



# Showcasing How To Phase Out Fossil Fuels From Urban Heating & Cooling

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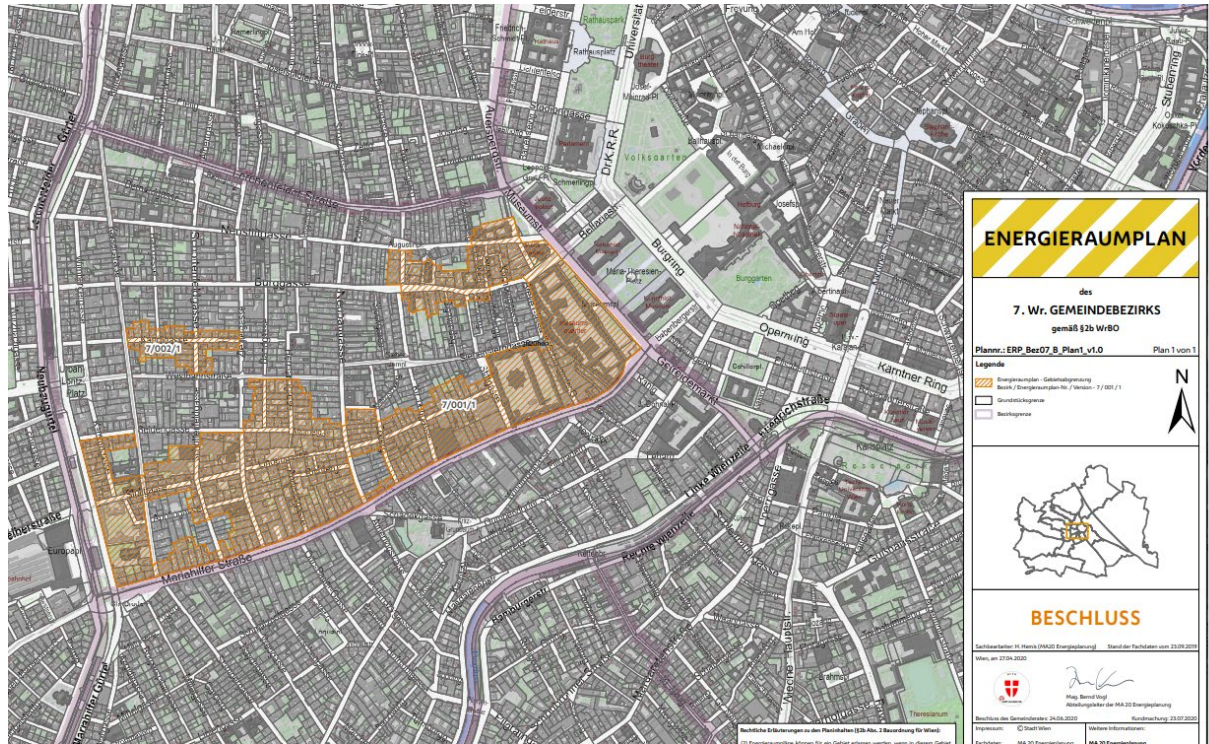
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# Vienna, 2020

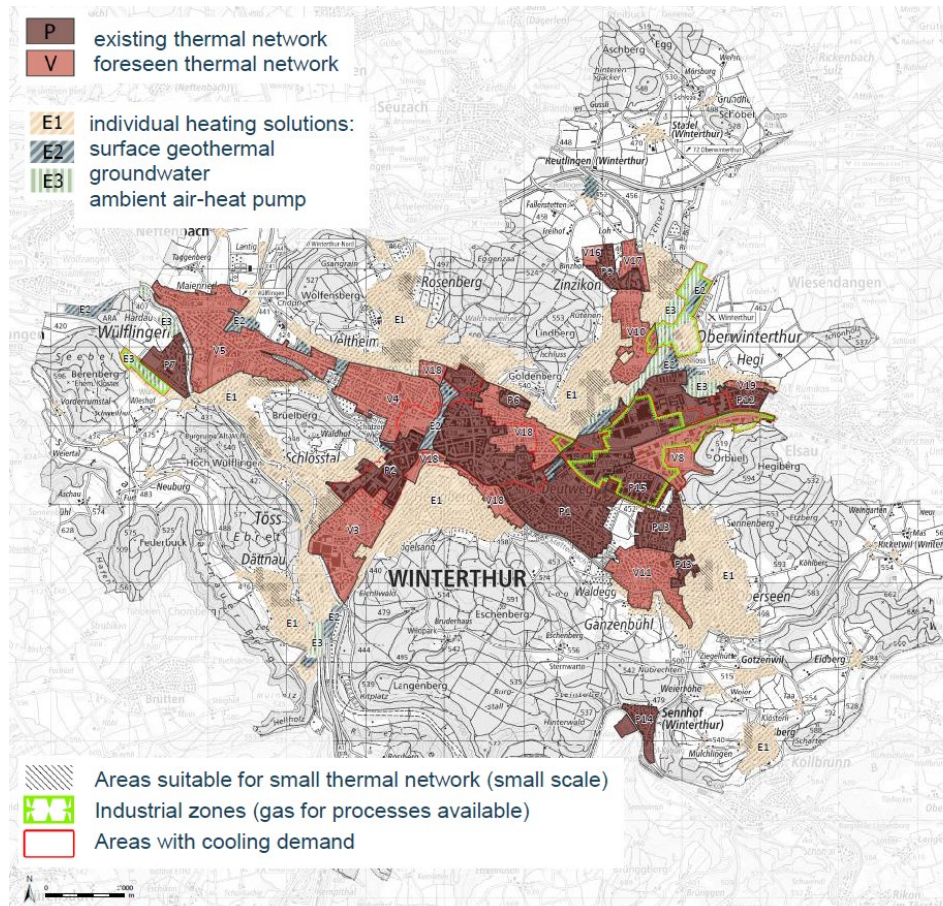
## Spatial Energy Planning 1.0: Prohibition of gasboilers in new buildings in designated areas



Spatial Energy Plan, 7th district, Vienna

# Winterthur, 2022

Cantonal Energy Law prohibits use of fossil heating systems in all buildings.



