From gas dependency to renewable energy supply

Phase-Out-Gas & Vienna Heating Plan 2040

18.02.2026

Herbert Hemis
Department for energy planning (MA20)

City of Vienna

Welcome to Vienna!

Some numbers

Who lives in Vienna?

1 Jan. 2024

Population

2,005,760

Women **51.0%**

Men **49.0%**

Average housing space

31 Oct. 2021

36 m²
Average housing space per resident

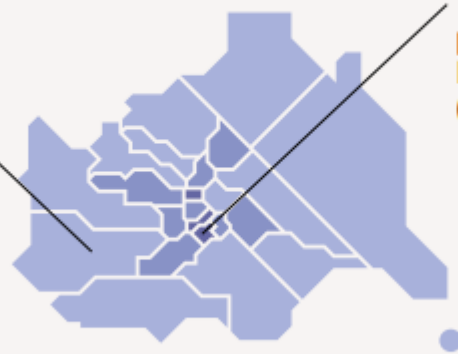
2.0
Average number of residents per apartment

Population density

1 Jan. 2024

1,472
people per km²
Lowest density
(Hietzing)

27,043
people per km²
Highest density
(Margareten)



Vienna has an average population density of **4,835 people per km²**

- Up to 10,000
- 10,001 to 20,000
- 20,001 and above

Buildings by construction period

31 Oct. 2021

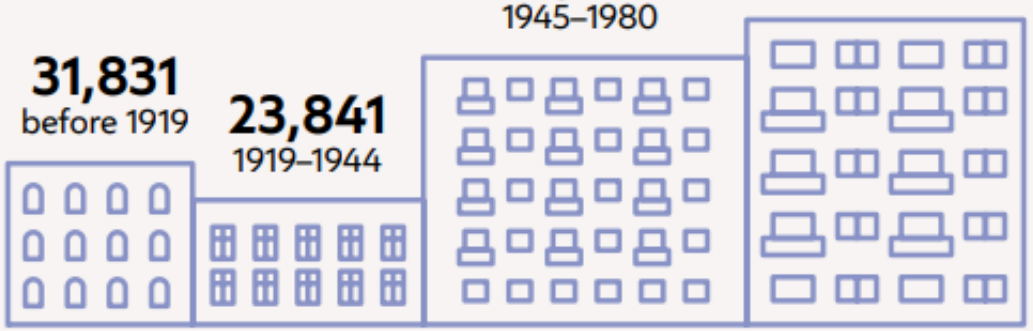
In 2021, Vienna had a total of about **176,000 buildings.**

31,831
before 1919

23,841
1919–1944

54,328
1945–1980

65,760
1981–2021



1
Strategies and concepts towards decarbonisation

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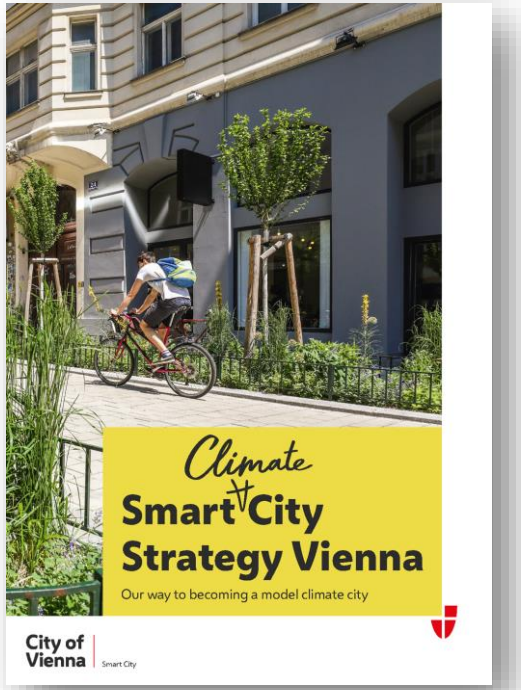
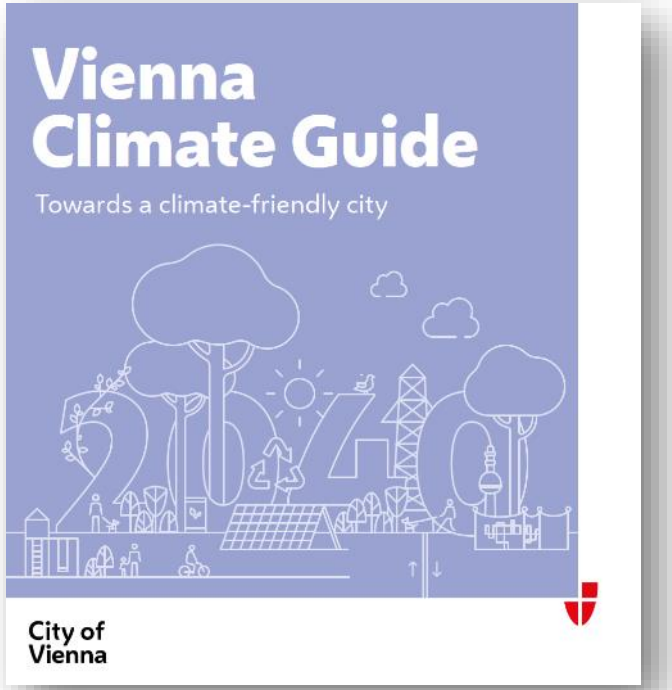
Achieving net zero by 2040 –strategies & concepts



DOWNLOAD:
https://smartcity.wien.gv.at/en/strategy/



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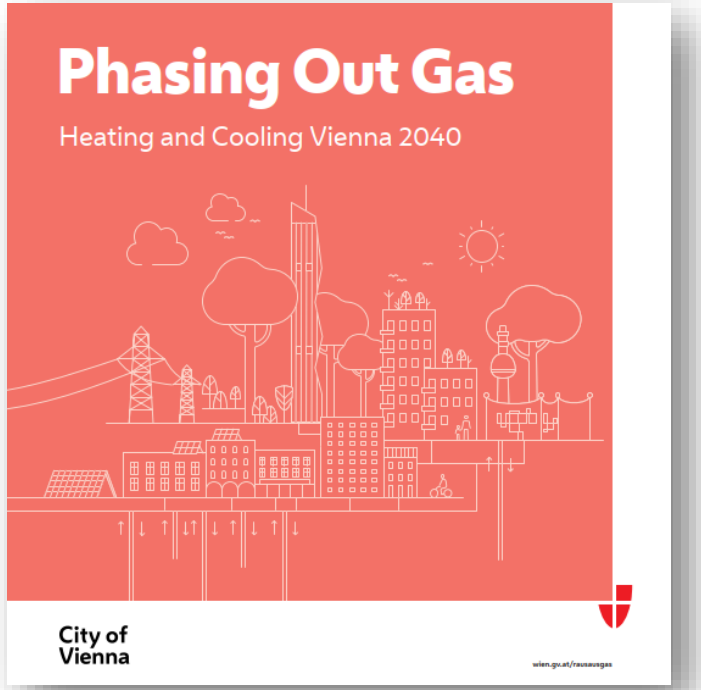
https://www.wien.gv.at/spezial/klimafahrplan/



DOWNLOAD:
https://www.wien.gv.at/stadtentwicklung/energie/wissen/waerme-und-kaelte-2040.html

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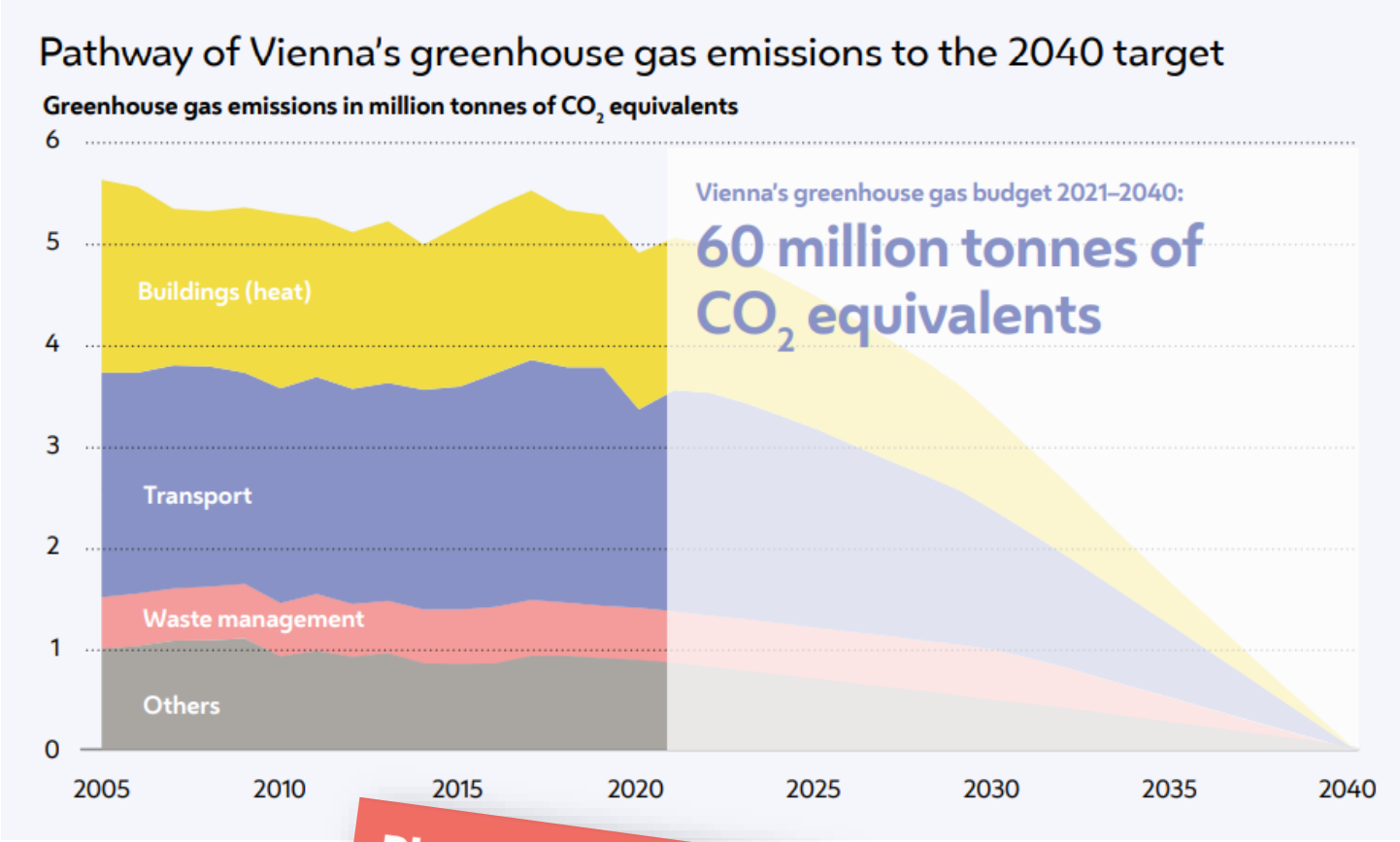
Pathway to 0

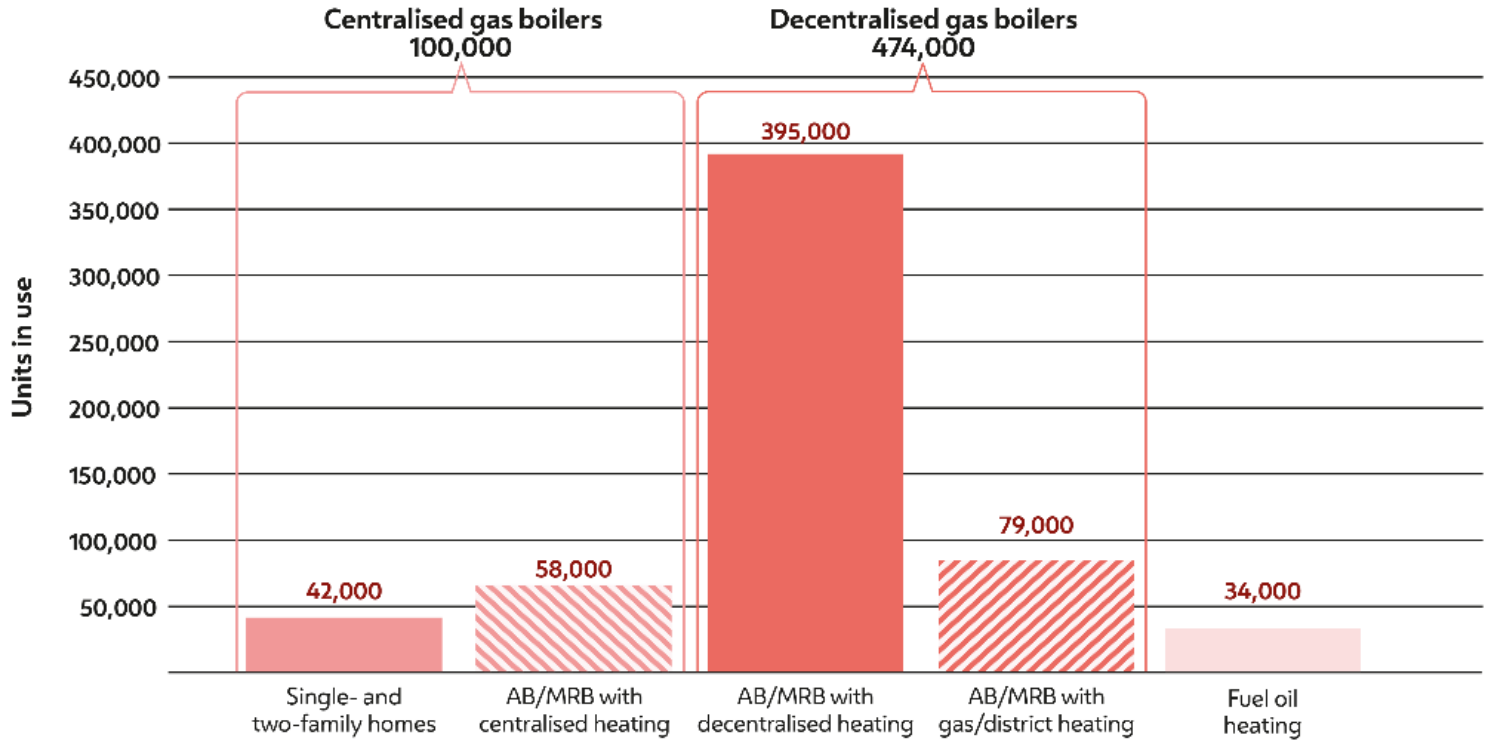
- New strategy paper: **Phasing Out Gas -** Heating and Cooling Vienna 2040
- City-wide program: Phasing out Gas
- Solar initiative
- Vienna Climate Team



