



Cogeneration as part of the Frankfurt Climate protection strategy



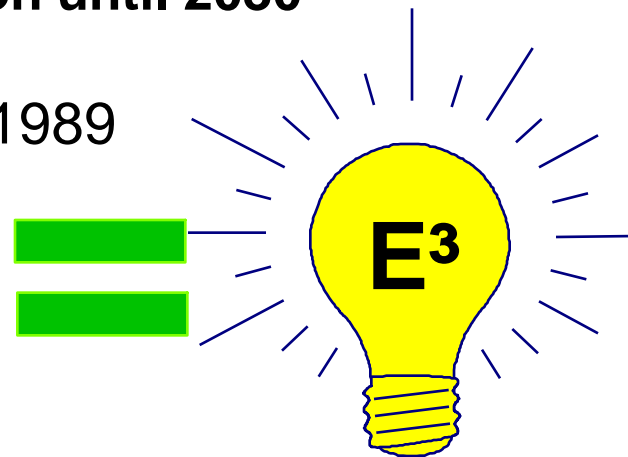
Dr. Werner Neumann
City of Frankfurt am Main
Municipal energy agency - Energierreferat

INTRODUCTION

- City of Frankfurt:
Founding member of Climate Alliance
 - Objective:

 **50 % CO₂-Reduction until 2030**

- *Energierreferat* established in 1989
 - Energy saving
 - Energy efficiency
 - Renewable Energies



The Frankfurt approach

- The city council of Frankfurt decided in 1991 to promote **cogeneration** as one of the most cost efficient CO₂ saving measures
- The municipal energy agency – Energierreferat started a campaign for:
- systematic implementation of small and medium CHP
 - systematic search for potential customers/sites for CHP
 - development of planning tools
 - offering of (free) consulting service
 - after „sales“ customer service – Experience exchange of plant operators
 - establishing favourable conditions (economical/technical)



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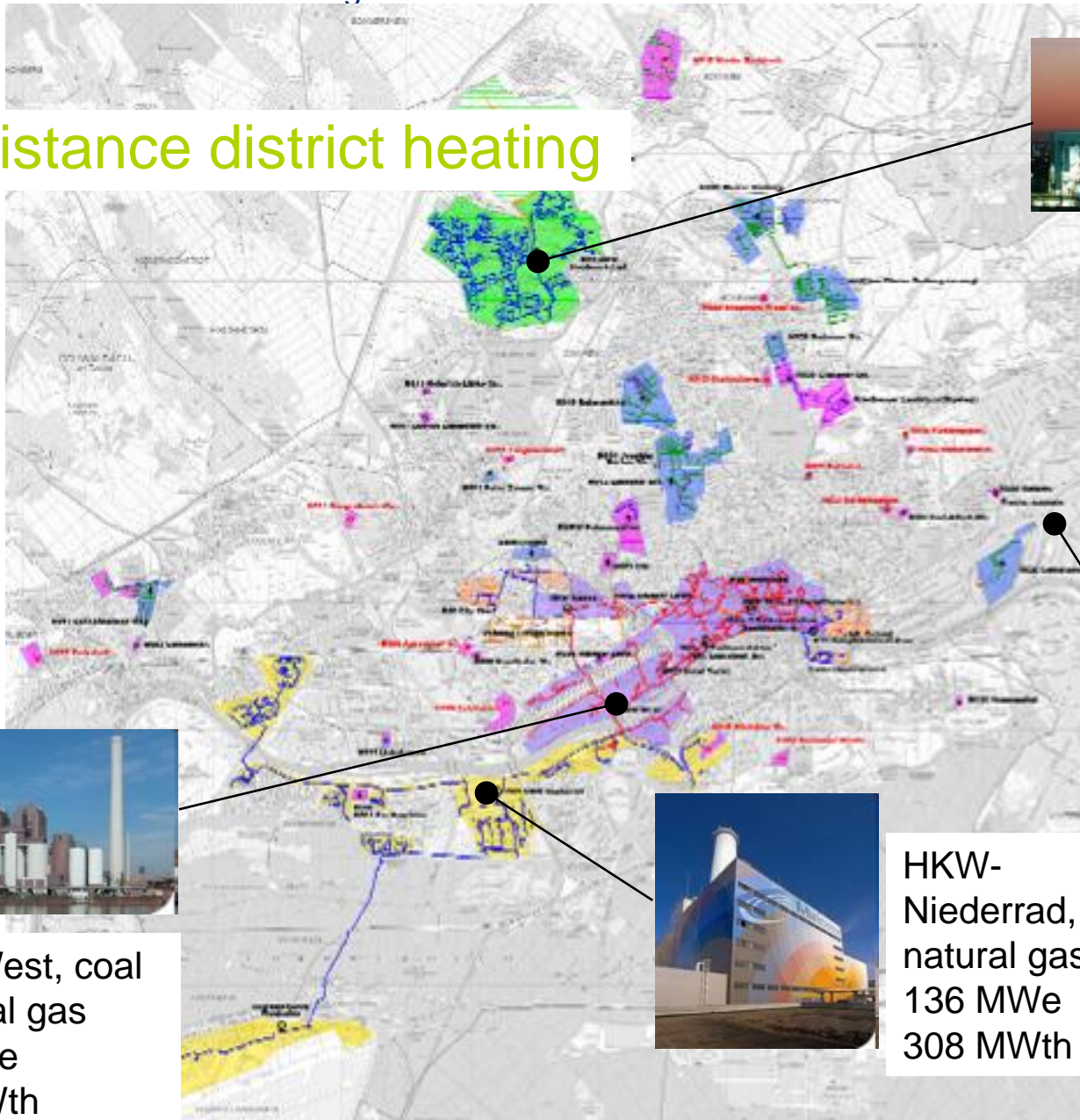
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Take a week to change tomorrow