Heating Map of Winterthur

## ... Decarb City Pipes 2050 ...

### Decarb City Pipes 2050: Transition Roadmaps To Energy Efficient, Zero-carbon Urban Heating And Cooling

- ▶ Horizon 2020 – Energy Call 2019
- ▶ Topic: Supporting public authorities to implement the Energy Union
- ▶ Duration: July 2020 to August 2023
- ▶ Budget: 1,9 Mio Euro
- ▶ [www.decarbcitypipes2050.eu](http://www.decarbcitypipes2050.eu)



## Other Project Partners

Besides the 7 cities: Vienna, Munich, Winterthur, Bilbao, Rotterdam, Dublin & Bratislava

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- ▶ **UIV Urban Innovation Vienna**
- ▶ **Energy Cities** (Belgium, France)
- ▶ **Halmstad University, Dept for Human Geography and Spatial Planning** (Sweden)
- ▶ **Utrecht University, Dpt. For Construction & Energy Engineering** (Netherlands)
- ▶ **TecNALIA** (Spain)



ENERGYCITIES



# Goals Of The Project

Equip cities with the know-how, capacity and mandate to act

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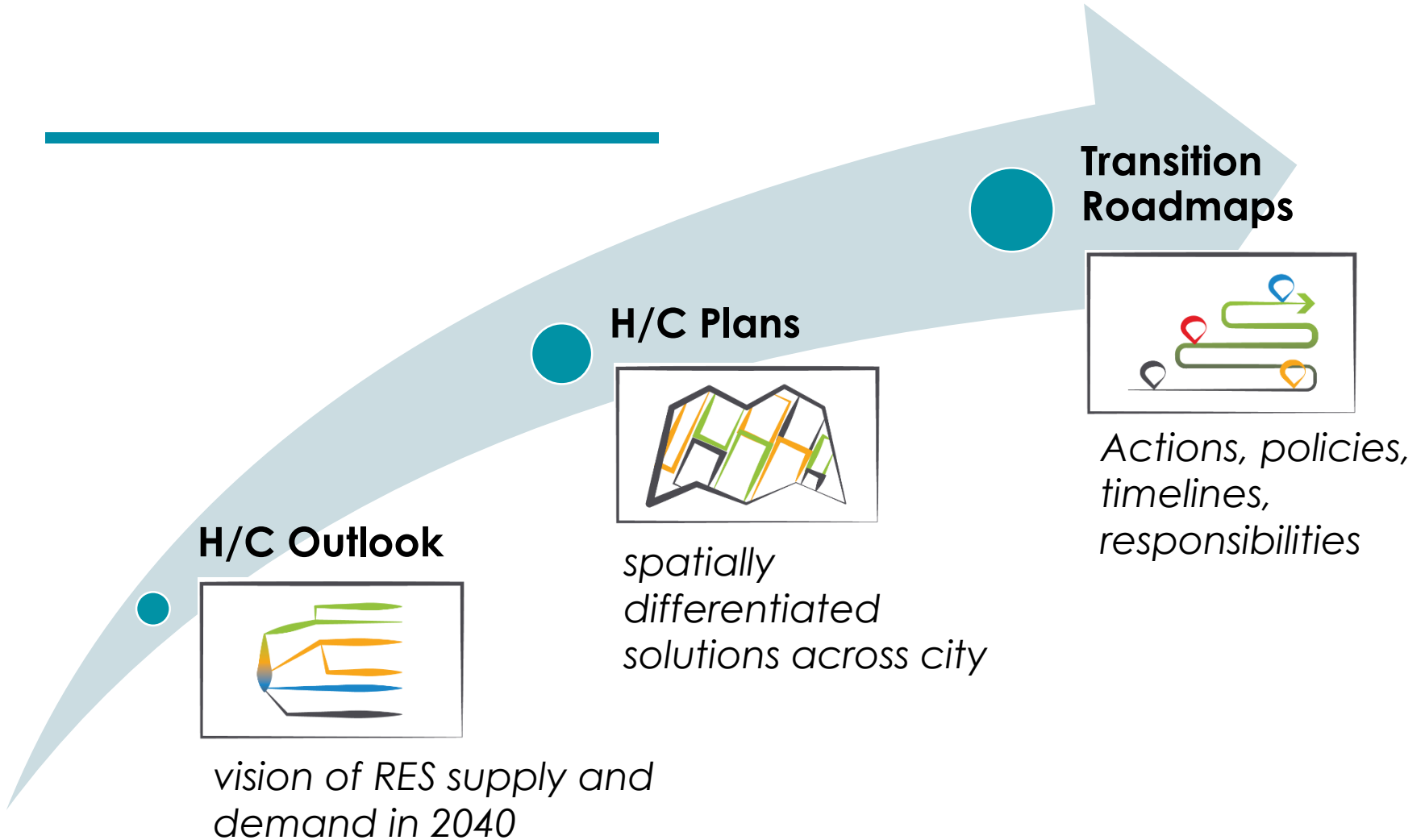
- ▶ build-up **planning and implementation capacity** in each city
- ▶ address the “**hot potato**” of **phasing out** fossil gas (or gas boilers!) in building sector
  - meaning “no gas” for space heating!
- ▶ break challenge down into manageable, concrete steps
- ▶ show-case how local authorities can succeed in this challenge
- ▶ ... and spread the word.



## 7 Cities to showcase how it could work...

City	Bilbao	Bratislava	Dublin	Munich	Rotterdam	Vienna	Winterthur
Climate neutral by	2050	2050	2050	2035	2050	2040	2040

# Triple Jump To Readiness





## How We Work? Local And International

Linking to an existing process... or kick-starting one ...