Source: Vienna Climate Guide

Where do we stand today?
Some numbers

Fossil heating systems in Vienna's current building stock



Source: Phasing out Gas

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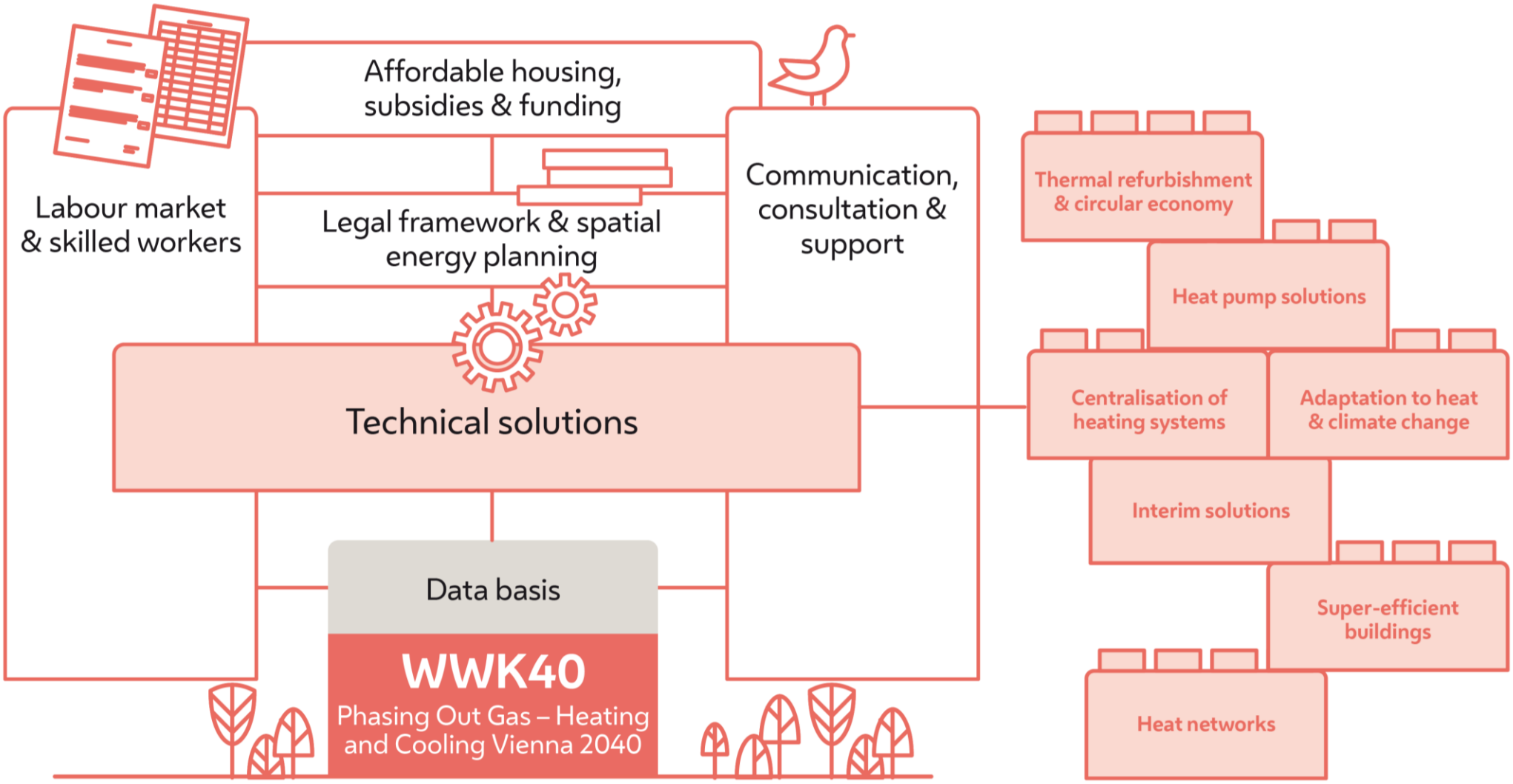
Heating & Cooling Vienna 2040

City of Vienna

The path to „Heating and Cooling Vienna 2040“

Elements of climate-neutral heating and cooling for Vienna in 2040



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2
Energy zoning plans

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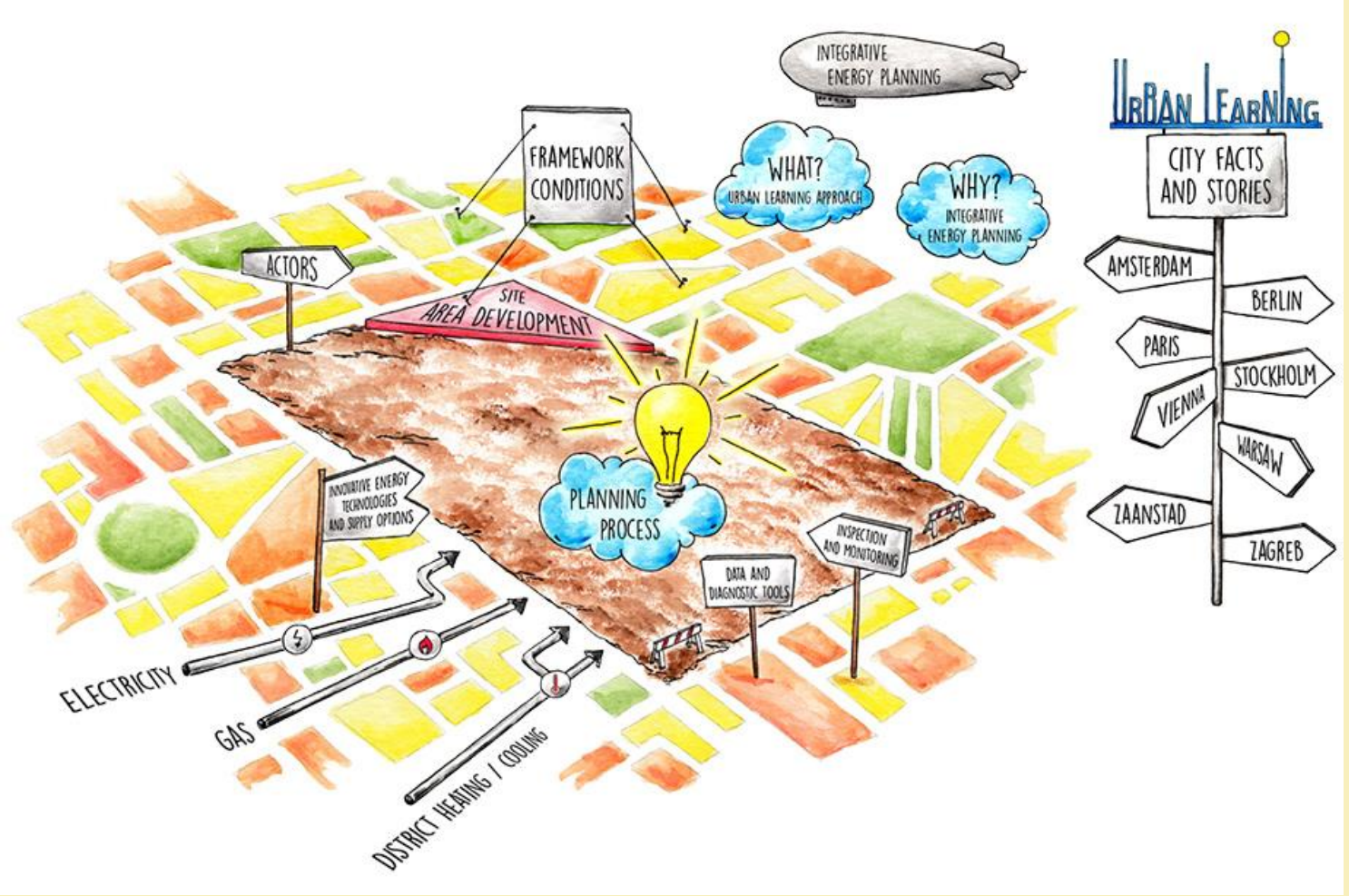
Goverance as starting point – integrative energy planning

- European project 2015-2017
- 7 European capital cities
- Focus on governance and implementation
- Local working groups established (different departments, net provider, municipal utility, developer)



http://www.urbanlearning.eu/

https://www.youtube.com/watch?v=mXhhM0LJdGQ

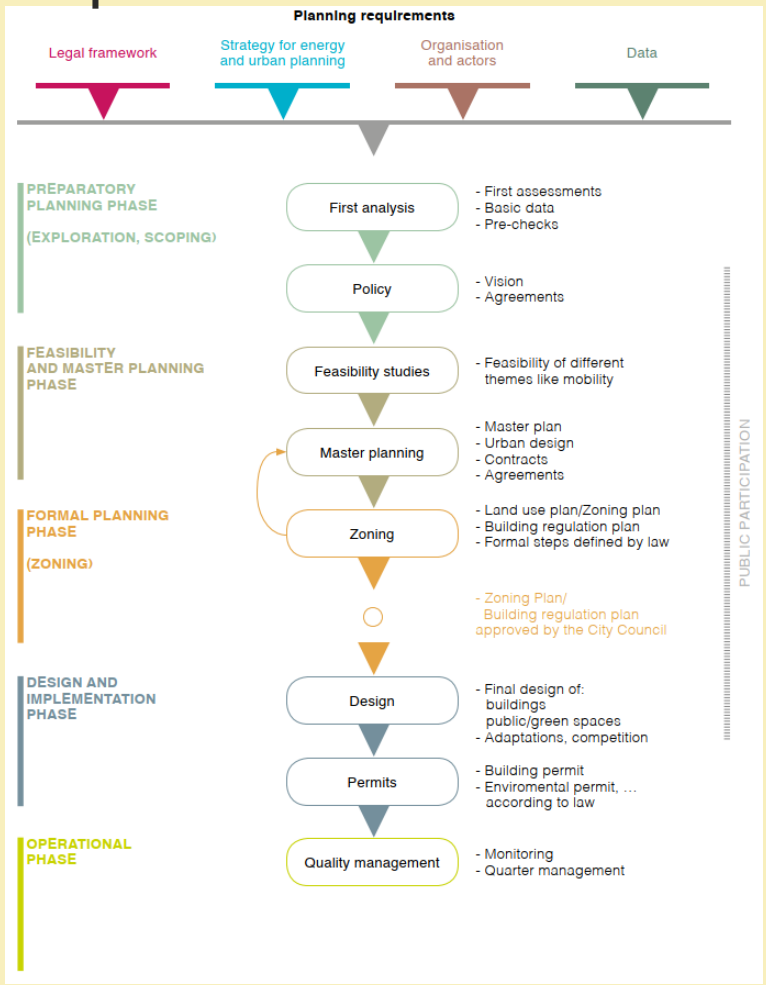
Goverance as starting point – integrative energy planning

URBAN LEARNING

- Step 1: Understanding and analysing the governance processes and instruments – focus on city planning
- Step 2: Integration of energy issues
- Step 3: Implementation plans

http://www.urbanlearning.eu/

Step 1:



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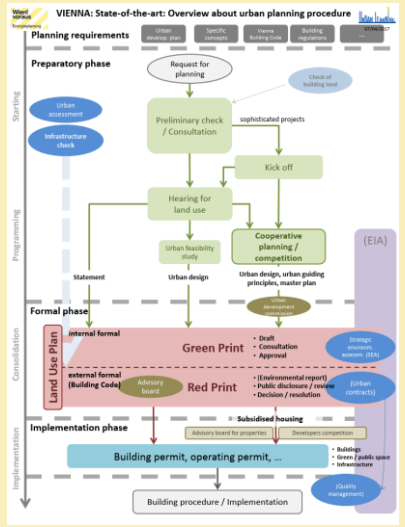
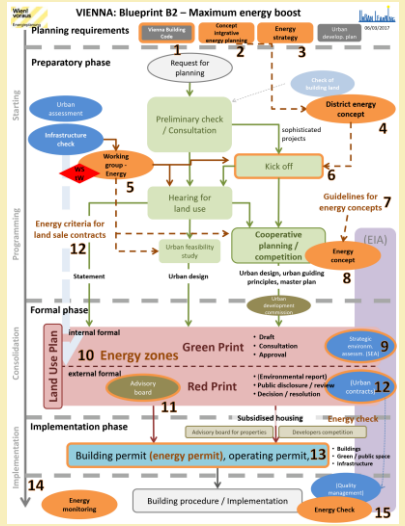
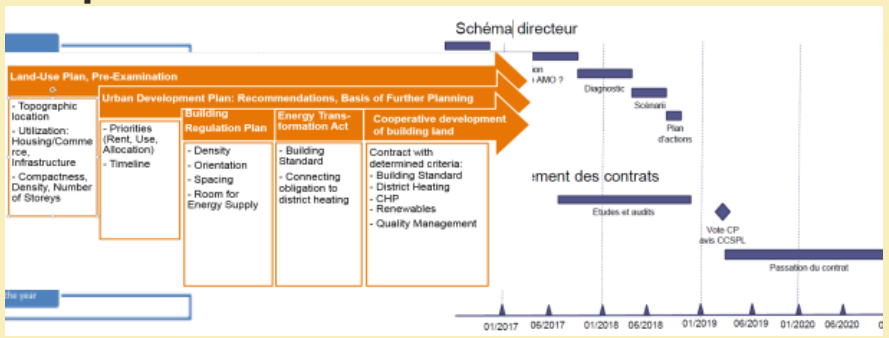


