

An aerial photograph of Mannheim, Germany, overlaid with a district heating planning map. The map uses various colors to delineate different planning zones: red for residential areas, blue for commercial/industrial zones, green for parks and green spaces, and yellow for other urban areas. Thick purple lines represent major district heating corridors or boundaries. The Rhine river is visible on the left side of the image.

DISTRICT HEATING PLANNING MANNHEIM, GERMANY

Presenter:

Maria Riffat

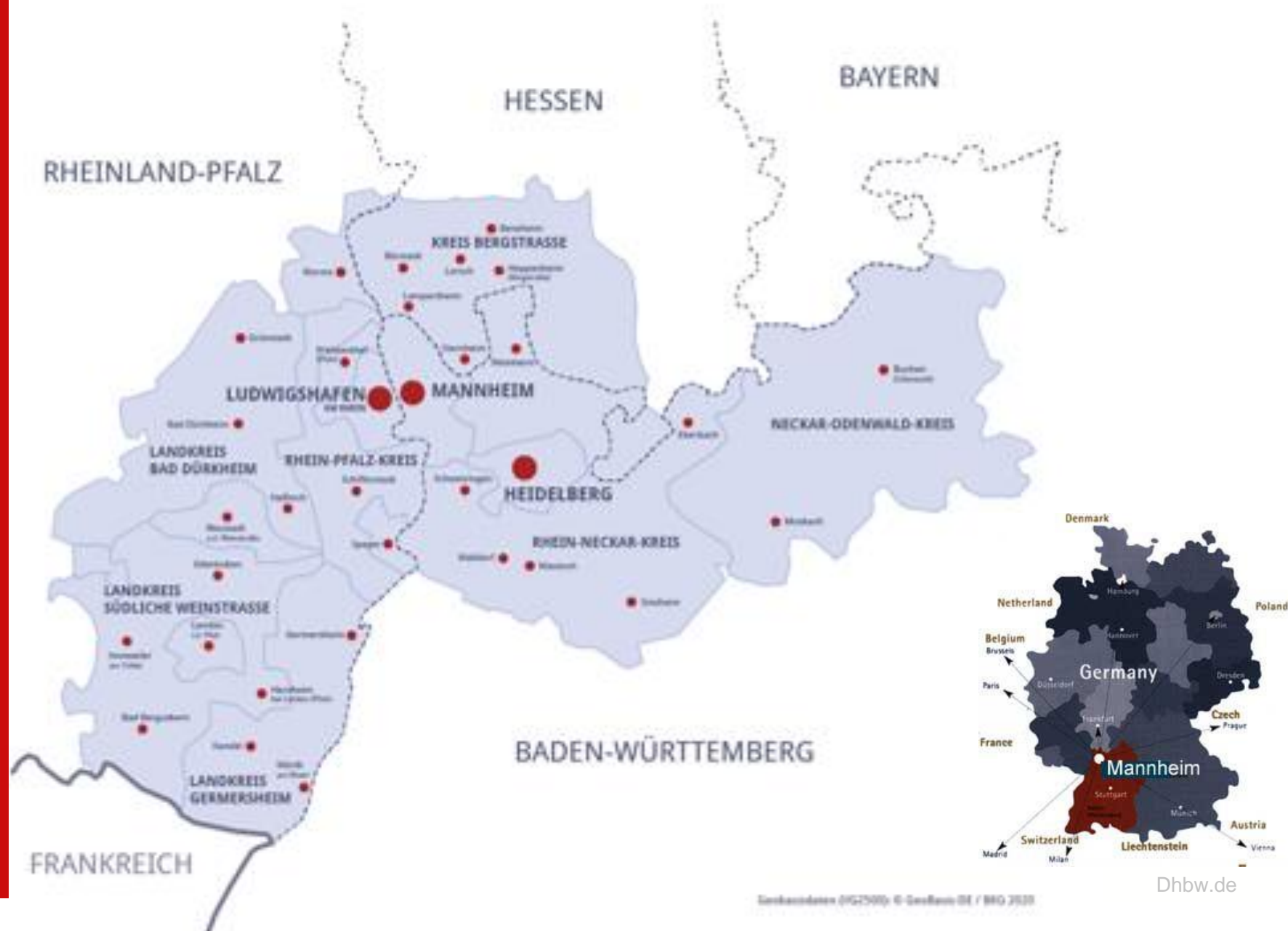
Energy Efficient Refurbishment Engineer

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Dated: 25.04.2024

About Mannheim

- Second largest city in Baden-Württemberg (BW) with 326,000 inhabitants
- Located on the boarder to 3 states
- Economic and cultural center of the European Rhein-Neckar metropolitan region



