Introduction

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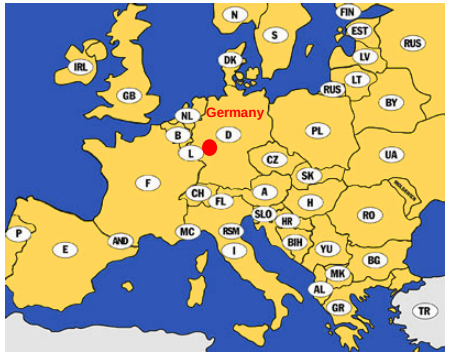
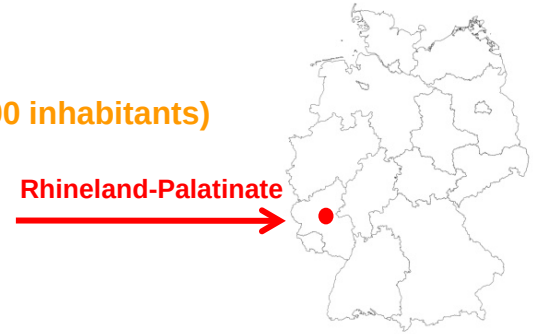
RHEIN-HUNSRÜCK-KREIS

District of Rhein-Hunsrück



- 102.000 inhabitants
  thereof 8.088 foreigners
  (12 from Japan)
- Area: 991 km²
- 137 settlements
  (75% with less than 500 inhabitants)



Head of the district authorithy (retired)

(District of Rhein-Hunsrück)
senior adviser – Mr. Bertram Fleck

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Our target: we want to transfer 290 Mio. € of energy imports into regional value creation

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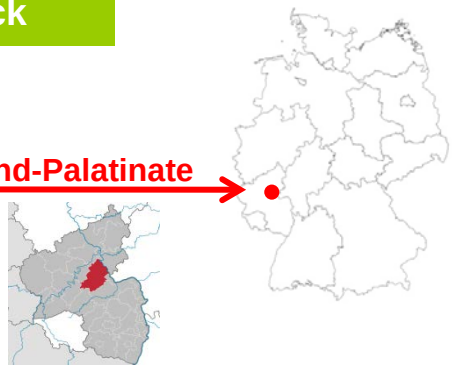
Total expenditures for energy imports in the district of Rhein-Hunsrück

approx. 290 Million €



Total expenditures for energy imports of the federal republic in **2012: around 92 Billion €**
40% more compared to 2010

Source: Fact booklet of the agency for renewable energies, State May/2013

Target of our climate protection concept:

We want to tie 250 Million € of annual energy import costs in the region until 2050!

We convert energy import costs into regional jobs and value creation by way of energy efficiency and renewable energies!

We started in 1999 with energy efficiency at our public owned buildings

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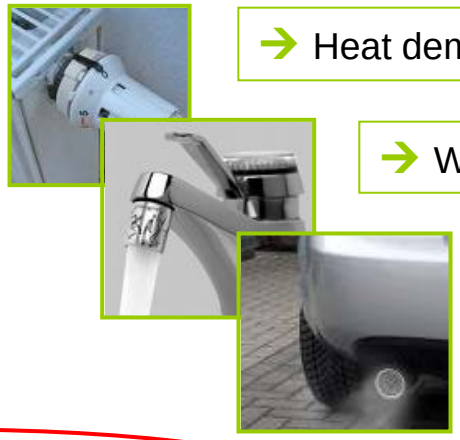
Achievements of the energy controlling operating since 1999

Year	C / KWh
1996	1,79
1997	2,21
1998	2,14
1999	1,92
2000	3,71
2001	4,65
2002	3,56
2003	3,74
2004	3,55
2005	4,43
2006	5,91
2007	6,21
2008	7,61
2009	7,10

+ 400 %

Reduction of:



→ Heat demand by **25 %**

→ Water demand by **26 %**

→ CO_2 emissions **9.500 tons**
→ Cost savings **2.000.000 €**

During the same period, however, heating energy costs have quadrupled!