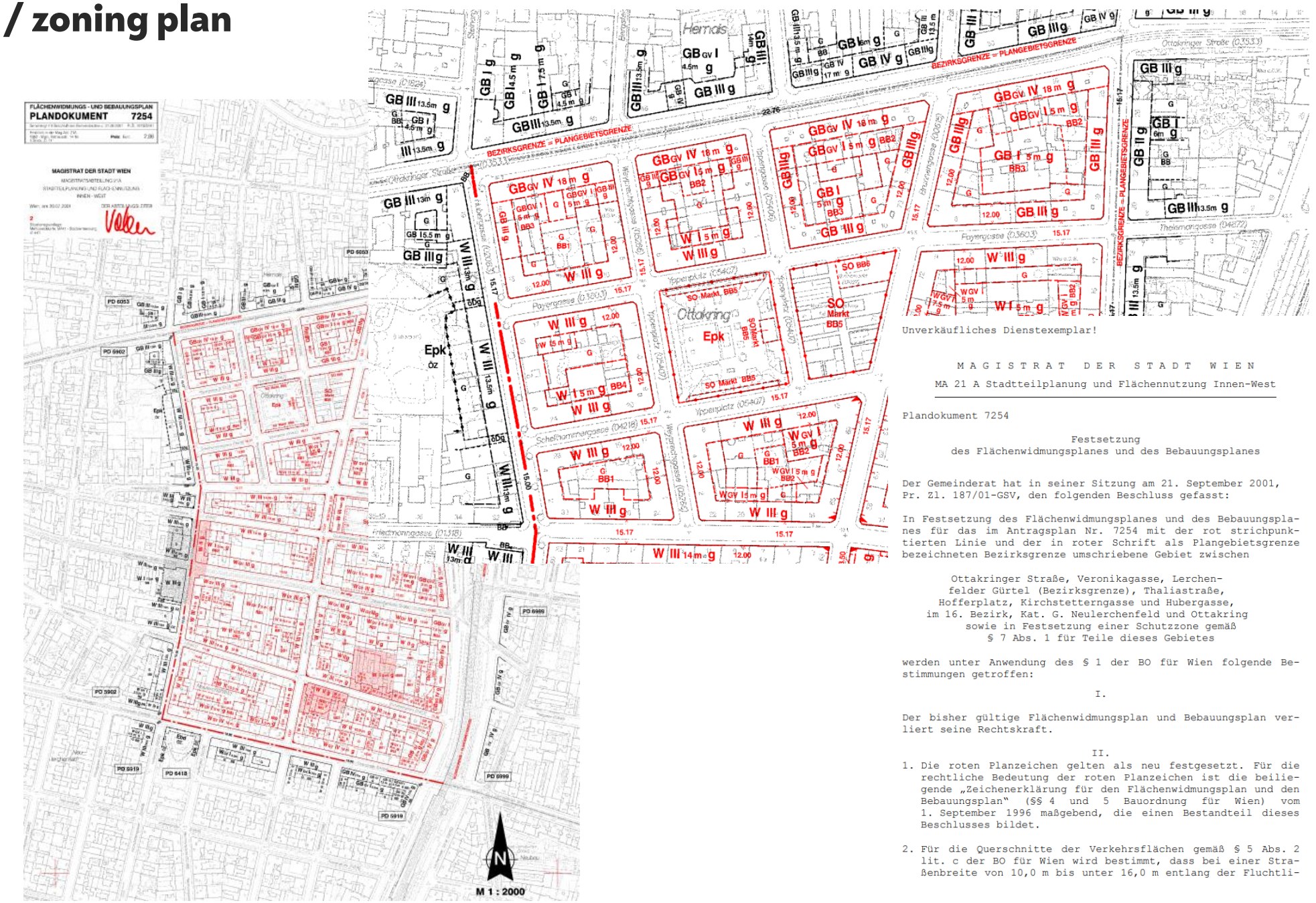


Step 3:



City of Vienna | Energy Planning

Land use plan / zoning plan



Unverkäufliches Dienstexemplar!

M A G I S T R A T D E R S T A D T W I E N

MA 21 A Stadtteilplanung und Flächennutzung Innen-West

Plandokument 7254

Festsetzung
des Flächenwidmungsplanes und des Bebauungsplanes

Der Gemeinderat hat in seiner Sitzung am 21. September 2001, Pr. Zl. 187/01-GSV, den folgenden Beschluss gefasst:

In Festsetzung des Flächenwidmungsplanes und des Bebauungsplanes für das im Antragsplan Nr. 7254 mit der rot strichpunktierten Linie und der in roter Schrift als Plangebietsgrenze bezeichneten Bezirksgrenze umschriebene Gebiet zwischen

Ottakringer Straße, Veronikagasse, Lerchenfelder Gürtel (Bezirksgrenze), Thaliastraße, Hofferplatz, Kirchstetterngasse und Hubergasse, im 16. Bezirk, Kat. G. Neulerchenfeld und Ottakring sowie in Festsetzung einer Schutzzone gemäß § 7 Abs. 1 für Teile dieses Gebietes

werden unter Anwendung des § 1 der BO für Wien folgende Bestimmungen getroffen:

I.

Der bisher gültige Flächenwidmungsplan und Bebauungsplan verliert seine Rechtskraft.

II.

1. Die roten Planzeichen gelten als neu festgesetzt. Für die rechtliche Bedeutung der roten Planzeichen ist die beiliegende „Zeichenerklärung für den Flächenwidmungsplan und den Bebauungsplan" (§§ 4 und 5 Bauordnung für Wien) vom 1. September 1996 maßgebend, die einen Bestandteil dieses Beschlusses bildet.

2. Für die Querschnitte der Verkehrsflächen gemäß § 5 Abs. 2 lit. c der BO für Wien wird bestimmt, dass bei einer Straßenbreite von 10,0 m bis unter 16,0 m entlang der Fluchtli-

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The way for spatial energy planning (energy zoning)

1

Research projects & data models & maps (2014-2024)

SMARTER TOGETHER
gemeinsam g'scheiter

URBAN LEARNING

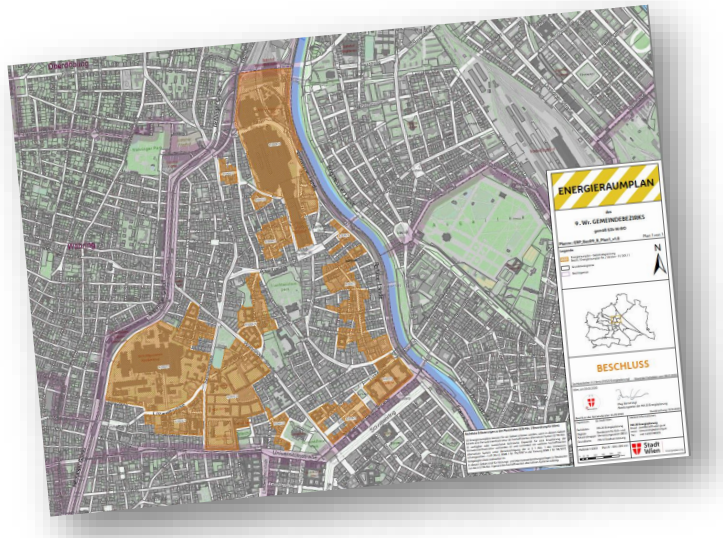
DECARB CITY PIPES 2050

2

Concept energy zoning (2017-2019)

3

Energy zoning plans (2019-2023)



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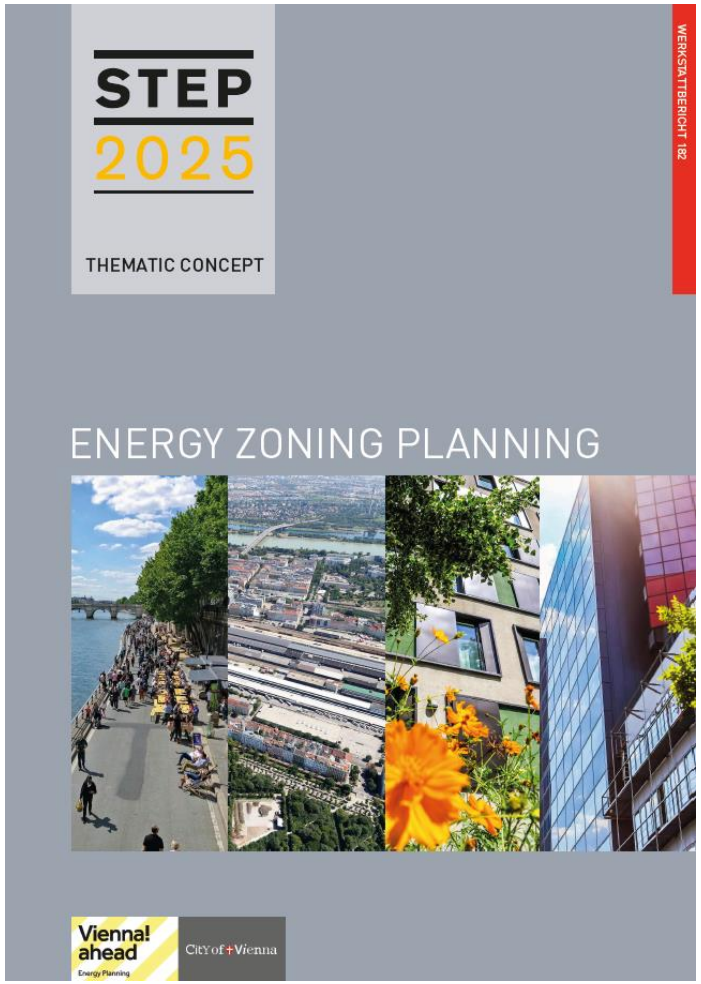
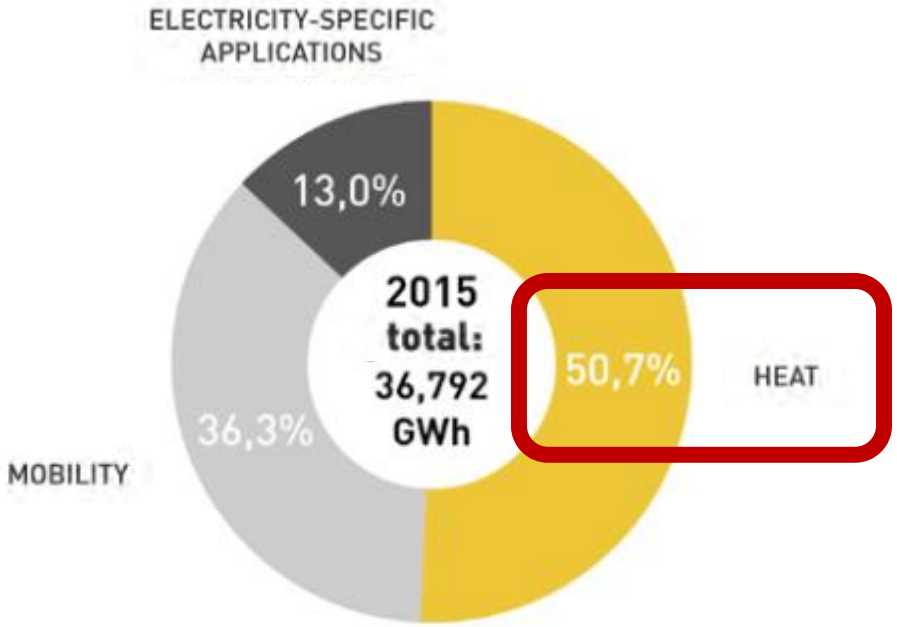
Planning instrument for new buildings

Energy Zoning Plans



https://www.wien.gv.at/stadtentwicklung/energie/pdf/energy-zoning-planning.pdf



⇒ Heat could be most influenced by planning the city

⇒ Energy zoning is the combination of urban/city planning and energy planning

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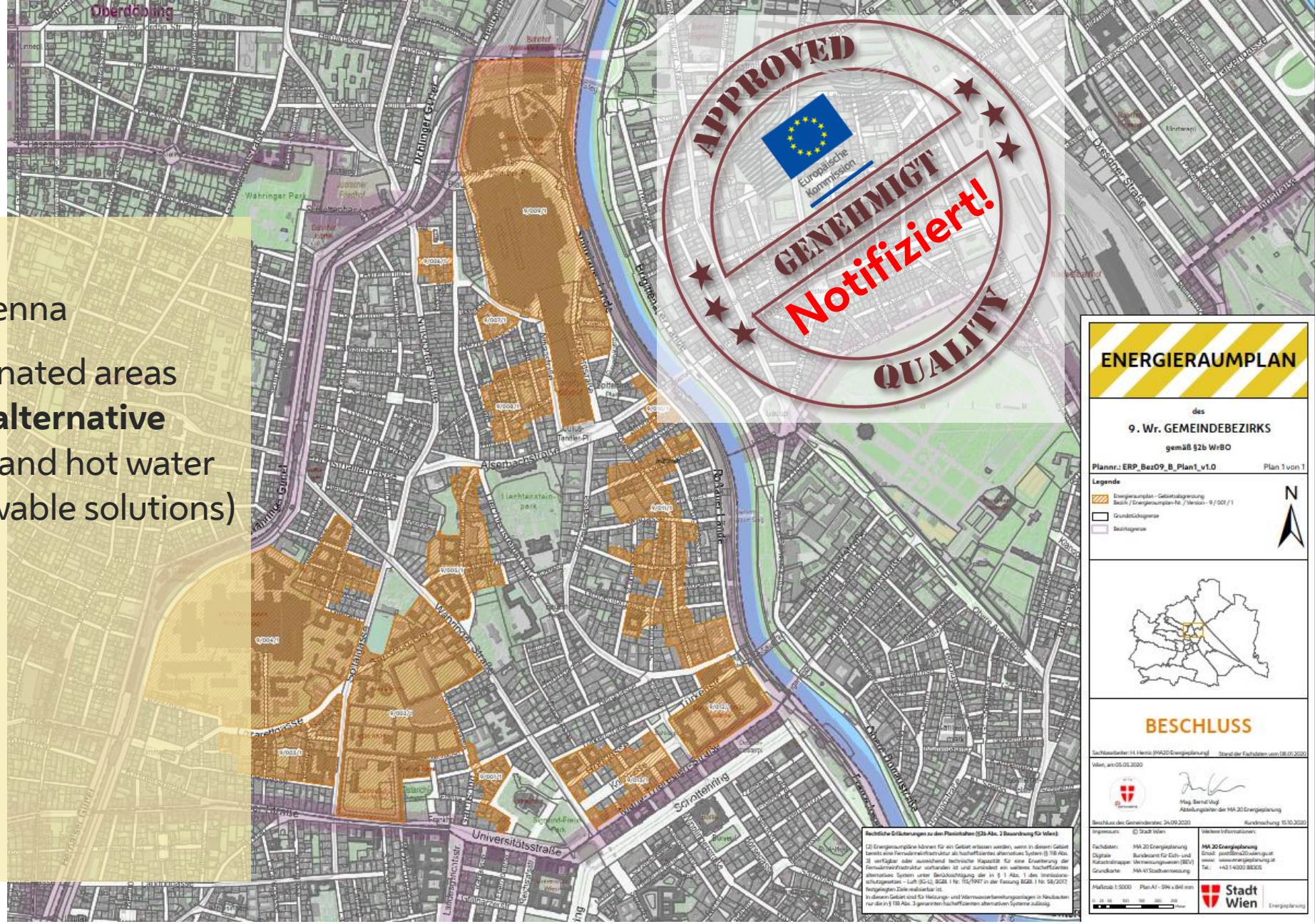
Energy zoning plans

