Blue Sky.
Green City.

InnovationCity Ruhr
Modellstadt Bottrop

Geographical position of Bottrop in Europe and in Germany

Impressions of Bottrop

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Modellstadt Bottrop

Bottrop Town Hall

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InnovationCity Ruhr – a project of the Initiativkreis Ruhr and the state of North Rhine-Westphalia

Economy

A.T. Kearney
BASF
Bautreff Pawella
Bayer Material Science
Betrem
Bosch
BP
Brabus
Brötje
Buderus
con energy
Deutsche Annington
Deutsche Rockwool
ELE
E.ON
E.ON Ruhrgas
Emschergenossenschaft
GBB mbH
Lippeverband
Evonik
Ferrostaal
Gelsenwasser
Hellweg
Hochtief
IBM
Ista International
Junkers
LaTherm
NRW.Bank
Opel
PWC
RAG
Rhein Ruhr Collin
RWE
Saint Gobain Weber
Siemens
Sparkasse Bottrop
Steag Fernwärme
Stiebel Eltron
Vivawest
ThyssenKrupp
TRIMET
TÜV Nord
TÜV Rheinland
Vaillant
Viessmann
Volksbank Bottrop
...

Science

Wuppertal Institut für Klima, Umwelt und Energie

Fraunhofer-Institute

Ruhr-Universität Bochum

Universität Duisburg-Essen

Technische Universität Dortmund

Hochschule Bochum

Hochschule Hamm-Lippstadt

Kulturwissenschaftliches Institut Essen

Institut für Kraftfahrzeuge Aachen

Folkwang Universität der Künste

Hochschule Ruhr West

Gas-Wärme Institut Essen

...

Politics

Interministerielle Arbeitsgruppen (IMAG):

Federführung Staatskanzlei NRW

Ministerium für Innovation, Wissenschaft und Forschung (MIWF)

Ministerium für Wirtschaft, Energie, Bauen, Wohnen und Verkehr (MWEBWV)

Ministerium für Klimaschutz, Umwelt, Landwirtschaft, Natur- und Verbraucherschutz (MKULNV)

Öffentliche Institutionen:
EffizienzAgentur NRW
EnergieAgentur NRW

Wirtschaftsförderung Metropoleruhr

...

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Purpose of the competition “InnovationCity Ruhr“

- Companies in the Initiativkreis Ruhr already offer numerous innovative products and services as part of their portfolios
- Many of these companies work in the fields on energy efficiency, energy generation and smart energy
- The purpose of the project is to concentrate and apply all these products and services in one location
- In this way, their operation and efficiency can be demonstrated in practice
- This will, primarily, enhance the market access of these products and services

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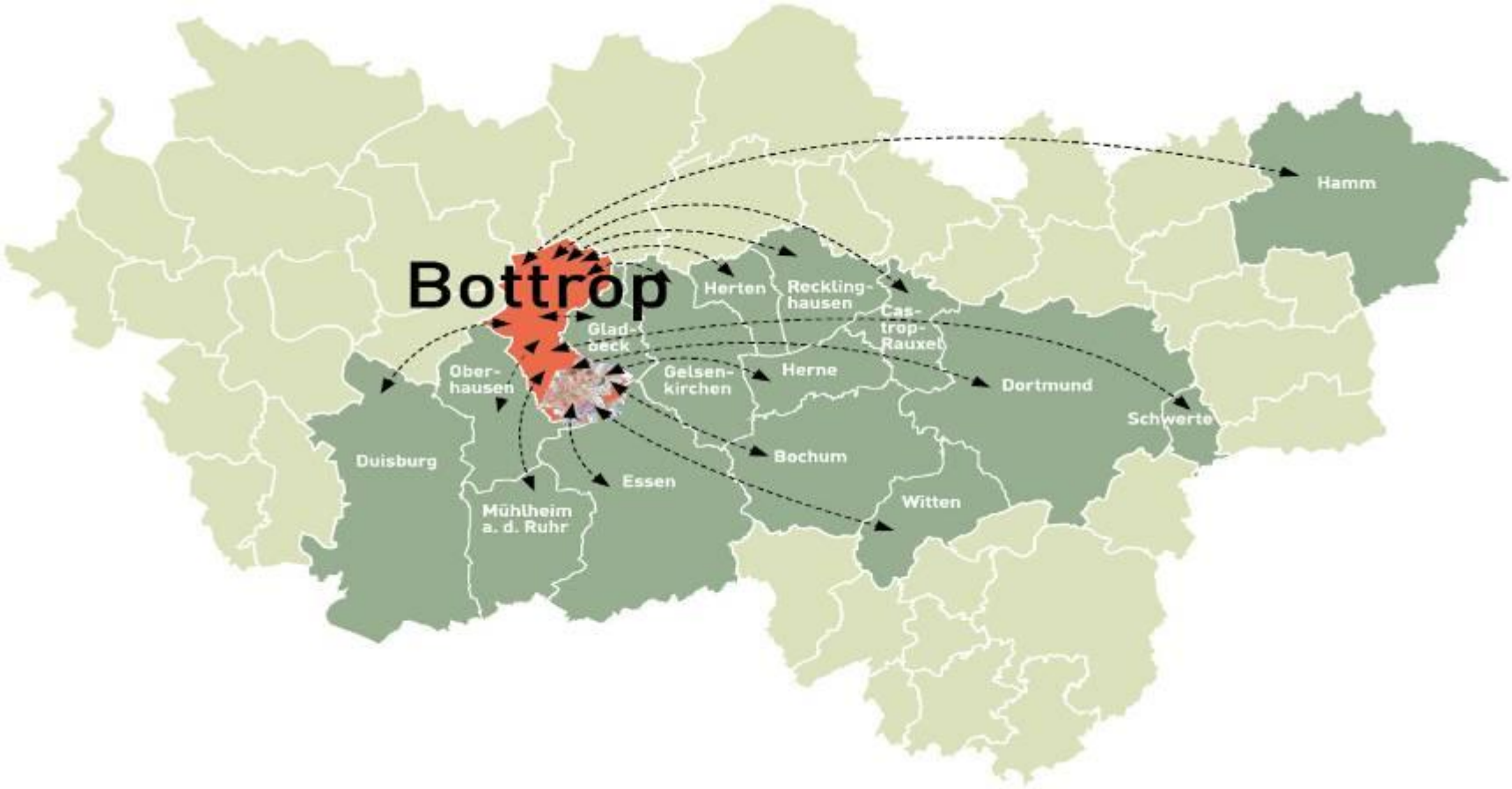