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- ▶ City-driven: **Local Working groups**  
as essential engagement format between the municipality, energy utilities, housing cooperations etc.  
→ Getting relevant local actors on board and onto cause
- ▶ **Peer-to-peer learning between cities and local utilities or Distribution System Operators** on progress and lessons learned
- ▶ Distinguished **Advisory Board** to challenge and strategically guide the cities work!
- ▶ **Energy Cities network to disseminate and replicate.**



# Heating (and Cooling) Outlook – Agreeing On A Common Goal



# THE Foundation For Further Planning Steps

**First, cities each set a common goal.**

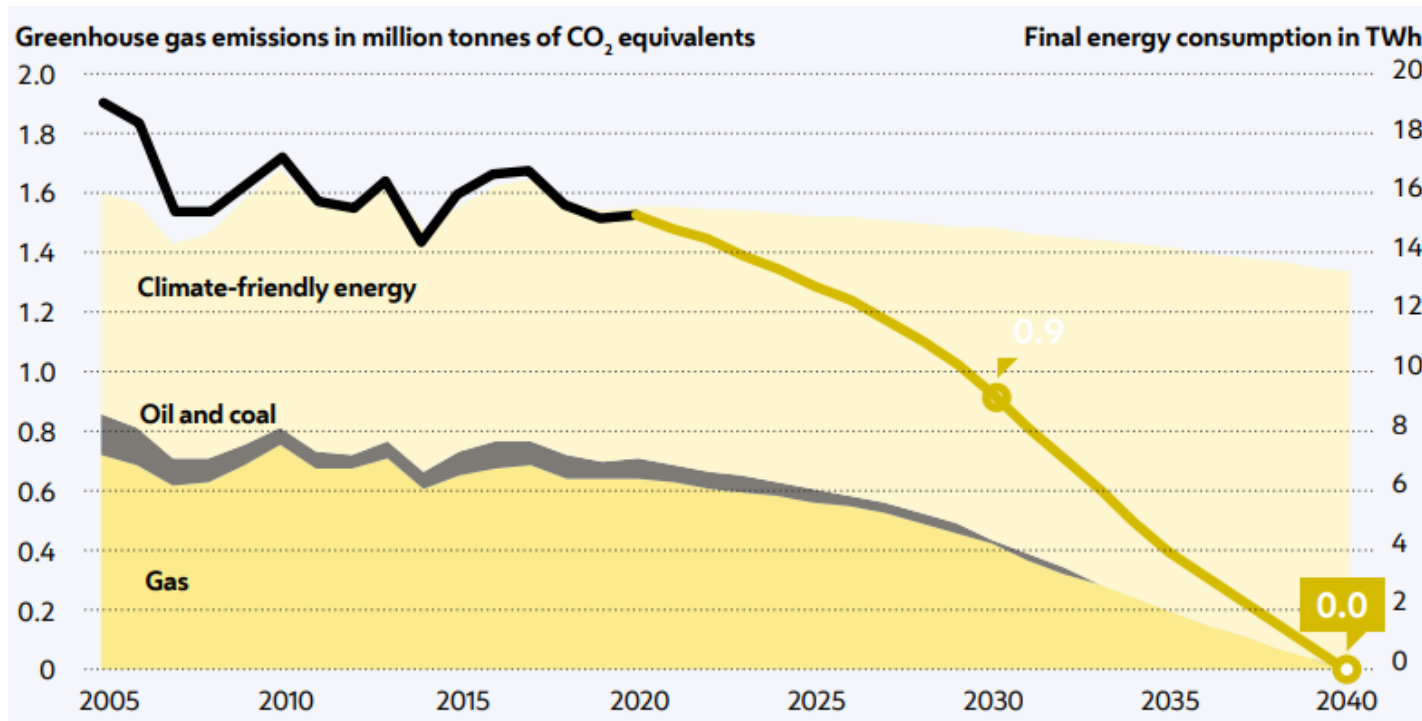
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- ▶ Developing and agreeing on a H/C Outlook of demand & supply to reach zero-carbon H/C in target year (2035 to 2050)
  - ▶ quantitative structure and energy carriers
- ▶ Setting a common target and a plausible, desirable vision for H/C in each city, e.g.
  - ▶ CO<sub>2</sub>-reduction pathways
  - ▶ renovation rates - reduction of heat demand
  - ▶ heating system exchange scenarios
  - ▶ What role, if any, for „Green Gas“?