MANNHEIM

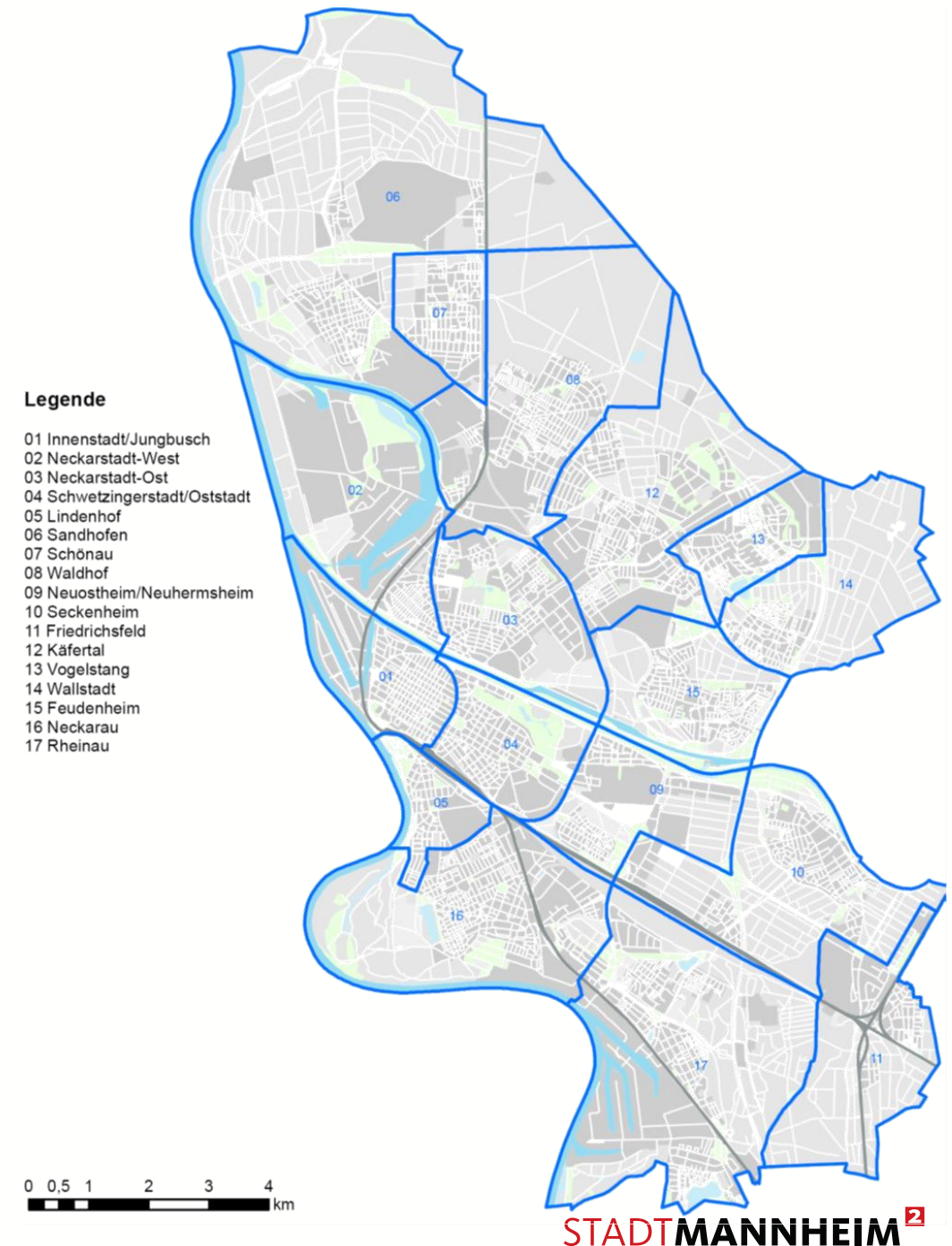
Quadratstadt (Square City)

- 17 Districts
- 38 Sub-Districts

Total area of the city: 144.96 km²

- Settlements area = 42%
- Transportation area = 17%
- Vegetation with agriculture area = 37%
- Water area = 4%

(Data source: City of Mannheim - excerpt from the property cadastre, [FB61](#))