→ **Energy efficiency is the sleeping giant**

Increase of:

→ Electricity demand only about **5 %**

Despite doubling number of PC's, introduction of air-conditioned server, introduction of catering and of all-day-school.
Without additional measures of energy controlling the increase would have amounted to 30%.

2005
Certified with the
Energy Seal of the State
of Rhineland-Palatinate

of district owned buildings by 2010

14 bio mass local heat networks in operation
Example: Material Flow Management

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Public building complexes are merged to district heating networks and heated with **tree and shrub cuttings** **(120 collecting points, central treatment place)**

→ Annual savings

680.000 Liters

Fuel oil equivalent

The first step: Fuel preparation in the central processing place

Startscreen →

High quality compost: approx. 50% of the total material

Fuel: approx. 50% of the total material

Three bio mass heating networks in school centers:

22 school buildings,
8 sports halls, 1 town hall
2 indoor and 1 outdoor swimmingpools,
1 libary, 1 old people´s home

The second step:

Thermal processing in the central heating station with burning capacity of 500 to 850 kW

Fuel storage facility

Central heating station

Roofs – Source of revenue
District administration as a role model

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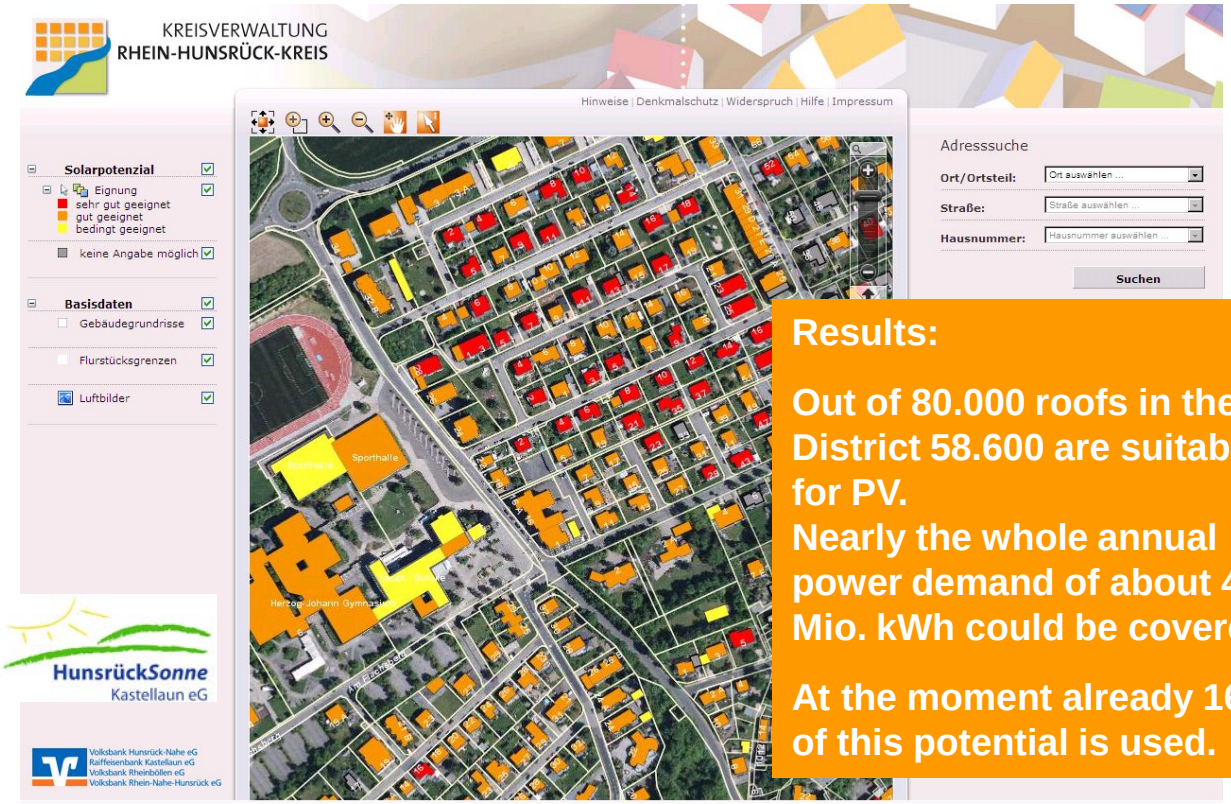
Target: 1000-roofs-photovoltaic-program – Result: 4.182 roof plants

District of Rhein-Hunsrück; Volksbank and Raiffeisen Bank Institutes in the District; Smart Geomatics; State agency for measuring



Results:

Out of 80.000 roofs in the District 58.600 are suitable for PV.
Nearly the whole annual power demand of about 468 Mio. kWh could be covered.