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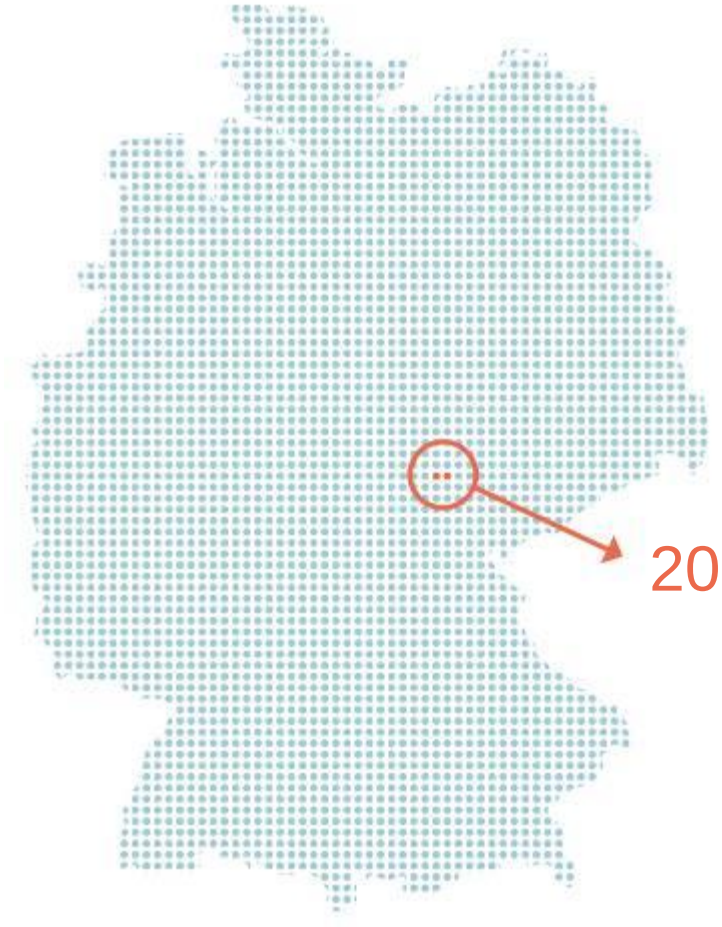
Annual volume of new residential buildings in relation to existing buildings

3400 Mio. qm²

Existing buildings



20,3 Mio. qm²

New Buildings

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$C0_2$-savings of 50% in 10 years

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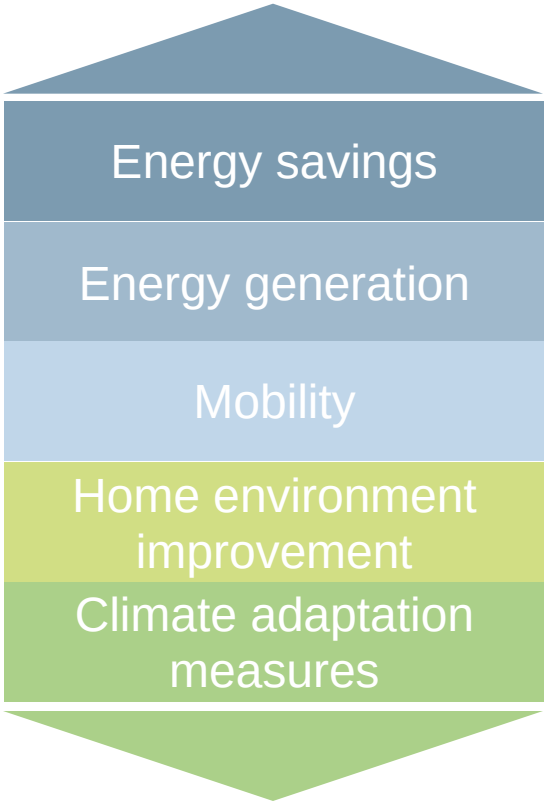
Measurable: CO2-Reduction



Noticeable: Quality of Life

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More than 50 agreements with businesses and associations