A new instrument

Key aspects:

- Basis: Building Code for Vienna
- new buildings within designated areas must use **highly efficient, alternative systems** for space heating and hot water preparation (DH and renewable solutions)
- **Binding (ordinance)**
- Parcel/property level
- For each district
- 2019-2023



3
Vienna Heating Plan

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Way of Vienna Heating Plan 2040

1

Viennese Climate Guide (2022)

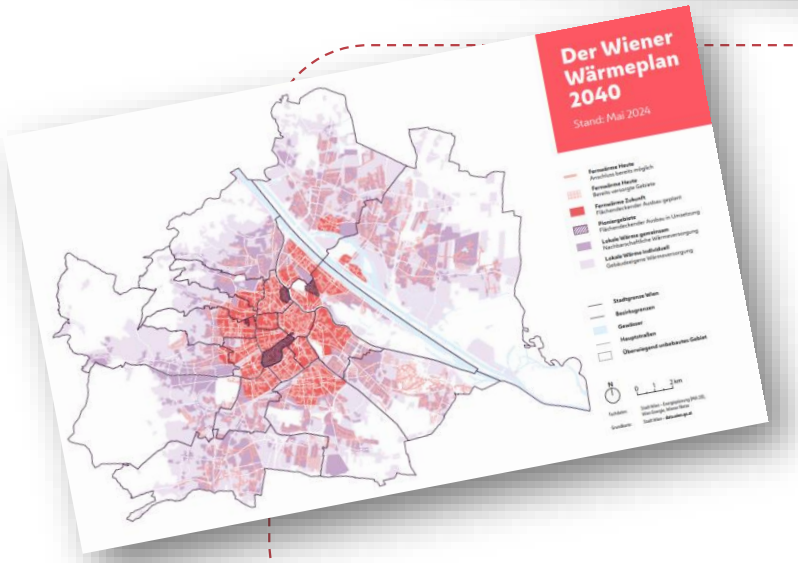
Idea: Development of a plan for a climate neutrale energy supply 2040

2

Concept Phase out gas (2023)

The plan/map should contain:

- District heating extension areas
- Local district heating areas
- Individual renewable solutions



3

Phase out Programme 1 (2023 – 2025)

Stream (Working Group) „Spatial energy planning“ as part of implementation:

Objective
Vienna Heating Plan 2040

4

Phase out Programme 2 (2026 – 2040)

Full implementation

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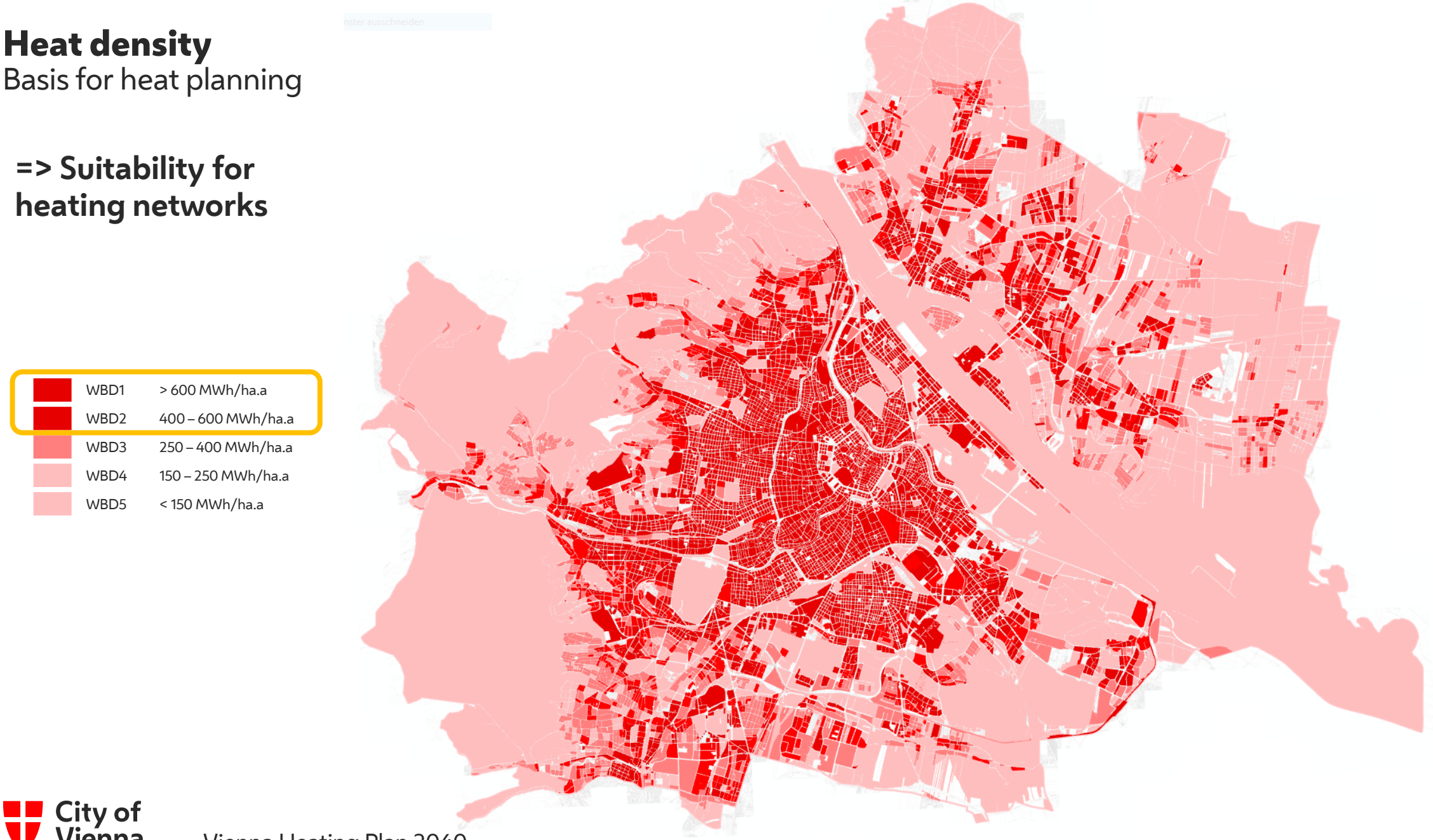
Wiener Wärmeplan 2040

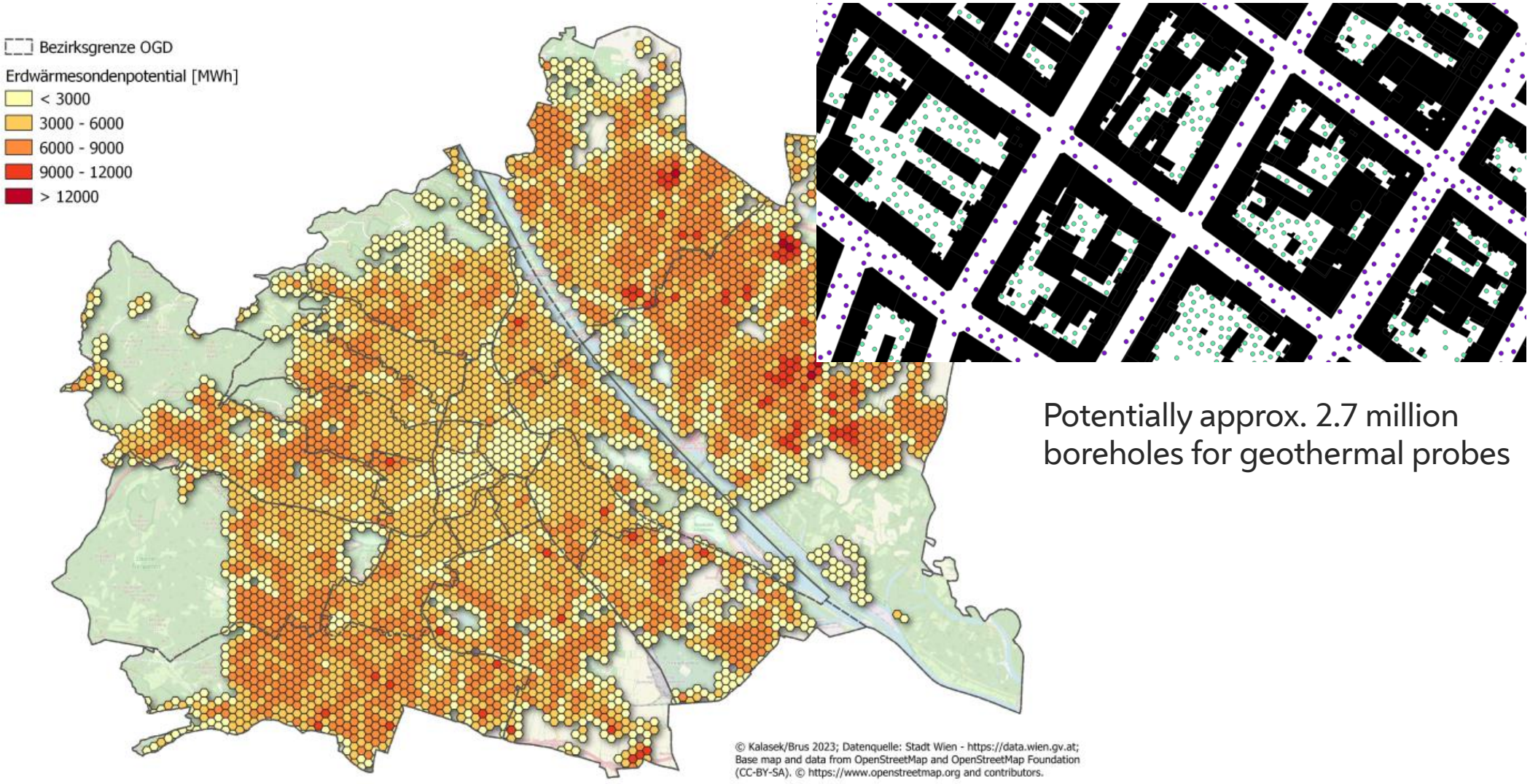
Heat density
Basis for heat planning

=> Suitability for heating networks



Energy zoning for the building stock

Shallow geothermal energy potential



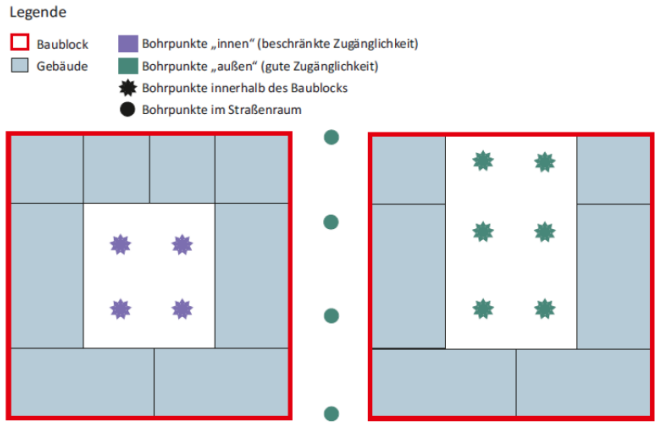
Potentially approx. 2.7 million boreholes for geothermal probes

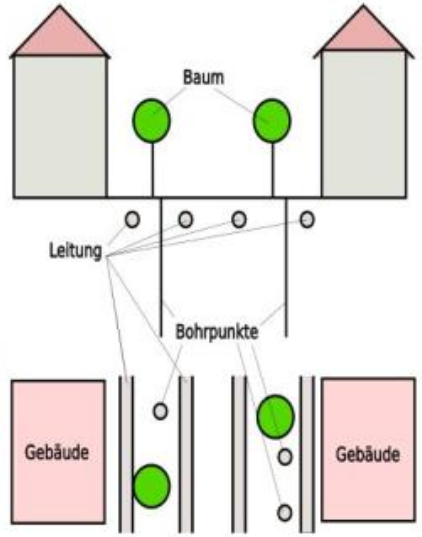
Shallow geothermal potenzial for energy probes

Detail of parameters

Difference between standard drillings and small drillings (depending on the accessibility)

Parameter	Flächen mit beschränkter Zugänglichkeit – „innen“	Flächen mit guter Zugänglichkeit – „außen“
Bohrgerät	Klein-BG	Standard-BG
Mittlere erreichbare Bohrtiefe	60 m	120 m
Mittl. gegenseitiger Sondenabstand	4 m	5 m
Spezifische Sondenleistung	36 W/m	
Spezifische Jahresenergie	75 kWh/m/a	





