

Konference AUÚP – Energetická krize

Integrated Spatial and Energy Planning Energieraumplanung – Výzva Pro Rakousko

30 March 2023 | Erich Dallhammer

ÖIR GmbH – Austrian Institute for Regional Studies

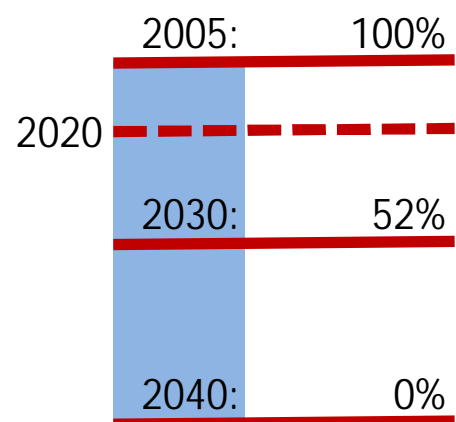
Climate and Energy Goals – Austrian Climate and Energy Strategy (#mission2030)

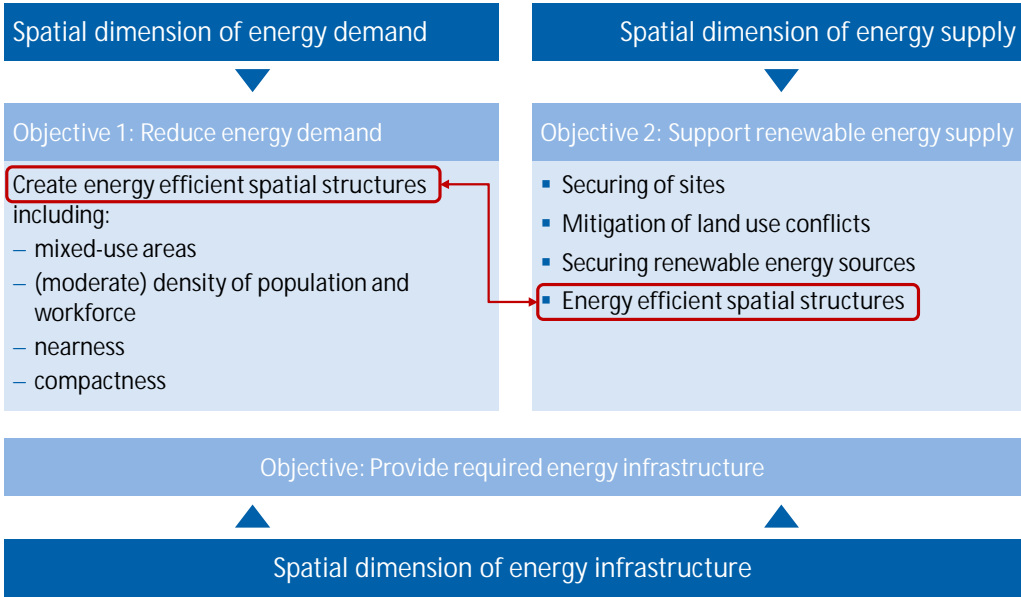
2030

- ▶ -48% GHG-Emissions (compared to 2005)
 - Mobility: -7.3 Mt CO₂-equivalent (-31%)
 - Buildings: -3.0 Mt CO₂-equivalent (-37.5%)
 - Share of renewable energy sources 2030: 45-50%
- ▶ 100% renewable electricity supply (national balance)

2040

- ▶ climate neutrality (10 years earlier than EU goals)
- ▶ heating
 - 2025: restricting the use of natural gas for heating in new buildings
 - 2035: no natural gas in heating systems