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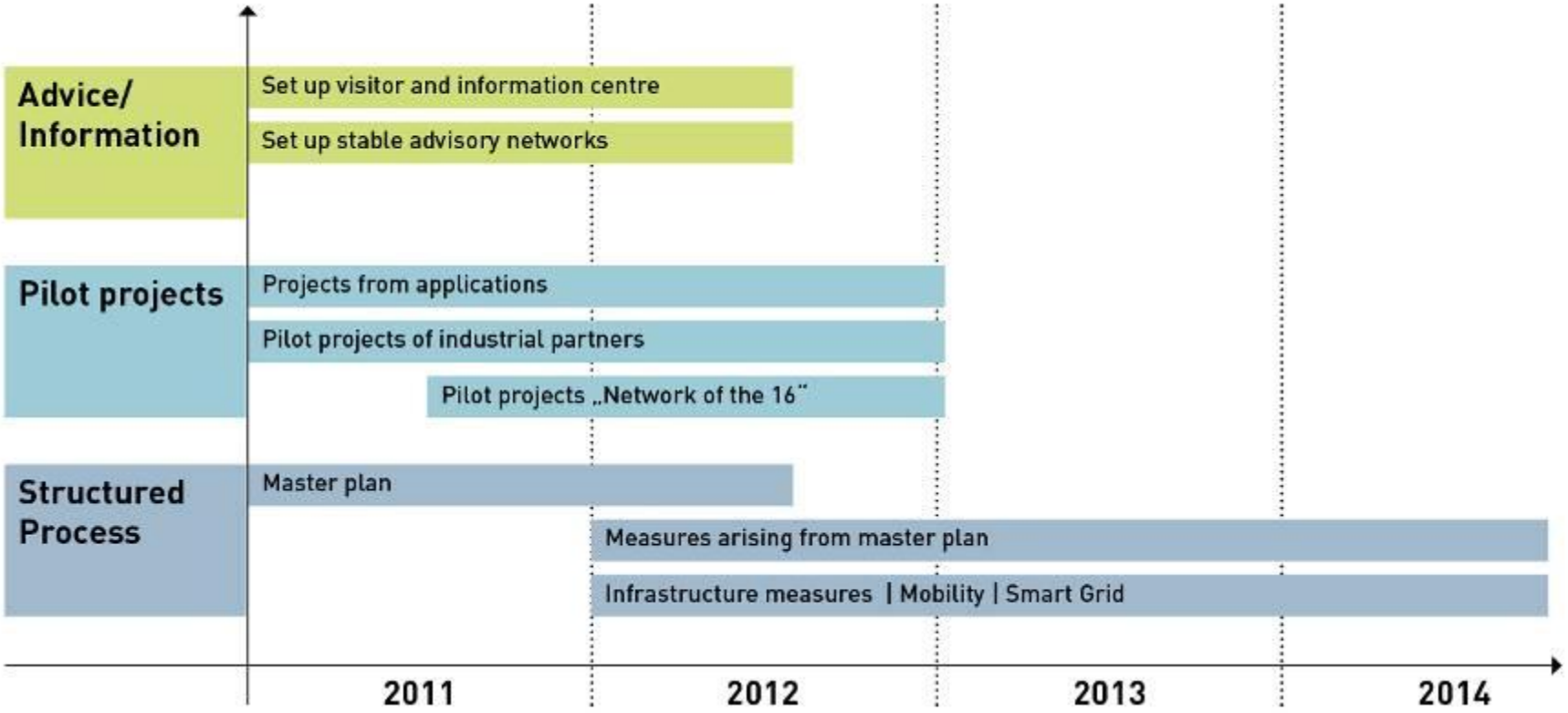
InnovationCity Bottrop – Three important first steps