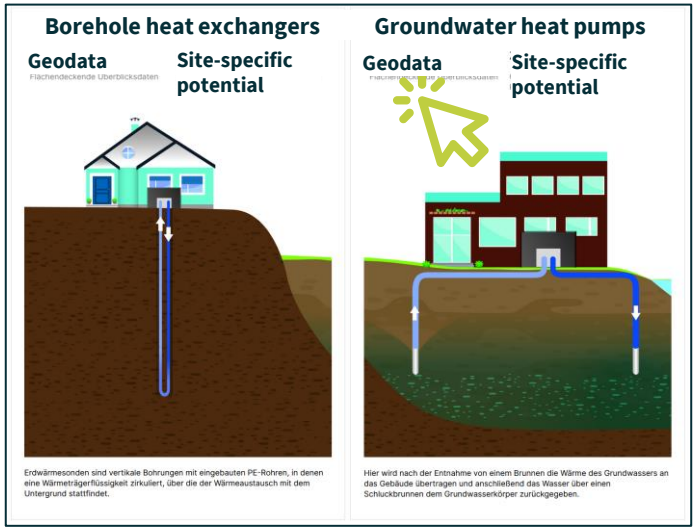
Geothermal Atlas

GeoSphere Austria

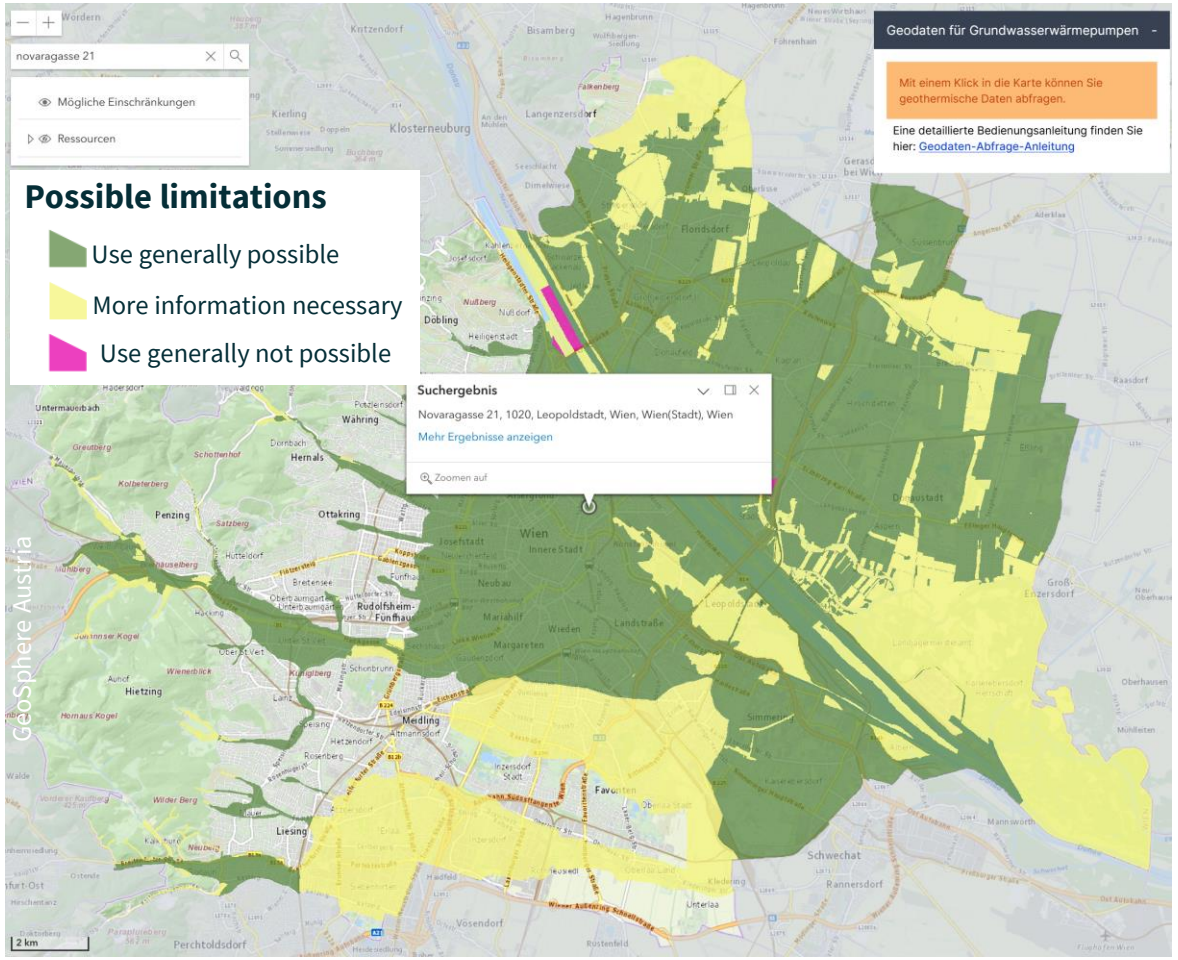
Content of web application

- **Borehole heat exchangers** and **groundwater heat pumps**
- **Geodata** as basis for planning and first overview (Vienna)
- **Site-specific potential** for borehole heat exchangers (Austria)
- Does NOT replace detailed planning

Landing page



Traffic light map – Groundwater heat pumps



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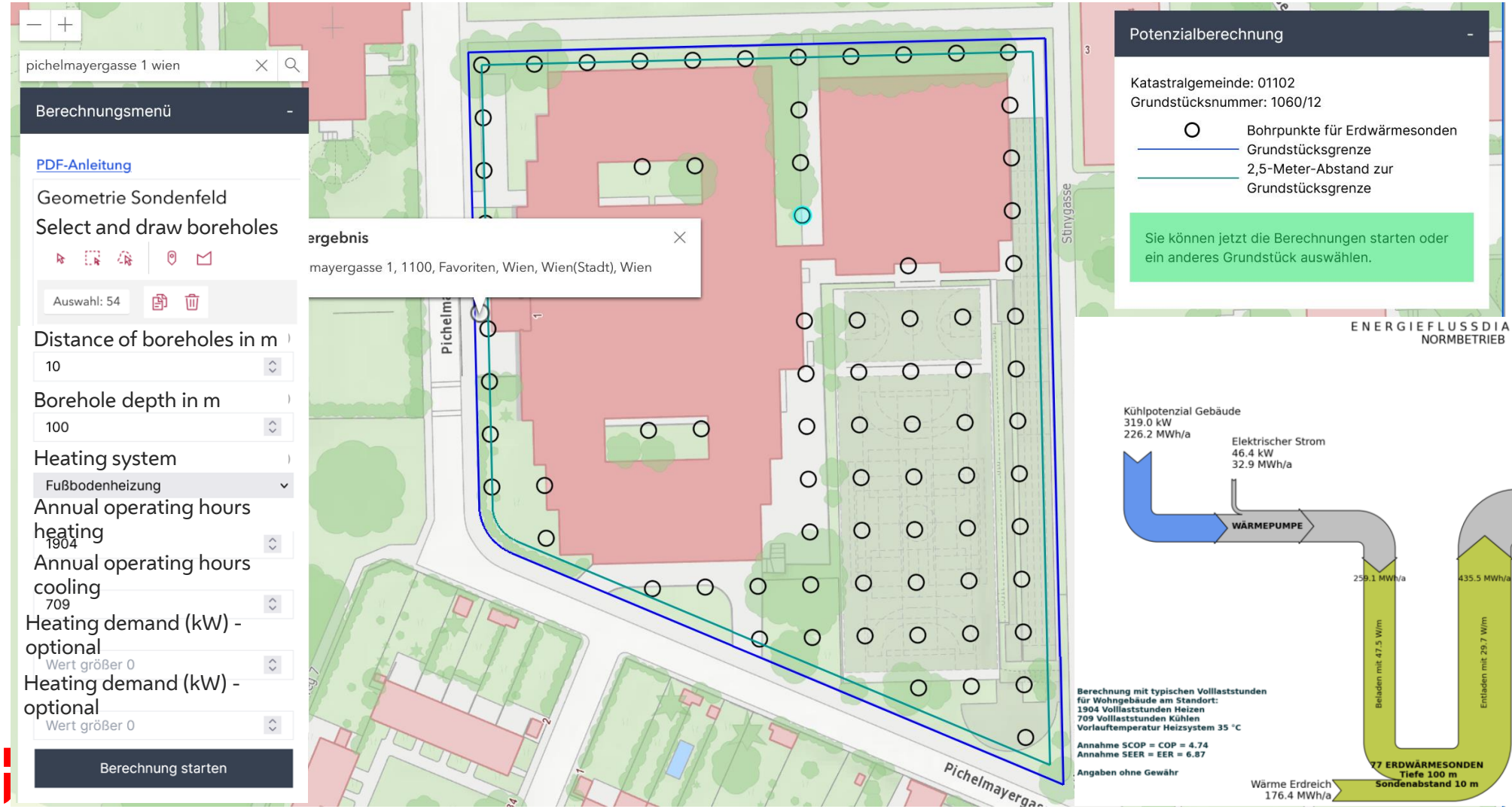
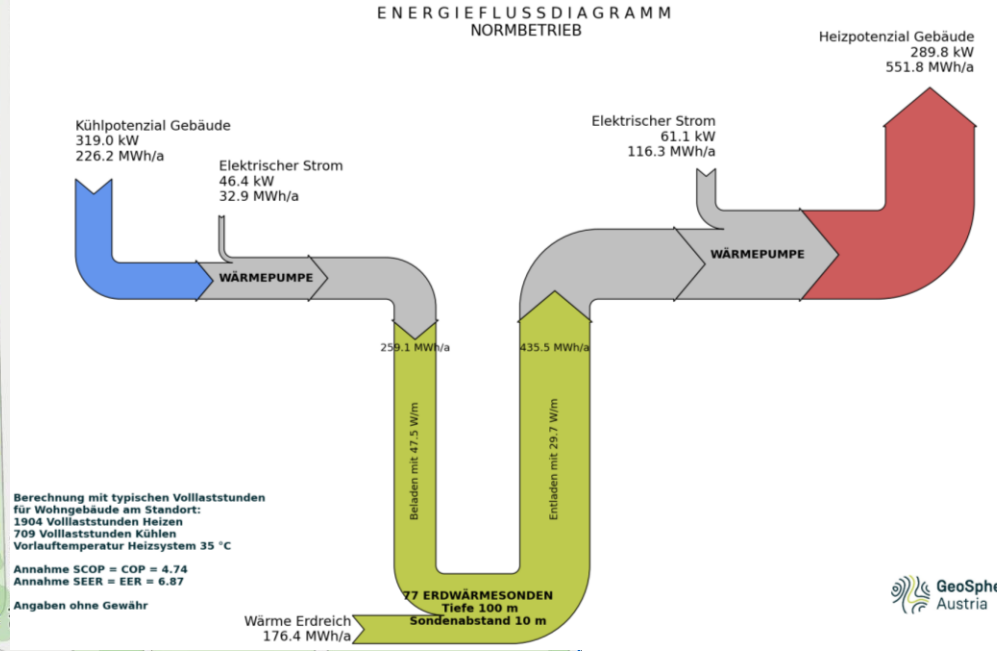
Information provided by Cornelia Steiner (GeoSphere Austria)

geothermieatlas.geosphere.at

Geothermal Atlas

Site-specific potential calculation

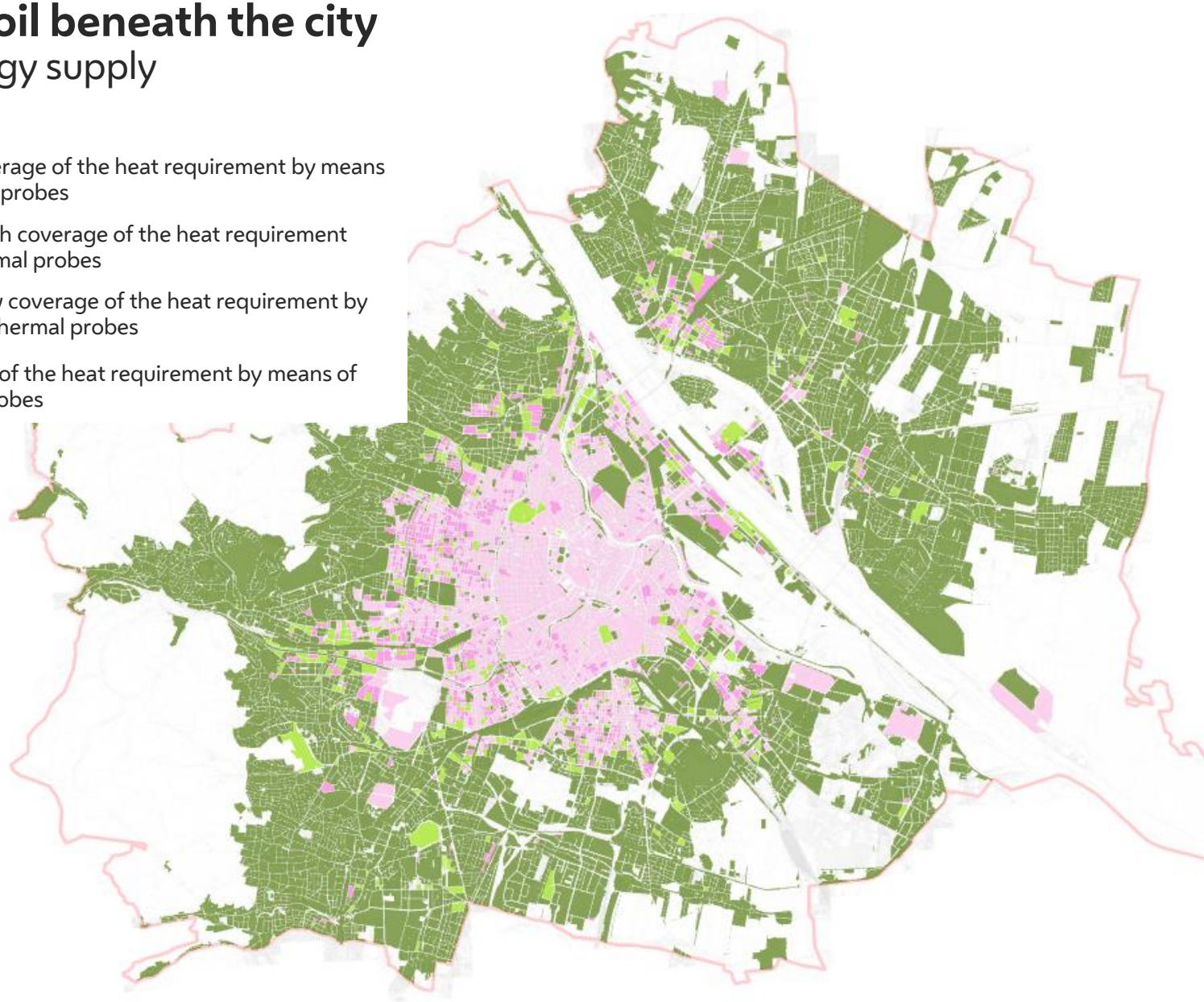




Utilizing the soil beneath the city

Geothermal energy supply

EWD1	Very high coverage of the heat requirement by means of geothermal probes
EWD2	Medium to high coverage of the heat requirement using geothermal probes
EWD3	Medium to low coverage of the heat requirement by means of geothermal probes
EWD4	Low coverage of the heat requirement by means of geothermal probes