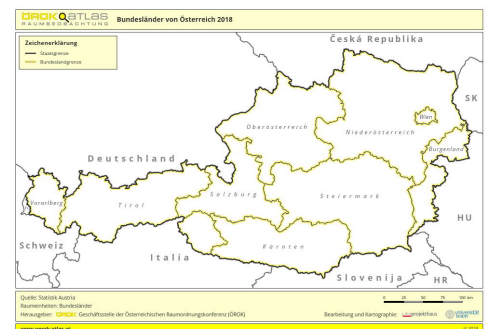
Adopted, based on: Stoeglehner, G. (2020): Integrated spatial and energy planning: a means to reach sustainable development goals. Evolutionary and Institutional Economics Review v. 17, p. 473–486

Spatial planning system in Austria

Federal Republic Austria is made up by 9 States (“Länder”) – federal state/level is called “Bund”

Spatial planning

- ▶ competence of the 9 Länder
- ▶ no centralized competence for spatial planning at the federal level
- ▶ federal government has some important planning powers (motorways, railways, ...)



The Austrian Conference on Spatial Planning – ÖROK as platform for exchange





Energy competences in Austria



- ▶ Goals set
 - by federal government
 - no agreement on targets between Länder
 - individually by each state (“Land”) not co-ordinated with others
(combining all state-goals results in a gap for reaching the national energy goals)
- ▶ Energy networks
 - main network – federal state
 - distribution net – Länder
- ▶ Energy provider
 - mainly private,
 - some (partly) owned by Länder

Integrated Spatial and Energy Planning

Requires integration of energy planning and spatial planning in terms of

- ▶ Knowledge & data 
- ▶ Planning instruments 
- ▶ Governance systems  

Integrated Spatial and Energy Planning (“Energieraumplanung”) in Austria



Austrian Conference on Spatial Planning –
“ÖROK-Partnership Integrated Spatial and Energy Planning”

- ▶ discussion platform between Länder and Bund
- ▶ spatial planning experts
- ▶ awareness raising and publications



ENERGIE-RAUMPLANUNG

Gemeinsam in eine positive Energie- und Klima-Zukunft

Integrierte Planung ist die Voraussetzung, um die Herausforderungen der Energie- und Energie- und Klima-Zukunft zu bewältigen. Die große Ziel dabei ist, Energie zu sparen, Kosten zu senken und dadurch weniger CO2 auszuemissen.

Energieraumplanung

Die Energie- und Klima-Zukunft wird durch die Integration von Energie- und Raumplanung erreicht. Die Energie- und Klima-Zukunft wird durch die Integration von Energie- und Raumplanung erreicht.

Die wichtigsten Aspekte, um dieses Ziel zu erreichen, sind:

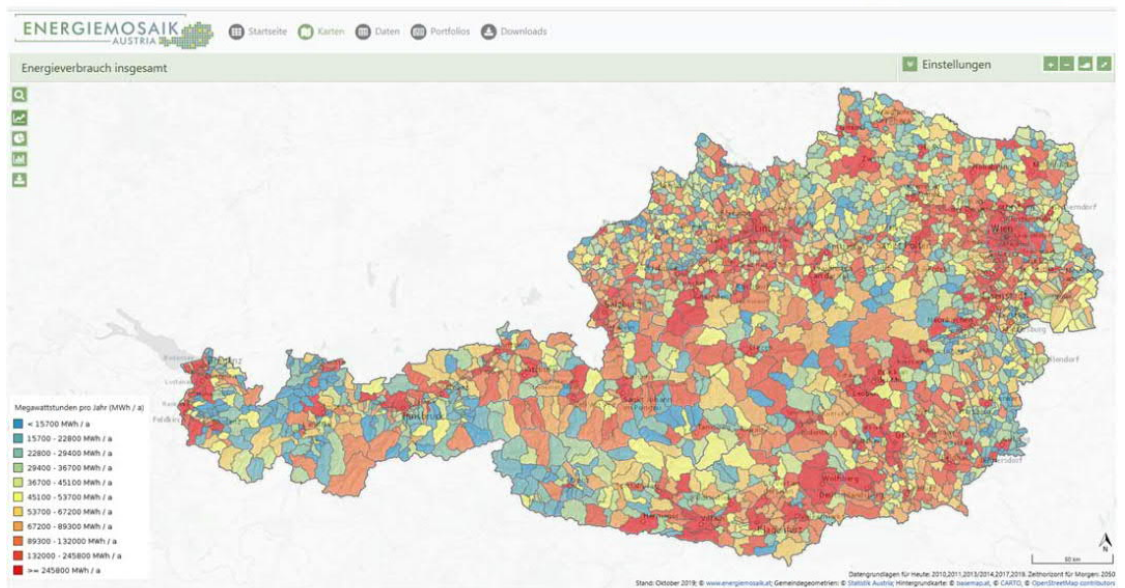
- Energie** → Reduzierung des Energieverbrauchs, Erhöhung der Energieeffizienz, Nutzung erneuerbarer Energien
- Mobilität** → Förderung der öffentlichen Verkehrsmittel, Ausbau des Radverkehrs, Reduzierung des Individualverkehrs
- Städtebau** → Dichte, kompakte Siedlungsstrukturen, Nutzung von Dachflächen, Reduzierung von Versiegelungen

