreement about the desired length of the sections, it is recommended that this version be used as a basis and that a page number specification be agreed before awarding a contract. Furthermore, it should be clarified between the offices before the call for tenders whether all elements or only certain modules are required.

In addition, an action sheet was developed to document information on measures as standard. It is proposed that this should also be attached to the specifications of an award and used for measures identified for implementation. Other measures under consideration that are not to be implemented immediately should only be listed.

Measures to develop districts in a climate-friendly manner

Title	<i>This is the name of the measure</i>		Number:	
			Quarters:	
Subject area	<i>(In category: Fields of action from standard model)</i>		Status	<i>Draft/finished</i>
			last edit:	<i>date</i>
Goal			through:	<i>Person</i>
<i>Text: What is to be achieved?</i>				
Target group	<i>Who should be reached?</i>			
Actors	<i>Who needs to be heard? Who is involved in implementation?</i>			
Relevance	<i>Why is this important?</i>			
Prioritisation	<i>from the proposed measures: what needs to happen first?</i>			
Expenditure	<i>Time required, necessary human and physical resources</i>			
Brief description (incl. current status)				
Contact persons	<i>Who wears the hat for it to happen?</i>			
Savings potential CO2 equivalents			<i>Picture</i>	
<i>How much CO2 can be expected to be saved?</i>				
Positive side effects				
<i>What else do we gain?</i>				
Costs				
Financial impact				
<i>Savings? Recoveries? Maintenance costs? in the long term</i>				
Funding opportunities				
<i>What funding programmes are available for this measure?</i>		Source:		
Required action steps	<i>Who</i>	<i>What</i>		<i>Until when?</i>
<i>Who has to do what by when?</i>				
Duration				
<i>How long does it take to reach the target?</i>				
Obstacles			Overcoming possibilities	
<i>What could prevent the goal from being achieved?</i>		<i>What can be done to ensure that the goal is still achieved?</i>		
Opportunities			Possibilities for utilising the opportunities	
<i>What could help to achieve this goal?</i>		<i>What can be done to utilise these opportunities?</i>		

Please fill in as completely as possible. Where nothing of substance can currently be written, please mark with -

3.4 Relationship between the energy neighbourhood concept and the process in the neighbourhood

Does the model table of contents provide the concept creators with instructions for the process to be carried out in the neighbourhood? No. The **concept document** does not fully document the necessary **agreement process on measures** with neighbourhood stakeholders. The aim of the undertaking is not primarily the development of a document, but the development of implementable measures for decarbonisation and support for decarbonisation in the neighbourhood. In order for contractors to develop effective measures that are ready for implementation, they must identify actors capable of taking action. Institutional players with implementation resources, such as Leipzig's municipal utilities, housing companies or large local companies, are key. If the willingness and implementation resources are available, civil society actors, residents' associations and tradespeople are also included. Where appropriate, their respective resources complement each other. Where measures require the involvement of various stakeholders, unity and commitment must be established. Neighbourhood stakeholders must be involved at an early stage to ensure that a package of implementable measures is ultimately available that is supported by them. In order to be able to apply for funding after co-signing and a city council decision, measures must be developed that are effective from the perspective of both the stakeholders and the authorities.

There is therefore a communication process between neighbourhood stakeholders and specialist departments, as well as documentation of measures in an energy-efficient neighbourhood concept. The model table of contents presented in the previous section can be used for the concept. There are currently no guidelines for the communication process, as the existing stakeholders, the intended measures and the framework conditions vary. The commissioning and commissioning parties should agree at the beginning which process is expected and which parts of it should be mapped in the concept.

3.5 Choice of neighbourhood

The need to reduce GHG emissions in existing buildings is a result of the city's climate policy goals. There are two strategies for this: To reduce energy consumption, and to cover the remaining consumption in a climate-neutral way.

In order to develop all neighbourhoods in a climate-friendly way, the most urgent and promising ones should be prioritised for energy development. What spatial demarcation is suitable for this? City districts are usually too large and too heterogeneous to implement effective measures there. Leipzig's 310 "statistical districts", which summarise statistically comparable areas with an average of 2,000 inhabitants, are each too small. There is currently no administrative division of the city area based on energy criteria.

The following proposal was developed to divide the city completely into territorial units that can be developed with the help of energy neighbourhood concepts: Based on the structure type map, approx. 2-4 statistical districts could be summarised. The resulting areas should be a maximum of 20 ha in size. Districts that are similar in their development according to the structure type map in LeipziGIS are summarised according to the rules described in the diagram. If necessary, neighbouring, structurally similar areas should be added. The aim is to maintain areas that are as homogeneous as possible and to combine remaining heterogeneous areas.

Guide for **dividing the city into districts** for which **district energy concepts** can be developed

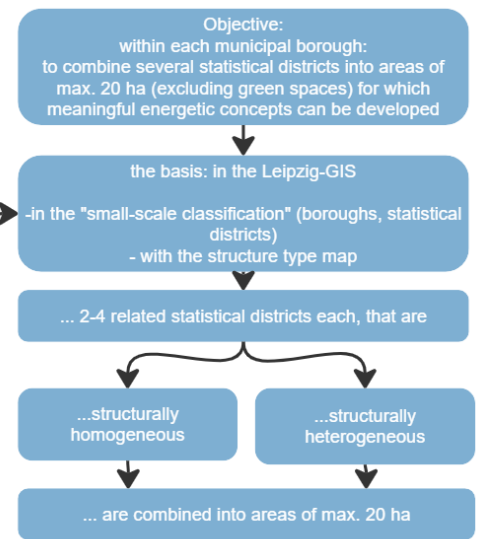


Figure 20: Guidelines for defining areas for climate-friendly neighbourhood development

Source: own illustration

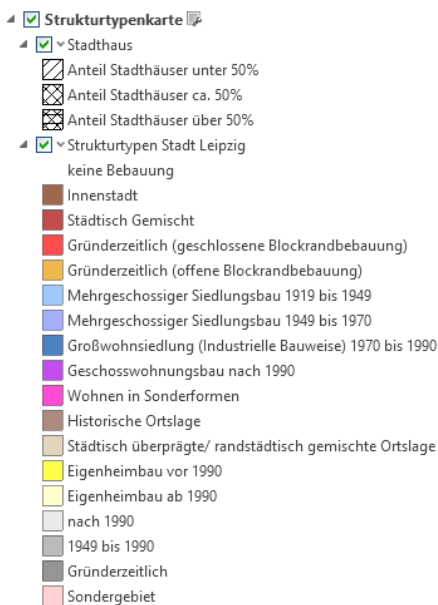


Figure 21: Legend of Leipzig's urban structure type map

Source: Leipzig GIS, Office for Geoinformation and Soil Organisation

In the section shown below, for example, the statistical districts with the numbers 721, 722 and 723 would be summarised, as well as 700, 710, 714 and 716. In addition to this simply structured example, there are cases in which greater deviation from the statistical districts is necessary due to greater heterogeneity. There are also areas for which funding concepts already exist - for these, only a specialised section may need to be added or the energy and climate protection fields of action updated.

For these territorial units, the scheme could be used to assess how urgent and promising the energy development is.

This is one way of dividing up the entire area and assessing it systematically.

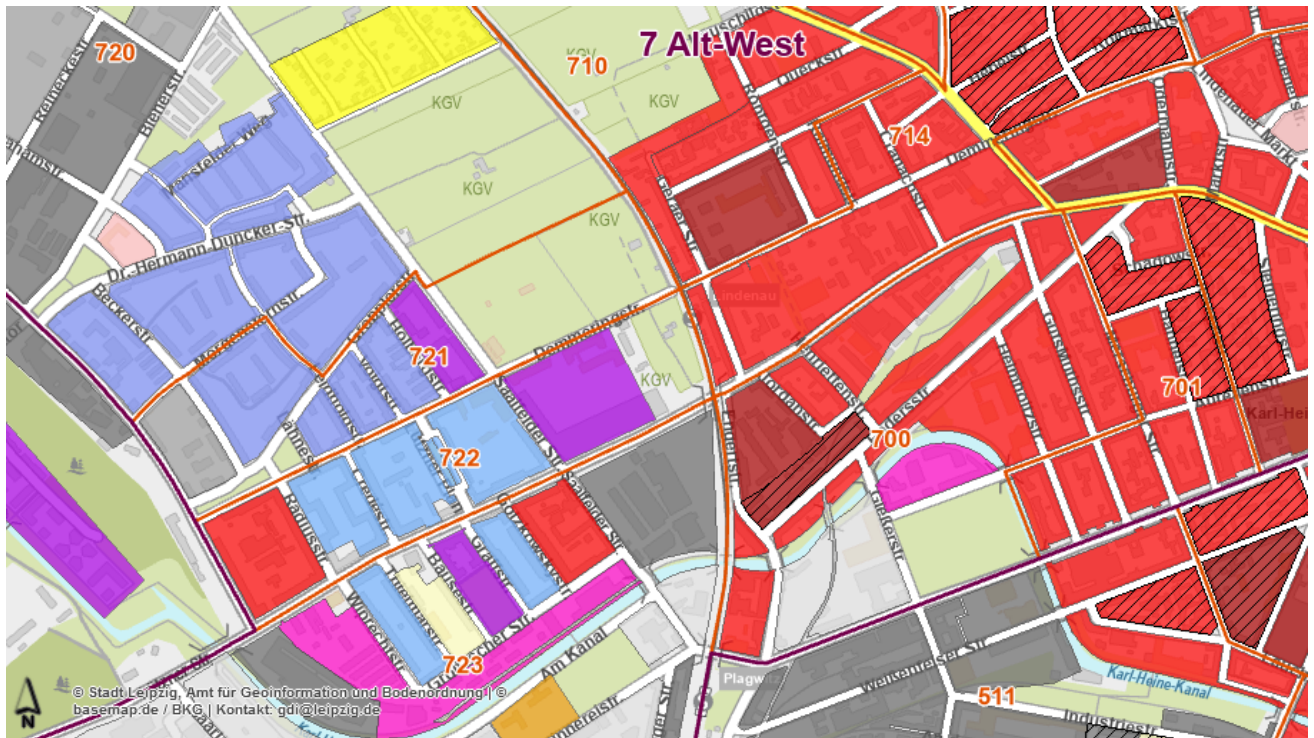


Figure 22: Section of the urban structure type map in the Leipzig GIS overlaid with the statistical districts

Source: Leipzig GIS, Office for Geoinformation and Land Organisation

Once the area has been divided up, it makes sense to prioritise the neighbourhoods according to urgency and opportunities, i.e. the municipality's ability to exert influence. In order to have implementation resources available, funding opportunities and conditions must be taken into account.