Picture: © MA 20/Sattler

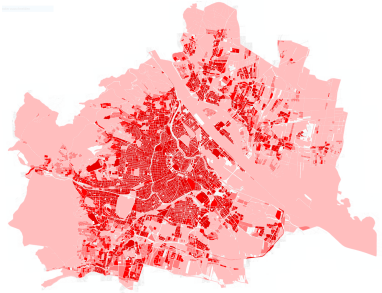
Typology for Viennese Heating Plan 2040

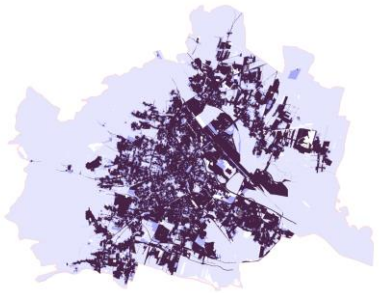
Heat density

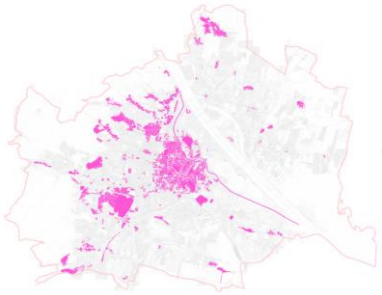
Existing DH

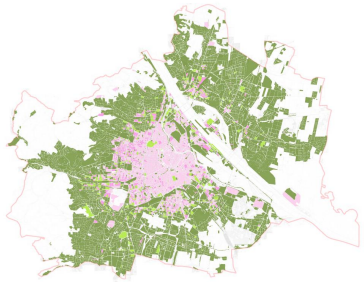
Protection areas

Shallow geothermal potentials

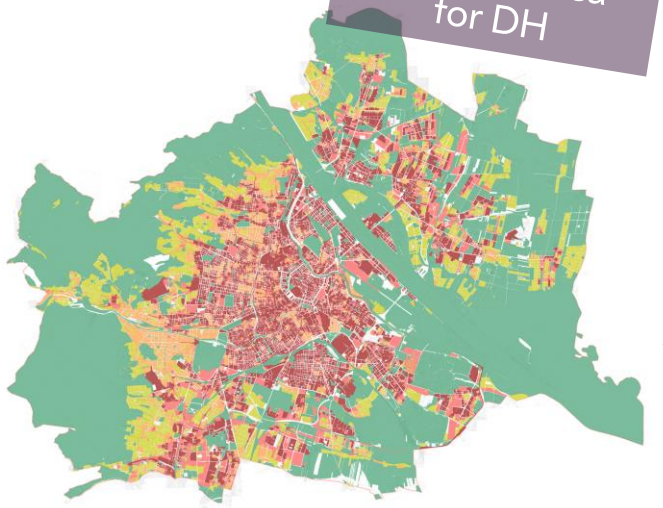




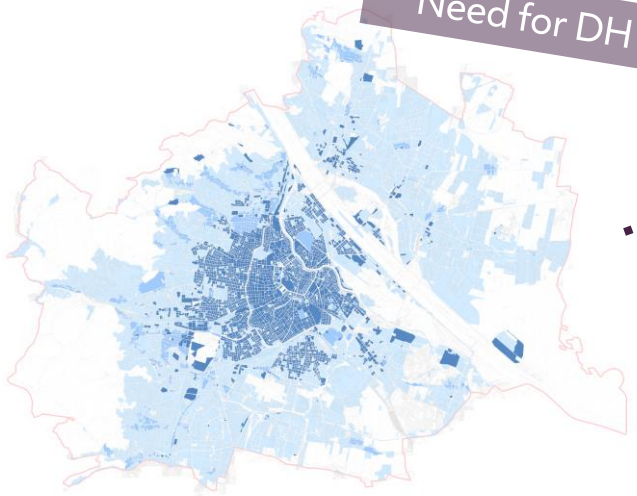


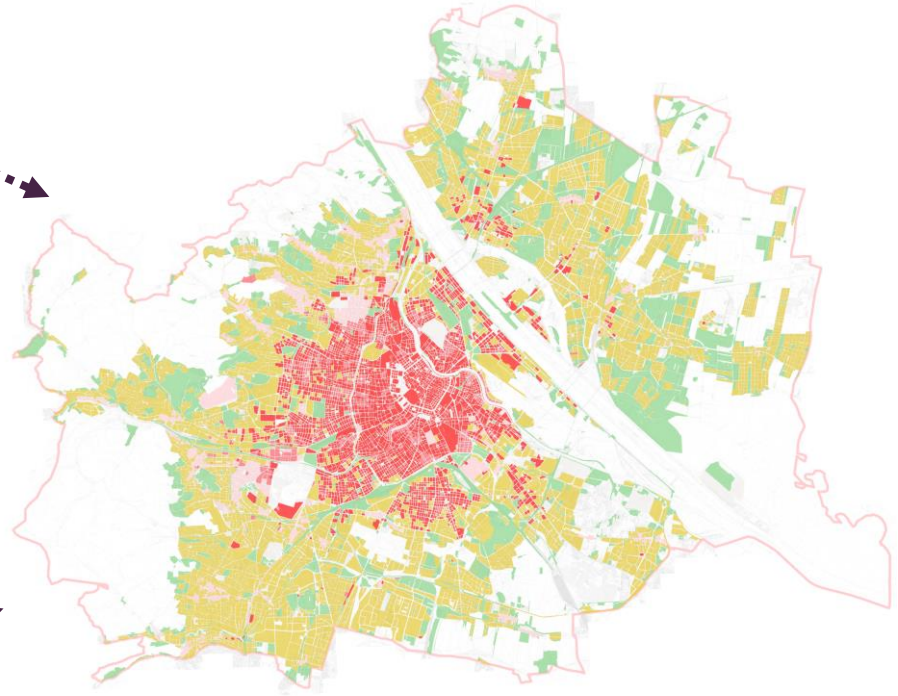


Possible area for DH

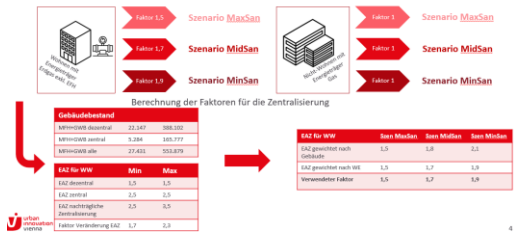


Need for DH





+ Scenarios



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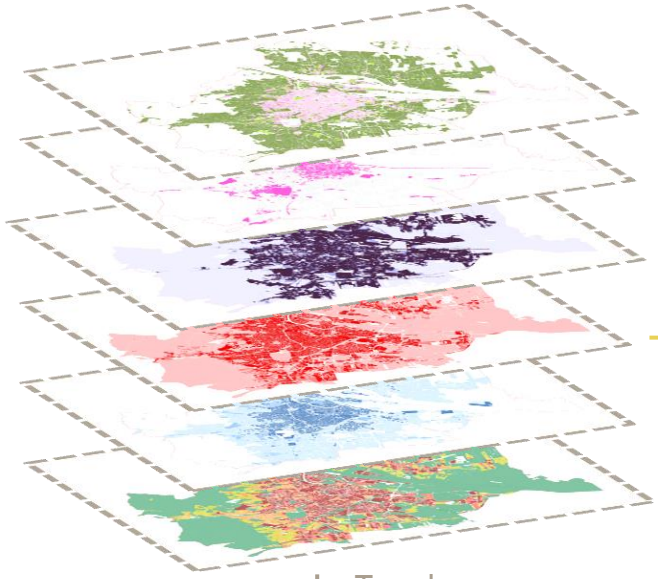
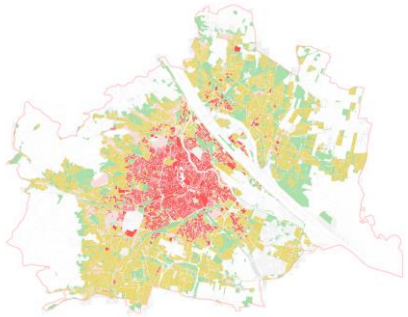
Co-operation between MA 20, Wiener Netze and Wien Energie

Professional approach



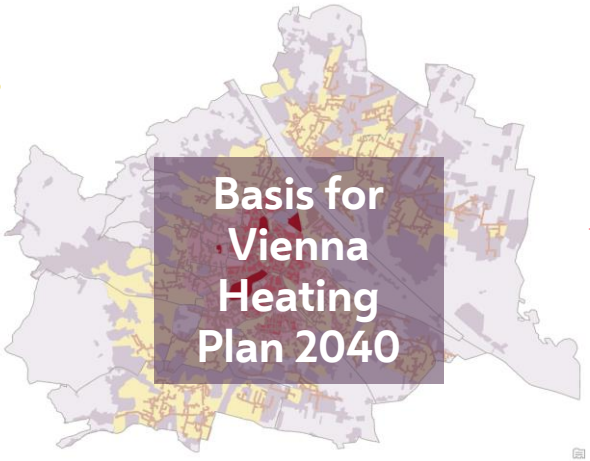
Basics MA 20

Typology as a technical basis



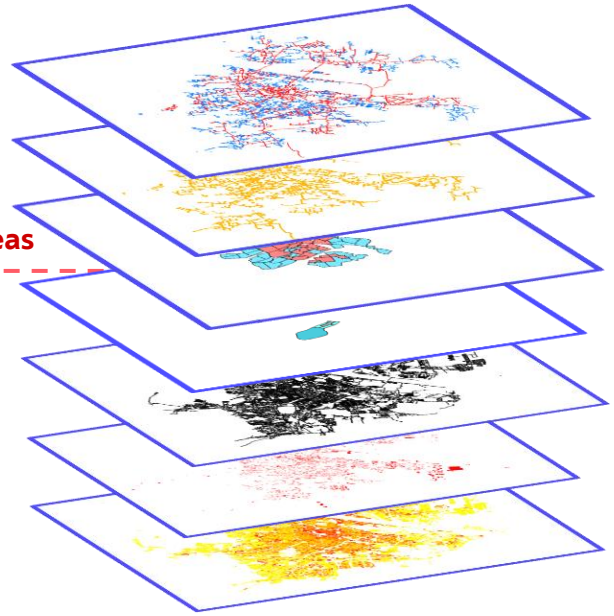
Areas with low heat demand density / building-by-building heat supply