Long distance district heating

50% of MAINOVA electricity supply comes from CHP!



MHKW –
Nordweststadt,
waste
incineration
72.5 MWe
289 MWth



BKF, biomass
12.4 MWe
44 MWth



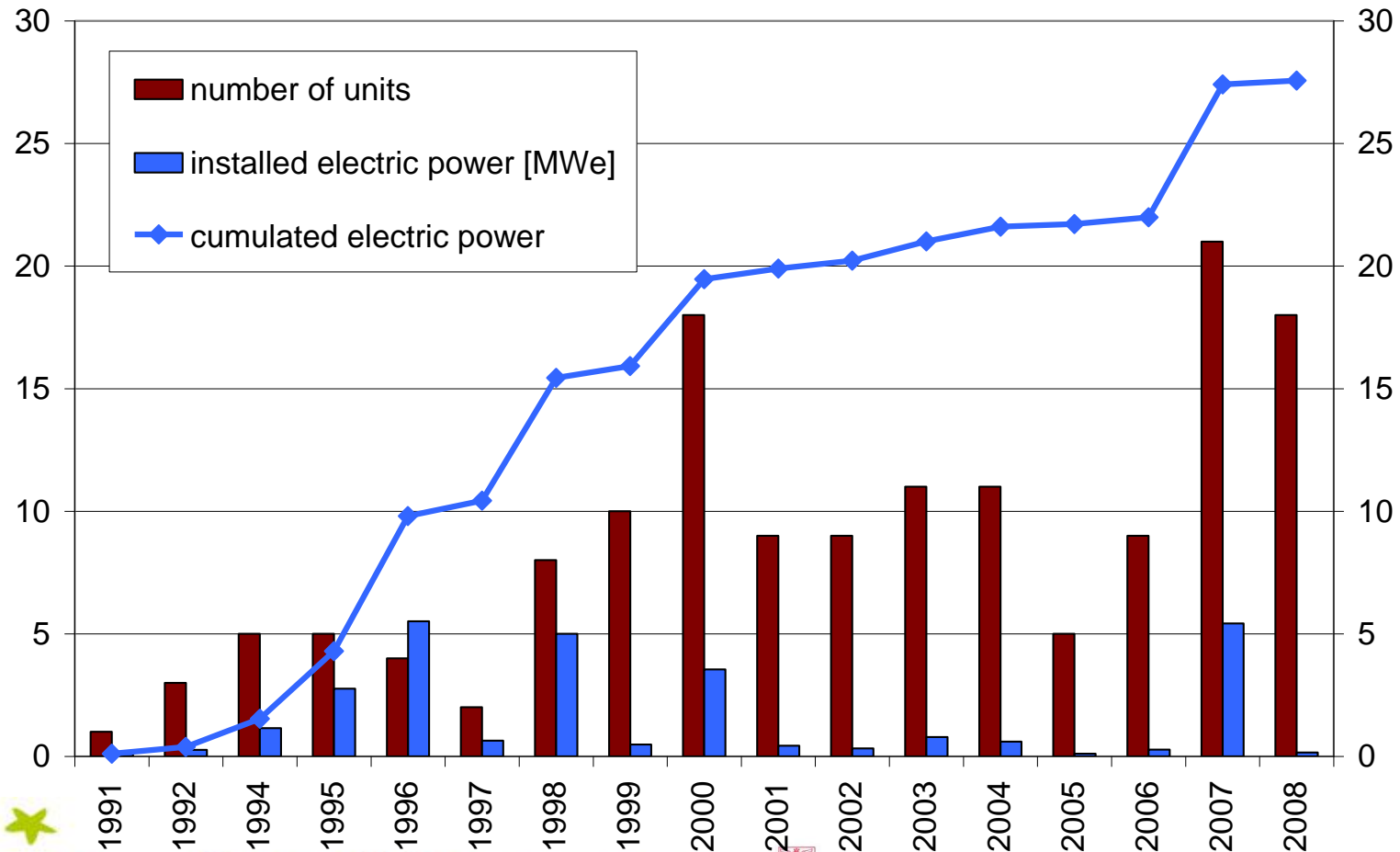
HKW-West, coal
+ natural gas
253MWe
570 MWth