The following basic distinctions were proposed according to the need for change and the number of stakeholders as an approximation of the municipality's ability to exert influence:

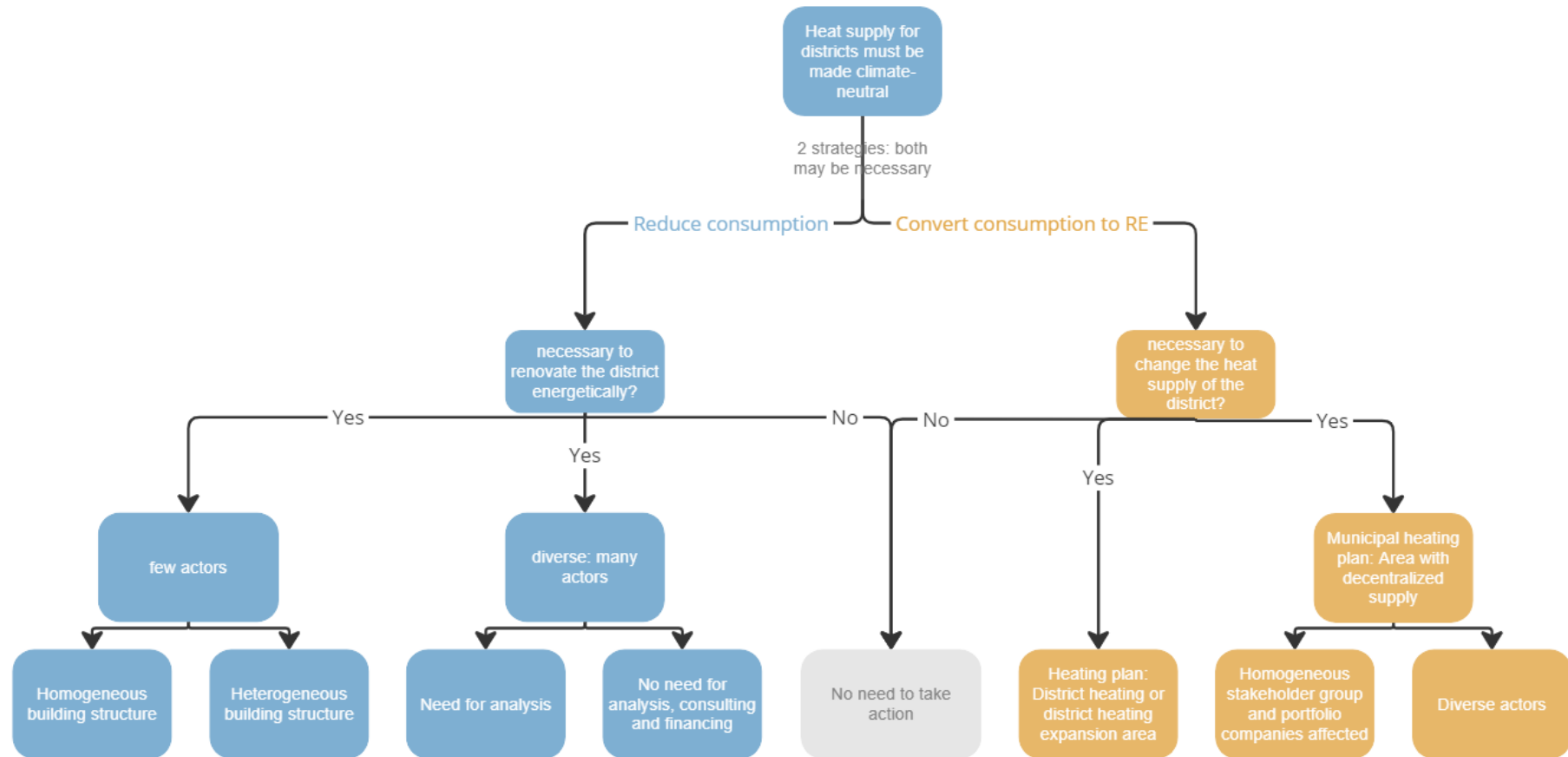


Figure 23: Area characterisation

Source: own illustration.

Both branches must be combined. The resulting neighbourhood characteristics give rise to different requirements for energy-efficient neighbourhood development.

In Leipzig, the ongoing heat planning is to be followed up. This is expected to answer which areas will be connected to the district heating network, where stand-alone networks make sense, where there is a need for decentralised solutions for heat supply and where further test steps are necessary. This answers the ochre-coloured branch on the right. The following area classes can be expected from municipal heat planning:

Table 3 Possible area classification according to heat planning and characteristics of the areas (in progress)

1. district heating areas	2. district heating expansion areas	3. district heating test areas	4. non-district heating areas Heat plan provides tendency whether a) or b)	
			4a. Island areas	4b. Areas with decentralised solution
District heating is already available here.	District heating is being expanded here.	Areas for which the results of the current test step are not clear.	They are too far away from the district heating area for the connection to be worthwhile, but have a high heat demand density - > island network and local supply make sense.	Areas for which district heating or a stand-alone solution does not make sense.
Mostly centrally located.	Mostly centrally located.	Mostly between the city centre and the outskirts.	Mostly town centre in peripheral location.	Mostly peripheral location.
No need for action from a heating perspective, the electricity grid is not strained by heat pumps. Therefore postponed for the time being for energy neighbourhood concepts.	No neighbourhood concept necessary. As part of the pipeline expansion, the neighbourhood must be made greener and bluer than before and active traffic must be better taken into account. If necessary, further objectives can be realised in the course of the road space conversion.	A further test step (possibly EQC) must clarify which area type (2, 4, 5) the area should be assigned to.	Heat plan provides a trend classification that must be confirmed. Solutions can be put out to tender or developed with EQK.	Solution can be developed with EQK. May happen later, as the current focus is on heat: electricity solutions are more likely here (electricity grid expansion). This planning is currently excluded in order to prevent excessive demands.

If confirmed, area type 1 represents existing district heating areas. Area type 2 are district heating expansion areas. Area type 3 are areas that are eligible for district heating but have not yet been clearly classified. Area type 4 are areas that will definitely not be connected to the district heating network and require another climate-neutral solution. Local supply with a stand-alone network or decentralised supply are possible options here. The trend in Leipzig is to focus on type 4 areas in order to support them with energy neighbourhood concepts to find climate-neutral heat supply solutions.

Whether and when complementary concepts should be developed for district heating areas and district heating expansion areas (type 1-3) is still under discussion. It is possible that concepts could also be aimed at finding island network concepts and operators.

The heating plan is part of the emissions reduction strategy "Covering consumption in a climate-neutral way". This is now being drawn up due to legal requirements. Nevertheless, "reducing consumption" remains the primary emissions reduction strategy in order to minimise the need for transformation. The question therefore also arises in all areas: how can support be provided to reduce energy requirements? Refurbishment and measures to increase building efficiency can be considered for this.

To this end, the following differentiation and prioritisation according to savings potential and actors capable of taking action was proposed (presentation not final):