DISTRICT HEATING PLANNING MANNHEIM

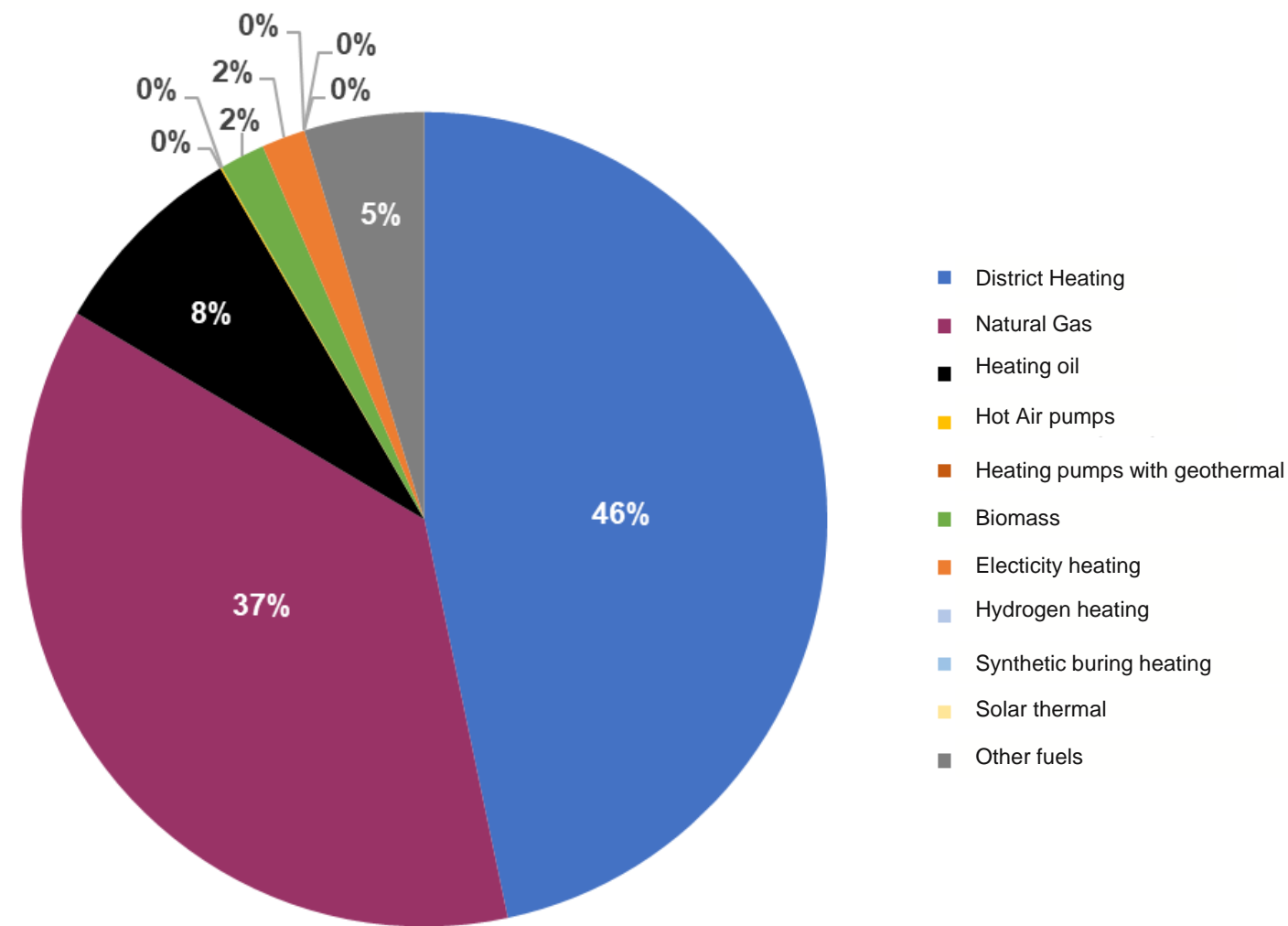
Targets

- City of Mannheim: Climate neutrality 2030
 - Climate Protection - Action plan 2030
 - EU-Mission „100 climate neutral and smart cities“
 - District Heating Plan
 - Climate neutral heat supply by 2040
- Transition/exit from fossil fuels
- Shift towards renewable energy sources
- **Heating Transformation/ Transition**

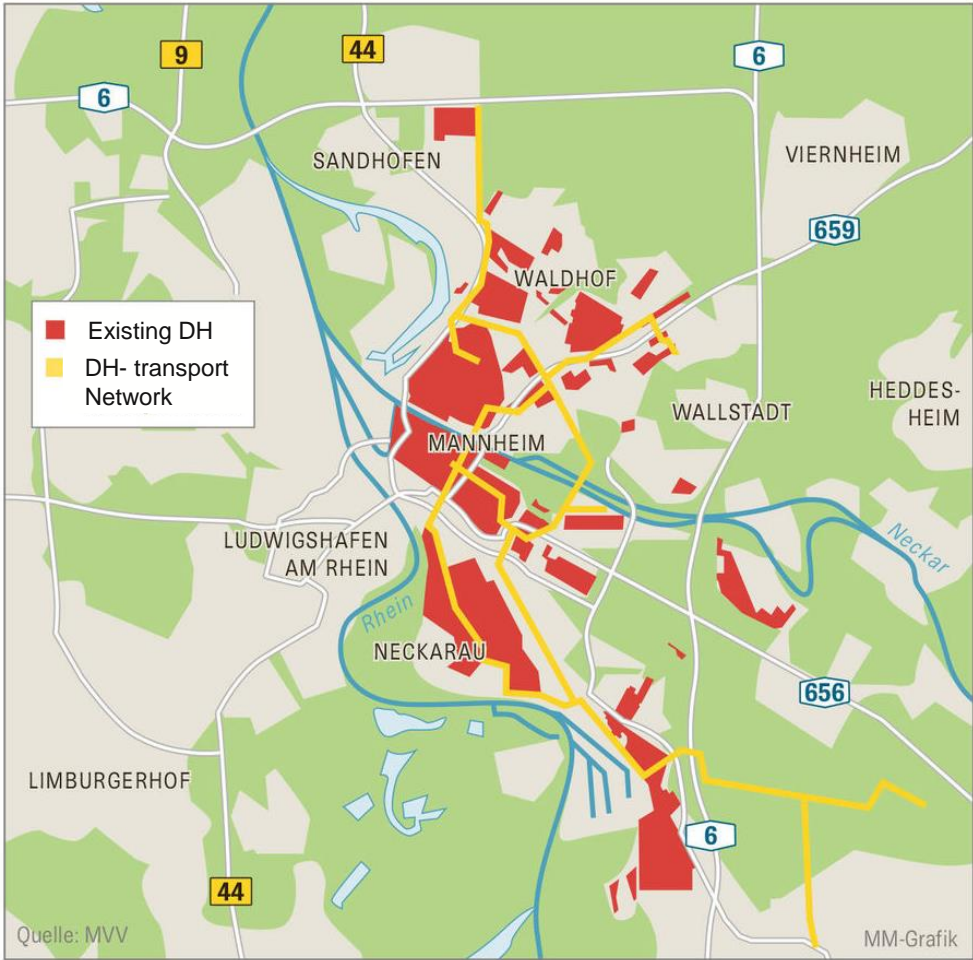
Goals and opportunities of heat planning