# The Case Of Vienna: Showing Fossil Fuels The Door

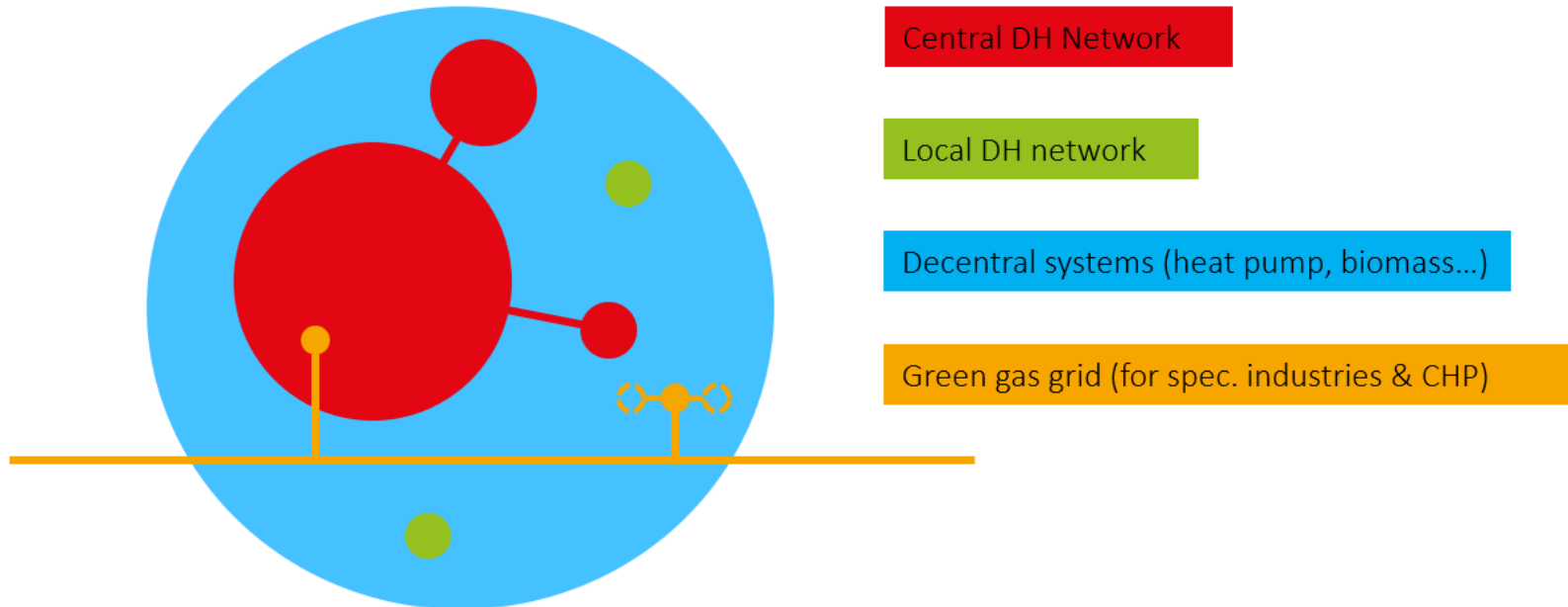
Pathway for greenhouse gas emissions in the building/heating sector till 2040.



Source:  
Vienna Climate Guide,  
City of Vienna 2022

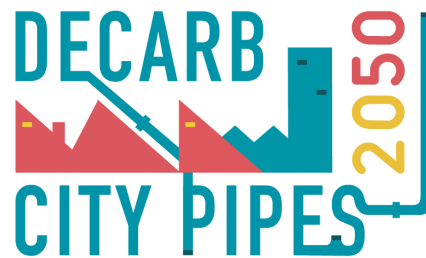
# Vienna's H/C Outlook: Spatial Principle

Envisioning a net-zero emission, climate friendly H/C system in 2040.