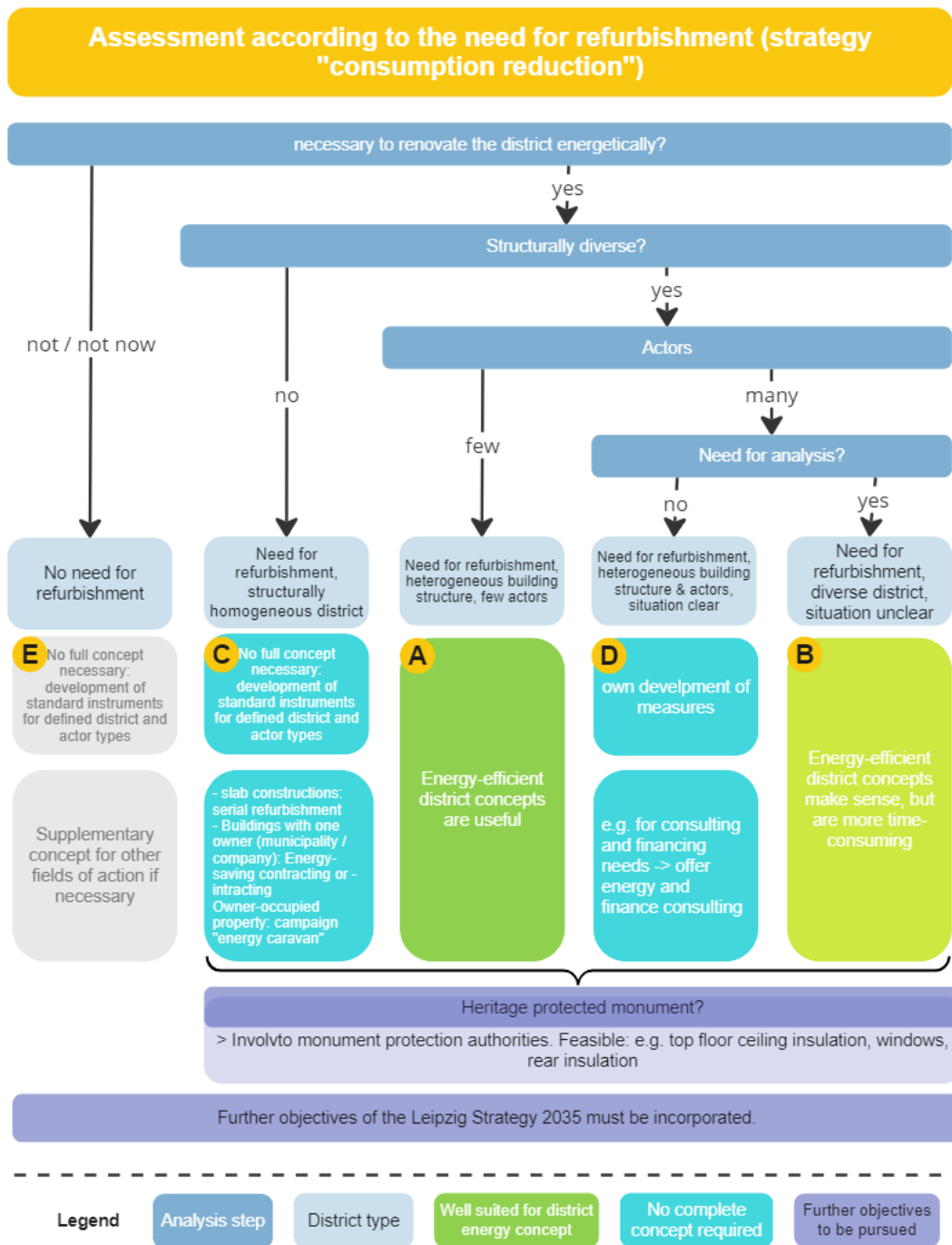


Figure 24: Prioritisation of areas for neighbourhood concepts according to refurbishment needs and number of stakeholders

Source: own illustration.

Not many areas are expected to be completely free of refurbishment needs (E). For areas with a need for refurbishment that are structurally homogeneous and for some types of stakeholders (C), it makes sense to develop standard measures. For various areas with a limited number of stakeholders, energy neighbourhood concepts (A) are suitable, as these are a good way of developing solutions. Areas with a large number of stakeholders, where the solution is nevertheless clear, do not need a detailed concept (D). Areas with a

high number of stakeholders and an unclear situation would benefit from concepts, although decarbonisation is likely to take a long time (B).

However, this definition of the evaluation criteria and their assessment has not yet been finalised.

Process experience

In Leipzig, the selection criteria have shifted several times. Several key conditions changed during the work:

Due to the funding opportunities and Leipzig's experience with the KfW 432 programme, it was initially decided to build on this. However, at the end of 2023, many funding programmes at federal level were cut or cancelled from the Climate and Transformation Fund, including those relevant to climate-friendly neighbourhood development, such as KfW programmes 432 and 215. In addition, heat planning did not play a role at the beginning of the work process on the 2021 standard model. It was only after the adoption of the Heat Planning Act in November 2023 that a cross-departmental and cross-stakeholder working structure was established within the Leipzig city administration to develop a climate-neutral heat supply. Heat planning has shifted the city's internal focus to shaping the heat transition in Leipzig's urban neighbourhoods. In addition, the leadership between the two offices responsible for climate-friendly neighbourhood development was initially unclear.

The criteria for prioritising neighbourhoods for climate-friendly neighbourhood development were adjusted accordingly on an ongoing basis.

It became clear during the development process for the standard model,

- which criteria play a role (decarbonisation requirements for heat and electricity, renovation requirements, stakeholder diversity and capacity to act, general neighbourhood development requirements, green supply, RE expansion potential),
- that not all the necessary information is available in all areas,
- that the evaluation of the information is not complete everywhere (e.g. with regard to the question of whether only areas should be selected where relatively quick successes can be achieved, or whether the aim is also to identify those areas where change processes will be lengthy and should therefore be tackled at an early stage)
- that some topics must be taken into account either in the selection or in the processing, e.g. monument protection
- and that criteria can shift as the energy transition progresses (e.g. from heat decarbonisation, which is initially being considered, to the necessary expansion of the electricity grid, including for heat pumps, and finally to the mobility transition).

It can be stated that the following questions should be answered taking into account the respective municipal framework conditions in order to be able to derive selection criteria appropriate to the context: Should concepts be used to develop measures for one need or for several needs at the same time? Which ones? Can they be prioritised according to one criterion (e.g. renovation requirements, renewable energy potential, heat planning, electricity grid expansion, mobility, climate adaptation)? If different criteria are to be taken into account: how should the prioritisation be carried out? For example, can a sequence for the application of the criteria be defined?

Interim conclusion:

1. Selecting neighbourhoods is complex. If there is a lot of time pressure, it is not possible to analyse all issues simultaneously and include them in the selection. It is therefore recommended to define a set of issues to be prioritised for selection and to determine how other issues are to be taken into account subsequently.
2. Due to the Heat Planning Act, it is recommended that the requirements for implementing the heat transition be assumed. In decentralised areas, this means that the capacities of the electricity grid should be checked and expanded if necessary.
3. Subsequently, electricity grid requirements were to be examined and processed.
4. Who should be supported with energy-efficient neighbourhood concepts? This is still being discussed in Leipzig. Owner-occupiers are more motivated to renovate their building stock than letting companies and are therefore easier to motivate. However, only a good 10 % of the population in Leipzig live in their own home. This is why support should focus on them. With regard to renting companies, it is being discussed whether Leipzig should prioritise large players who have the capacity to intervene in larger units in terms of energy efficiency. Faster success can be expected here. However, some of these have their own structures to be able to act in terms of energy. In this respect, support could also be focussed on smaller and medium-sized players.
5. It currently seems difficult to fully standardise the selection: integrated urban development aims to weigh up the specific needs in each neighbourhood; however, these are not available in detail for all neighbourhoods. The field is also dynamic: legal requirements and funding opportunities change frequently.
6. Efforts to standardise are nevertheless valuable: they create transparency with regard to decision-making criteria. Visualising these creates clarity for those involved, which strengthens cooperation.

4. OPTIONS FOR ACTION: INSTRUMENTS AND IMPLEMENTATION OPTIONS IN THE NEIGHBOURHOOD

What instruments are available to cities to develop existing neighbourhoods in a climate-friendly way and implement the energy transition in the neighbourhoods? This chapter provides an overview of municipal options. These include: financial, legal and organisational-communicative support measures, including the creation of clear responsibilities.

4.1 Financial Subsidies

In order to implement measures, cities can use funding programmes as well as implement measures with suitable financing models. They can exert influence by promoting measures themselves.

4.1.1 Support programmes

A selection of funding programmes that municipalities can use for climate-friendly neighbourhood development is presented below.

(1) KfW subsidy

The German development bank KfW provides a wide range of funding on behalf of the federal government. For a long time, the KfW funding programme 432⁹ was central to integrated energy-efficient neighbourhood development, as energy-efficient neighbourhood development was broadly understood thematically and all fields of action could be addressed. However, at the end of 2023, the Federal Constitutional Court ruled that remaining funds from the special coronavirus fund to combat the effects of the coronavirus pandemic may not be used for the Climate and Transformation Fund. A budget freeze was therefore imposed, affecting the KfW Programme 432, among others.¹⁰ A resumption of the programme at a later date has not yet been ruled out. The programme is therefore described below:

The KfW 432 programme initially supported the creation of energy-efficient neighbourhood concepts and, in a second step, their implementation through refurbishment management if necessary. The concepts were to be integrative and could focus on refurbishment, RE expansion and heating, for example, provided that the conditions in the other fields of action were taken into account. With refurbishment management, personnel could be hired or commissioned to implement measures.

Other stopped programmes to make municipal heating, cooling, water and wastewater systems more energy efficient, to promote vehicles with alternative drive systems and to invest in green infrastructure are the KfW programmes 201 and 202.

⁹[https://www.kfw.de/inlandsfoerderung/%C3%96ffentliche-Einrichtungen/Kommunen/Quartiersversorgung/F%C3%B6rderprodukte/Energetische-Stadtsanierung-Zuschuss-Kommunen-\(432\)/](https://www.kfw.de/inlandsfoerderung/%C3%96ffentliche-Einrichtungen/Kommunen/Quartiersversorgung/F%C3%B6rderprodukte/Energetische-Stadtsanierung-Zuschuss-Kommunen-(432)/), currently stopped (28/04/2024)

¹⁰ See here for practical examples: <https://energetische-stadtsanierung.info/> (28.04.2024)

Grants and loans are currently available for: Green spaces/climate adaptation (grant 444), municipal and social enterprises (loan 148), to build or expand municipal infrastructure (loan 208), to renovate buildings or buy newly renovated buildings (loan 264) and for sustainable transport projects (loan 267).¹¹

Environmental pilot projects are funded in the areas of wastewater treatment, waste avoidance or recycling, soil protection, air pollution control, climate protection, noise reduction, energy saving, renewable energy and resource efficiency (grant and loan 230) (all as of 4 April 2024).

(2) Federal subsidy for efficient heating networks (BEW)

This funding programme¹² promotes the construction of new heating grids with a high proportion of renewable energies and the decarbonisation of existing grids. This can be interesting for areas that are too far away from the district heating area but require locally bundled heat. The planning, construction, individual improvements and operation of renewable heating networks are subsidised in four modules (transformation plan, systemic funding, individual measures and operating cost funding).

(3) "Energy and Climate/2023" funding guideline from the Saxon Development Bank

The Saxon Development Bank promotes energy efficiency, the reduction of GHG emissions, climate change adaptation and the development of a sustainable energy supply¹³. Application-orientated energy and climate research is funded in research institutions, where local authorities can benefit as practical partners. Funding for the development of intelligent local energy and storage systems and grids is being planned.

(4) Serial refurbishment

The serial refurbishment funding programme¹⁴ supports projects in which refurbishment modules are produced remotely from the construction site using digital recording. This is particularly worthwhile for building types that occur more frequently, e.g. GDR type buildings or co-operative buildings. With these, property developers can save costs by producing in series and gaining experience. In addition, the construction time on the building site is shorter. This makes refurbishments more pleasant for tenants and it may not be necessary to provide alternative flats. In schools, refurbishment can sometimes be completed during the summer holidays and alternative locations do not have to be set up. During this process, components from both the old and the new components could be added to a component register to make them available for later recycling.