- District heating plan as a strategic basis for action in the local heating transition
 - The district heating plan creates planning and investment security for companies and citizens
- **How will I heat my living space in the future?**

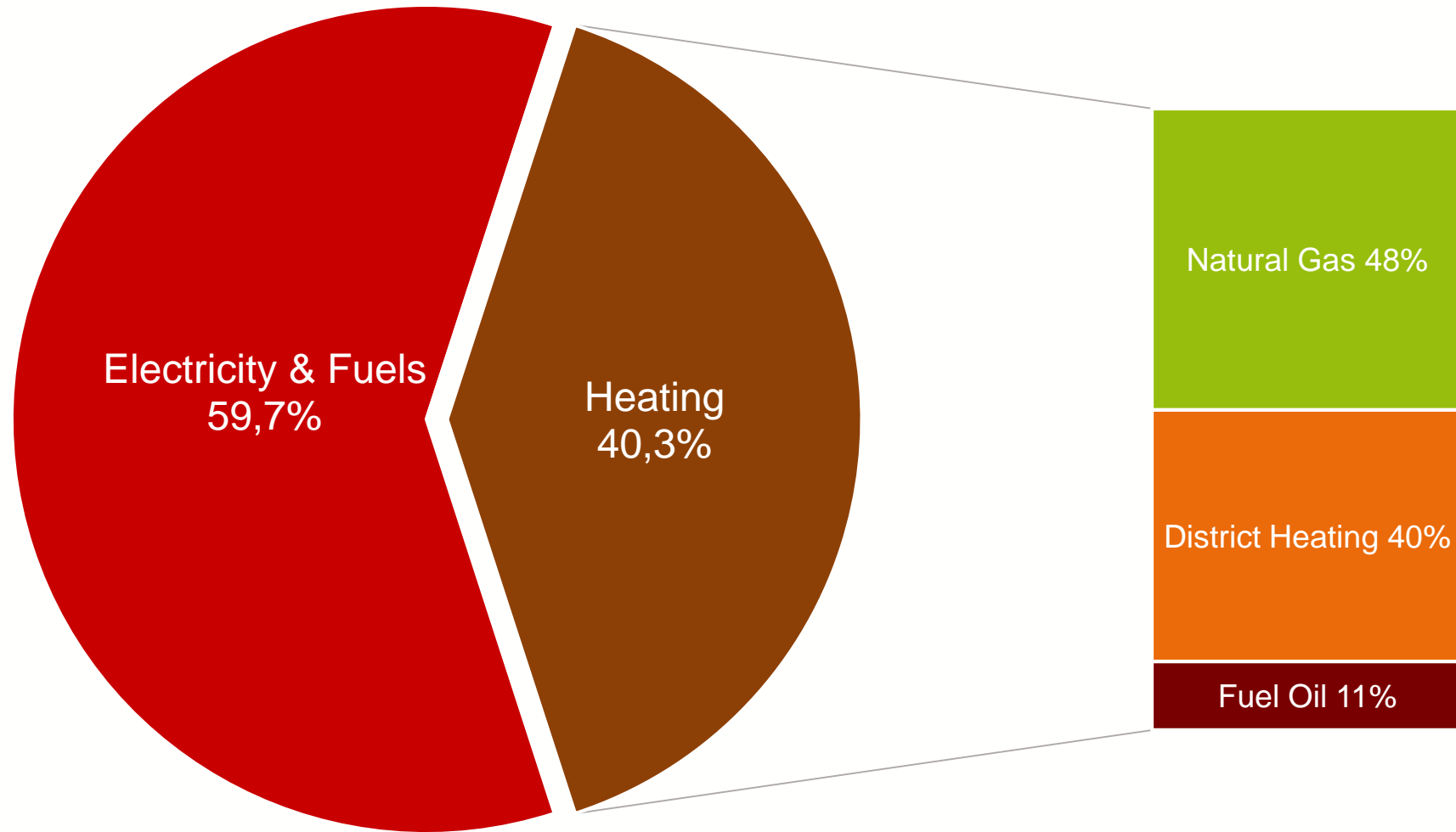
DISTRIBUTION OF THE MAIN HEATING SOURCES IN BUILDING STOCK ACROSS ALL SECTORS