HKW-
Niederrad,
natural gas
136 MWe
308 MWth



...and the results: development of decentralised CHP in Frankfurt



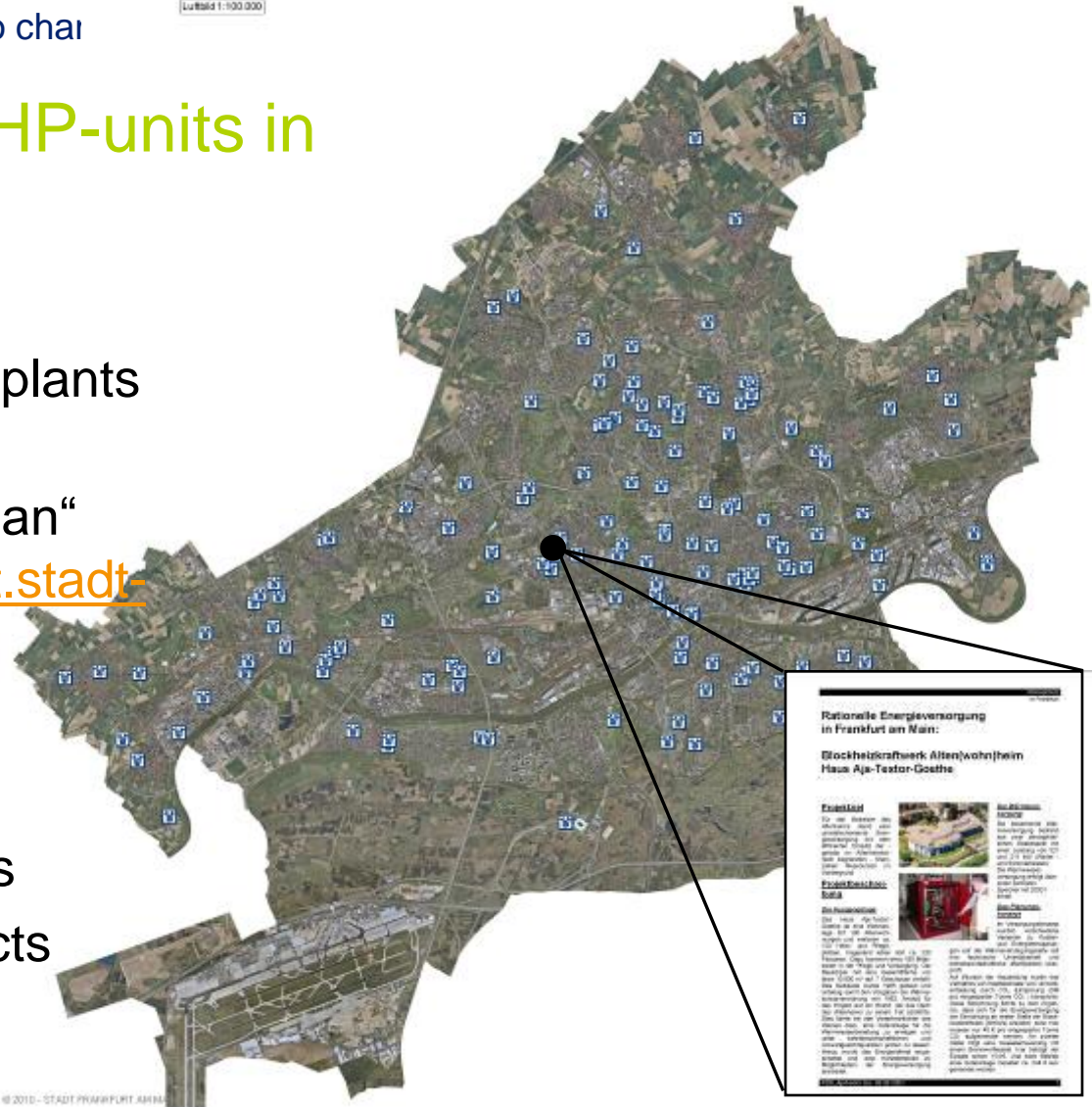
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decentralised CHP-units in Frankfurt