Municipalities are currently not directly subsidised. Municipal companies can receive a maximum of €75,000 for 50% of the costs of feasibility studies and 25-40% of the development and testing costs.

¹¹<https://www.kfw.de/inlandsfoerderung/%C3%96ffentliche-Einrichtungen/Kommunen/Quartiersversorgung/TS-Quartiersversorgung.html> (4 APRIL 2024)

¹²https://www.bafa.de/DE/Energie/Energieeffizienz/Waermenetze/Effiziente_Waermenetze/effiziente_waermenetze_node.html (4 APRIL 2024)

¹³ <https://www.sab.sachsen.de/f%C3%B6derrichtlinie-energie-und-klima/20231> (4 APRIL 2024)

¹⁴ <https://www.energiesprong.de/foerderung/bundesfoerderung-serielles-sanieren/> (4 APRIL 2024)

Further funding for serial refurbishment can come from the federal subsidy for efficient buildings¹⁵ .

(5) Subsidies to make buildings more efficient

The federal subsidy for efficient buildings promotes efficiency measures for residential buildings, non-residential buildings and individual measures¹⁶ . Various subsidies are available to make residential buildings more efficient, for example. Some of these are aimed at private owners, others at local authorities. ¹⁷ Funding is currently available,

- to have the refurbishment planned by specialists,
- install a new heating system or
- optimise an existing system,
- better insulate the building envelope and
- install efficient system technology (e.g. heat exchangers)

Loans and grants for energy-efficient refurbishment are also available for local authorities that own or purchase residential buildings (KfW 264)¹⁸ and for non-residential buildings (KfW 464)¹⁹ .

We will not go into more detail on the funding options here. Funding opportunities are part of energy consultations that have their own services: for example, from DENA, the consumer advice centres and the state energy agencies. It is often part of the remit of refurbishment management in neighbourhoods to offer funding advice in the neighbourhood.

(6) Find further funding

The Saxon Energy Agency (SAENA) has a subsidy search engine. The online tool makes it easy to search for current subsidies and find out about new programmes: <https://www.saena.de/fordermittelberatung.html>.

(7) EU funding

EU funding should also be mentioned in passing. The European Union uses various programmes to promote the development of energy-positive neighbourhoods, often in combination with digital technology ("Smart City"). The LIFE programme promotes environmental and climate protection measures²⁰ and includes various sub-programmes for nature and biodiversity, circular economy and quality of life, climate protection and adaptation as well as the energy transition.

¹⁵ <https://www.energiesprong.de/foerderung/bundesfoerderung-fuer-effiziente-gebaeude-beg/> (4 APRIL 2024)

¹⁶ https://www.bafa.de/DE/Energie/Effiziente_Gebaeude/Foerderprogramm_im_Ueberblick/foerderprogramm_im_ueberblick_node.html (4 APRIL 2024)

¹⁷ <https://www.ndr.de/ratgeber/verbraucher/Haus-energetisch-sanieren-Welche-Foerderungen-gibt-es.gebaeudesanierung108.html> (4 APRIL 2024)

¹⁸ <https://www.kfw.de/inlandsfoerderung/%C3%96ffentliche-Einrichtungen/Kommunen/Wohngeb%C3%A4ude/> (4 APRIL 2024)

¹⁹ <https://www.kfw.de/inlandsfoerderung/%C3%96ffentliche-Einrichtungen/Kommunen/Kommunale-Geb%C3%A4ude/Kommunales-Geb%C3%A4ude-sanieren/> (4 APRIL 2024)

²⁰ https://cinea.ec.europa.eu/programmes/life_en (4 APRIL 2024)

Urban development projects can also be funded as part of special EU calls for proposals.²¹ This often involves working together with partners from different European countries. Participation in such funding programmes allows additional funds to be made available and activities or prototypes to be developed and tested. Such funding programmes are not widely available to all neighbourhoods. Participation in funding programmes requires medium-term planning, as the application and the start of the project are approximately one year apart. EU-wide networking makes it possible to learn from other European cities. This causes effort in the project. In addition, the project must be well networked with the local administration so that the project measures are permanently integrated. The objectives and funding levels differ depending on the focus of the EU programmes. Funds from the Horizon Programme²² are more research-oriented and promote new developments, but are not available for broad implementation. Funds from the ERDF regional development programme²³ are more implementation-oriented and promote the application of successful models, but only relate to certain regions and have priorities.

4.1.2 Utilising smart financing models

In addition to utilising subsidies, it is also possible to finance measures with generated income. In most cases, no direct income is generated, but costs are saved. This is achieved with the following two models:

(1) Energy-saving contracting

Energy-saving contracting is a model for financing efficiency measures. It is suitable for larger public and private buildings or street lighting, for example. A local authority or company invites tenders for a bundle of properties to be optimised with a certain minimum total energy consumption. An energy services company guarantees savings with the help of measures such as light bulb replacement, insulation, smart thermostats, networking or renewable energy systems. Implementation is financed by the savings. If the savings are higher than agreed, the service provider and client can share the savings; this also gives the client an economic interest in maximising energy savings.

Energy performance contracting can be used to modernise the energy efficiency of public buildings in the focused neighbourhood if the city is unable to do so itself in terms of personnel or investment. If it has been known for some time which neighbourhood is to be developed in a climate-friendly way, it is possible to foresee which buildings are eligible for contracting and which projects need to be put out to tender. In this way, the municipality can set an example in the neighbourhood and serve as a model for private-sector buildings in the neighbourhood.

(2) Intracting

Intracting works in a similar way to energy-saving contracting: measures are financed from the savings achieved following start-up financing. With intracting, this is not done with the help of an external service, but instead an internal organisation is created that implements and invoices energy-saving measures.

²¹ One example of this is the "Driving Urban Transitions" call: https://dutpartnership.eu/funding-opportunities/dut_call_2023/ (4.4.2024)

²²https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en (4 APRIL 2024)

²³<https://www.eu-foerdermittel.eu/efre-2021-2027-ueberblick/> (4 APRIL 2024)

4.1.3 Promote measures yourself

Municipalities can not only have measures subsidised, but can also set incentives themselves.

(1) Support programmes

Local authorities can use funding programmes to provide incentives by subsidising defined measures. In Leipzig, this includes

- the subsidy for balcony solar systems²⁴, which supplements the Saxon subsidy for balcony power plants²⁵ with a special subsidy for financially weak households,
- the green roof promotion programme²⁶, which promotes green roofs on new buildings, in particularly polluted areas and in combination with solar systems, and
- Companies are to be specifically supported in utilising the solar potential of their roofs by free consultants (currently being decided)

(2) Financing

Local authorities can support projects in the neighbourhood by investing money from an internal climate protection fund in climate protection projects in the neighbourhood. For example, compensation payments for business trips can be paid into an internal climate protection fund and used for a specific purpose in the neighbourhood.

(3) Rewarding environmentally friendly construction when selling urban land

Bonus point systems for environmentally friendly and energy-saving construction can be used to grant rebates on the purchase price of property sales. This is used in the SPARCS partner city of Reykjavik, for example.²⁷ Bidders who build in an environmentally friendly way can also be favoured in the context of concept awards.

4.2 Shaping the legal situation in a climate-friendly way

It is possible to use the legal options available to municipalities to promote climate-friendly neighbourhood development. In 2022, the German Association of Towns and Municipalities issued a publication detailing the federal and state legal situation and corresponding justifications for climate-friendly neighbourhood development in new and existing districts. *"As part of the 2011 Climate Protection Amendment and the 2013 Interior Development Amendment, the concerns of climate protection and adaptation to the consequences of climate change have been significantly strengthened and the measures of urban redevelopment (Sections 136 ff. BauGB), urban redevelopment (Sections 171a to d*

²⁴ <https://www.leipzig.de/umwelt-und-verkehr/energie-und-klima/foerderung-privater-stecker-solar-geraete> (4 APRIL 2024)

²⁵ <https://www.sab.sachsen.de/balkonkraftwerke-stecker-pv-anlagen> (4 APRIL 2024)

²⁶ <https://www.leipzig.de/umwelt-und-verkehr/energie-und-klima/klimawandelanpassung-und-stadtklima/gruendachfoerderung> (4 APRIL 2024)

²⁷ See <https://sparcs.info/en/deliverables/>, project report D5.9 (in progress, soon online)

BauGB) and urban conservation (Section 172 f. BauGB) have been further developed in this regard."

The legal basis is still being finalised internally. They can therefore unfortunately not be reproduced.

4.3 Communicating and organising: "informal" tools

Municipalities provide infrastructure and services; they can provide advice, subsidise measures and set an example in the market. In some areas, they impose requirements and bans that set the framework for climate-friendly behaviour by those who live or work in their area. There are also other instruments to promote the climate-friendly design of neighbourhoods and private investment in climate protection.



Figure 25: Roles of municipalities in climate protection (excerpt)

Source: Federal Environment Agency, 2023, <https://www.umweltbundesamt.de/themen/klima-energie/klimaschutz-energiepolitik-in-deutschland/kommunaler-klimaschutz#Rolle> (27 November 2023)

(1) Clarify responsibilities

Local authorities can promote climate-friendly neighbourhood development by clarifying which specialist department in their structure is responsible for developing concepts for climate-friendly neighbourhood development and planning and implementing measures. Part of the clear clarification of responsibilities is to define the objective and scope. It is also necessary to define which resources are to be deployed and which procedures are to be used to coordinate the specialist interests of the departments when developing measures. Finally, it makes sense to distinguish which part of the identified need for action is to be addressed with standardised city-wide measures and which part requires the development of measures specific to the neighbourhood.