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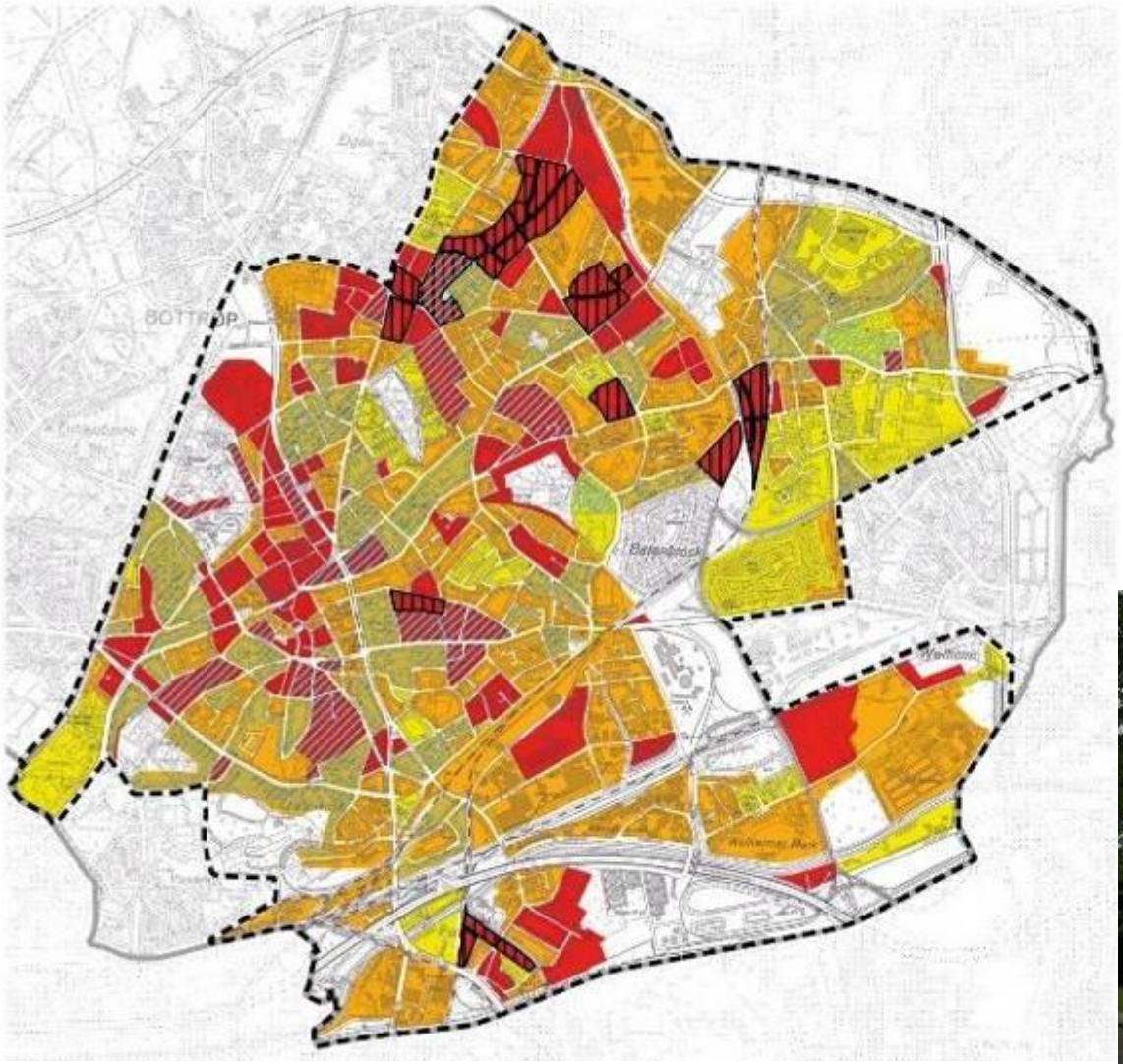

Levels of energy consumption

Example: Detached House of 1965, 140 m² Living space

Retrofitting

- Insulation of the building shell, the roof and the basement ceiling
- Heat insulated windows with double glazing
- Heat pump using geothermal energy
- Energy recovery ventilation

Investment: 78.000 €

Financing and Subsidies:

- Contribution Heat Pump: 2.000 €
- KfW-Investment Subsidy to 12,5 %: 9.500 €
- Total Contribution: 11.500 € and
- KfW-Credit-Financing at 1 % Interest

Energy Costs Heat and Hot Water:

- **Costs:**

  Interest + Amortization = ***2.660 € per year****

  * 1% Interests, 3% Amortization (financing 100%)

- **Reduction of almost 75% :**

  from 325 € to *85 € per month*

- **Reduction 2012:** *240 € per month*

  = ***2.880 € per year***

- **Savings 1. year** = ***220 € per year***

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- Centralized electronic regulation and control system for heat consumption of all urban buildings by 2015
- In 11 years, 30,366 MW h of heat energy will be saved
- This is equivalent to a CO^2 reduction of about 5,162 tons
- Cost reduction of EUR 2.15 million

