



Blue Sky

GREEN CITY

... fresh ideas for our climate

Competition

Initiator: Initiativkreis Ruhr



phase 1



phase 2

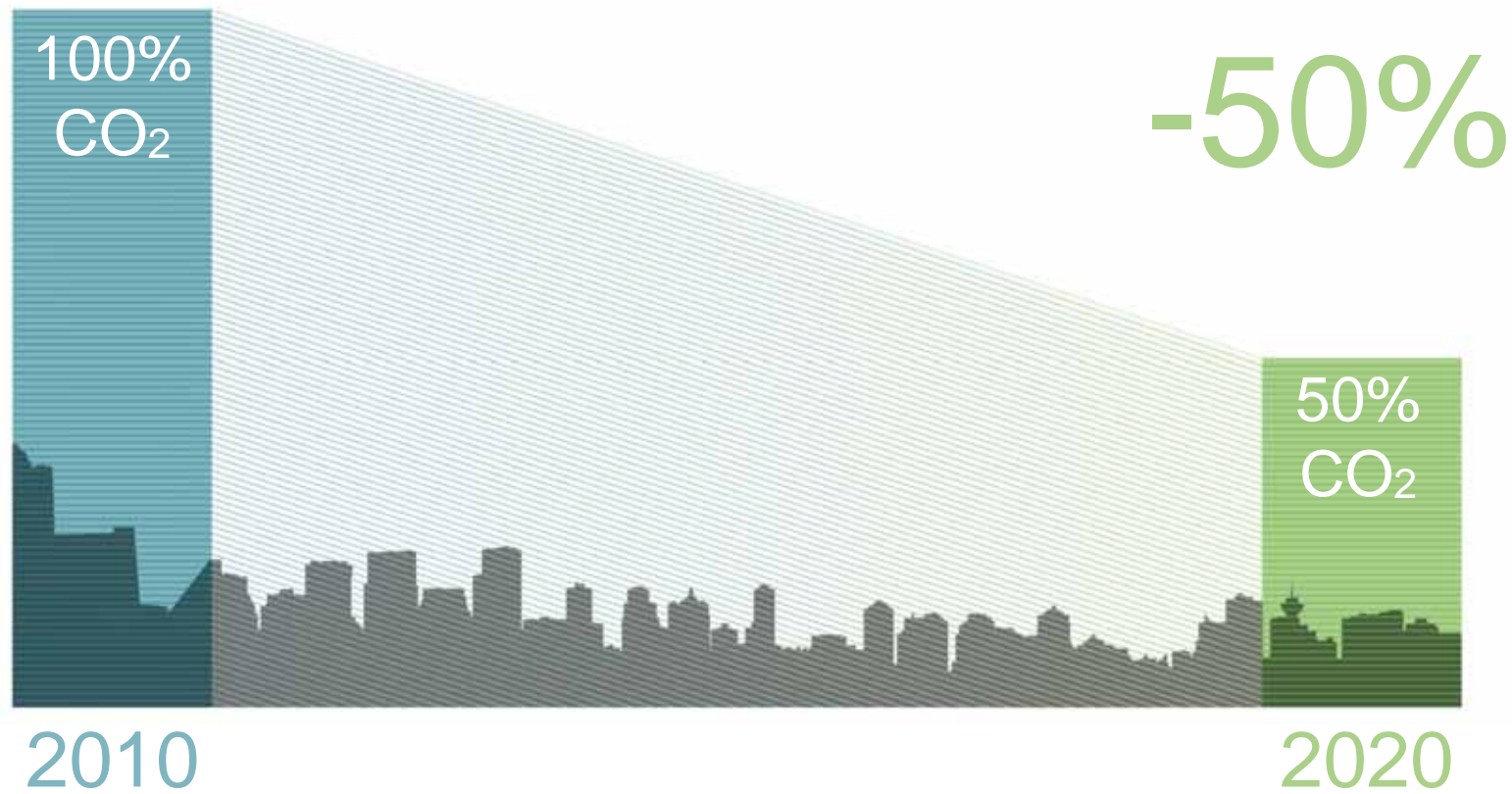
InnovationCity Ruhr
- Bottrop

the Winner



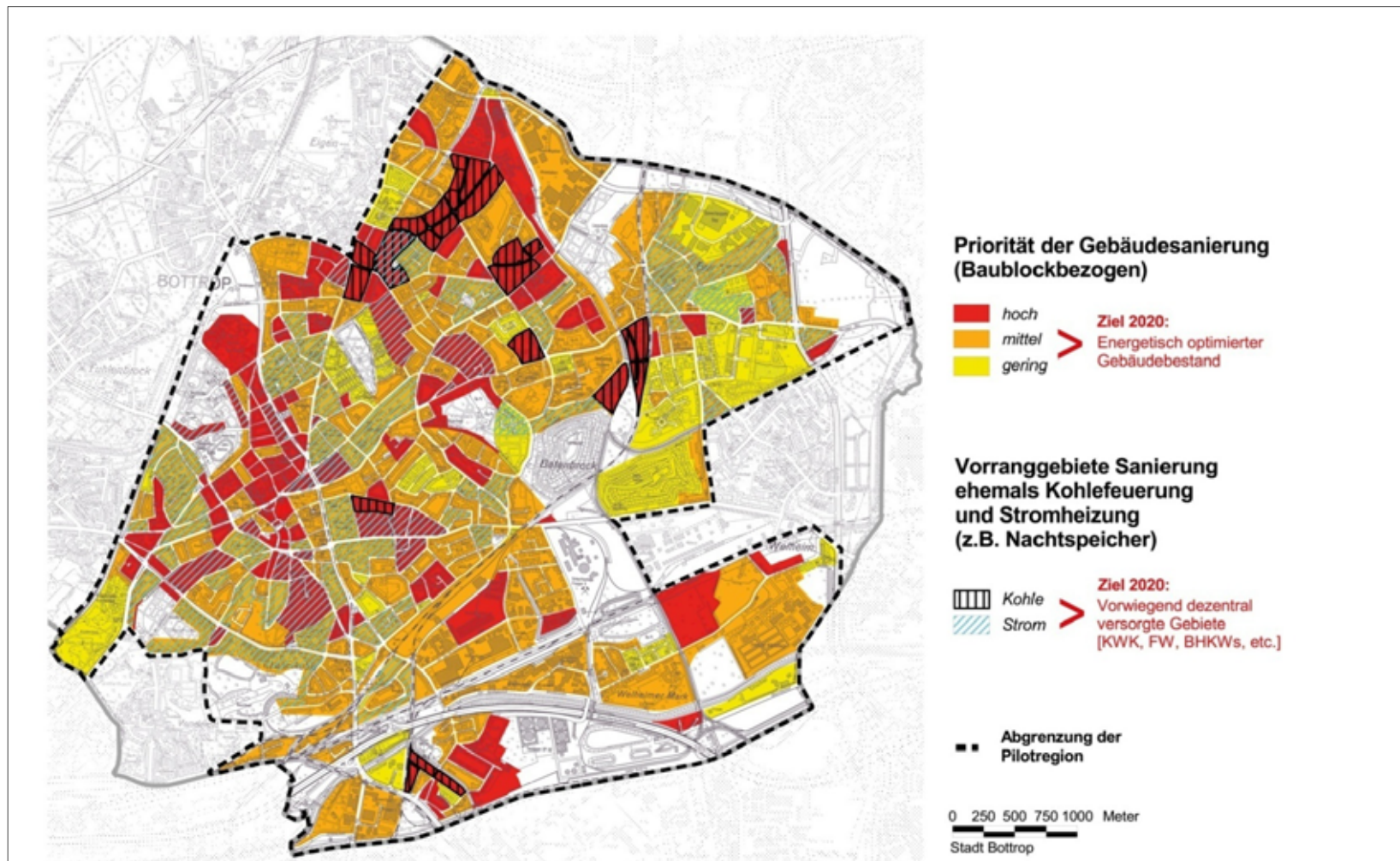
Target

CO₂-Reduction of 50% within 10 years






Initial point

The Pilot Area: 70.000 Inhabitants



Cooperation Economy, Science, Politics

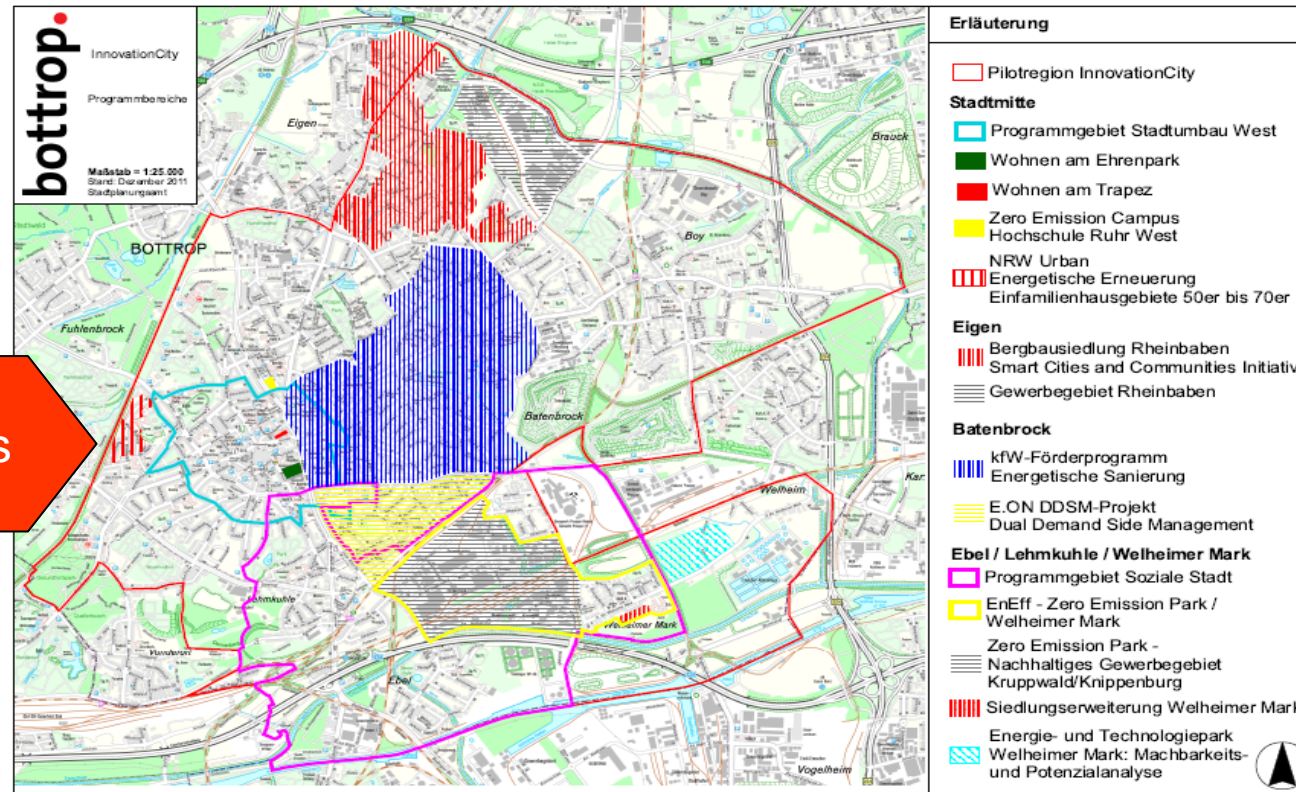
Wirtschaft	Wissenschaft	Politik
<p>Accenture A.T. Kearney BASF Bautreff Pawella Bayer MaterialScience Betrem Bosch BP Brabus Brötje Buderus con energy Deutsche Annington Deutsche Rockwool ELE E.ON E.ON Ruhrgas Emschergenossenschaft/ Lippeverband Evonik Ferrostaal GBB Gelsenwasser Hellweg Hochtief</p> <p>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 Weishaupt ...