(2) Bilateral talks and coordination rounds

"In order to create the basis for energy-optimised planning, it makes sense to coordinate specialist interests at an early stage. To this end, coordination rounds can be established, including with the involvement of local energy suppliers. Such exchange formats and early information can be used to gain influence on the urban planning design" (German Association of Towns and Municipalities, 2022).

This also applies to the development of existing buildings: local authorities can invite coordination rounds in order to leverage synergies and drive certain developments forward. The coordination rounds for municipal heat planning are an example of this.

Municipalities can define priority areas of urban development in which they aim for and promote certain developments. To this end, they can introduce coordination rounds to which they invite all relevant people. Depending on the objective, these may be different stakeholders, e.g. transport associations, the housing industry, tenant representatives, waste management or tradespeople. In bilateral discussions, they can endeavour to find common motivation with the stakeholders and develop joint climate protection measures.

(3) Energy, building and subsidy advice

This can be followed by energy and building counselling services: local authorities can offer **advice**. These are intended to motivate private building owners to choose climate-friendly solutions.

Local authorities often offer free initial consultations that refer to networks of specialists, detailed consultations for specific building projects or basic energy-related building advice.

The offer usually comes from urban planning or environmental offices or from climate protection offices in cooperation with the local consumer advice centre or from a cooperation of municipal utilities, neighbouring municipalities and districts.

To this end, the municipality can provide **checklists** for energy and urban development optimisation.²⁸

These offers should include advice on available funding (see section 4.1 Financial support, especially 4.1.1(5) Promotion of efficient buildings).

(4) Approaching homeowners with advice

Although there are various energy advice programmes, only around 7,000 subsidised consultations are used in Germany every year²⁹. There are around 10 million detached and semi-detached houses in need of refurbishment, so more than 300,000 consultations would have to take place annually by 2050. However, according to a market survey conducted in 2018, 55% of owners who identify a need for renovation have never taken advantage of a consultation. This percentage does not include those who do not see a need, even though there is potential.

Organising climate protection. What are we talking about?

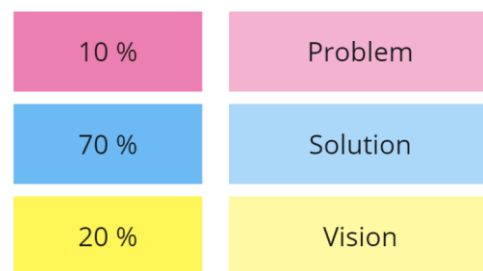


Figure 26: Focus of climate protection communication

Source: own illustration

Assuming that all technical solutions are available and the problem is known, the focus of climate protection communication should be on solutions. As the next steps are unimaginable for many people, the focus should be on communicating these or developing them. Possible visions can serve as "guiding stars".

Source: Christian Gutsche /Klimacoach

²⁸ An example of this is <https://www.hamburg.de/nachhaltiges-bauen/5367754/leitfaden-modernisierung/> or <https://www.hamburg.de/eimsbuettel/klimaschutz/16863040/klimagerecht-bauen/>. It is also helpful to refer to existing offers, such as: https://www.co2online.de/service/energiesparchecks/foerdermittelcheck/?mtm_campaign=button-kopfbuehne-startseite, <https://www.schwaebisch-hall.de/content/dam/dambsh/bsh/dokumente/checklisten/checkliste-energetisch-sanieren.pdf> (all 5.4.2024)

²⁹ <https://www.ifeu.de/projekt/energieberatung-fuer-wohnbaeude-staerken/> (11 DEC. 2023)

Energy consultations are successful: around 80 % of those advised have implemented measures and 95 % of those advised would recommend the consultation to others³⁰. This is where the local authority should start and actively promote energy advice to owners. A tried and tested format for this is the "Energy Caravan" campaign (see next section).

(5) Campaigns and action days

Local authorities can organise exhibitions in public buildings or carry out information campaigns and activities aimed at citizens and businesses. These can be carried out one after the other in the neighbourhoods.

One example of this is the energy caravan, which provides energy advice to all house and flat owners who have not explicitly refused it and offers advice on refurbishment, RE expansion and energy.

A campaign initiated by the city is also conceivable, in which tenants approach their landlords with requests for refurbishment and the installation of renewable energies. It is important to bear in mind when organising campaigns and exhibitions: Good climate protection communication does not work through information alone (see box). Local authorities should bear this in mind when organising campaigns.

(6) Create model neighbourhoods, lead the way as a market participant and test measures

Municipalities can create model neighbourhoods by implementing focused measures that are in line with urban strategies. This can draw attention to the topic, ideally increase acceptance and encourage imitation.

Municipalities can act as **role models** and **market participants** in their own buildings: Municipalities can serve as role models and set high energy standards for energy and heat supply in their own measures. Due to their size, they have an impact on the market when they demand energy products with high ecological standards. Studies have also found that visible solar installations significantly increase the likelihood of further solar installations in the neighbourhood. Finally, local authorities can use neighbourhoods to implement and test new measures on a pilot basis.

(7) Skilled labour portal for the expansion of renewable energies

In some cases, there is a lack of qualified specialists to implement refurbishments, plan renewable energies, adapt the statics of buildings or commission systems. Municipalities can set up a trades portal themselves that lists skilled workers with expertise in ecological refurbishment and the expansion of renewable electricity and heat, or alternatively motivate chambers to take on this task. In this context or in cooperation with the Chamber of Industry and Commerce or adult education centres, further training can be offered and

Reading tip

Talking about climate -

The manual.

Christoph Schrader, 2022

This handbook discusses with many examples how climate protection should be communicated in order to motivate climate-friendly behaviour. It quotes current findings, summarises them and provides exercises.

It is organised into topic chapters and is ideal for reference. It is easy to use for anyone who wants to improve how they communicate about climate protection.

It is available as a printed book, free online and as a podcast.

<https://klimakommunikation.klimafakten.de/>

³⁰ <https://www.verbraucherzentrale.de/energie/energieberatung-der-verbraucherzentrale-27560> (11 DEC. 2024)

RE specialists can be networked. Although this is not a neighbourhood-specific measure, depending on the initial situation it can significantly promote progress in the neighbourhoods in the medium term.

5. ASSESSMENT FOR LEIPZIG

5.1 Current status

Climate-friendly neighbourhood development is a field of action in the EKSP. The following section presents the fields of action that are currently being worked on and assesses whether neighbourhood-specific strategies and measures are necessary or whether a city-wide strategy makes sense. It is internal. The presentation is internal. It is organised according to the fields of action and the following questions:

Table 4 Processing the fields of action in the City of Leipzig

Field of action	What processes, projects and strategies already exist in this field?	Is there neighbourhood-specific processing?	Do city-wide strategies and measures make sense?	Are neighbourhood-specific strategies and measures necessary?
1) Making refurbishment and buildings more efficient				
2) Climate-neutral heat				
3) Expansion of RE				
4) Climate-neutral mobility				
5) Adaptation to the consequences of climate change				
6) Inner city development				
7) Consumption and the circular economy				
8) Culture and leisure				
9) Process design				
a) Shaping processes and decision-making situations				
b) Integrated working				
c) Communicate and participate strategically				
d) Controlling				
General conditions				

Local availability of skilled labour				
Legal framework conditions				
People's ability to go along with a far-reaching transformation				

It is clear that instruments and institutions already exist for many areas of action. What further action is needed to ensure decarbonisation by 2040 should be specified in a next step with the offices involved. From a climate protection perspective, the focus should be on the first three areas of action, as this is where primary emissions are caused and there is great potential. Culture (8) as a value basis for transformation and process design (9) as a vehicle for acceptance and procedural justice also deserve greater attention. A joint assessment should be made as to whether decarbonisation is likely by 2040 with the current measures. An exact assessment is time-consuming; an expert estimate is therefore recommended in order to put costs and benefits in a meaningful relationship. It should be worked out which targets have been or should be set in these fields. Specific, measurable, attractive, realistic and scheduled objectives for neighbourhoods should be developed so that all offices can develop concrete ideas for the following steps. These should be harmonised with the objectives of the other offices.

5.2 Conclusions: Recommendations for action

Climate-friendly neighbourhood development requires specific expertise in decarbonisation in various fields and must also be interdisciplinary. Even if individual fields of action are usually anchored in specific municipal administrative structures (e.g. green and open space management, transport and civil engineering), **an organisational unit is needed** to manage the process: analyse and prioritise neighbourhoods, bundle efforts, identify synergies and develop measures. In order to define the scope of its activities, the **desired number of neighbourhoods and depth of processing** should be specified. The central goal is the climate-friendly development of all neighbourhoods; the prioritisation is based on the emission reduction potential of the neighbourhoods. How general neighbourhood development needs are to be incorporated into the prioritisation should be clarified. Furthermore, it has not yet been determined to what extent climate-friendly neighbourhood development should take place or what level of climate-friendly neighbourhood development (see 2.2, 2.4) is aimed for. Depending on the number of fields of action to be addressed and the desired level of decarbonisation, sufficient human and financial resources must be available. In view of the ambitious targets, the question arises as to whether resources can be increased to expand the neighbourhood measures. One way of tackling the challenge of bringing the energy transition to all neighbourhoods is through the support of **climate action managers** for climate-friendly neighbourhood development.³¹ Depending on the intended scope of the tasks, this position may require further support.

It is also advisable to promote **coordination and clarify roles**. The role that neighbourhood development should play in relation to city-wide planning should be clarified with the offices that primarily pursue city-wide planning. For example, should new green and transport measures be planned in existing neighbourhoods that are being developed in a climate-friendly way in addition to city-wide plans? If necessary, this must be determined on a neighbourhood-specific basis. In the development of measures, office representatives must take on an active role as a link between neighbourhood climate work and their offices and coordinate and confirm proposed measures. Furthermore, the role of the organisational unit responsible for climate protection should be specified in terms of communication. Is its role to provide technical support, develop objectives and bundle them for the city as a whole, or can it work and implement in the neighbourhoods in terms of capacity? For procedures, it should be clarified whether it should act as a participating actor and whether a communicative sharpening of its role is sufficient. Or should more tasks be taken on - for example in the creation of concepts or in the development and review of targets for the city as a whole? Then it must be clarified with which resources this can be done.

