

# [Green City Freiburg]



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Management  
Marketing

**FWTM**  
FREIBURG

# Freiburg, in the heart of Europe



# GREEN CITY FREIBURG



Wind power plant

Soccer stadium

Education and training

Eco farming

Bio energy

Waste utilisation

Communication

Green economy

Research and development

Water Recycling

Solar and green industry

Political and citizen commitment

Hydro energy

Retrofitting

Green tourism

Energy efficient buildings

Energy saving and climate protection

Public transport

## Green and solar roofs

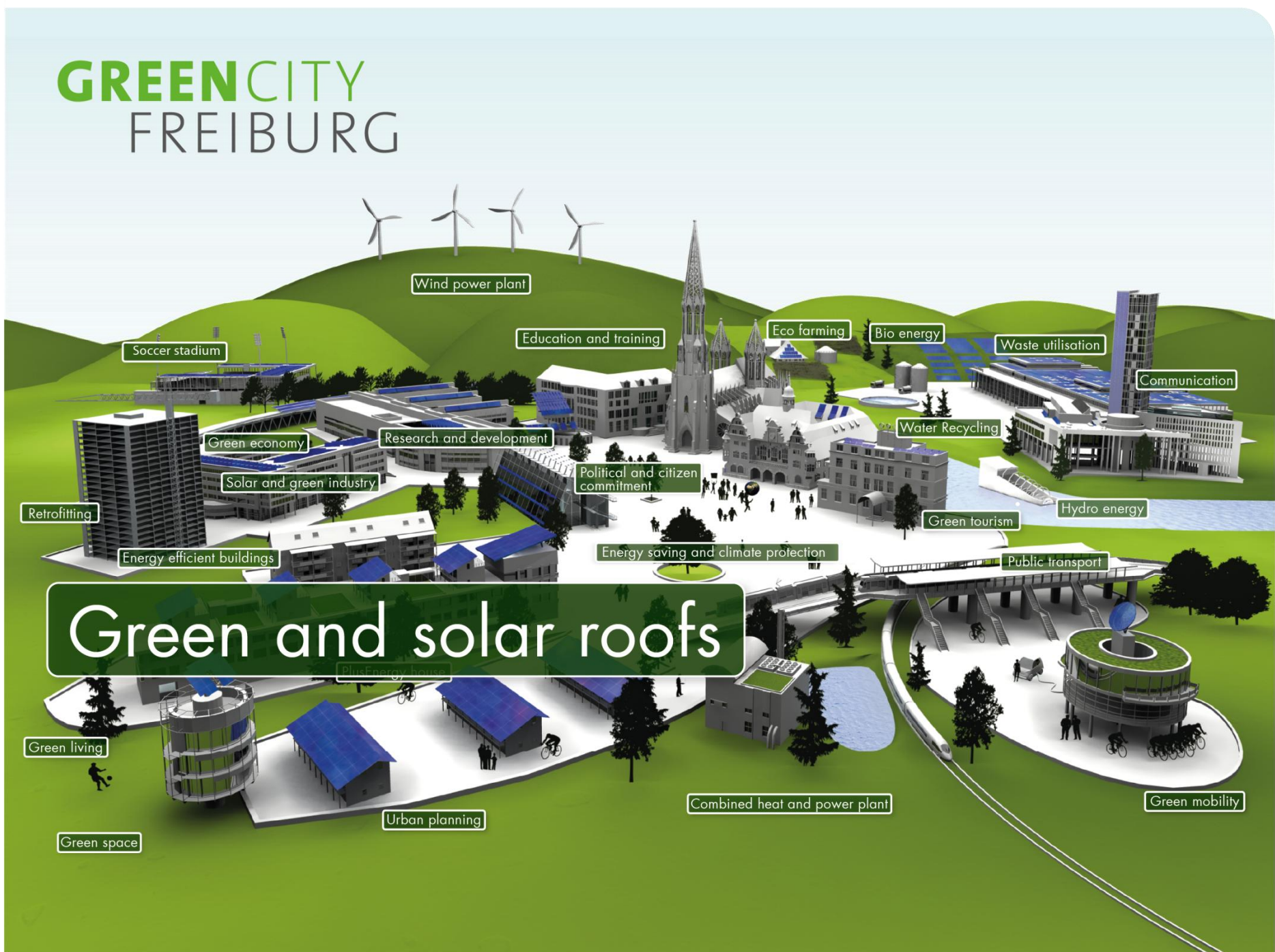
Green living

Green space

Urban planning

Combined heat and power plant

Green mobility



# Energy saving and climate protection

**Energy consumption must be reduced by 50%  
to achieve a 100% renewable energy region**

## **Targets of the City of Freiburg:**

- **Reducing CO<sub>2</sub> emissions by 40% until 2030**
- **Carbon-neutral city until 2050**
- **Reducing energy consumption**
- **Boosting renewable energy supply**
- **Increasing energy efficiency**
- **Commitment needed from all citizens to reduce CO<sub>2</sub> emissions**