</p> 	<p>Wuppertal Institut für Klima, Umwelt und Energie</p> <p>Fraunhofer-Institute</p> <p>Ruhr-Universität Bochum</p> <p>Universität Duisburg- Essen</p> <p>Technische Universität Dortmund</p> <p>Hochschule Bochum</p> <p>Hochschule Hamm- Lippstadt</p> <p>Kulturwissenschaftlich es Institut Essen</p> <p>Institut für Kraftfahrzeuge Aachen</p> <p>Folkwang Universität der Künste</p> <p>Hochschule Ruhr West</p> <p>Gas-Wärme Institut Essen</p> <p>...</p> 	<p>Interministerielle Arbeitsgruppen (IMAG):</p> <p>Federführung Staatskanzlei NRW</p> <p>Ministerium für Innovation, Wissenschaft und Forschung (MIWF)</p> <p>Ministerium für Wirtschaft, Energie, Bauen, Wohnen und Verkehr (MWEBVV)</p> <p>Ministerium für Klimaschutz, Umwelt, Landwirtschaft, Natur- und Verbraucherschutz (MKULNV)</p> <p>Öffentliche Institutionen: EffizienzAgentur NRW EnergieAgentur NRW</p> <p>Wirtschaftsförderung Metropol Ruhr</p> <p>...</p> 

Topics

Pilot Area



100 Projects





Energetic Rebuilding of residential districts	Cooperation
Living at Ehrenpark – Model House Rebuilding	BMS & ECBP Netzwerk (Alwitra, Puren, Kingspan, Linzmeier, Uponor, Solon, Stiebel-Eltron)
Living at Trapez	PCI (BASF)
Living at Trapez – Model House Rebuilding	BMS & ECBP Netzwerk
Improvement of districts (Windmühlenweg)	NRW Urban
Rheinbaben district	ELE, RWE, NRW.BANK, Deutsche Rockwool, Collin, Stiebel Eltron, Vivawest
Colliery Housing Rheinbaben – Model House Rebuilding	BMS & ECBP Netzwerk, Collin, Deutsche Rockwool, KZA, Annington, Vivawest
Manual Consultation Process Rheinbaben	
Batenbrock-Nord District (KfW-Program)	Vivawest
PLUS-ENERGY-Model House Detached House	RWE, STIEBEL-ELTRON, Saint-Gobain Weber, Miele, Velux, Grohe, BMS & ECBP Netzwerk,
PLUS-ENERGY-Model House Apartment Building	Collin, Rockwool, Brötje, Cosmo, EFG, VAILLANT
PLUS-ENERGY-Model House Commercial Building	BMS & ECBP Netzwerk
Living Lab	EU-Projekt: SusLab