Municipal energy demand



Research on Data

Municipal level
Grid data level
(250 x 250 m)

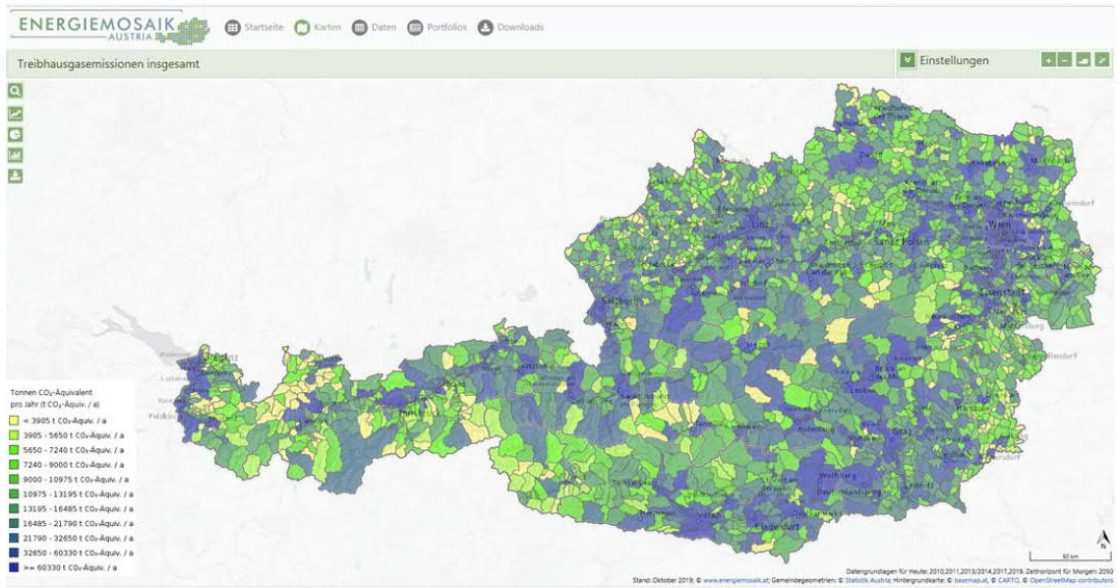


Source: Abart-Heriszt, Lore (2022). Kommunale Energie- und Treibhausgasdatenbank: Präsentation Wien

Research on Data

Municipal level

Grid data level
(250 x 250 m)



Source: Abart-Heriszt, Lore (2022). Kommunale Energie- und Treibhausgasdatenbank: Präsentation Wien

Developments to be supported by spatial planning

Development of compact settlements

- ▶ enabling efficient use of public transport
- ▶ enabling local heat networks
- ▶ avoiding dependency on car transport in the daily routines

Link urban development and energy supply networks



Source: ÖROK (o.J.): Infoblatt Energieraumplanung.