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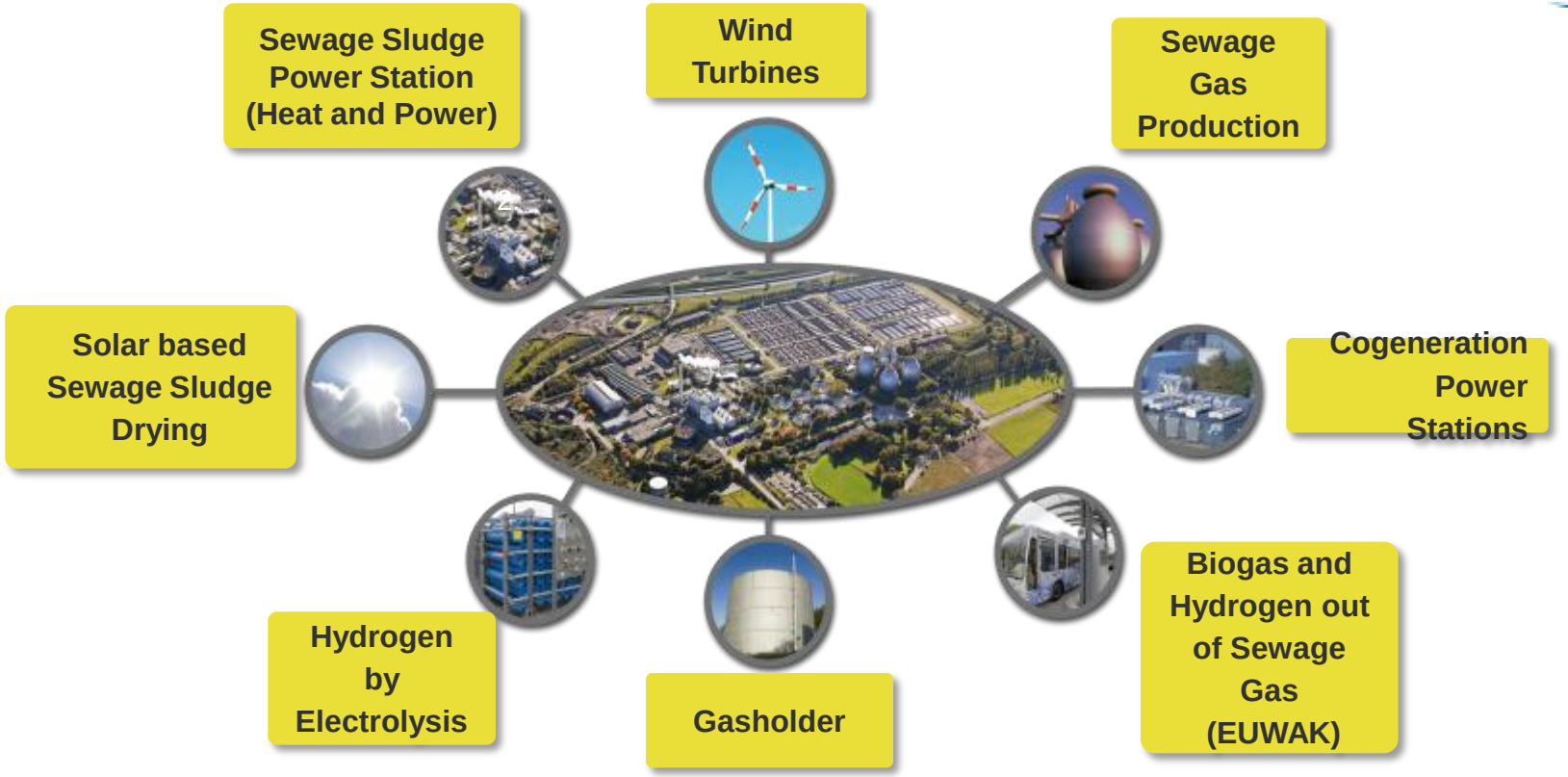
Smart Area

EMSCHER GENOSSENSCHAFT



Energy Production out of Regenerative Resources : 60 Mio. kWh/Year
= Energy Demand of 30,000 People

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Developments

- Sustainable land management
- Sustainable water management
- Sustainable waste management
- Energy concept
- Attractive urban building structures, and
- Use of sustainable energy transport.

- Reducing costs and improving market opportunities for companies

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LaTherm: “Warmth on wheels“

- The use of waste heat of the coking plant “Prosper“
- Heating system of the primary school in the suburb in Bottrop-Ebel since October 2010

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Measurable investment in energy efficiency, renewable energy etc. in Bottrop in 2010 and 2011

Public investments (City of Bottrop): **EUR 9.752 million**

- Energy renovations of public buildings including heating systems and windows, photovoltaic plants

Joint investments (public/private): **EUR 5.601 million**

- Rainwater infiltration plants, energy renovations of private buildings, solar installations on public buildings operated by an association of private investors

Private investments: **EUR 30.780 million**

- Private photovoltaic installations, expansion of the district heating network, energy renovations at the “Knappschaftskrankenhaus”, vertical wind turbines, projects for the use of renewable energy sources at the waste water treatment plant

Sum of measurable investments: **EUR 46.133 million**

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1. People

➔Advice and inform

2. Networks

➔Set up and coordinate

3. Solutions

➔Develop across systems

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Come to Bottrop – You won`t want to leave