Areas with high heat demand density / possible heating network solutions

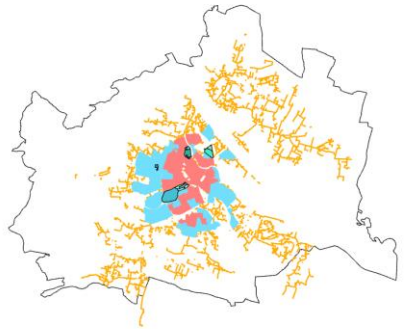


Basis for Vienna Heating Plan 2040

District heating areas



Basics Wiener Stadtwerke

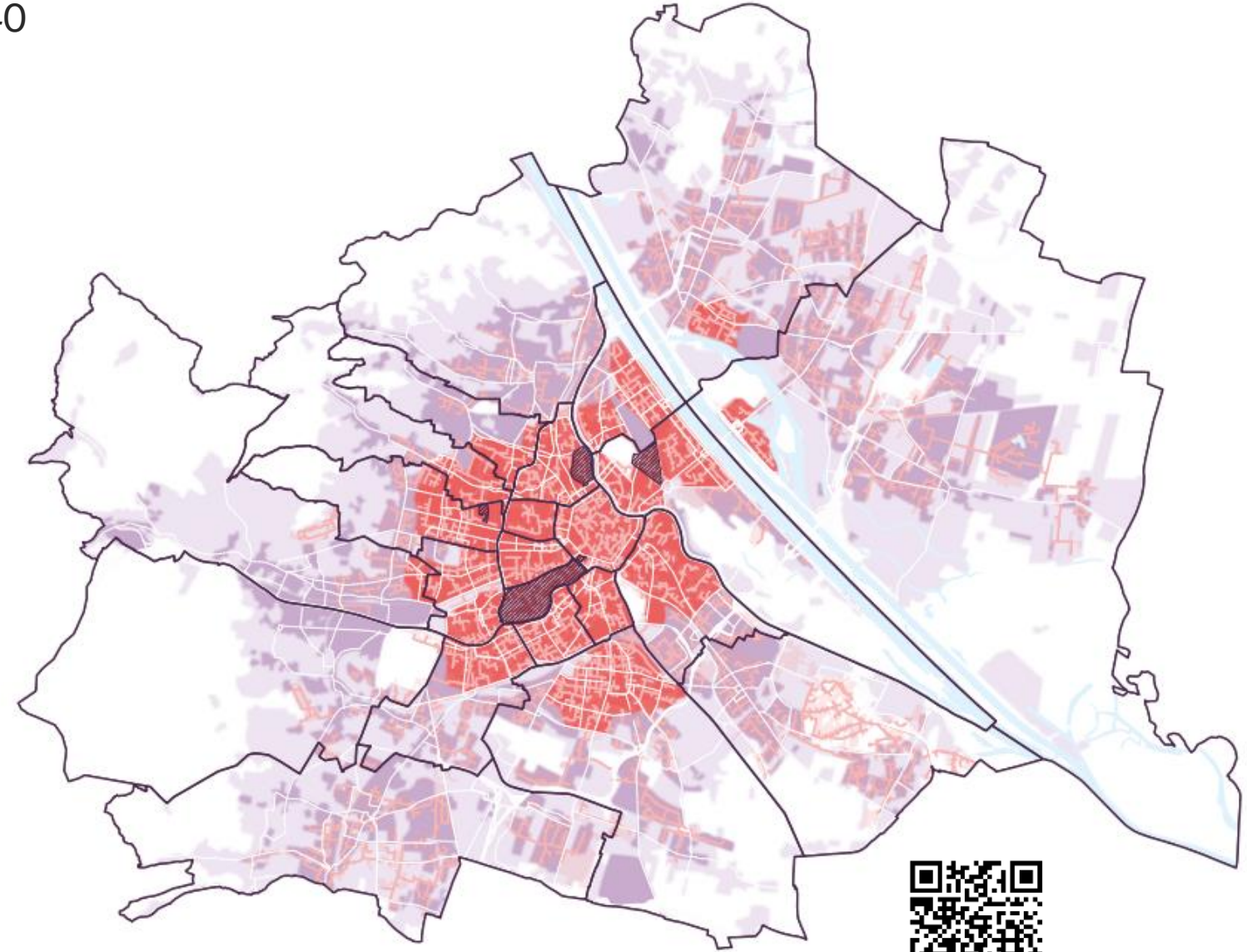


Plausibility check

Phase-out of gas and oil heating

Vienna Heating Plan 2040

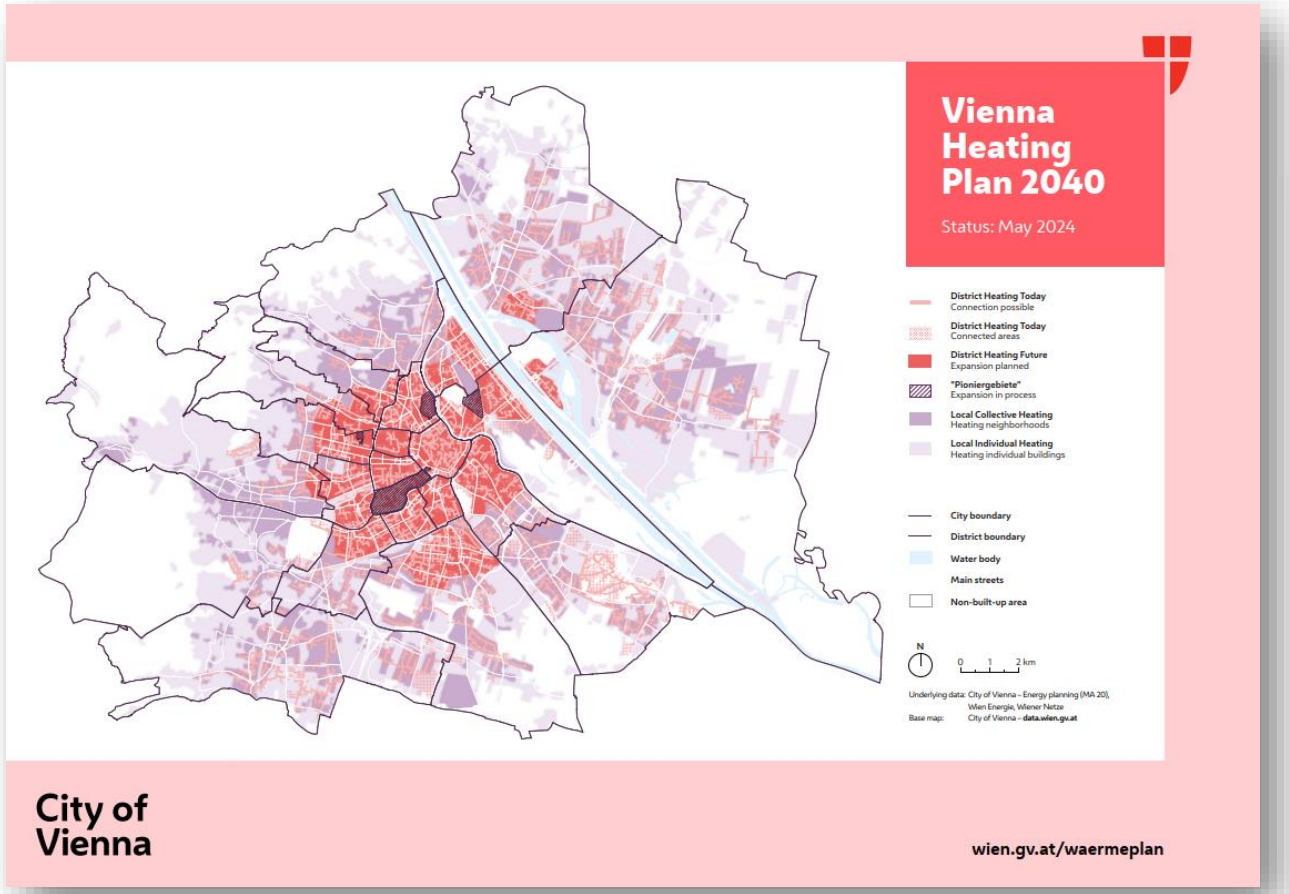
- Goal: Replacing 600.000 units heated with gas
- Focus on existing buildings
- Guidance for all people

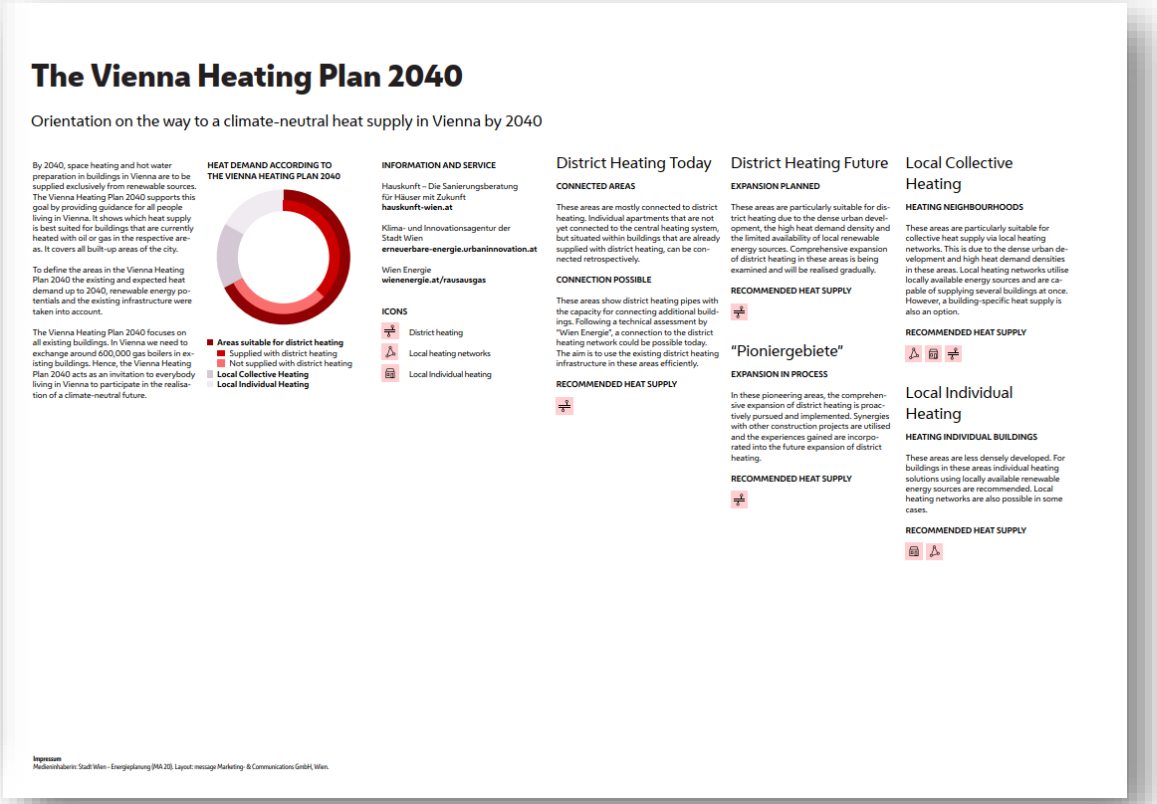


Source: https://www.wien.gv.at/umwelt/waermeplan-2040/

Vienna Heating Plan 2040

Vienna Heat Plan 2040





Download:
www.wien.gv.at/waermeplan

District Heating Today
connected areas

These areas are **connected to district heating**. **Individual apartments** that are not yet connected to the central heating system, **can be connected retrospectively**.

District Heating Today
connection possible

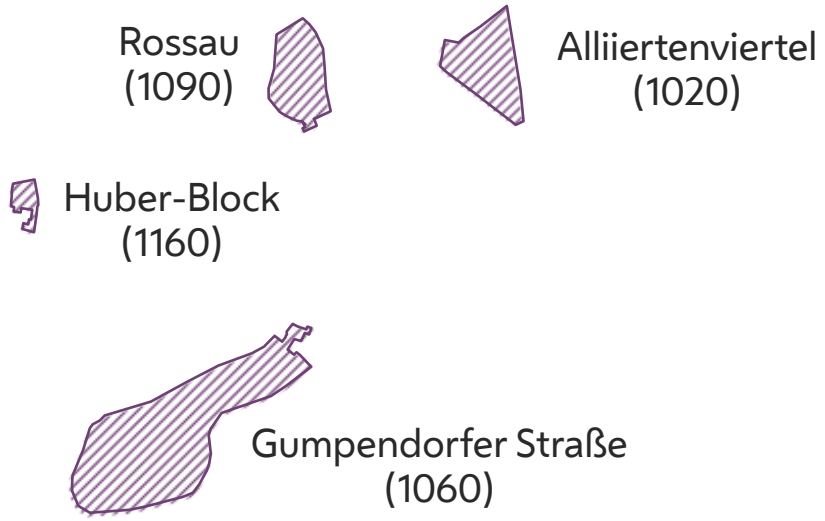
These areas show **district heating pipes** with the capacity for connecting additional buildings. Following a technical assessment by "Wien Energie", **a connection to the district heating network could be possible today**.

District Heating Future
expansion planned

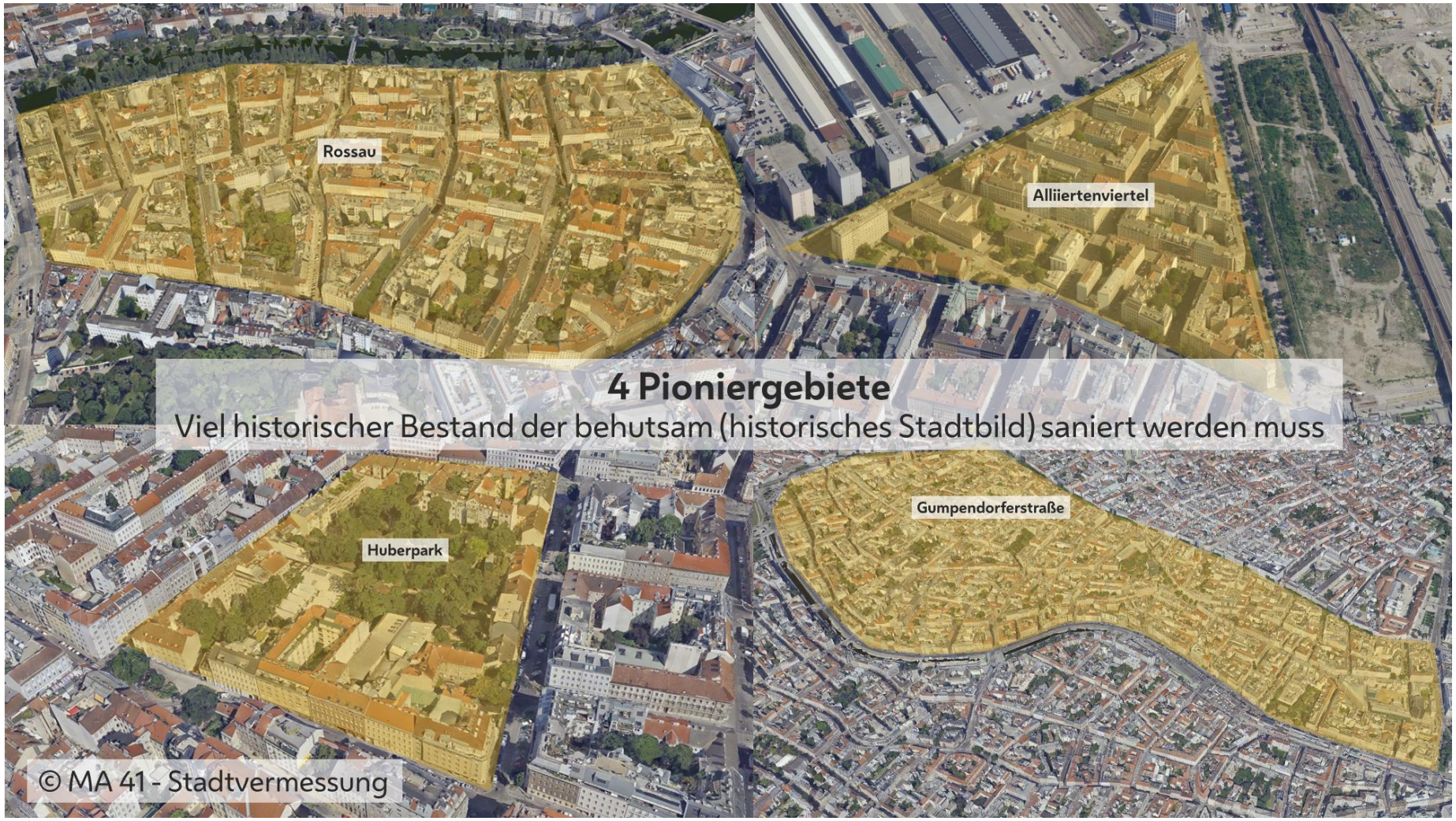
These areas are particularly suitable for district heating due to the **dense urban development**, the **high heat demand density** and the **limited availability of local renewable energy sources**. Comprehensive expansion of district heating in these areas is being examined and will be realised gradually.

„Pioniergebiete“ (Pilot Areas)
expansion in process

In these pioneering areas, the comprehensive **expansion** of district heating is proactively pursued and **implemented**. Synergies with other construction projects are utilised
and the **experiences gained** are incorporated into the future expansion of district heating.