Energy Spatial Planning Concept Styria

Enacted by the Styrian government

- ▶ standardized data base and methodology
- ▶ empowers municipalities to integrate energy in Local Development Plans

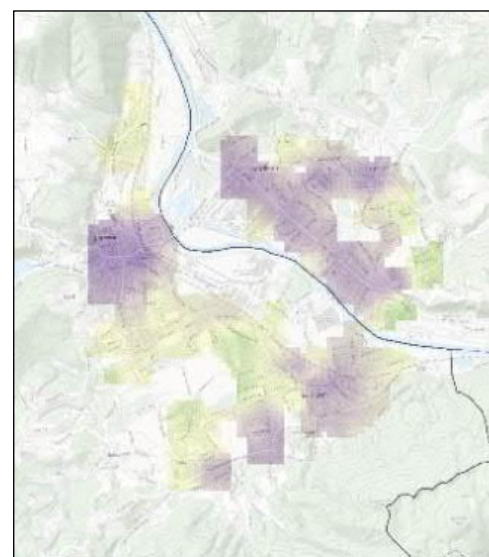
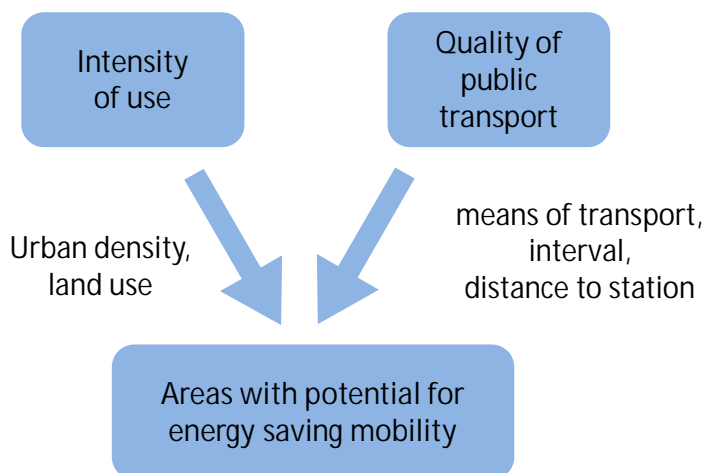
2 main issues

- ▶ areas with potential for energy saving mobility
- ▶ areas with potential for district heating



Source: Abart-Heriszt, L, Stöglehner G. (2019): Das Sachbereichskonzept Energie, Ein Beitrag zum Örtlichen Entwicklungskonzept. Graz.

Mapping areas with potential for energy saving mobility



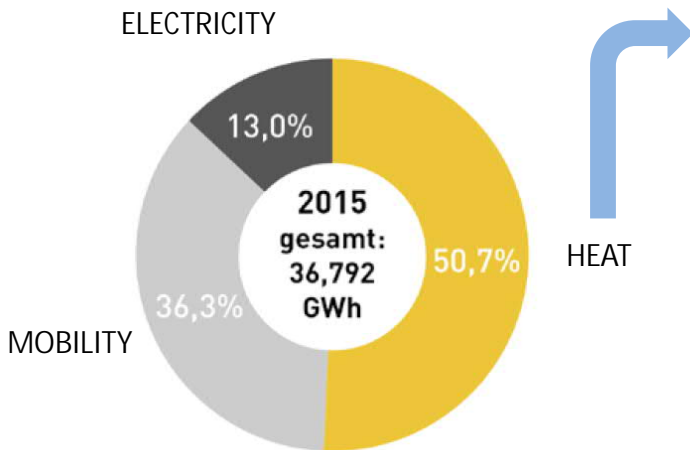
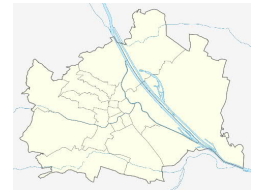
Source: Abart-Heriszt, L, Stöglehner G. (2019): Das Sachbereichskonzept Energie, Ein Beitrag zum Örtlichen Entwicklungskonzept. Graz.