Energetic Rebuilding of Companies and Industrial Estates	Cooperation
	BEST
Industrial Estates Knippenburg/ Kruppwald	EON
Energy Supply Welheimer Mark	
New Building Staff-/Administration Buildings BEST	BEST
Model Houses Commercial and Public Buildings	
Model Rebuilding Corporate Restaurant	energieagentur.nrw, effizienzagentur.nrw, BMS & ECBP Netzwerk I
Model Rebuilding Commerce	TÜV-Rheinland, energieagentur.nrw, effizienzagentur.nrw, BMS & ECBP Netzwerk
Climate Friendly Hostel	
Mapping of Public Buildings	RGM
Hochschule Ruhr West	STEAG Fernwärme, Gelsenwasser, ELE, E.ON Ruhrgas
Low Energy Gas-Station	BP Europe
Climate Neutral Retail Sale	
Climate Neutral Super Market	REWE, BMS & ECBP Netzwerk



	Cooperation
Smart Energy	
Dual Demand Side Management	E.ON
Virtual Power Plant	DVGW
Business Simulation of Load Variable Tariffs	ELE, RWE
Smart Grid	Accenture, ELE, E.ON, IBM, Mitsui, Panasonic, RWE, Siemens
Combined Heat and Power	
Application of 10 Mini-CHP	ELE, E.ON Ruhrgas, RWE
CHP Field Test (100 Micro-CHP)	DVGW, GWI
Energy Exploitation Concept Mine Dump	
Geothermal Energy Schöttelheide	RAG, Fraunhofer
Solarheat	RAG, Fraunhofer
Photovoltaics	RAG, Fraunhofer
District Heat	
Promotion of New Connections	STEAG Fernwärme
Promotion of District Heating Grid	STEAG Fernwärme
Biomass	
Mine Water	RAG
Biochar	BETREM, Fraunhofer
Regional Biomass Cadastre (EU-Project: Regions of Knowledge)	



Waste Heat	Cooperation
Heat on Wheels	La Therm
Use of Process Heat of the Coking Plant	RAG
Use of Sewage Water Heat	
Waste Heat Recovery (Shower Water)	Fraunhofer UMSICHT
Solar Power	
Smart Photovoltaic Model Systems	ELE, RWE
Solar Atlas	
Extension of Commercial Photovoltaics	
Solar Carport	
PV- Facilities BEST - Location Mozartstraße	BEST
Hydrogen	
Masterplan Hydrogen	Round Table "Wasserstoff"
Wind Energy	
Small Wind Energy Facilities	
Geothermal Energy	
Heat Storage in Mining Plants	RAG
Innovation Workshop at HRW	ELE, RWE, HRW
From Sewage Plant to Power Plant	Emschergenossenschaft
CO2 Research Center	Evonik
Heat Cluster	
Improvement of Data Centers	Fraunhofer



	Cooperation
Integrated Urban Development Welheimer Mark	
District Enlargement Welheimer Mark	
Photovoltaics Noise Barrier at A 42 Highway	
Green Corridor Welheim	
Technology Park Welheimer Mark: Feasibility Study	
Research Project: Energy Efficient District	
Climate Adjustment	
City Network Climate Change (EU-Projekc: Future Cities)	
Capacity Analysis: Climate Adjustment City Center	
Infarming – Farming on the Roof	
Cultivation of Facade Surfaces	
Rain Water Management	
Rain Water Management at BEST Area	BEST
Public Infrastructure	
LED-Street Lighting	



	Cooperation
<i>E –Mobility in the context of energetic district retrofitting</i>	ELE, E.ON, NRW.BANK, RWE, TÜV Rheinland, HRW
E-Vehicles (Single projects)	ELE
Hydrogen Bus	
E-Truck	BETREM
Rental system	ELE, E.ON Ruhrgas
Charging Station Infrastructure	
Exchnage of Charging Station ZIB	ELE, RWE
Hydrogen Station	Daimler, Linde
Public Transport	
Quality Management	Vestische
Mobile Reserve Public Transport	Vestische
City Compatible Truck Routing	
Car-Sharing (LPG)	ELE, E.ON Ruhrgas