In order to successfully implement the developed fields of action of the standard model, four recommendations are explained below:

1. **Create an organisational unit that controls and coordinates,**
2. **systematically select: analyse and prioritise and**

³¹ Temporary funding from the National Climate Initiative is conceivable ("follow-up project climate protection management" as implementation of a measure, e.g. EKSP 2030 measure 1.4). The Federal Ministry for the Environment currently provides 60% funding for climate protection managers (lignite mining area). However, in order to fulfil the task, the position should be awarded on a permanent basis. [Climate protection concepts & personnel | National Climate Protection Initiative of the Federal Ministry for Economic Affairs and Climate Protection](#), 10.4.2024

3. **into city-wide and neighbourhood measures,**
4. **Actively address different target groups and increase counselling services where necessary**

(1) Create an organisational unit that controls and coordinates

The available resources are scarce and neighbourhood measures are usually intended to implement objectives from different areas at the same time. In order to decide which neighbourhoods to focus on, the energy prioritisation must be aligned with other urban concerns and the urban strategy. A central unit must be determined for this purpose.

When a neighbourhood is developed, measures must be selected after analysing the current situation and potential. A central body should either **be authorised to prioritise** these itself or be tasked with shaping the evaluation process. When the measures are implemented, they must be coordinated in the various neighbourhoods and, if necessary, harmonised with new urban developments in the course of implementation. The centre must **coordinate** this.

The city of Leipzig is in the unique position of having an office responsible for neighbourhood development and urban renewal. Since 1991, it has been responsible for eliminating structural, economic and social problems in Leipzig's Gründerzeit neighbourhoods and in the large prefabricated housing estates and maintaining affordable housing with the help of the instruments of special urban development law and the use of subsidies. The creation of energy-efficient neighbourhood concepts has also been based there since 2014. For this reason, it would make sense for it to take on a central role in climate-friendly neighbourhood development and coordinate activities in neighbourhoods. This would be a new focal point that would have to be organised and staffed accordingly. This could be done, for example, with a climate protection management for climate-friendly neighbourhood development. In order to achieve climate targets effectively, there is a guideline from Helsinki that lists standards that administrations can adhere to in order to draw up and implement strategic action plans effectively. This should be consulted.

The following two recommendations define it as the task of this organisational unit to create a comprehensive overview of the work area and to identify synergies.

(2) Systematic selection: analyse and prioritise

An overview of all neighbourhoods is helpful when resources are limited, as it allows sensible priorities to be set. For the **analysis**, all neighbourhoods must first be roughly assessed in terms of energy. This requires information from many sources. Pooling and processing all available energy data in an urban geo-information system can help. One example of this is the Leipzig Energy Map.

Prioritising neighbourhoods requires weighing up various interests and agreement between different departments. Which goals should be pursued in which neighbourhoods must be decided with regard to city-wide strategies. The presented fields of action and target levels can be used for this purpose. Furthermore, a decision should be made as to

Reading tip

Supporting strategy with action plans - A Guide for the Preparation of an Emissions Reduction Action Plan

City of Helsinki, 2022

The handout provides a clear overview for public stakeholders of how objectives and action plans need to be formulated in order to implement strategies effectively. The aim is to focus on measures that are effective.

www.hel.fi/static/kanslia/Julkaisut/2022/HKI_Guide_Emissions_Reduction_2022.pdf

which level should be targeted where and whether fields of action should be prioritised. In principle, there are different approaches to neighbourhood development:

- Implement decarbonisation measures in all neighbourhoods in order to develop them in a climate-friendly way (Level 3 everywhere),
- Implement basic measures in all neighbourhoods (Level 1),
- Only implement all measures in selected pilot neighbourhoods (Level 3 selective),
- develop all or selected neighbourhoods in such a way that they achieve a climate-neutral energy balance and focus on the technical balance (Level 2) or
- Set different priorities in neighbourhoods (do not orientate on levels, but select fields of action).

A strategic decision should be made here. From a climate protection perspective, all neighbourhoods should be decarbonised. Energy from one neighbourhood can be used in another, but the premise is that all neighbourhoods must become GHG-neutral in order to stabilise the global temperature. To achieve this, all neighbourhoods must be examined to see how this can be achieved. From the perspective of the standard model, the first three fields of action should be prioritised: 1) refurbishment, 2) expanding climate-neutral heating and 3) expanding renewable energies because they reduce energy consumption and thus the need for transformation. These can be addressed largely independently of the other areas of action.

(3) Split into urban and neighbourhood measures

If additional measures are to be implemented in the neighbourhood in areas for which there is city-wide planning, integration into the urban strategy, financing and support must be clarified beforehand. One area in which this is already being applied, for example, is the decarbonisation of the heating supply. It is becoming apparent that municipal heating planning is defining this for most neighbourhoods: In neighbourhoods that will be supplied with district heating in the future, the issue of climate-neutral heat supply has been resolved. Here, neighbourhood concepts can focus on other areas of action. A city-wide approach can also be developed in other fields of action and successively implemented in the neighbourhoods. The contents of the standard model can be implemented within this framework.

(4) Actively address different target groups and increase counselling services where necessary

Once neighbourhoods have been selected, measures must be implemented effectively. How can the city administration help bring the energy transition to the neighbourhoods? How can the city administration motivate neighbourhood stakeholders to renovate buildings, expand renewable energies or adapt living environments to the changing climate?

Energy has become more expensive, the price of CO₂ is rising, landlords have had to contribute to the CO₂ costs of heating since 2023 and the legal situation and funding landscape are constantly changing. Individuals who want to take action must first find out what the current framework conditions are.

In order to **actively approach different target groups**, building owner groups should be addressed in a differentiated manner, as these are based on different motivations and work logics.

It is generally not easy to find out who owns the buildings in Leipzig. This is only possible with specific processing. The Statistical Yearbook of the City of Leipzig lists around 15 % of Leipzig households in owner-occupied property for 2023 (City of Leipzig, 2024) who owns the other buildings remains unclear. The 2011 census (Statistical offices of the federal and state governments, 2015) lists the following forms of ownership for

residential buildings: 63 % private individuals, 15 % homeowners' associations, 6 % municipal housing companies, 5 % private housing companies, 8 % housing cooperatives and 3 % other owners. A precise and up-to-date breakdown of private individuals in particular is necessary in this context. Trautvetter and Knechtel (Trautvetter & Knechtel, 2023) have distinguished the following ownership groups based on the 2011 census and other research (updates, rental advertisements, annual reports of listed companies, cooperative and company reports, 2018 microcensus) (**Error! Reference source not found.**): Financial market and stock exchange, large private ownership, small private ownership, owner-occupiers, co-operatives and non-profit, government.³² Even if this classification contains estimates due to a lack of more precise data and exact percentages may differ, it is an up-to-date and comprehensively researched source that can therefore be used as a guide.

The standard model suggests differentiating between the following target groups and addressing them directly:

Owner-occupiers account for around 12% of Leipzig's population, i.e. an estimated 75,000 people or 44,000 households. For them, the "Energy Caravan" offers a tried-and-tested model to promote refurbishment, increased building efficiency and the expansion of renewable energies. Implementation is more protracted in communities of owners than in single-party ownership.³³

Around 24% of the building stock is organised by **the state, cooperatives or non-profit organisations**. The city should continue to target these organisations.

Small and large private owners of buildings account for 55 %. This percentage is high in comparison to other cities and represents a Leipzig speciality that is due to post-reunification sales. The city should address this group by means of a campaign via the tenants: the tenants can ask their landlords to renovate (and inform the city if necessary). This target group has so far been difficult to address, which is why it is worth testing a new format.

Property owned by the financial market and stock exchange, 9%, is more difficult to address because there is usually no local connection and the focus is on maximising profits. To this end, the city should use the Lord Mayor to formulate, via bodies such as the Association of Cities and Towns, what regulation is needed to drive forward the desired decarbonisation in the neighbourhoods. If necessary, property owned by the financial market and stock exchange can be achieved through campaigns; however, the city would have to outsource this.

In addition to this property-based target group differentiation, the city should consider and address the following additional target groups:

Eigentumsverhältnisse in Leipzig

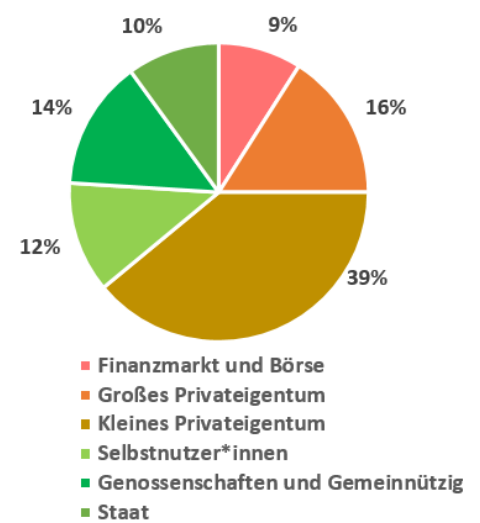


Figure 27: Owners of Leipzig buildings

Source: Trautvetter & Knechtel 2023

³² Non-partitioned apartment blocks with 7 or more flats were classified as "large". See <https://www.wemgehoertdiestadt.de/methodik/>, 17.04.2024

³³ More information can be found under 4.3(5).

Tenants make up around 88% of the population. The city should also actively address these tenants, e.g. via the Leipzig app with neighbourhood-specific climate challenges, or by mailing them advice on energy-saving potential and rights. Some cities offer special advice for low-income households: the Cariteam energy-saving check is provided by former long-term unemployed people who have undergone further training to become energy consultants.

Companies with large roofs: Both a study by the Leipzig Economic Development Agency on company roofs and the Agora Energy Transition study "Electricity from the roof" make it possible to identify owners of large roofs. In order to utilise this potential, the city should approach them, as planned with the "Solar Scout". This is intended to address companies and support them in the realisation of solar energy systems. It should be evaluated whether the work of the Solar Scout is successful, obstacles removed if necessary and efforts intensified.