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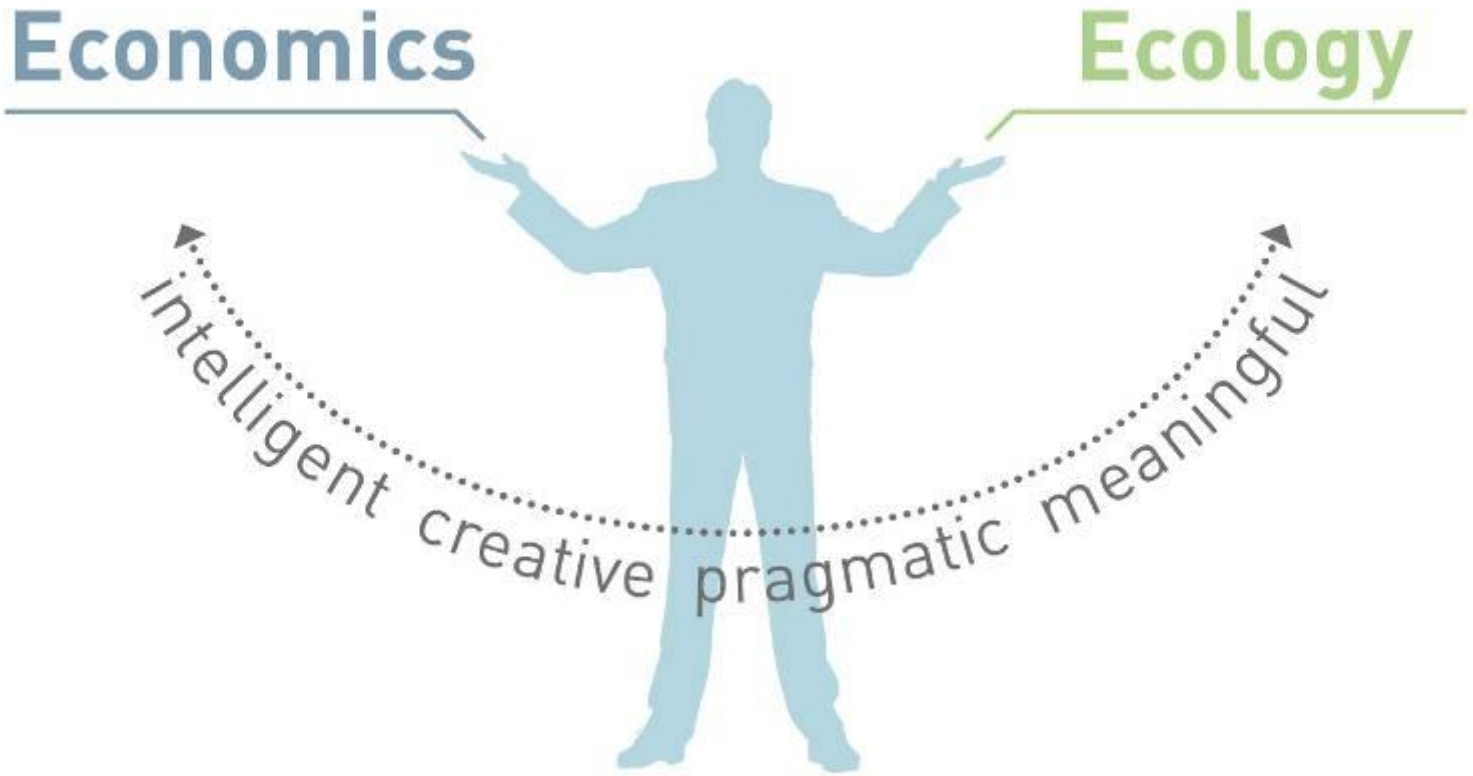
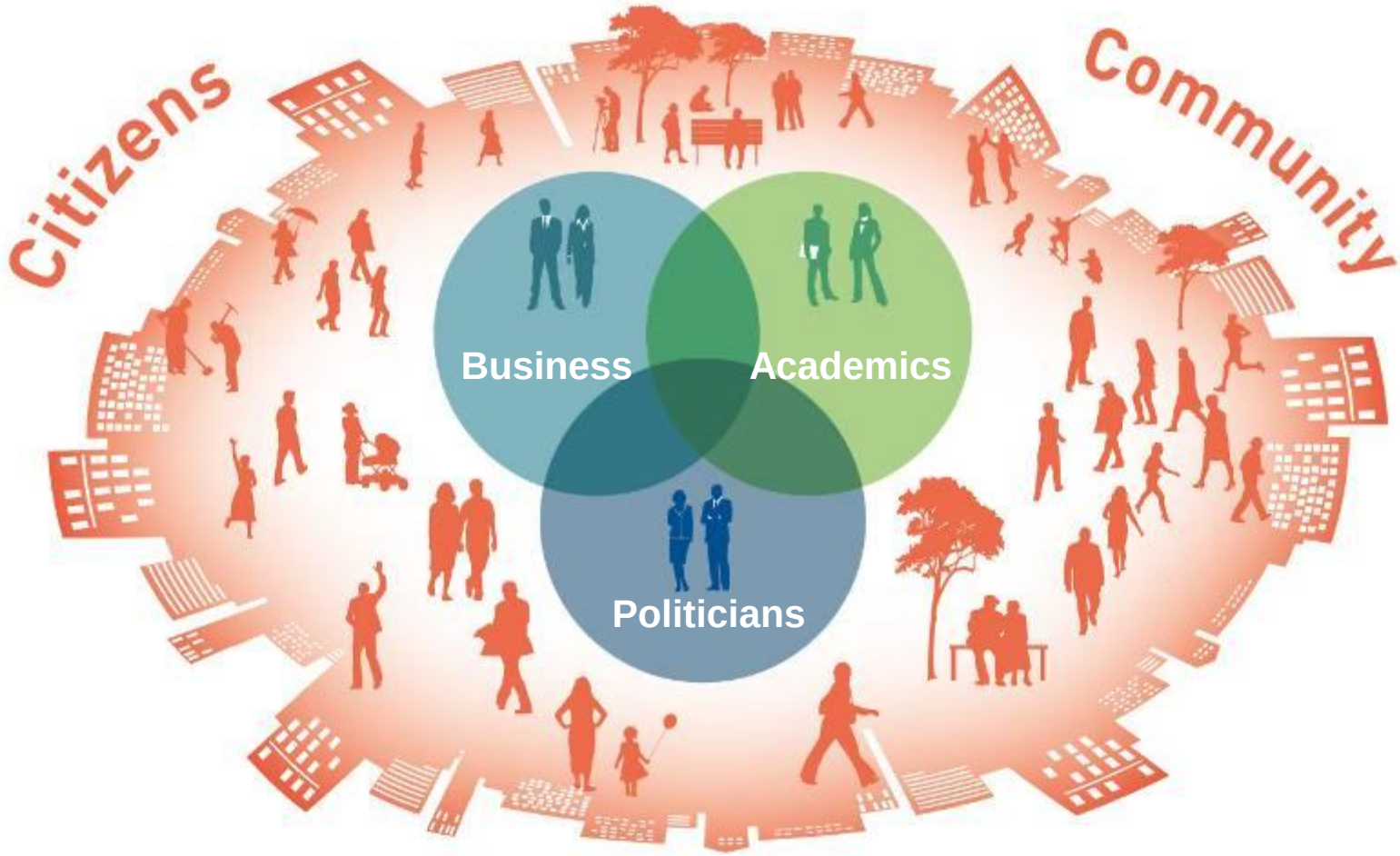