Activation

Consultation

- Consultation at ZIB
- Home Consultation
- Initial Consultation
- Thermographics
- Energy Expert Opinions

Marktplatz Klimaschutz (Showroom)

Events

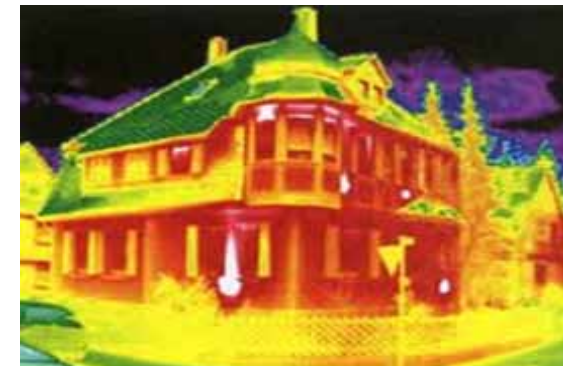
Campaigns

Vaillant, Smart – Home (RWE, ELE)

Partner Network



8.995 Home Consultations



100 Buildings (Feb.2012)



Since October 2011:
 798 Individual Consultations





Energy Costs
 Before:
325 €/ month

Retrofitting:
 -Insulation
 -Heat Pump
Costs: 78.000 €



Energy Costs
 After:
85 €/ month

Model Calculation:

Savings:

2.880 €/ Year (2013)
 3.992 €/ Year ** (2020)

Subsidies:

11.250 € cash

Financing:

2.640 €/ Year (Interest and Amortization)*

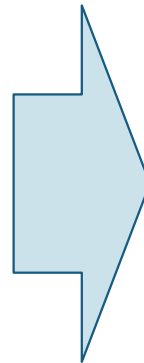
* 1% Interest, 3% Amortization

Gain:

240 €/ Year (2013)
 1.352 €/ Year ** (2020)

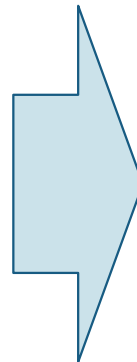
** 4,5 % price advance energy costs

On-site Consultation



Info Truck

District by District
Bottrop-Ebel until 22.06.
from 03.07. City West
Change every 4-6 weeks



Info Container

In City Center since 04/2012
1821 Contacts by now

Topics

Project ‚Marktplatz Klimaschutz‘

Show- and Function
Room (30 Exhibitors)