Situation in Vienna

Energy consumption



Heat Plan Vienna (2023)

Source: Magistratsabteilung 20 der Stadt Wien – Energieplanung (2019): Fachkonzept Energieplanung. Wien.

Stadt Wien

wien.gv.at/ressourcen

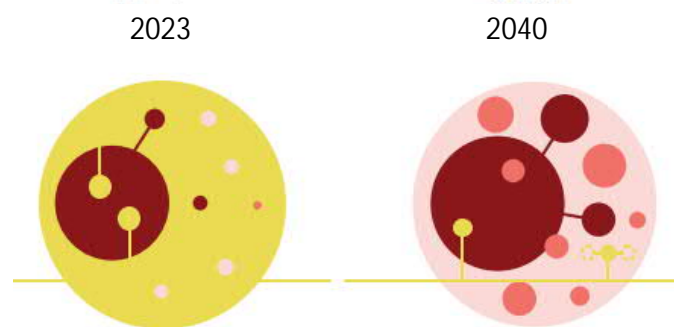


Heat Plan Vienna (2023)

2025: restricting the use of natural gas for heating in new buildings

2040: all buildings in Vienna are heated with renewable energy – no fossil energy für heating in 2040

- ▶ solution for 600,000 gas heater and for 460,000 gas cooker required
- ▶ challenge for existing district heating:
 - Change of energy production
 - Enlargement of net



- Gas/Green gas (2040)
- Central district heating network
- Local district heating network
- Stand-alone building solution (heat pump, biomass, ...)



Source: Magistratsabteilung 20 der Stadt Wien – Energieplanung (2019): Fachkonzept Energieplanung. Wien.

Situation in Vienna

Heat Plan Vienna (2023)

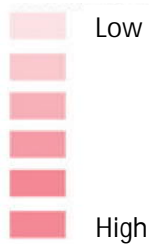
No fossil energy for heating in 2040

- ▶ definition of areas, that can be connected to a district heating system
- ▶ definition of areas, in which the buildings must use renewable energy sources individually

Source: Magistratsabteilung 20 der Stadt Wien – Energieplanung (2023): Raus aus Gas. Wiener Wärme und Kälte 2040. Wien