Vienna needs **green gas** for producing electricity and district heating at times of peak-demand and low renewable-production!

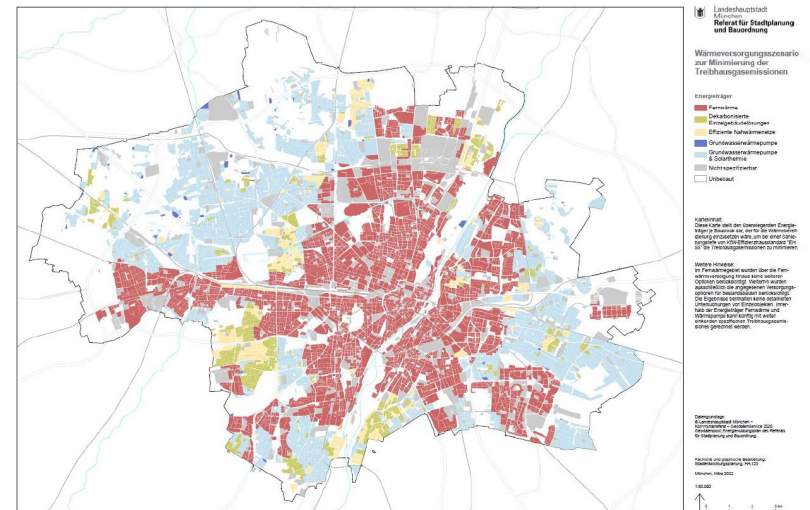
# Heating (and Cooling) Plans – Bringing the goals to a spatial level



# Heating (and Cooling) Plans

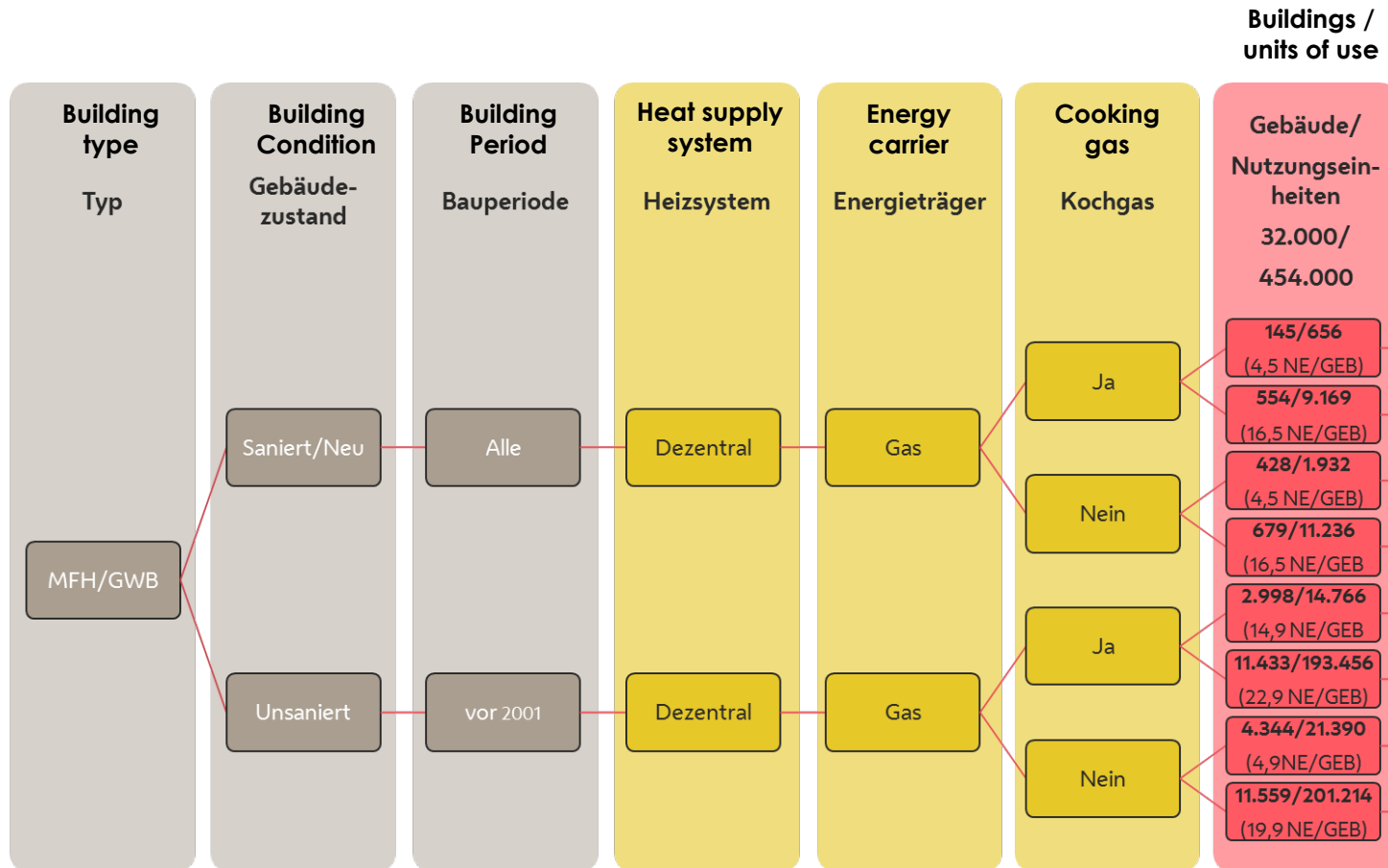
Bringing the quantitative outlook to a spatial level.