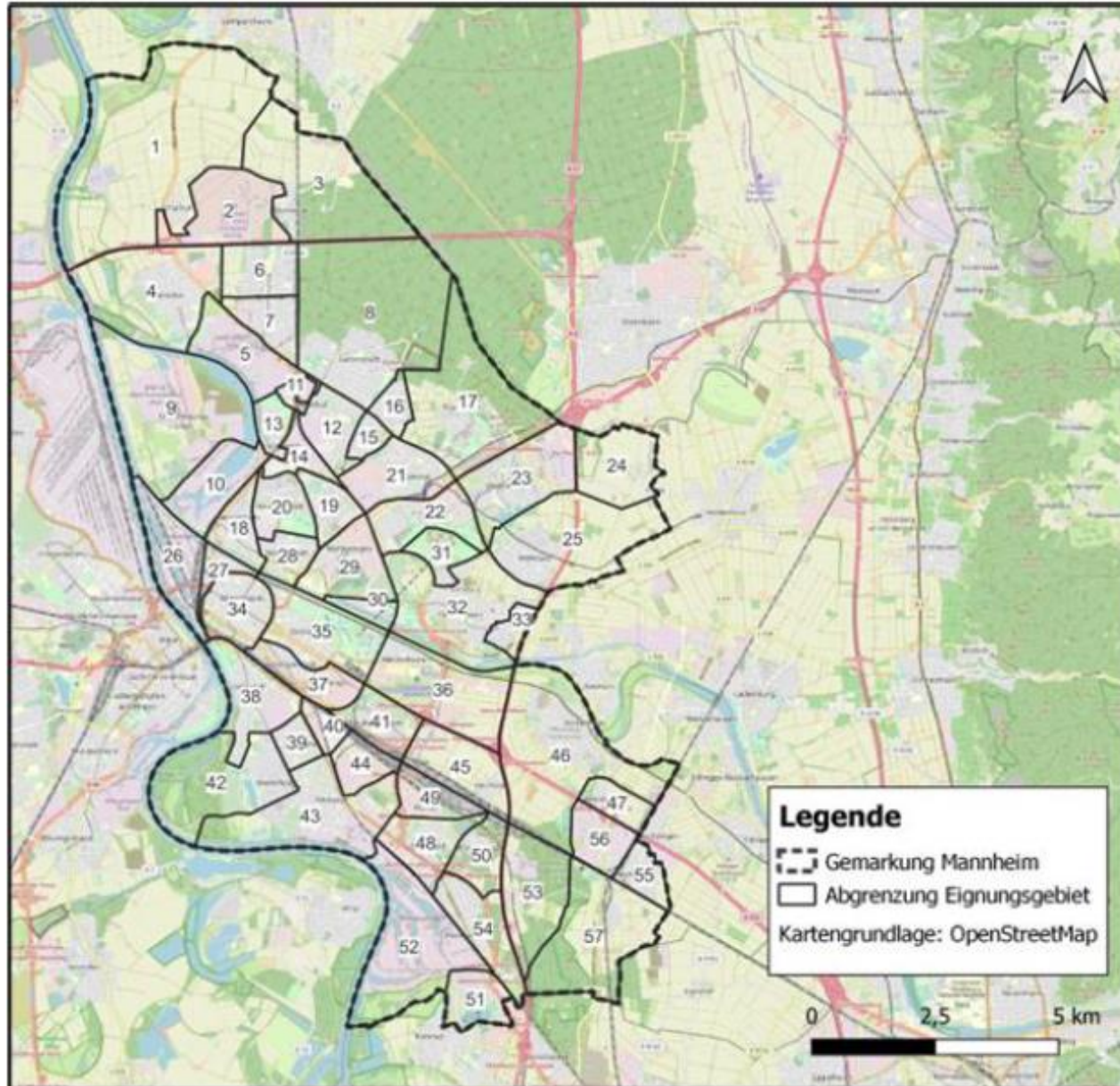
Centerlized District Heating System



SHARE OF HEATING IN TOTAL CO₂ EMISSIONS 2020



Suitable Areas: Overview



Identification Criteria:

- Urban development / urban structure / building age classes
- Building use
- Heat consumption density
- Network infrastructure/strategy
- Potential for solar on roofs
- Potential for geothermal heating