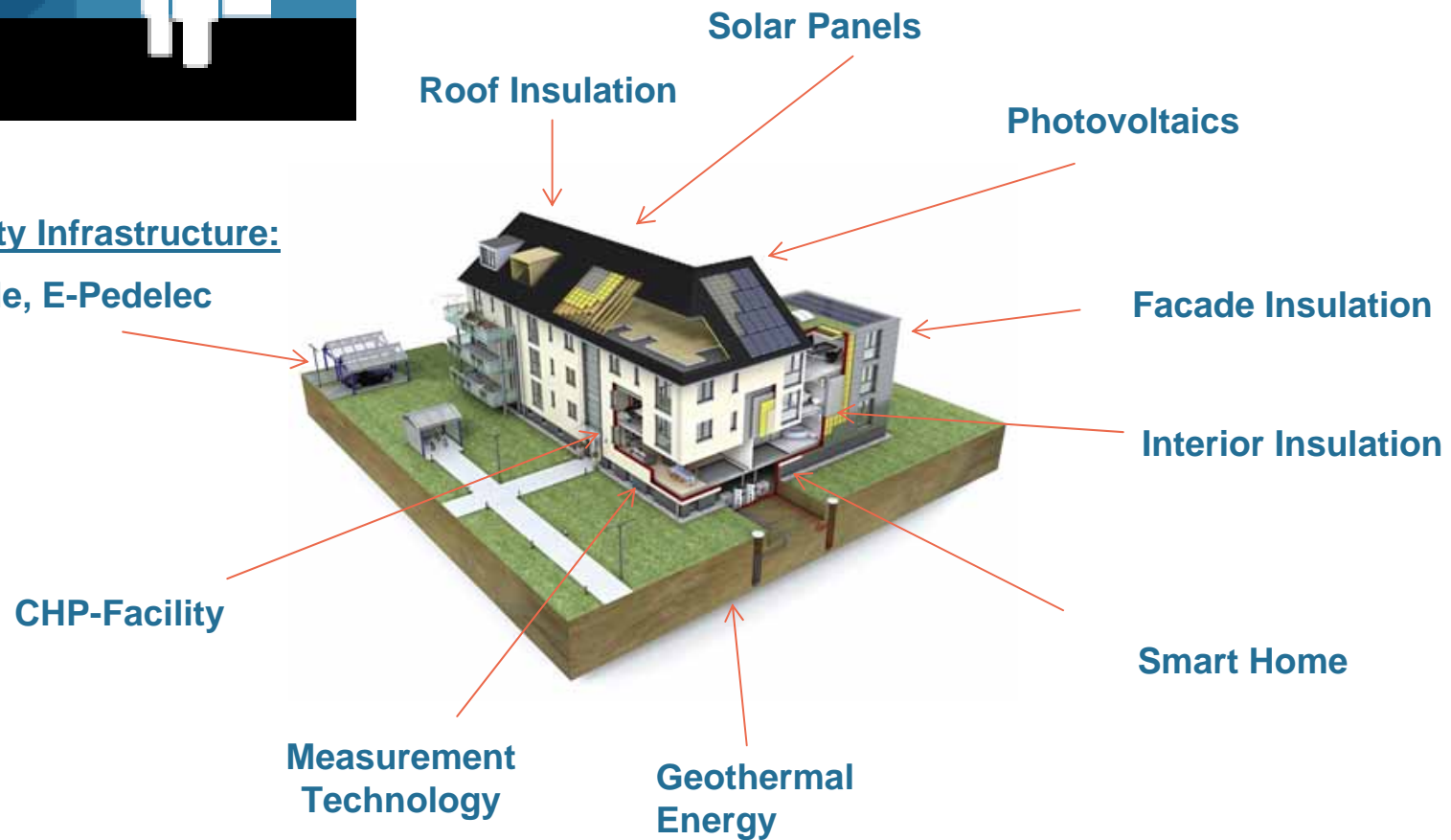
Innovation at your Fingertips

Example

The InnovationCity ‚Zukunftshaus‘



E-Mobility Infrastructure:
E-Vehicle, E-Pedelec



Example

The InnovationCity ‚Zukunftshaus‘



- Data Acquisition until 15th May
- Suggestions by Jury
- Conclusion of Contract
- September: Announcement of Winners
- Start of Construction Summer 2012 - Spring 2013

Detached House



Apartment Building



Commercial Building



Applications
Data Acquisition
Suggestions by Jury

35
16
5

21
12
4

6
5
3

Example

New Construction of 'Hochschule Ruhr West'



New Construction: Hochschule Ruhr West – Energy Campus LAB

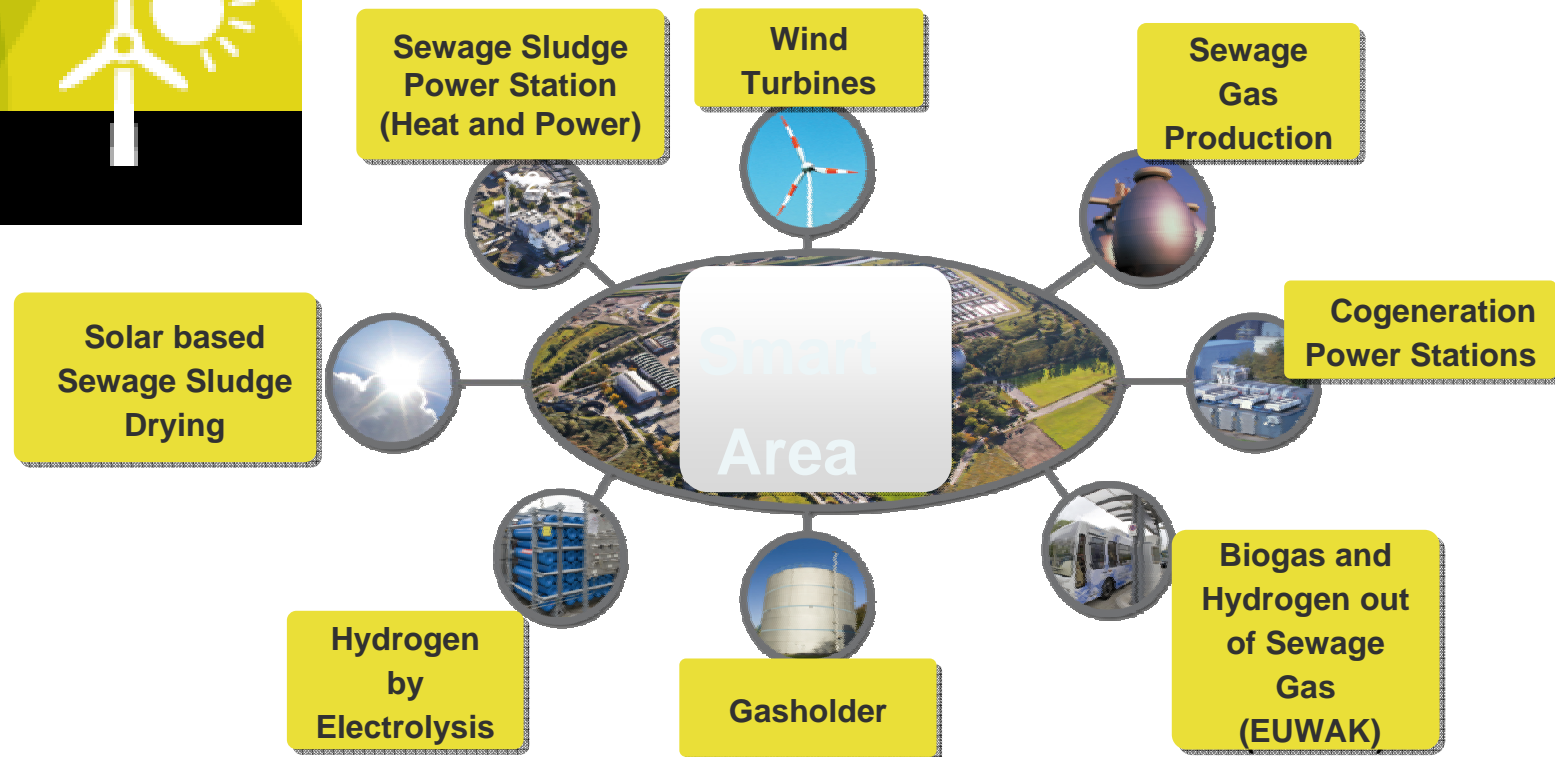
Target Groups: Hochschule Ruhr West, Students, Science, Companies