Central district heating net Vienna

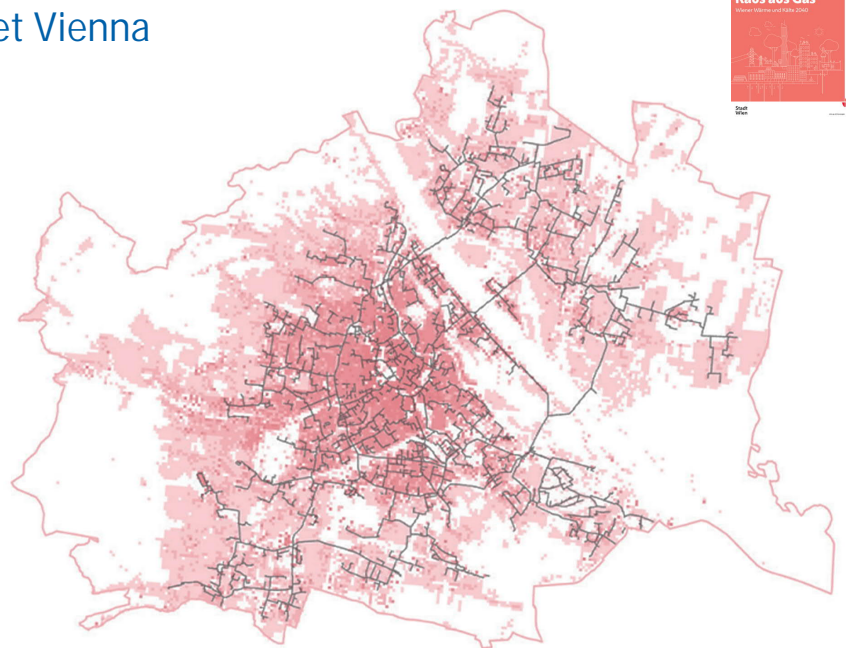
Heat demand



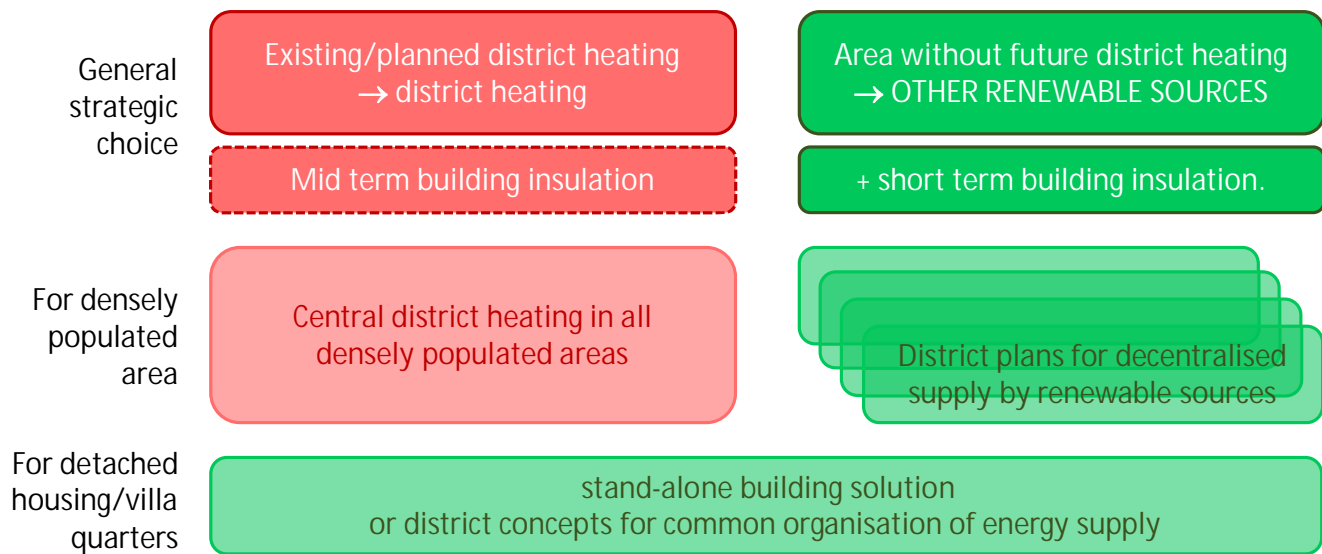
— District heating net



0 0.5 1 2 3 4 5 Kilometer



Source: Magistratsabteilung 20 der Stadt Wien – Energieplanung (2023): Raus aus Gas. Wiener Wärme und Kälte 2040. p. 29. Wien