Suitable Area

Neckarstadt-West

Primary Building-use:
Residential

Network Situation:
Natural Gas and District heating

Heat Consumption Density:
Very high



Gebäudfunktion

- Gemeinwesen
- Wirtschaft oder Gewerbe
- Wohnen

Netzsituation

- Bestand: Gasnetz
- Bestand: Fernwärmenetz

Wärmeverbrauchsichte

- < 7 kWh/m²a (ausgeblendet)
- 7 - 17,5 kWh/m²a
- 17,5 - 41,5 kWh/m²a
- 41,5 - 105 kWh/m²a
- > 105 kWh/m²a

zur Gesamtübersicht Eignungsgebiete

Suitable Area

Neckarstadt-West

<u>Potenziele</u>	
Heating Demand 2020	Ca. 96.451 MWh (Endenergie)
Heat Demand 2030	Ca. 73.362 MWh
Heat Demand 2040	Ca. 47.707 MWh
District Heating Network Demand with RE	Prioritäres Fernwärmegebiet Bestand: 66-99% Bis 2040: 66-99 %
Nahwärmeoption	Nein, Fernwärme vorhanden
Potenzial Solar	Ja, Dachflächen (gesamt: ca. 21.174 MWh)
Potenzial oberflächen-nahe Erdwärme	Ja (gesamt: ca. 5.787 MWh) Einzelfallprüfung nötig
Dezentrale Wärmeversorgungsoptionen	Wärmepumpe (Luft, Erdwärme, Abwasserkanal), Biomasse, Kombination mit Solarthermie
Grundwasser via Wärmepumpe (W/W)	grds. möglich, Einzelfallprüfung nötig



Solarpotenzial auf Dachflächen

sehr gut
gut
bedingt
vor Ort zu prüfen

□ Abgrenzung Eignungsgebiet

Datenquelle: LUBW



Max. Potenzial oberflächennaher Erdwärme

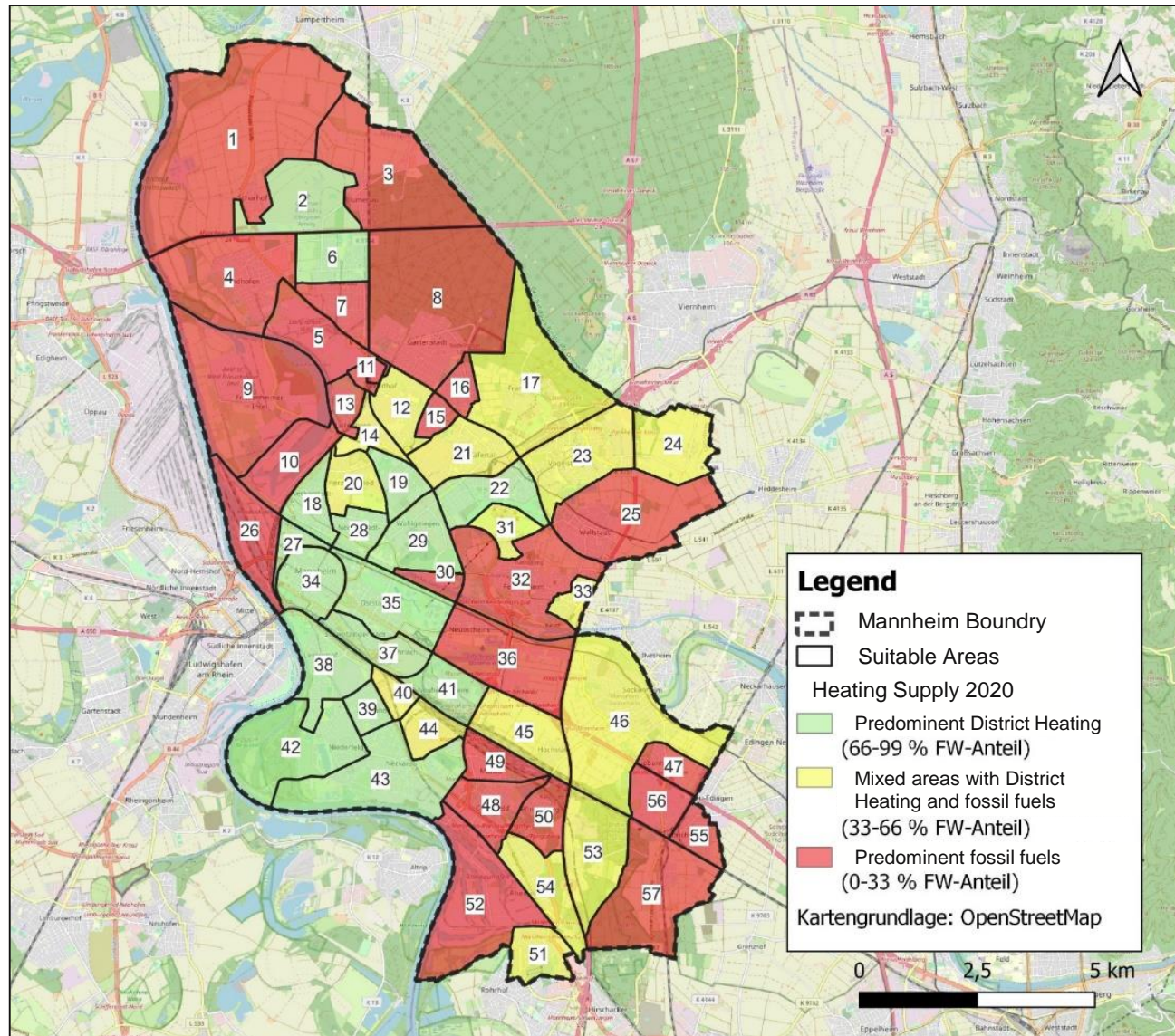
sehr gering
gering
mittel
hoch
sehr hoch