Listed buildings: Around 20 % of Leipzig's buildings are monument protected. Here, energy and conservation advice should be combined. In addition, it should be worked out whether it is possible to promote the expansion of renewable energies on new buildings first, and within the monument protected buildings primarily on large, uncomplicated monument protected roof areas instead of on small-scale monument roof areas.

The needs of these target groups should be analysed and suitable contact formats developed. The advantage of an active approach and counselling is that the city learns about the concerns and worries of the various target groups and can respond to them by systematically evaluating them. The active counselling formats should be developed for the entire city and, in principle, be available to everyone. They should be carried out successively in the neighbourhoods on a neighbourhood-specific basis depending on the primary form of ownership. The City of Leipzig should build on the successful model of the "consultant architects" from the 1990s and 2000s as part of the major urban redevelopment and expand the advisory capacities that can advise on both measures and their financing.

To this end, the city should **set up centralised energy advice points** that the various target group formats can refer to and access. One possibility would be to expand the energy advice centre in Leipzig's Technical City Hall and, as in other cities, operate it in cooperation with the municipal utilities and the Chamber of Crafts. One example of this is the "Energy Point" in Frankfurt am Main, a co-operation between Mainova (municipal utilities), the Chamber of Skilled Crafts and the Office for Construction and Real Estate.

6. CLOSING WORDS

Although climate-friendly neighbourhood development has been set as a goal in Leipzig, it has not yet been defined. This report on working aids for a standard procedure for climate-friendly neighbourhood development has made a proposal for this. It analyses Leipzig specifically and highlights opportunities for other municipalities: it contains recommendations on how city administrations can act to develop existing neighbourhoods in a climate-friendly way and systematise their approach. These suggestions are welcome to be taken up and processed further.

It should be borne in mind that in some areas the current framework conditions prevent climate-friendly neighbourhood development, e.g. the local availability of skilled workers, the legal framework, current skills or the willingness of those involved to accompany a far-reaching transformation.

During the process, it became clear that there are many starting points for improving the energy situation in neighbourhoods and moving them towards climate-friendly neighbourhoods. In conjunction with federal and state policy changes, important steps can be taken to make existing neighbourhoods climate-neutral and socially equitable and to enable a secure, intergenerational future for all.

7. INDEXES: SOURCES, TABLES, FIGURES, ABBREVIATIONS EN

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7.4 List of abbreviations

EE	Renewable energies
EKSP	Energy and climate protection programme of the City of Leipzig
EQK	Energy neighbourhood concept
DENA	German Energy Agency
LWB	Leipziger Wohnungs- und Baugesellschaft mbH
SAENA	Saxon Energy Agency
SDG	Sustainable Development Goals, goals for sustainable development adopted by all UN nations
GHG	Greenhouse gas(s)

Abbreviations for offices of the City of Leipzig:

ABD	Office for Building Regulations and Monument Preservation
AfU	Office for Environmental Protection
AGM	Office for Facility Management
ASG	Office for Urban Greenery and Water
AWS	Office for Housing and Urban Renewal
AGB (GDI)	Department for Spatial Data Infrastructure in the Office for Geoinformation and Land Organisation
RDS	Digital City Unit
RNK Protection	Department for Sustainable Development and Climate
SPA	Urban planning office

VTA

Traffic and civil engineering office

8. APPENDIX

8.1 Participatory process model

In projects that are based on the voluntary co-operation of stakeholders, there are typical dynamics in decision-making. This was described on page 28 illustrated. This also results in sensible step sequences for the overall process. Assuming that cooperation for climate protection work in neighbourhoods is usually voluntary, a collaborative setting can therefore be assumed. Successful collaborative processes often follow these seven steps as a model:

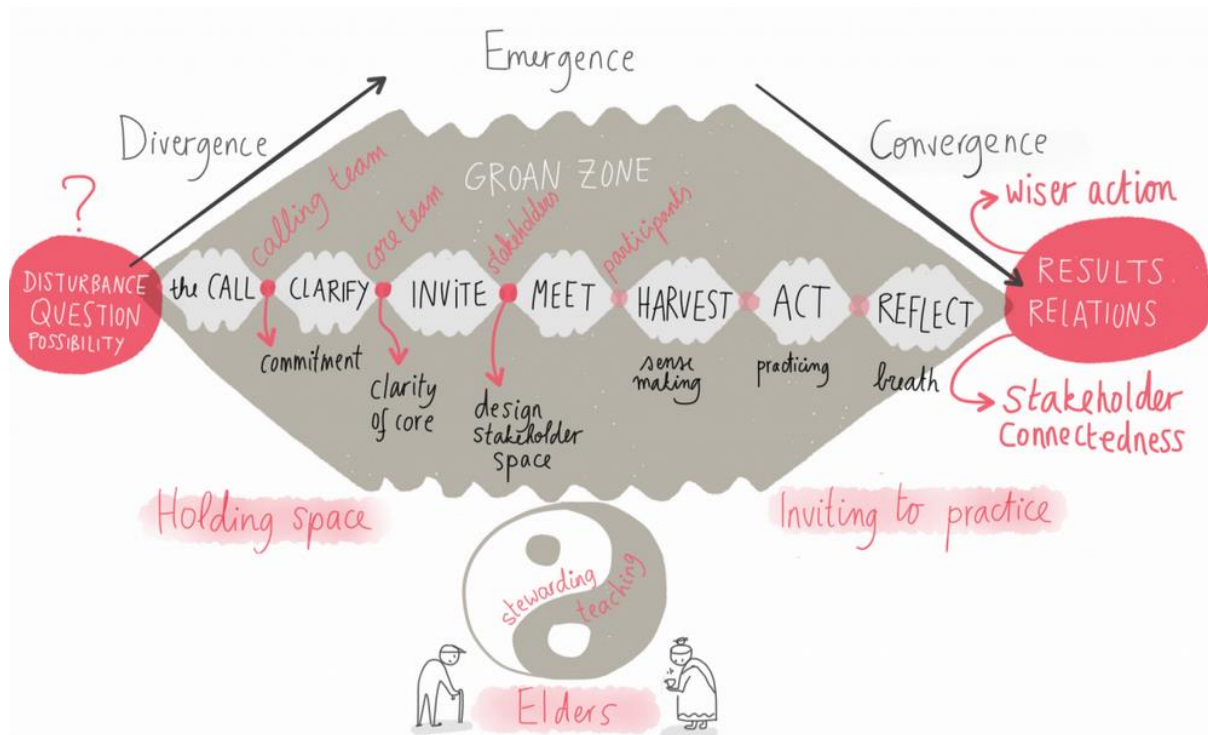


Figure 28. A model of participatory process design

Source: Peer2Peer Foundation, https://wiki.p2pfoundation.net/Diamond_of_Participation (18/10/2023)

An appropriate sequence is as follows: From the project idea, to inviting other stakeholders, clarifying the objective, inviting participants, meeting, evaluating, implementing the ideas and reflecting until the end.

Every step benefits from being shaped ("holding space"). Certain results are only possible as a result.

Whilst many things seem clear at the beginning, the discussion continues with more participants. While everyone involved agrees on the problem and the goal, it can be exhausting; however, in order for viable solutions to be created, this phase must be endured and organised so that new solutions can emerge. Finally, the space of possibilities for a solution can be narrowed. While it is initially important to hold the space, it is later important to take action.

8.2 Model table of contents

Model table of contents for energy-efficient district concepts

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II. Inventory (max. 7-15 pages)	3	Description of the target image favoured by the stakeholder conference. Development of a target image or targets for energy-efficient urban refurbishment	6
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In future, the database for this will be largely available within the city with the energy atlas and exported for the contractors. This will speed up the analysis phase. The contractors should develop measures based on this. The initial situation should be summarised in the concept. Include foreseeable developments, adopted plans in implementation (electricity, heat, mobility), plans for the future.....	4	Implementation plans (max. 5-7 pages)	6
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Energy supply structure	4	Timetable for implementation	6
Production and utilisation of renewable energies.....	4	Responsibilities, priorities, short/medium-term	6
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Initial situation and strategies in the area of mobility and climate adaptation	4	Tasks of the reorganisation management.....	7
III. Potential analysis (max. 15 pages, details on methods in the appendix).....	5	Quality assurance measures (max. 2-3 pages).....	7
Savings and reduction potential for existing buildings (building envelope and systems technology, in-depth investigation of exemplary buildings if necessary).....	5	VIII. Appendix.....	7
Savings and reduction potential through sustainable energy supply in the neighbourhood	5	Details on methods for analysing potential	7
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[rather excluded; adapt on the city side:] Savings and reduction potential through climate-friendly mobility.....	5		
Evaluation of the potential presented.....	5		
IV. Greenhouse gas balance & scenarios (max. 15 pages)	5		
Balance sheet (max. 5 pages)	5		
Final energy, primary energy and GHG emissions	5		
Updates (max. 5 pages)	5		

Preliminary remark: Aim of the model table of contents

This document is to be understood as a suggestion and is intended to facilitate,

- a) to clarify within the City of Leipzig what is to be developed in energy neighbourhood concepts and in what depth. In this sense, the model table of contents can be attached in whole or in part to tenders for energy neighbourhood concepts.
- b) make it easier for contractors to meet these expectations
- c) make emerging concepts comparable
- d) enable the process to improve over time

This table of contents is intended to be used to create KfW-432-eligible concepts. If it is resumed, it can be used directly; if not, the principle can be utilised. It is therefore based on: https://www.energetische-stadtsanierung.info/wp-content/uploads/2019/08/00_Arbeitshilfe_EnSa_Ausschreibung.pdf

The green text gives instructions that should be deleted in the finished document, as well as the page number information in the headings. In total, it should be around 50-80 pages. Please provide further explanations in the appendix.