# Green and solar roofs and façades

## Commercial buildings

Soccer stadium

Sun Ship in Vauban district

Ganter private brewery

Solar office tower at the main train station

Exhibition Centre

Hotel Victoria



# Green and solar roofs and façades

## Future projects

### SunPortal for Freiburg

Solar power plant following bionic principles

### Theater Freiburg

Golden roof-integrated PV is planned





# Energy Retrofitting

Example: Bugginger Straße 50 in Freiburg

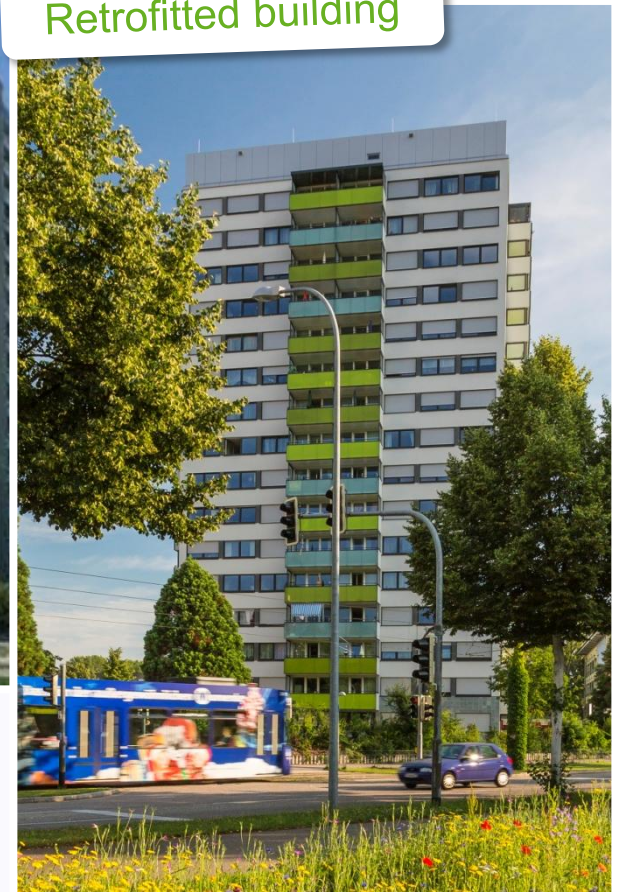
## Bugginger Straße 50

- **First high-rise to meet passive house standard nationwide**
- **78% energy saving**
- **More than 57 metric tons fewer CO<sub>2</sub>-emissions per year**

Old building



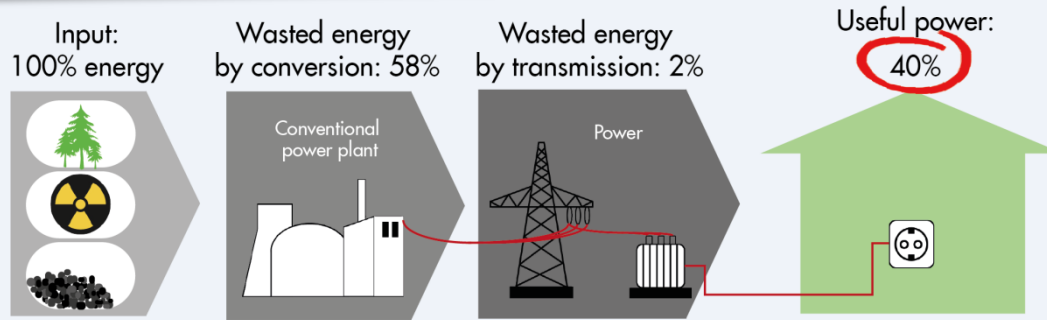
Retrofitted building



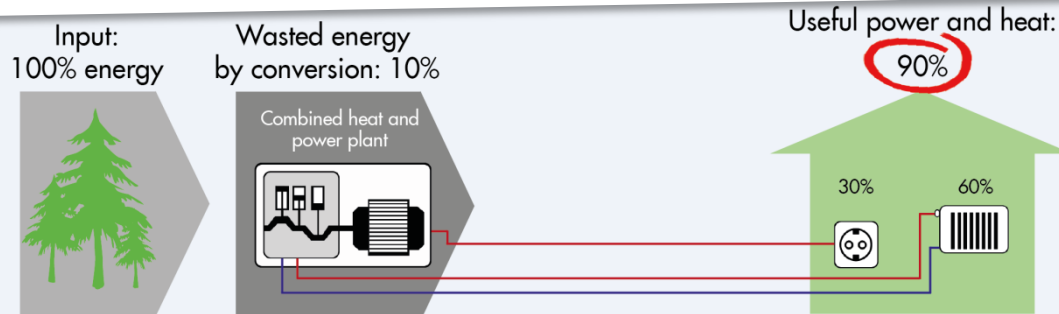
# Combined heat and power plant

## Two ways of power generation:

### 1. Conventional power plant



### 2. Decentralized combined heat and power plant



Combined heat and power plant:  
heat and power for the entire district of Vauban