□ Abgrenzung Eignungsgebiet

Datenquelle: LUBW

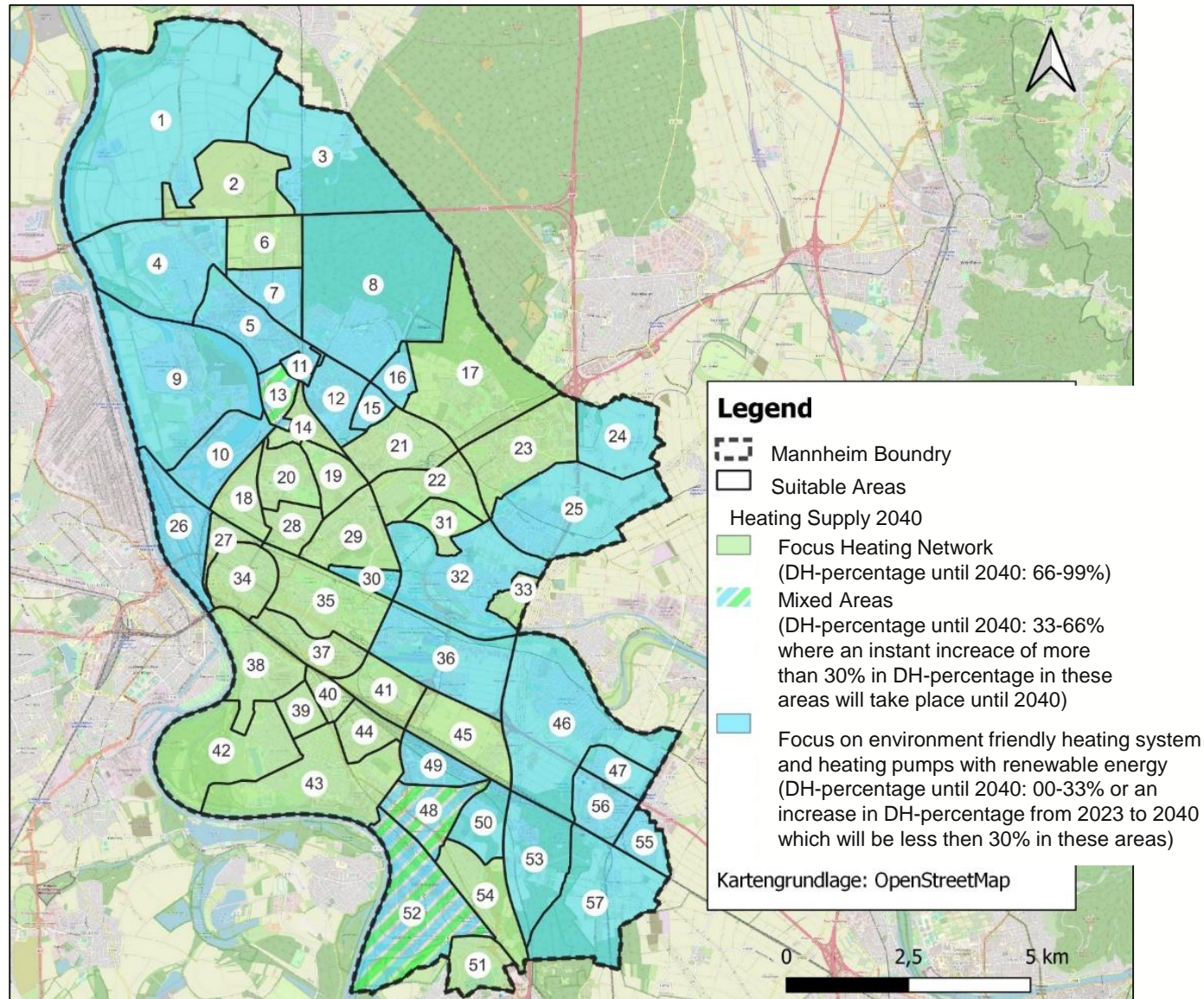
zur Gesamtübersicht Eignungsgebiete

HEATING SUPPLY 2020



FW-Anteil: Percentage of district heating supply

HEATING SUPPLY 2040



- Heat consumption density
- Network infrastructure/strategy
 - Max. Expansion capacity
 - Max. Transport capacity of existing pipelines
 - CO₂-Reduction costs
 - Resource scarcity
 - Minimize the load of construction sites