- ▶ Cities developed spatially-differentiated H/C plans
- ▶ Taking a look at heat density, current system, energy availability, building stock, cost calculations, etc.
  - ▶ Where to establish new DHC? Where not?
  - ▶ How to unbundle gas and DHC grids?
  - ▶ What role for (decentral) heat pumps?
  - ▶ How to decarbonise existing DHC? (Industrial) waste heat? Geothermal energy?
  - ▶ How to accomodate for sector coupling?



Munich's Heating Map

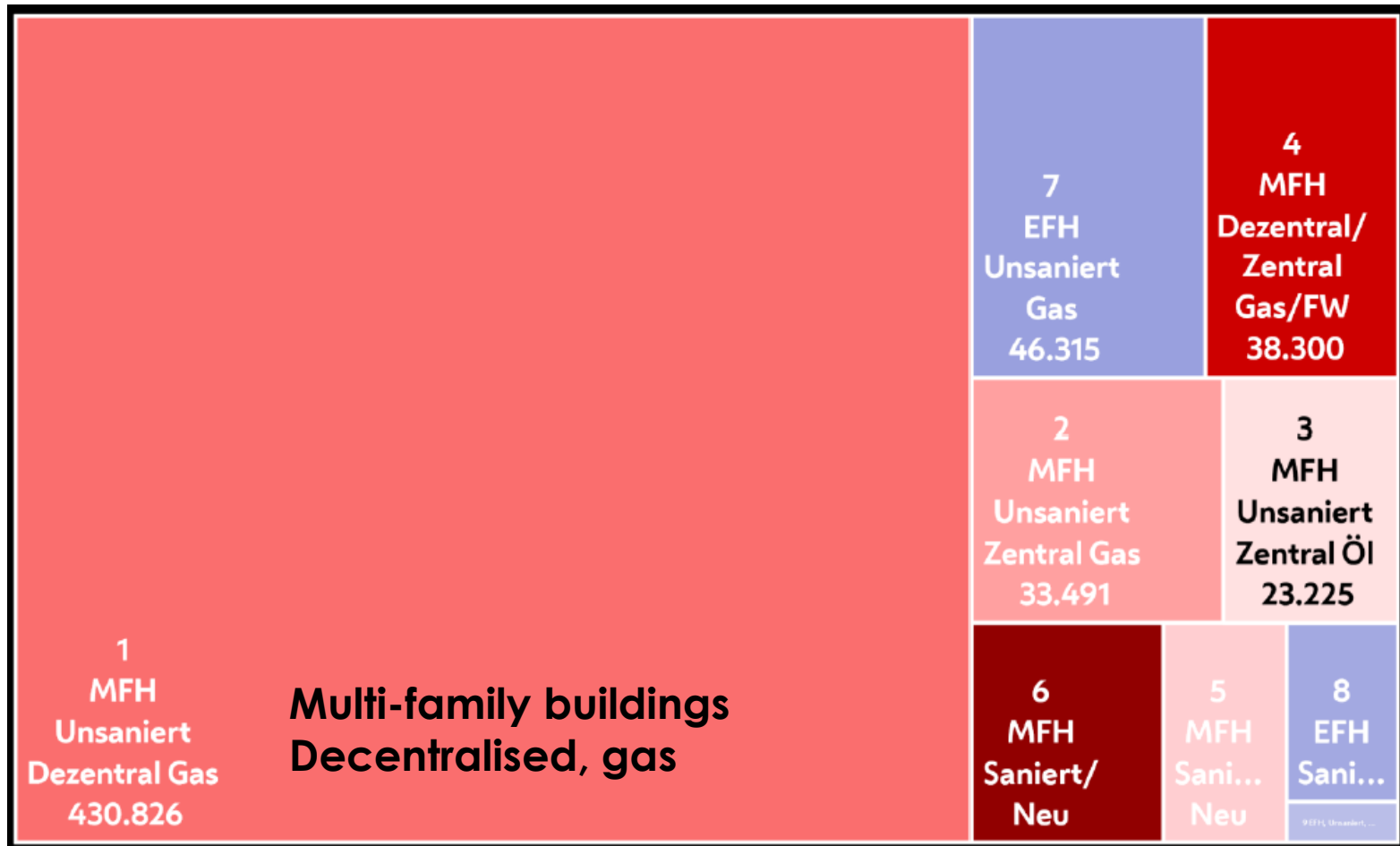
# Vienna: Decarbonisation Types



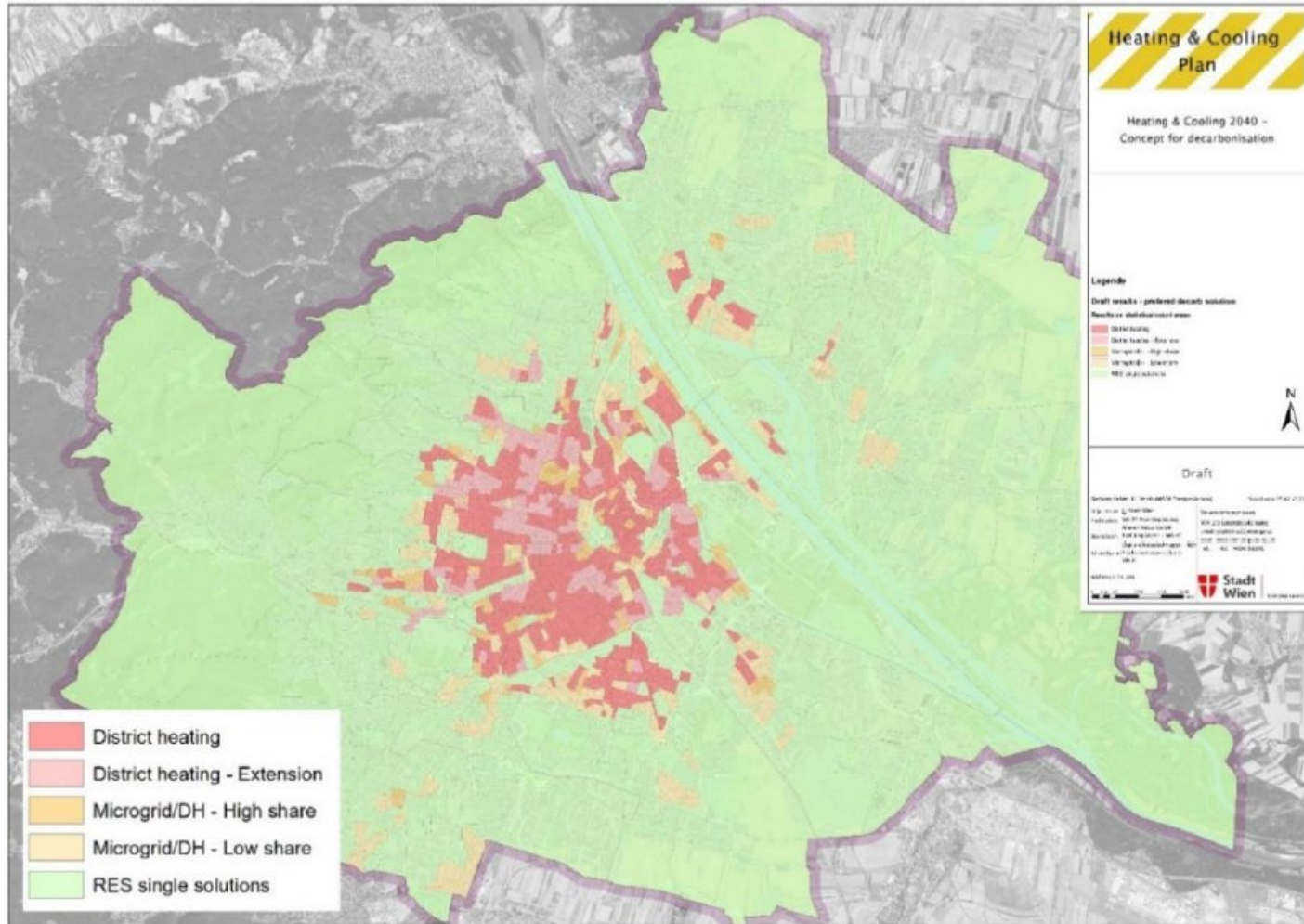
Decarbonisation types for multi-family homes