Project Aim A sustainable handling of resources and reduced CO₂ –emissions

Project Idea The new campus may support teaching and research by innovative building standards and efficient handling of energy. Focussing on the avoidance of emissions and the supply with geothermal energy of a close by sewage drain.

Project Status Construction starts summer 2012

Example From Sewage Plant to Power Plant



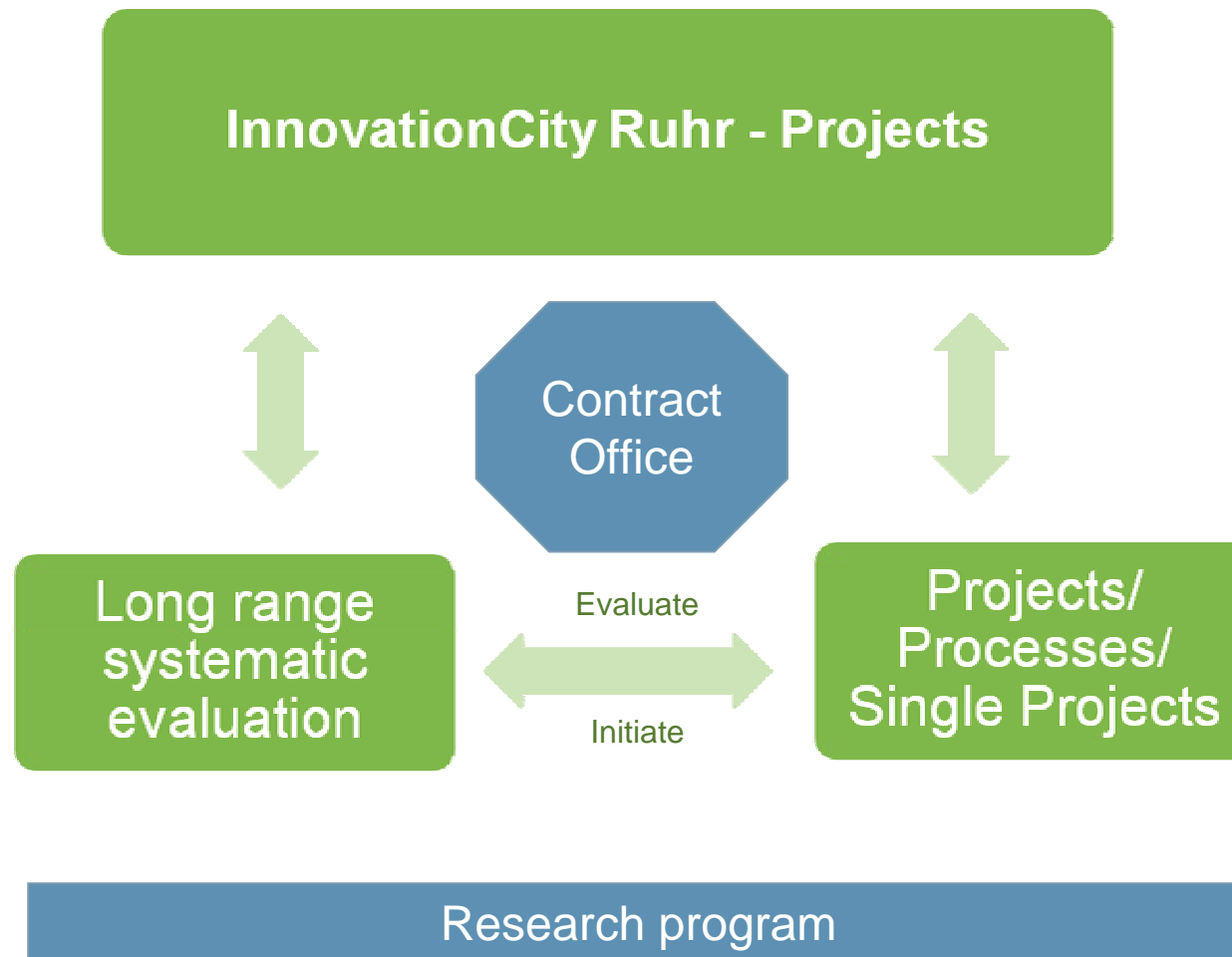
**Energy Production out of Regenerative Resources : 60 Mio. kWh / Year
 = Energy Demand of 30.000 People**