LIST OF MEASURES

- 1. Minimize heat consumption**
 - 1.1 Reduce heat consumption in district properties
 - 1.2 Supporting the energy-efficient refurbishment of private households
 - 1.3 Utilize efficiency potential in the commercial sector
- 2. Develop the district heating network**
 - 2.1 Increase the connection rate to the existing district heating network
 - 2.2 Expansion of the district heating network
 - 2.3 Decarbonization of district heating by 2030
- 3. Support decentralized solutions / storage technologies**
 - 3.1 Examine and support potential for local heating networks
 - 3.2 Review expansion of existing heat storage capacities
 - 3.3 Support program for heat pumps in priority areas
 - 3.4 Funding program for solar power and heat generation
- 4. Create planning security**
 - 4.1 Availability check of supply options
 - 4.2 Statutes for the designation of suitable areas for district heating in accordance with the Renewable Energy Act
- 5. Ensure monitoring of success**
 - 5.1 Monitoring the heat transition
 - 5.2 Regular updating of the district heating plan
- 6. Accompanying, accelerating activities**
 - 6.1 Heat transition academy
 - 6.2 Further develop (specialist) force strategy
 - 6.3 Model testing of hydrogen use in an industrial context

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1.2 SUPPORTING THE ENERGY-EFFICIENT REFURBISHMENT OF PRIVATE HOUSEHOLDS

Projects in districts for energy efficient refurbishment of buildings

- **Finished:**
- Käfertal-Center
- Friedrichsfeld-Center
- **Ongoing:**
- Gartenstadt
- Nekarstadt-West
- Feudenheim Nord
- **New:**
- Vogelstang



Abb. 15: Energiespar-Kampagne und deren Bewerbung im Käfertaler Einzelhandel.
(Quelle: MVV)

Model Construction Site



Abb. 16: Vorher-Nachher-Vergleich der Musterbaustelle, Eigentümer mit Projektmanagerin
(Quelle: KSA)



Abb. 17: Sanierung auf Effizienzhaus-Niveau (Reichshofer Straße).
(Quelle: MVV Regioplan)



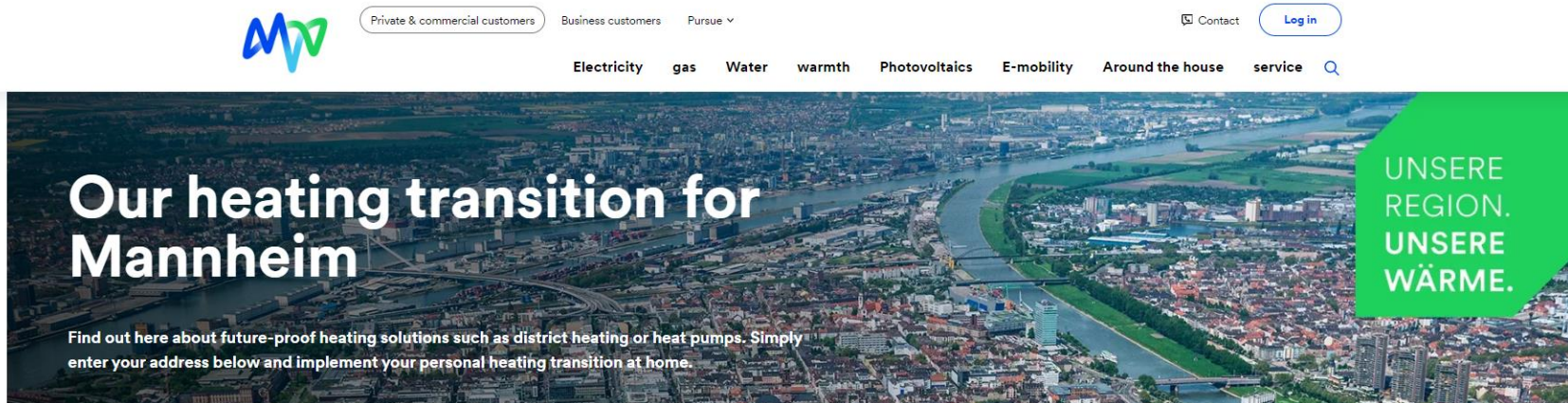
Abb. 18: Neubauquartier der GBG (Bischweilerring).
(Quelle: MVV Regioplan)



Abb. 19: Komplettsanierung des Gebäudebestands der Gartenstadt-Genossenschaft Mannheim eG (Schleifstadler Straße).
(Quelle: MVV Regioplan)

3.1 DISTRICT HEATING AVILABILITY CHECK (MVV)

3.3 HEAT PUMP CHECK (KSA)




[Arrange a consultation appointment now](#)


The heat pump check from the Climate Protection Agency Mannheim gGmbH

The heat pump check is intended to give you an initial orientation as to whether your building is suitable for a heat pump. Please note: Your information must refer to the entire building and not just to individual residential units. Please fill out the following questionnaire - we will then send you an initial, free assessment of whether your building is suitable for operating a heat pump.

* Necessary



WärmepumpenCheck



1

Your email address? *

Enter your answer

2

What type of building is it? *

☐ detached house

☐ Apartment building

Further

Never reveal your password. [Report abuse](#)



Thank you