Summary (max. 1 page)

Summarises the concept on one page, with a focus on the measures developed. <

I. Objective of the energy neighbourhood concept and development (max. 2.5 pages)

Objective of the concept development in this neighbourhood (max. 1-2 pages)

This describes what is to be achieved by developing an energy neighbourhood concept for this neighbourhood. As the basic assumptions are the same for all neighbourhoods, there is a template here:

[The city's goal is to use energy-efficient neighbourhood concepts to develop measures for existing neighbourhoods that will move them towards decarbonisation and thus make it easier to live there in a climate-friendly way. Climate justice means compliance with the Paris Climate Agreement, i.e. decarbonisation by 2040 in accordance with Leipzig's climate targets (international and intergenerational justice perspective), and a fair distribution of burdens and obligations (intra-societal justice perspective). In particular, the opportunities of marginalised groups should be strengthened and procedural justice achieved through participation in measures. To this end, energy neighbourhood concepts are to be used to develop and implement measures to improve energy efficiency. As there are already concepts for mobility and climate adaptation, the current focus is on the transformation of the heat supply, the expansion of renewable energies and the refurbishment of buildings. To this end, stakeholders are being identified who can implement or promote energy-related measures. If the stakeholders are unable to implement the measures themselves, the concept can be used to apply for funding. Instruments can be, for example, refurbishment management, process support for neighbourhood stakeholders or outreach energy consulting (e.g. solar scouts for companies or energy caravans for owner-occupiers). Local authorities can only achieve a great deal by working together. The aim is to effectively reduce emissions together. The city assumes that all stakeholders want to contribute within the scope of their possibilities. Because the city cannot implement measures alone, they are developed collaboratively. The development process is intended to formulate a common goal, motivate and encourage initiative. The energy neighbourhood concept documents this and records it in a form that is eligible for funding.]

Description of the development process (0.5-1 page)

Although there are documents that describe the ideal procedure, there are special features in every process. How did it actually work? Who developed the concept with whom and over what period of time? Which coordination rounds and methods were used?

II. Inventory (max. 7-15 pages)

This section summarises the initial situation in the neighbourhood in a concentrated form.

General initial situation (max. 3 pages)

Characteristics of the neighbourhood

An overview of the neighbourhood is given here.

Age of construction, spatial demarcation, owner, vacancy, socio-economic situation, connection to surrounding neighbourhoods, central challenges in the neighbourhood

Statements from overarching plans and concepts

INSEK, EKSP, STEKS, development plans (B plans), land utilisation plan (FNP), green master plan as soon as adopted. Further master plans if adopted; mention plans. Social conservation statutes. The text formulates how the neighbourhood is to be strategically developed in the context of the city.

Initial energy situation (max. 6-12 pages, details in the appendix if necessary)

In future, the database for this will be largely available within the city with the energy atlas and exported for the contractors. This will speed up the analysis phase. The contractors should develop measures based on this. The initial situation should be summarised in the concept. Include foreseeable developments, adopted plans in implementation (electricity, heat, mobility), plans for the future.

Highlighted in blue: should in future be largely available within the city in the energy atlas. The contractor should have to collect as little data as possible. As far as possible, the data is exported and can be used as a basis. Additional research may be required.

Building stock

(e.g. building age, structural condition, utilisation)

Energy supply structure

for heat supply, electricity, domestic hot water if applicable, street lighting if applicable. E.g. energy source, grid and system structure.

Production and utilisation of renewable energies

Special network loads

where available: Charging stations, large heat pumps, etc.

Actors

Owner structure, user structure, other stakeholders with whom work can be done in the neighbourhood (energy suppliers, infrastructure operators, large companies, networks, etc.)

Stakeholder analysis:

Actors	Which potential interest groups (people, groups of people or institutions) should be considered for the upcoming project?	What influence can the identified interest groups have on the project?	What is the behaviour of the identified interest groups towards the project?

Initial situation and strategies in the area of mobility and climate adaptation

[As there are already overall strategies for these topics and plans for some neighbourhoods, the concept developers should only present what is already set out in existing plans and overarching strategies for the selected neighbourhood. (develop no measures or only after consultation)

- Mobility (e.g. vehicle density, public transport connections, cycle and footpath network, traffic congestion, modal split, accessibility)
- other topics (e.g. urban climate aspects, social compatibility, building culture)

III. Potential analysis (max. 15 pages, details on methods in the appendix)

Savings and reduction potential for existing buildings (building envelope and systems technology, in-depth investigation of exemplary buildings if necessary)

Savings and reduction potential through sustainable energy supply in the neighbourhood

Potential for expanding renewable energies in the neighbourhood

Production and utilisation

[rather excluded; adapt on the city side:] Savings and reduction potential through climate-friendly mobility (if desired in concept; specify level of detail)

Evaluation of the potential presented

with regard to economic efficiency and feasibility and ecological effects. Parts of the potential analysis will be available in the energy atlas, parts must be prepared by contractors. The energy atlas is under development; please check the current database online.

IV. Greenhouse gas balance sheet & scenarios (max. 15 pages)

The current status and its extrapolation, as well as various technical options for achieving the selected scenario are presented here; or the achievability of the target with various technologies is assessed. The CO should be able to derive the carbon footprint relatively easily from data. It will not be available as standard for all neighbourhoods.

Balance sheet (max. 5 pages)

Final energy, primary energy and GHG emissions

Status quo. As far as possible, broken down by consumption types/actors and energy sources. As far as simply possible, consider all greenhouse gases; if complex, only create a CO₂ balance. [The balance sheet is to be drawn up analogue to the city-wide balance sheet based on BSKO.

Updates (max. 5 pages)

Business-as-usual (BAU)

... if trends continue as before, taking into account overarching trends (e.g. development of the German electricity mix, e-car rollout, ...)

Current EKSP climate neutrality target: 2040

... necessary trend changes to be climate-neutral by 2040

Mission goal 2030

... necessary trend changes in order to be climate-neutral by 2030.

Scenarios (max. 5 pages)

The scenarios to be described must be agreed with the client. Present at least 3 different, sensible technology options and describe the effects on heat decarbonisation, RE and electricity grid expansion, road construction, costs and effects for residents as well as possible.

Conceivable would be: Individual vs. neighbourhood solutions; refurbishment vs. green heat, hydrogen vs. heat pumps, or: 20% heat pumps, 80% neighbourhood solution vs. 100% individual solutions, The assumptions that need to be made for this are to be discussed with the accompanying voting and steering group.

V. Target image/goals (max. 5 pages)

Description of the target image favoured by the stakeholder conference. Development of a target image or targets for energy-efficient urban refurbishment

e.g. target refurbishment rates and standards for building types, heat supply concept, social compatibility, climatic effects, etc.

This is where the common goal/objective is documented and worked out. The desired path is selected by the stakeholders in a stakeholder conference (see "Agreement process and standard table of contents"). The stakeholders working on the project jointly decide on the best way forward.

It is possible that those working on the project cannot yet be certain of achieving certain goals at this stage. New developments and findings in the further process may make it necessary to pursue something else after all. Nonetheless, the aim of the commissioning party (WG) is to agree on a goal as precisely as possible with the processors and neighbourhood stakeholders at this stage.

VI. Catalogue of measures (max. 7-17 pages)

Development of a catalogue of measures based on the objective and coordination with the responsible stakeholders

This is the heart of the concept! This is where measures are described that are effective in achieving the goal and should be implemented. Detailed, realistic, implementation-orientated. Less is more: it is better to have fewer measures that can actually be implemented. There is a profile template for the measures. One page per measure -> approx. 5-15 pages [adapt on the city side] At least in the subject areas: refurbishment, electricity, heat

Reference to appendix: Documentation of the comparison with measures in the areas of transport, climate adaptation, monument protection, social conservation statutes, social compatibility

VII. Plans for implementation & controlling (max. 7-10 pages)

Implementation plans (max. 5-7 pages)

Procedure

One page each Timetable, planned cooperation structure, who does what (role description & delimitation + task description), financing options

Timetable for implementation

Responsibilities, priorities, short/medium- /long-term goals, etc.

This is where we plan who should do what and in what order to implement the measures.

Co-operation structure

Who does what? How do we work together? describe

Financing options

Showing: Subsidies, sources of income, intracting, etc.

Tasks of the reorganisation management

Describe if remediation management is considered necessary

Quality assurance measures (max. 2-3 pages)

Describe per measure and for overall goal,

- which can be used to determine whether the EnQK has the desired success.
- who checks this and when
- what should happen if it does not yet fit.

Develop updatable monitoring, define success criteria: consider key figures, consider verifiability, consider effort, select key figure. Define threshold value for what counts as success. **Define time periods and persons responsible for monitoring success:** e.g. city, RNK, municipal utilities, housing companies. **Control measures:** describe what should happen if the target is not achieved. Evaluate the measure? / who should be informed / where should the issue be addressed / tightening of measures / where should financial difficulties be reported /... ?

Measure title	
Updatable monitoring indicator	<i>This characteristic is used to recognise whether the measure has been successfully implemented</i>
Success criterion	<i>When is the measure considered successful?</i>
Test manager	<i>Who checks?</i>
Timing	<i>When will it be checked?</i>
Control measure	<i>What happens in the event of deviations?</i>

VIII. Appendix

Includes detailed explanations of the neighbourhood status, scenarios and measures, comparisons, methods, if necessary.

Details on methods for analysing potential

Documentation of the comparison with measures in the areas of transport, climate adaptation, monument protection, social conservation statutes, social compatibility

To avoid conflicts, the measures must be harmonised with the resolutions and plans in the above-mentioned fields before they are adopted. This should be documented here. To ensure that the concept is easy to read, this is only presented after the measures. Obvious measures that were abandoned due to conflicts with the above-mentioned fields should also be explained here.

Measure	Synchronisation					Result
	Traffic	Climate adaptation	Monument protection requirements	Social conservation statutes	Social compatibility	
Measure 1	Explanation, if adjustment necessary	- (dash) if adjustment not necessary				
...						