- Virtual visit to CHP-plants in Frankfurt:
- „Klimaschutzstadtplan“ www.energiereferat.stadt-frankfurt.de
- Data-base with detailed description of 150 CHP projects out of > 1000 projects



summary

- **achievement:**
 - 25 MW generating capacity in 150 decentralized units,
CO₂-reduction 80,000 tons per annum - 1% of total emissions
- **potential:**
 - total of at least 50 MW of co-generation capacity
- **obstacles:**
 - low electricity and high natural gas prizes
 - complicate funding and remunerations tariffs
- **Requirements:**
 - improvement of national (or/and European) regulations to improve economic conditions



Take a week to change tomorrow



The EURO is made by CHP –
one of three Jenbacher units at the
European Central Bank
Frankfurt am Main

Thank you for your attention

www.energiereferat.stadt-frankfurt.de



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Take a week to change tomorrow

Urban planning and CHP

- **Rebstock (2000)**

- 405.000 m²
- District heating with CHP
- **CO2 Reduction: 1.200 tons /Year**

- **Europaviertel ()**

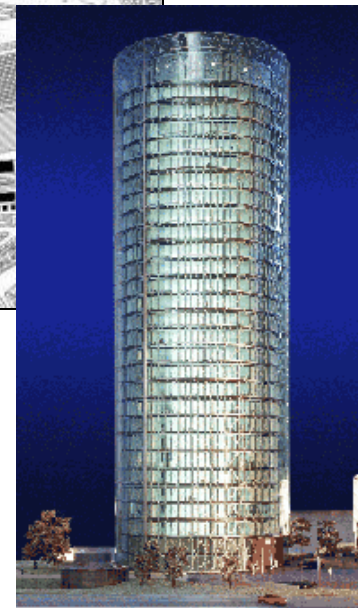
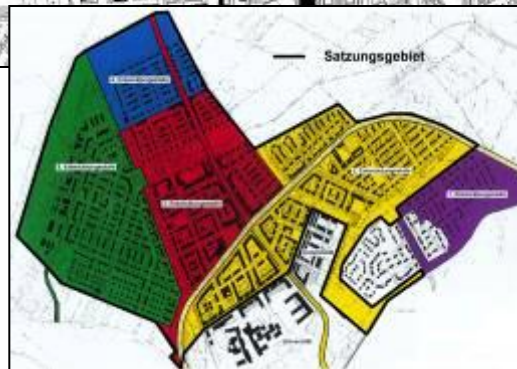
- 1.225.000 m²
- Ca. 4.800 WE
- District heating with CHP
- **CO2 Reduction ca. 10.000 tons /Year**

- **Am Riedberg (2001...)**

- 830.000m²
- 6000 Apartments
- District heating with CHP
- **CO2 Reduction: 9.000 - 13.000 tons /Year**

- **Westhafen (2001)**

- Ca. 650 Apartments
- District heating with CHP
- **CO2 Reduction: ca. 20% - 650 tons /Year**



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