Economics
Ecology
intelligent creative pragmatic meaningful



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20,000 Signatures by citizens

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- **The climate**
- **The people**
- **The town**
- **The craft, the trade and the local service industry**
- **Partners from the trade and industry and the science sector**

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Zentrum für Information und Beratung – ZIB (Center for information and consultation)

- **Information** about the project:
  Content, background, goals, approach, participants, etc.
- **Consultation** on questions of energy efficiency and building renovation as well as financing
- **Marketplace Climate Protection:**
  Companies present their concepts, projects, products and other approaches with regard to climate protection
- **Events/Training** for citizens, professionals (**partner network** and others), workshops, meetings, other
- Project team headquarters and **offices** in the center of the pilot area

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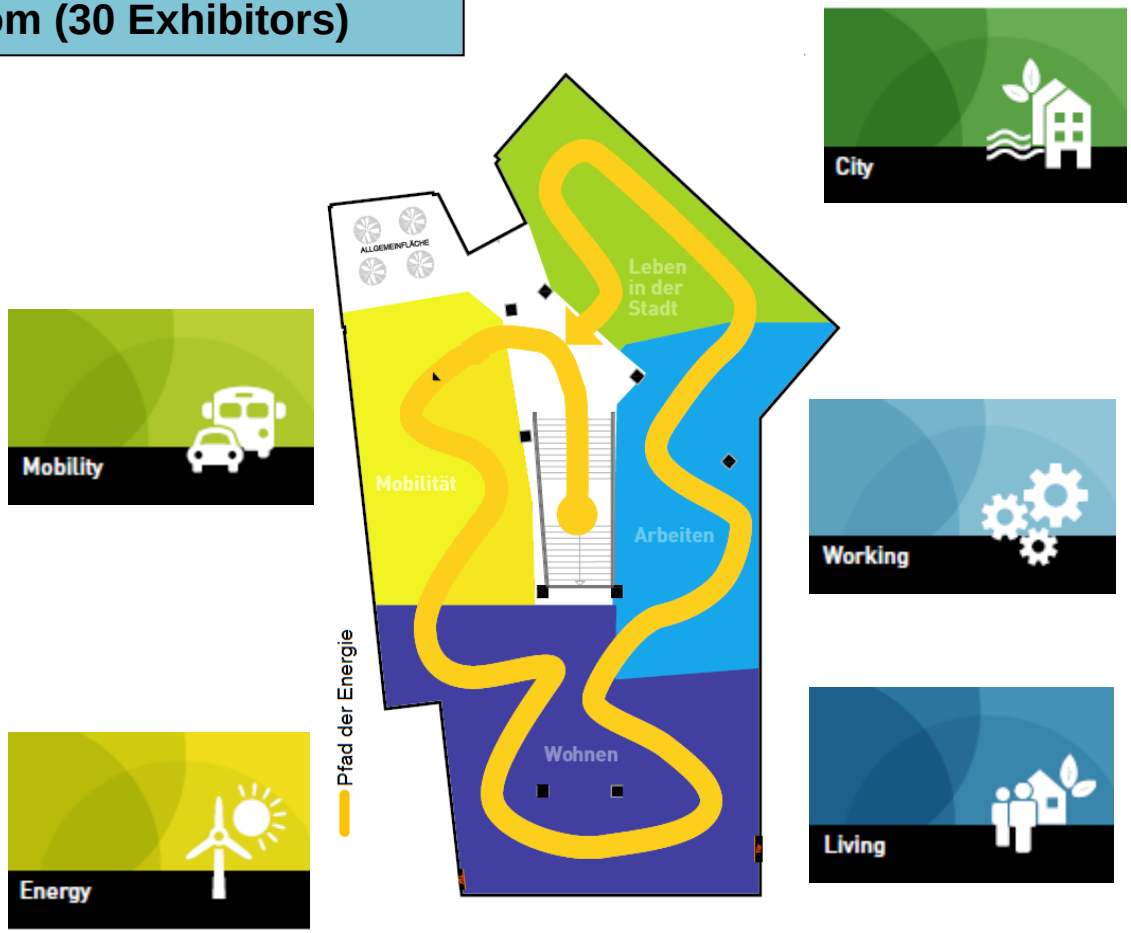
Show- and Function Room (30 Exhibitors)



Innovation at your Fingertips

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- A cross-industry alliance of service providers for energy efficient building renovations

- An open network for energy consultants, architects, planners, artisans etc.