# Distribution Of Decarbonization Types In Vienna According To The Number Of Utilization Units



# H/C Plan Of Vienna



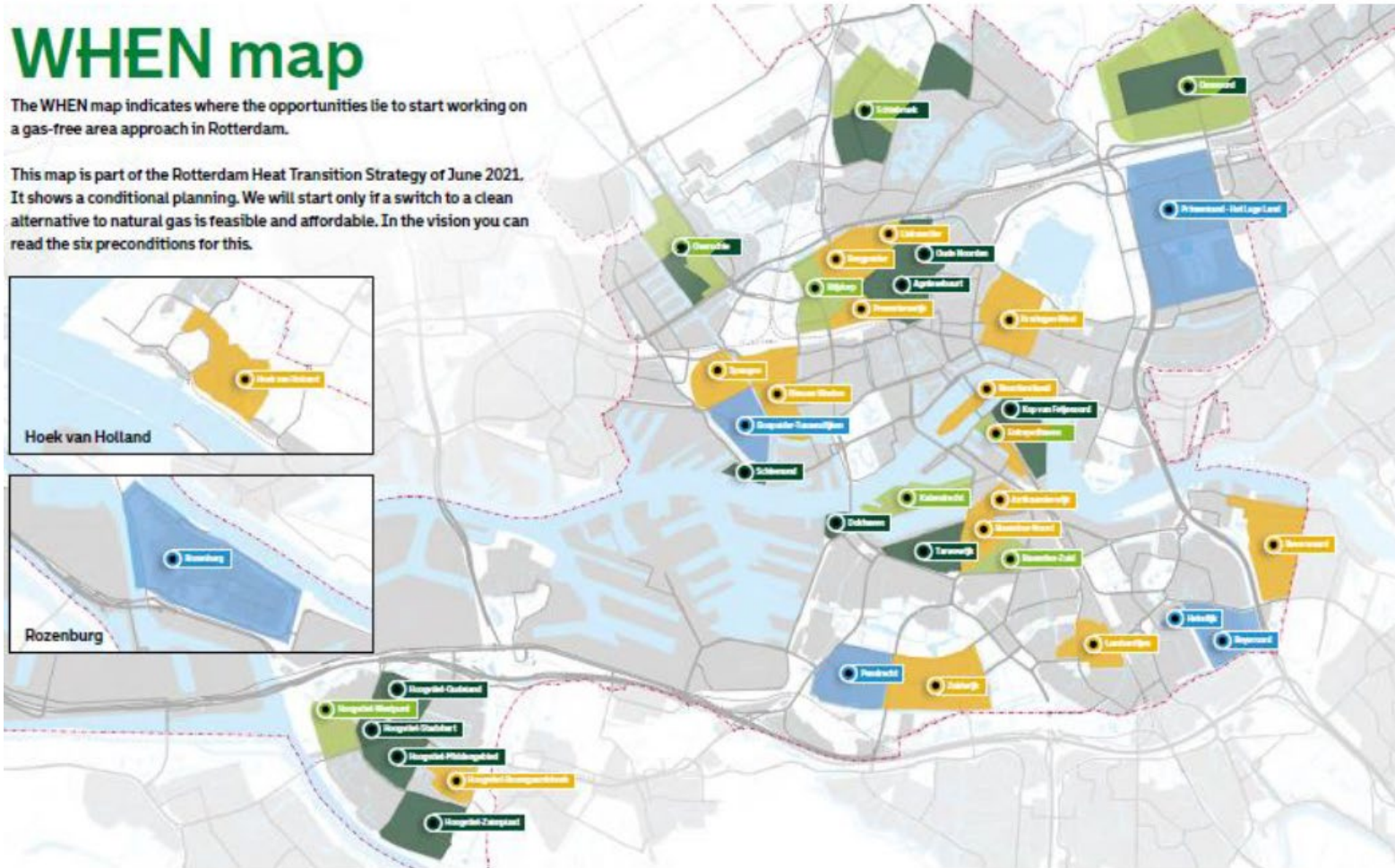
Vienna needs **green gas** for producing electricity and district heating at times of peak-demand and low renewable-production!

# H/C Plan Of Rotterdam

## WHEN map

The WHEN map indicates where the opportunities lie to start working on a gas-free area approach in Rotterdam.

This map is part of the Rotterdam Heat Transition Strategy of June 2021. It shows a conditional planning. We will start only if a switch to a clean alternative to natural gas is feasible and affordable. In the vision you can read the six preconditions for this.



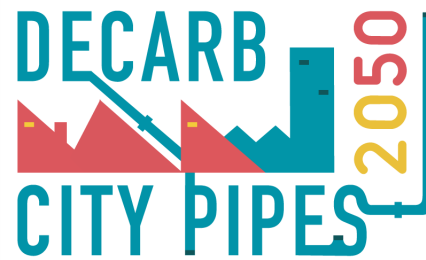
● Ongoing district oriented approaches

● Advice to start a district oriented approach before 2025

● Advice to start a district oriented approach between 2025 and 2030

● Advice not to start a district oriented approach yet

## Next up: Transition Roadmaps



# H/C Transition Roadmaps

## Next up...

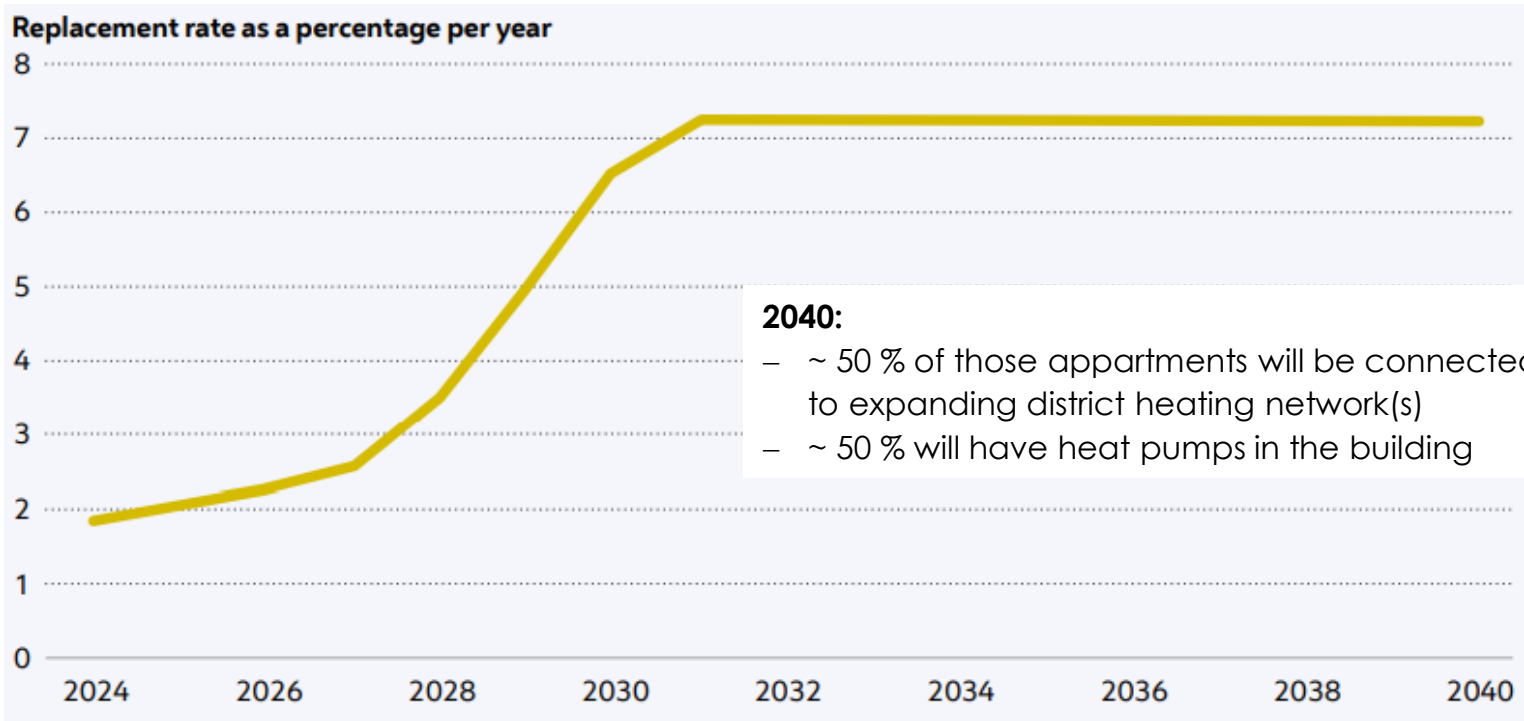
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- ▶ **Cities develop action plans**
  - on how to reach an energy efficient, zero-carbon local H/C no later than by 2050
- ▶ **Instruments** to be employed
  - ▶ Regulatory?
  - ▶ financial?
  - ▶ governance structure to be set up?
- ▶ **Actions** to be set by the city – when?
- ▶ Clearly spelled out **responsibilities**