Types of decarbonisation

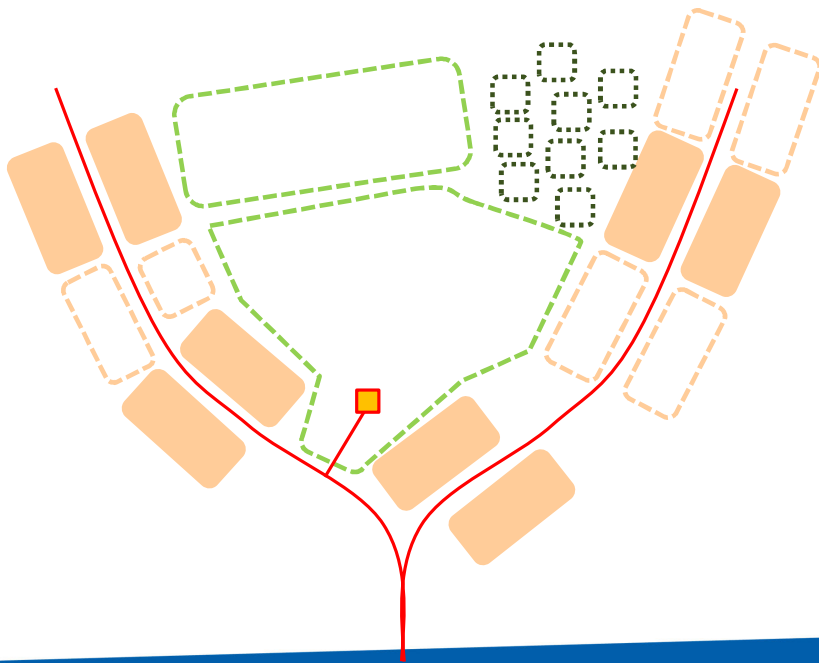
Types of decarbonisation according to the following characteristics:

- ▶ multi-storey residential buildings (multi-family house)
 - detached and semi-detached houses
- ▶ thermically NOT renovated – thermically renovated/insulated
- ▶ heating: gas/oil – centralised – de-centralised

474,000 apartments in thermically NOT renovated multi-family houses with de-centralised gas supply

Source: Magistratsabteilung 20 der Stadt Wien – Energieplanung (2023): Raus aus Gas. Wiener Wärme und Kälte 2040. p. 23. Wien

Different types of heat supply in a district – different types of transformation



- Existing connection to central district heating network
- Planned connection to central district heating network
- Local district heating network To be set up
- Stand-alone building solution for each house (heat pump, biomass, ...)

Energy Spatial Plans: Definition of “Climate Protection Areas”

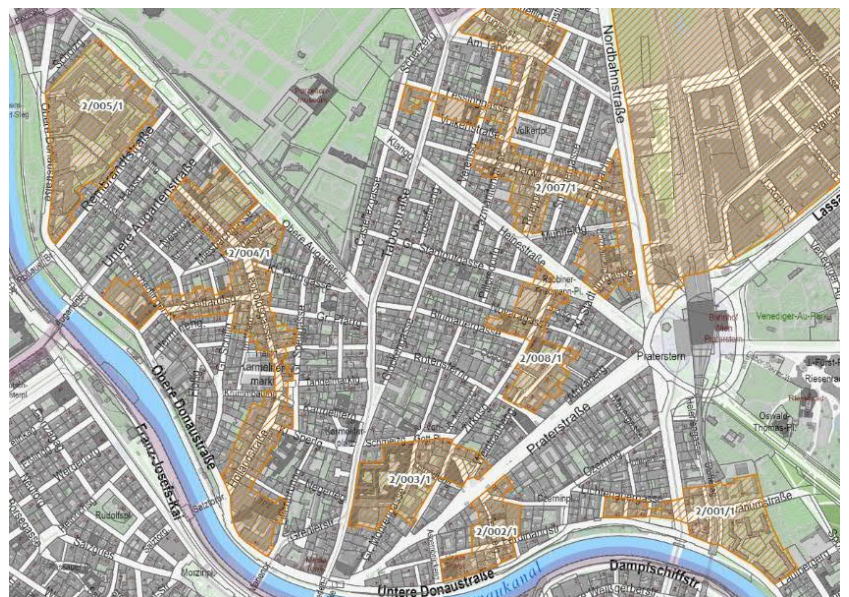
For new developments

Only highly efficient alternative systems for heating are allowed

- ▶ central district heating network
- ▶ heat pump
- ▶ decentralised renewable energy systems (Solar, wood, pellets, ...)
- ▶ power/heat cogeneration