- Entry qualification is required

- Benefits for partners:
  – Regular qualification
  – Publicity using the InnovationCity logo
  – Recommendations through the ZIB

- Benefits for citizens:
  – Quality assurance
  – Removal of barriers

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- Processing of steel, stainless steel and aluminum, welding company

- Warm water production and heating entirely with wood pellets
- Investment amount: EUR 70,000
- Annual savings: EUR 6,500

- Electricity entirely through photovoltaic cells (total capacity: 69.87 kWp)
- 50% excess that is put back into the grid reimbursed
- Investment amount: EUR 225,000
- Annual savings: EUR 19,000

- Plans: Increased efficiency, electric vehicles, solar heating

- http://www.technoboxx.de

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- Linking with other means of transport: bicycle, pedelec, bus, train, carsharing

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Installation of 100 micro CHP-systems

- Scientific field trials
- Installation of various plant types
- Scientific support for optimization
- State funding application has been prepared

Construction of vertical windturbines

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Procedure

- Written information to owners
- On-site appointment (basic energy inventory)
- Appointment for a free initial consultation at the consultation center
- Explaining the wider scope of the energy consultation and the statistical collection of data
- Citizens who are ready to renovate are put in touch with the energy consultant and relevant artisans

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Phasing out subsidized coal production in Germany

- In Germany, coal is mined at a depth of more than 1,000m and is therefore not competitive
- The Deutsche Bundestag (German Federal Parliament) has decided to stop subsidizing coal production in Germany as of 2018
- Currently, there are five mines in Germany that still mine coal, and two of these will close in 2012
- The Prosper-Haniel mine in Bottrop will close in 2018, by which time it will be the last coal mine in Germany
- 4,500 people currently work at the mine. By 2018, new jobs will have to be created for some 1,000 Bottrop miners

ca. 51%
Of people

3%
Surface of the earth

80%
CO_2-Emissions

World population | Live on | Surface of the earth | and cause | CO_2-emissions

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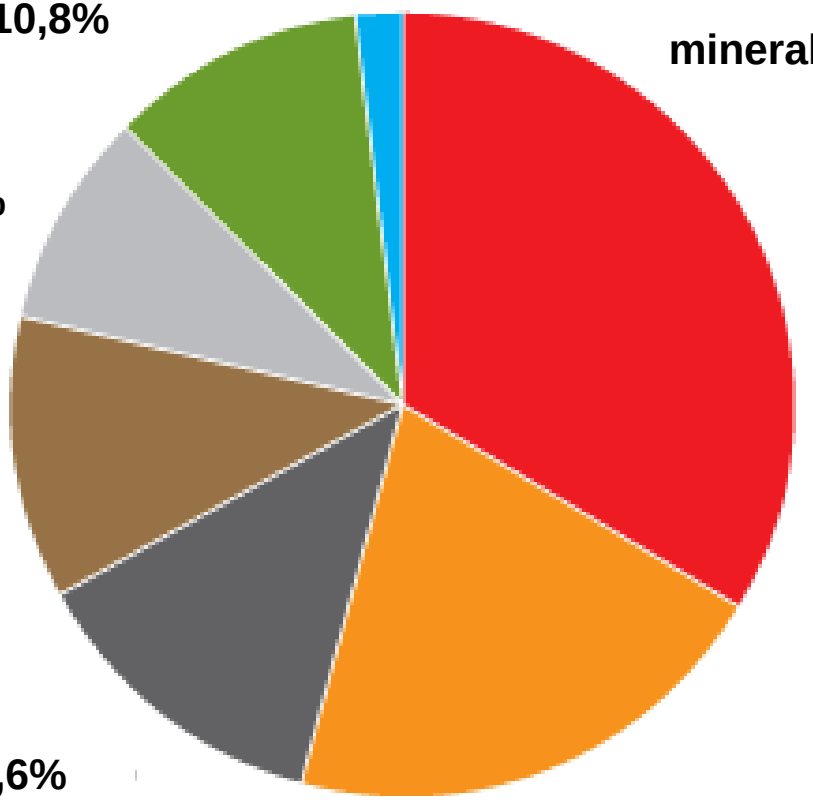
The primary energy mix in Germany 2011

AGEB
AG Energiebilanzen e.V.



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Development of the use of nuclear power in Germany

- 2000: limitation of the operation of the existing 19 nuclear power plants until 2023 at the latest plus renouncement of new plants
- 2010: prolongation of the operation of the nuclear power plants until 2036 at the latest
- 2011: closure of eight nuclear power plants and progressive switching off of the remaining nine plants until 2022

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- Abandonment of nuclear energy by 2020 and clarification of the question of permanent waste storage

- Climate protection - strengthen renewable energies.
- New energy storage systems: bring in line electricity supply and demand.
- Grid extension: guaranteeing secure supply by quick planning and approval.
- Modern conventional power plants: the new transition technology.
- Save energy and increase efficiency.
- The future belongs to electric cars.

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Social background of the energy transition in Germany 2011

- the consensus of energy change is based on a long tradition

- first environmental movement in Germany in the 19th and early 20th century

- new environmental movement established in the 1960s and 1970s

- a strong anti nuclear power movement after the catastrophe of Tchernobyl in 1986

- political parties open up for ecological issues and implement measures for climate protection

- strong protests against the use of nuclear power in 2010 and 2011

- Operators of plants to generate renewable energies receive a fixed price for 15 to 20 years
- Operators of electricity grids are bound by law to buy electricity from renewable energies
- Renewable energy generation is supported by a small amount added to rate payers' bills
- Worldwide the most successful instrument to promote renewable energies

- Model function for more than 40 countries worldwide
- 11% less emission and creation of new workplaces

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