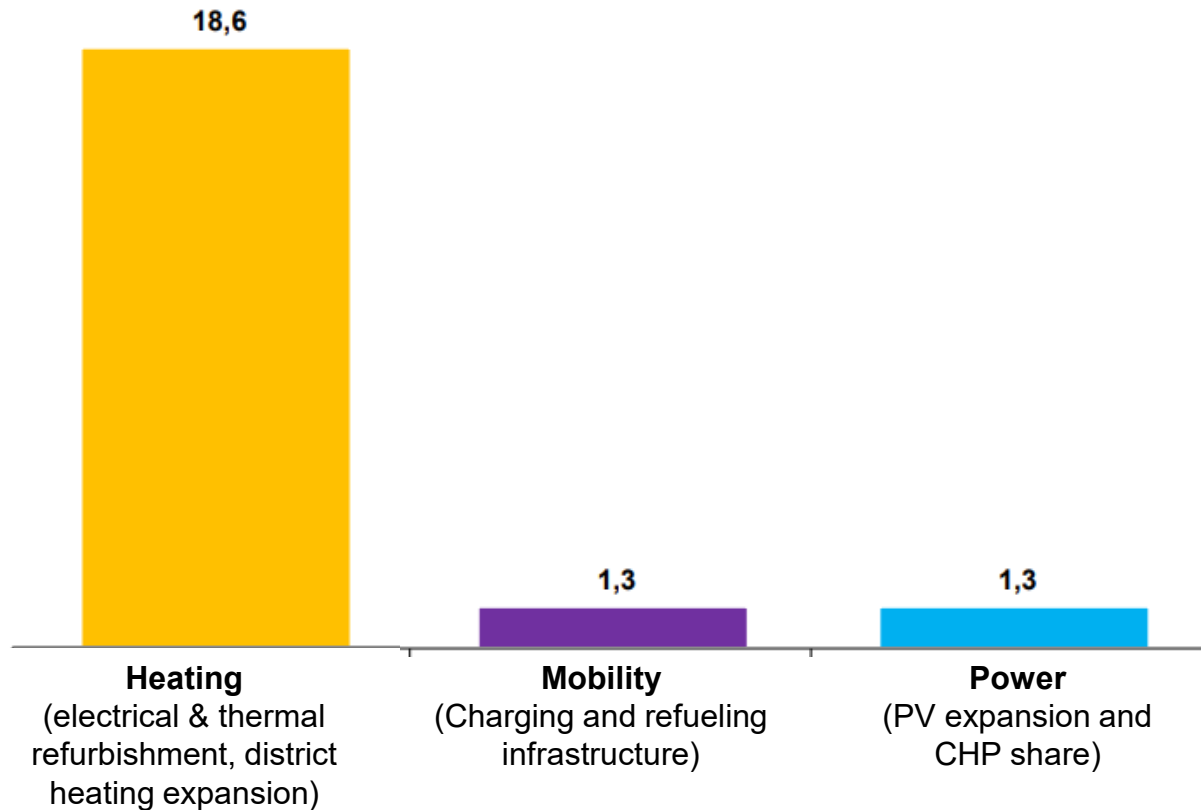
# Vienna: Phasing out gas boilers for more than 500,000 units

## Roadmap for annual replacements



# Vienna: Additional Investments Required

Achieving climate neutrality 2040 requires additional (comp. to BAU) investments of < 2 % of Vienna's GDP



Source: Wien Energie 2021

# Recommendations for legislative framework

## What cities need from the EU to speed up their energy transition

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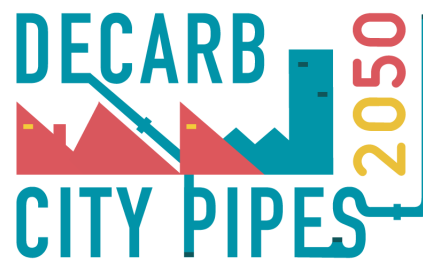
- ▶ European green gas strategy with requirements where limited amounts of green gases shall and shall not be used.
- ▶ Investment security requires legal technology clarity, not “technology openness”.
- ▶ Rules and obligation for integrated planning of energy infrastructures
- ▶ Encouraging rather than hindering regulation for the phase-out of gas (distribution) networks
- ▶ Even stronger EU support for district heating expansion and direct electrification at the municipal level





# THANK YOU!

For more information, visit [decarbcitypipes2050.eu](https://decarbcitypipes2050.eu)  
Any question? Get in touch [contact@decarbcitypipes2050.eu](mailto:contact@decarbcitypipes2050.eu)



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## Your Questions?