Next step

- ▶ definition energy transition zones



Source: Building Regulation Vienna

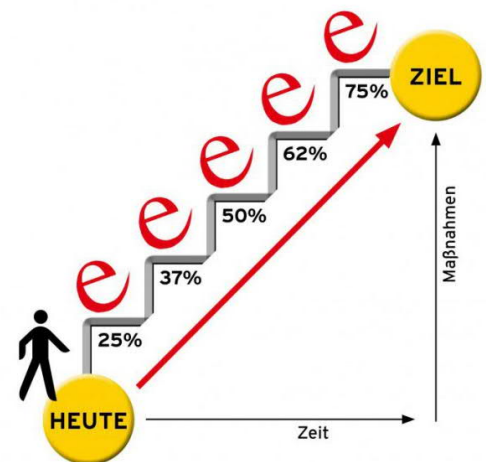
The Real Challenge:

Bring together spatial planning and energy supply and infrastructure planning

- ▶ different stakeholder
- ▶ different planning cultures – act independently
- ▶ public vs. private

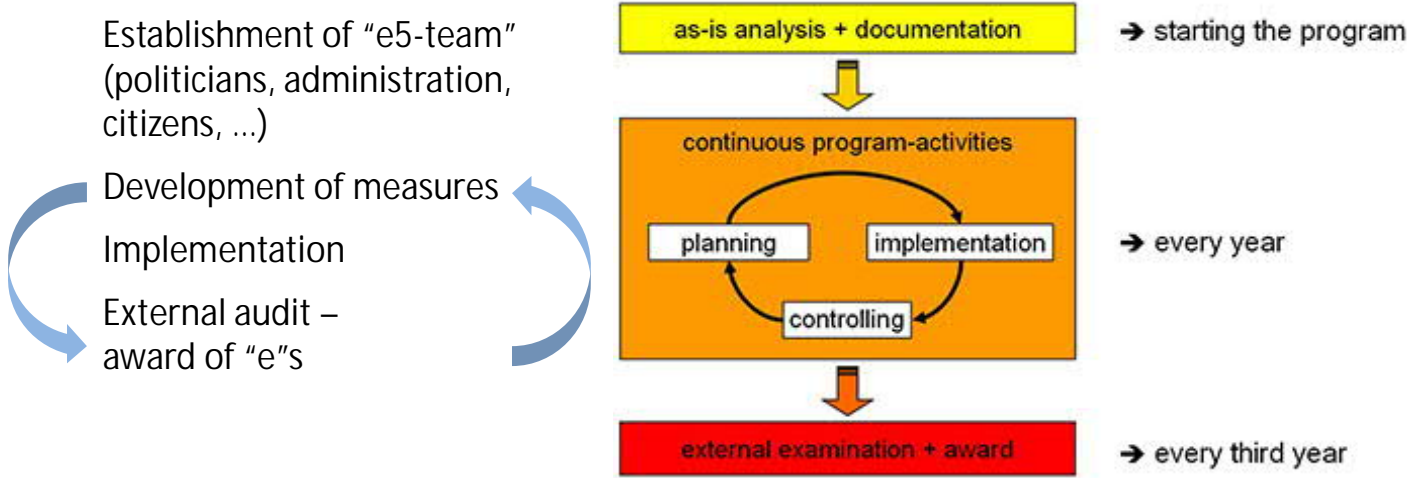
e5 Programme consultancy and certification services

- ▶ standardized audit and certification process combined with consultancy
- ▶ to encourage energy transition and climate protection
- ▶ 1-5 “e” awarded – The higher the implementation level of protection measures, the more “e” awarded – like stars in the restaurant industry
- ▶ field “spatial planning”
- ▶ participatory approach
- ▶ part of the European Energy Award programme



Source: <https://www.umweltgemeinde.at/e5-beitritt>

e5 Programme consultancy and certification services



Source: <https://www.umweltgemeinde.at/e5-beitritt>

Further information

ÖIR GmbH
 Erich Dallhammer
 dallhammer@oir.at | +43 1 533 87 47-51
 A-1010 Vienna, Franz-Josefs-Kai 27

Visit our website www.oir.at