Pilot Areas for District Heating Extension



Vienna Heating Plan 2040
Areas in detail

Local Collective Heating
heating neighbourhoods

These areas are particularly suitable for collective heat supply via local heating networks. This is due to the **dense urban development** and **high heat demand densities** in these areas. Local heating networks utilise locally available energy sources and are capable of **supplying several buildings at once**. However, a **building-specific heat supply is also an option**.

- Heat density
- Building density
- Building structure

Local Individual Heating
heating individual buildings

These areas are **less densely developed**. For buildings in these areas individual heating solutions using locally available renewable energy sources are recommended. **Local heating networks are also possible** in some cases.

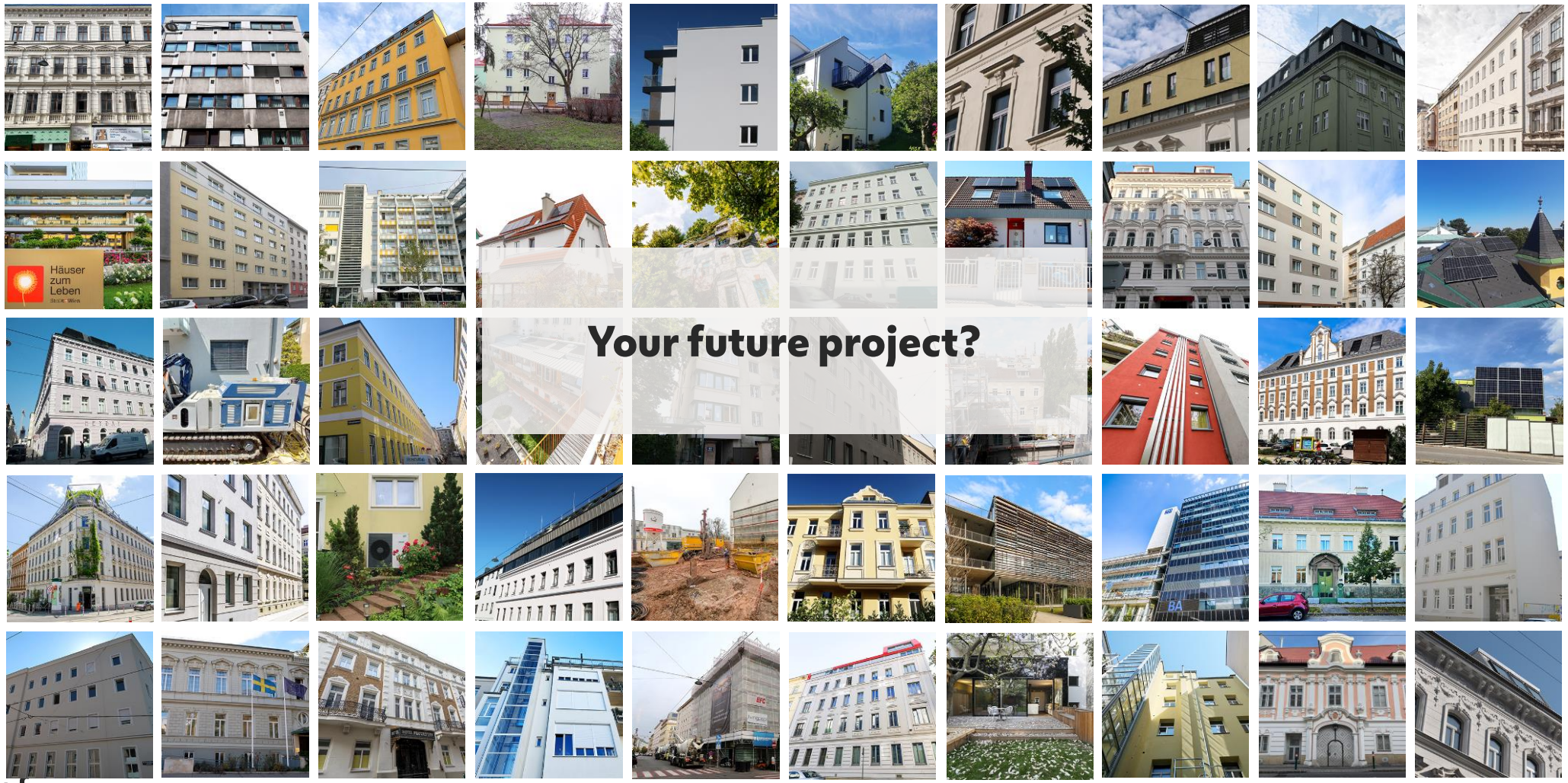
100 Projects Phasing Out Gas

Initiate, inform, accompany, learn, talk about it

- **Demonstrate broad feasibility** of decarbonizing existing buildings
- Primary focus on **multi-storey residential buildings** without district heating connection options
- Collect, process and effectively disseminate **at least 100 Viennese Get Out of Gas projects by the end of 2025**
- As **wide a range** as possible of different initial situations and transformation solutions
- Create space for shared learning & prepare inputs for widespread rollout from 2026
- Important: **high transferability** of the developed solution approaches

Phasing Out Gas – Showcase projects

100 Projects Phasing Out Gas



Initiative „100 Projects phasing out Gas“

What we have done so far

49
PV systems and
1.078
Kilowatt-Peak
installed

696
Gas boilers converted
to local renewables

292
geothermal probes
drilled

this corresponds to a
running length of **39**
kilometers

Zwölfergasse

Gründerzeit house with geothermal heating

Initiative „100 projects leaving gas“

At a glance

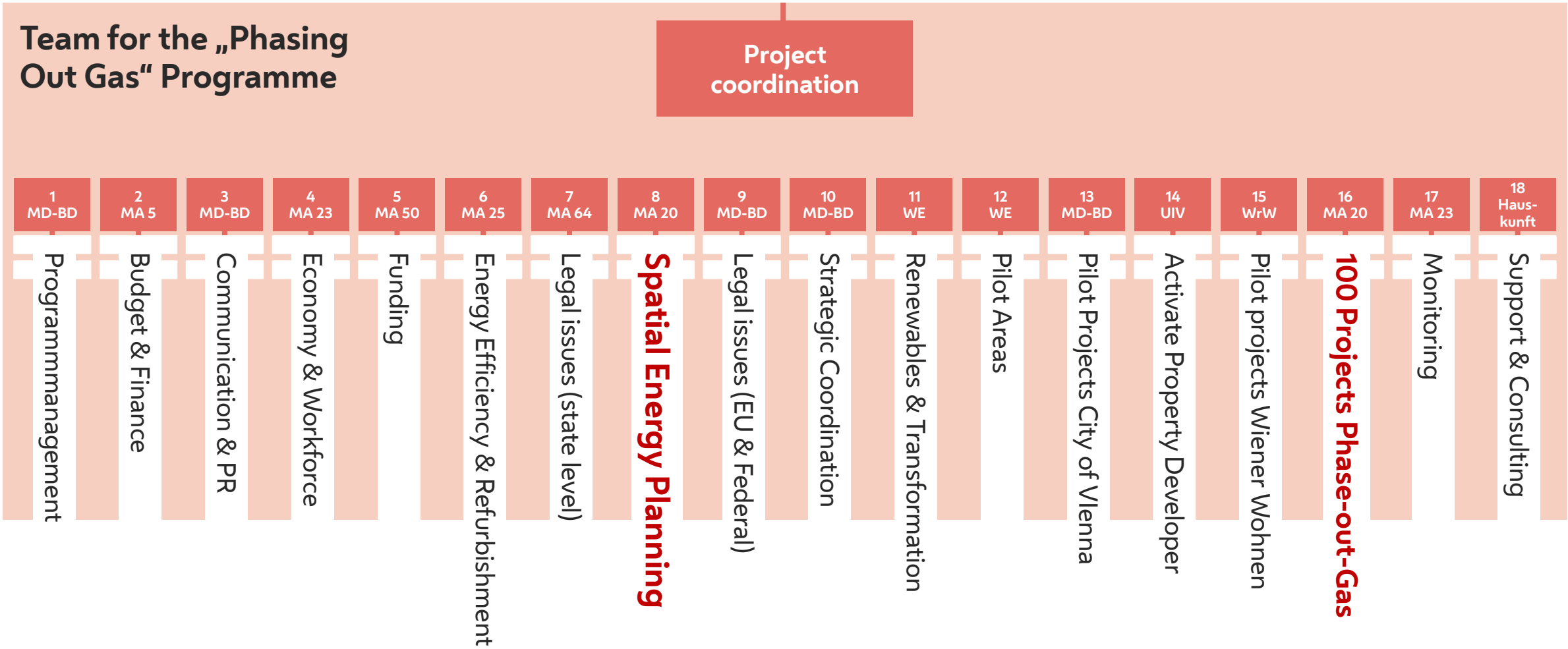
- Refurbishment and conversion of a Gründerzeit house from natural gas to geothermal heat supply in two stages
- Stage 1: 4 geothermal probes of 100-150 m each in the inner courtyard to supply the new or fully renovated apartments with low-temperature heat
- Stage 2: for the other apartments 3 geothermal probes à 200 m in the sidewalk, i.e. for the first time geothermal probes drilled in public space
- After completion in spring 2023: Full supply with geothermal energy for heating, cooling and hot water preparation
- Solar thermal energy for „over-regeneration“ of the probes + PV systems to supply the heat pump

4
Phase Out Programme

City of Vienna

„Phasing Out Gas“ Programme

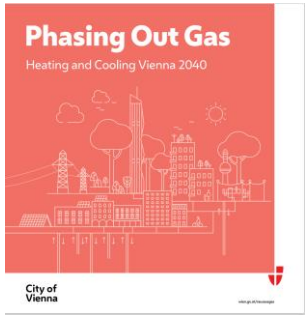
Organisation



City of Vienna

Programme „Phasing Out Gas“

Implementation in 2 phases



2020-2022

Phase 1

Built-up of framework conditions
Adaptation of processes
Market stimulation
Pilot implementations
Public relations activities

2023-2025

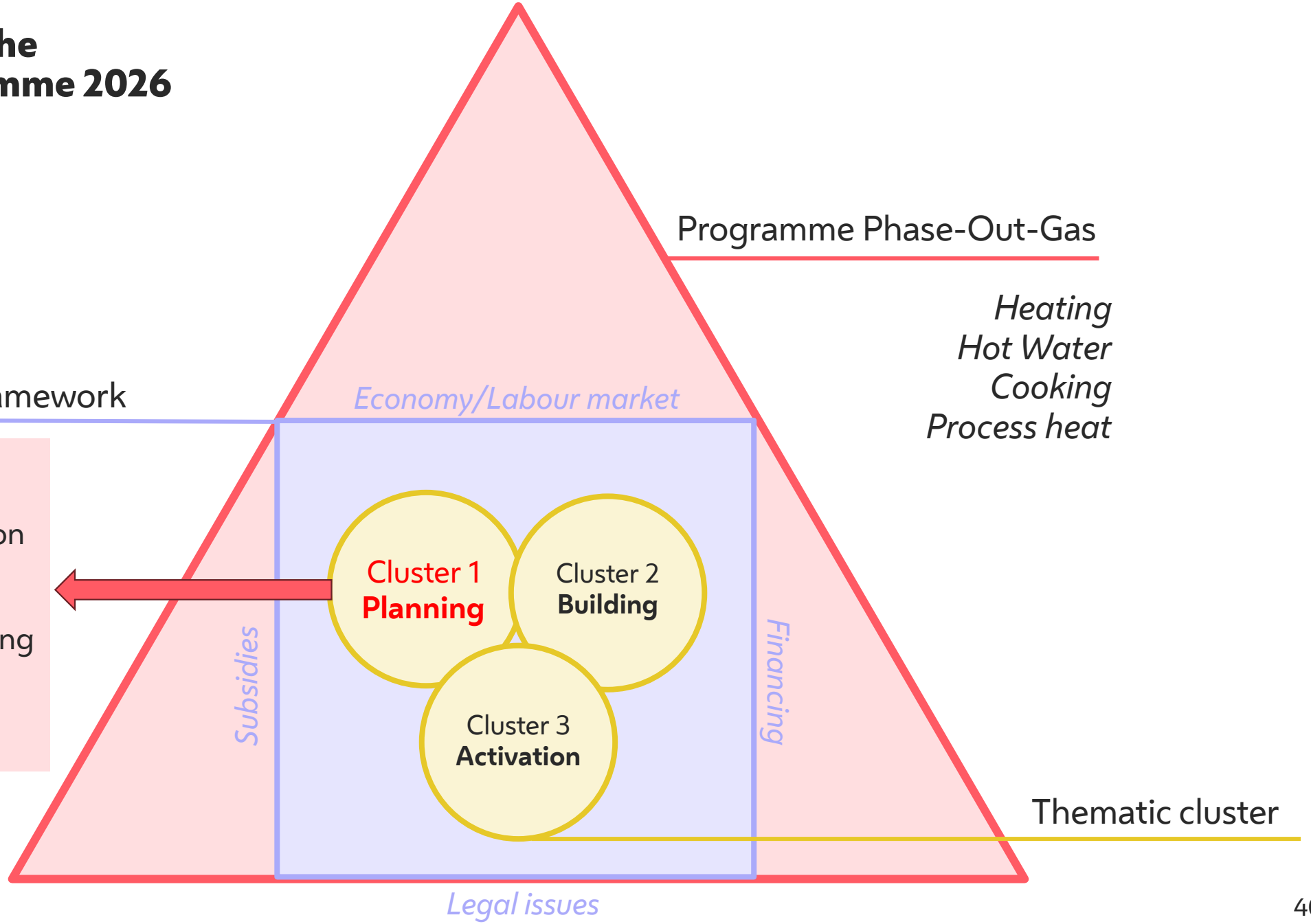
Phase 2

Large-scale rollout
Observation of market, research & innovation
Reflection and, if necessary, adaptation of processes

2026-2040

City of Vienna

New structure for the Phase-Out-Programme 2026



- Heating Plan
- Cooling (Plan)
- Electr. Grid adaptation
- Energy storage
- Gas decomission
- Local collective heating networks
- Infrastructure coordination

City of Vienna

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Thank you!

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