# Wind power plant

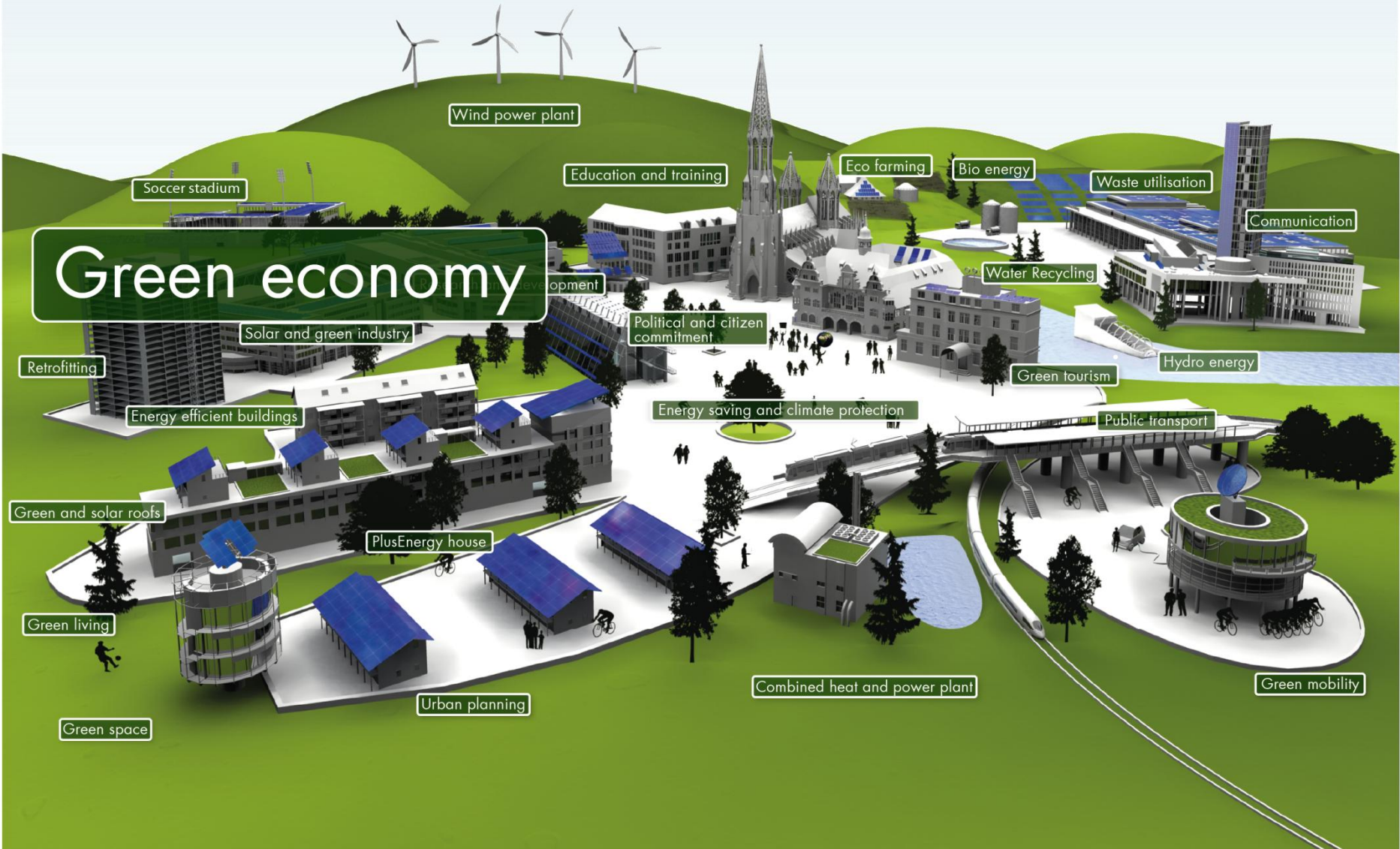
**4 windmills near the city centre**

- **Rotor diameter of 70 metres**
- **Total height of 133 metres**

Wind energy in Freiburg:  
**12 million kW meets 5,400 households**



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## Green economy

Development

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Green and solar roofs

PlusEnergy house

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Urban planning



# Green economy

## Solar-Fabrik AG



## Producing solar modules



## Wehrle Umwelt GmbH





# Research and development

## Fraunhofer Institute for Solar Energy Systems ISE



**Over 1100 employees at Europe`s largest solar energy research institute**

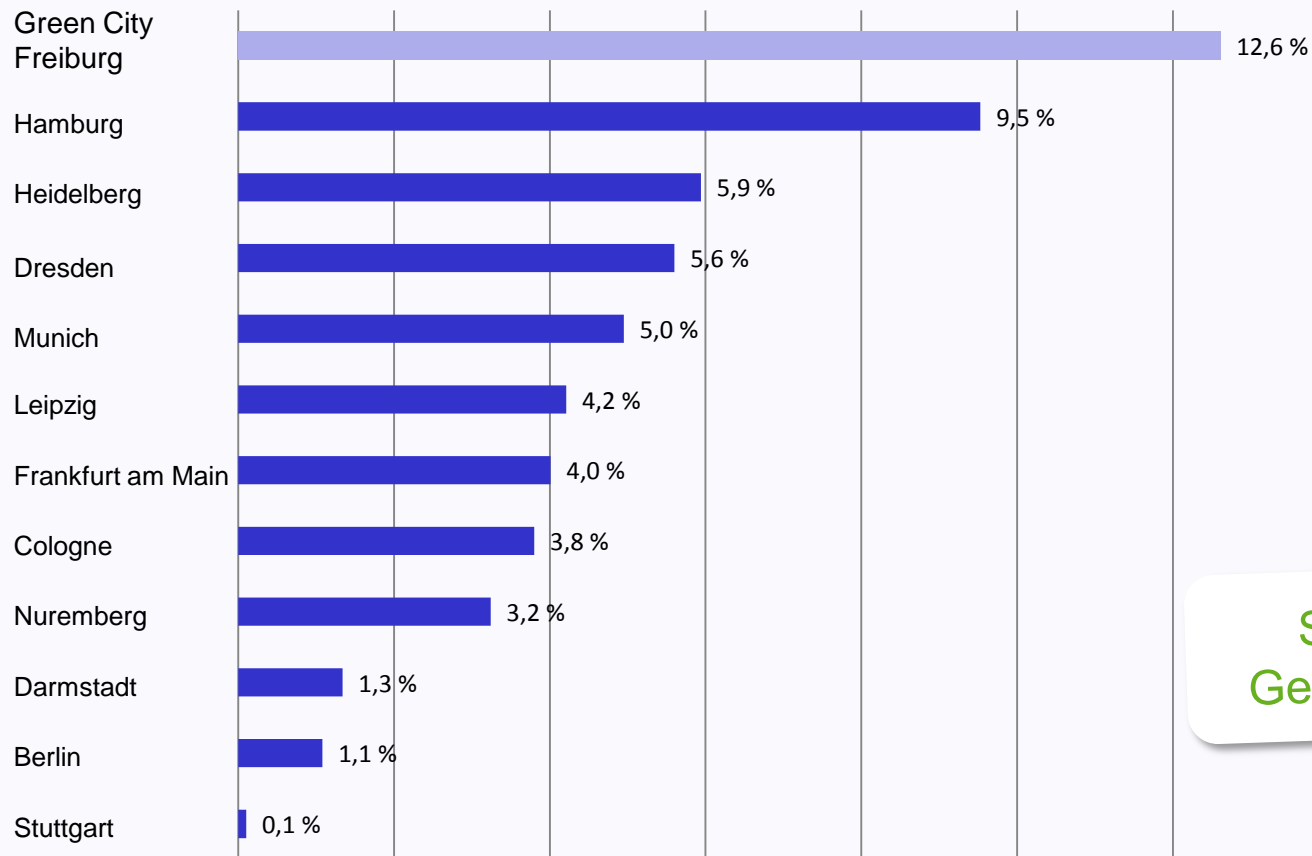


# Green City Cluster: More than 140 companies



# Green economy & Economic outcome

## Growth rate of employment



Selected cities in  
Germany 2000 - 2011



## **Ecology** creates **Economy**

- **High quality of life attracts young and creative professionals**
- **One of the highest growth of population in Germany**
- **High growth rate of employment**
- **High growth rate of tourist overnight stays**
- **One of the best places to live and to work**

Cluster | **GREENCITY**  
FREIBURG

**Cluster Green City Freiburg**  
**c/o Freiburg Wirtschaft Touristik und Messe GmbH & Co. KG**

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**Project initiator:**



**Sponsored by:**



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Europäischer Fonds für  
regionale Entwicklung



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