Example

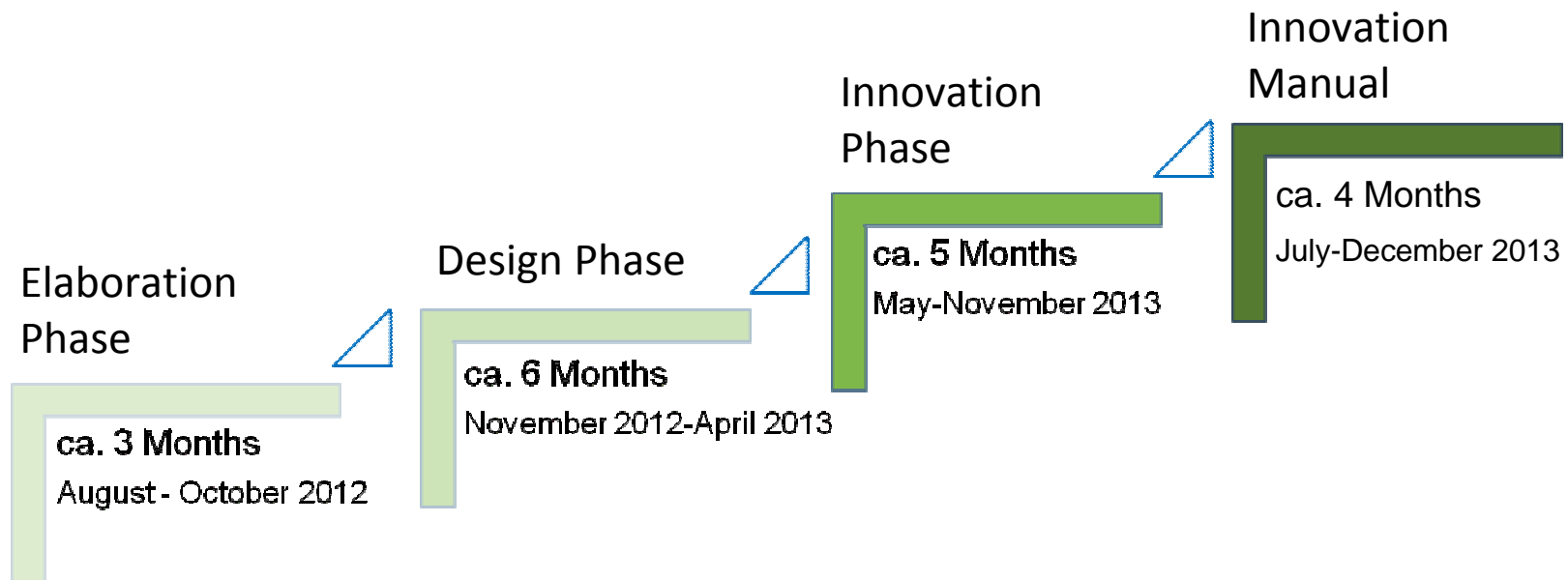
Cultivation of Facade Surfaces



Target Groups	Selected Buildings within the Pilot Area
Project Aim	Unsealing of Vertical Surfaces
Project Idea	Application of moss on backing material with irrigation. Moss may immobilize air pollutants, holds back the rainwater drain and supports as a 'biological' isolation energetic rebuildings.
Project Status	Research Phase
Cooperation	Fraunhofer Umsicht, Oberhausen



Masterplan



Target

Using the example of the City of Bottrop, the innovation manual will show the necessary work steps, modes, measures and structures for a sustainable rebuilding of a complete city



Tetraeder, City Lakes, Malakoff Tower

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