At the moment already 16 % of this potential is used.

2007:

2011:

www.solarkataster-rhein-hunsrueck.de - online since 2010

Example Wind farm Ellern - 7.5 MW power : the highest-power plants on land worldwide

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film shooting of Mr. Tetsunari Ida und Mr. Hiroyuki Kawai, 30th of August 2016

At the beginning of the 20th century wind-water mills were built in the Hunsrück in many local congregations.

1995 construction of the first modern wind turbine in the Hunsrück with a capacity of 600 KW.
Annual production of 800.000 kWh renewable electricity per wind turbine.

2010 first Repowering-project in the Hunsrück
- through that the electricity yield **sextupled** up to over 5 million kWh per wind turbine.

End of 2017:

268 turbines with 748 MW capacity will produce more than 1 billion kWh annual renewable power!

The share of renewable electricity in the district probably will be at 298 % by the end of 2017

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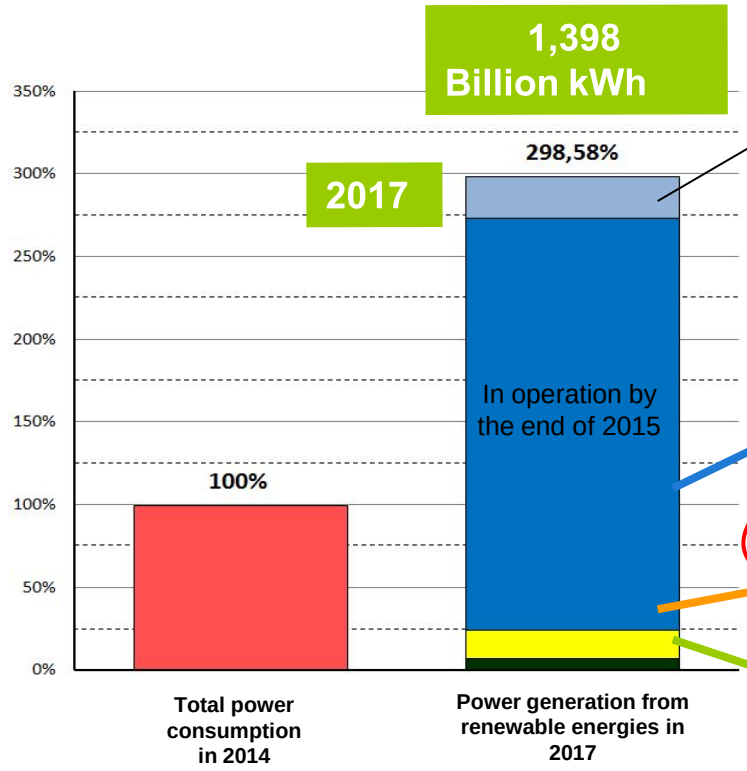
Total power consumption 468 Mio. kWh in 2014



To the grid, approved and in construction in 2016

16 turbines
117 MW capacity

252 turbines
631 MW capacity

4.182 plants
86 MW capacity

18 plants
6,2 MW capacity

informational:
Hydro power

Ø Federation
3,3 %

since 2010: Pilot project river turbines in the Rhine at St. Goar

Wind energy
State by the end of 2015
249,62 %
Ø Federation 11,0 %

Photovoltaic
16,73 %
Ø Federation 6,0 %

Bio mass
7,09 %
Ø Federation 7,8 %

Share of renewable energies: 298 % Ø Federation 32 %

The district of Rhein-Hunsrück is an associated partner within the "Designetz" consortium

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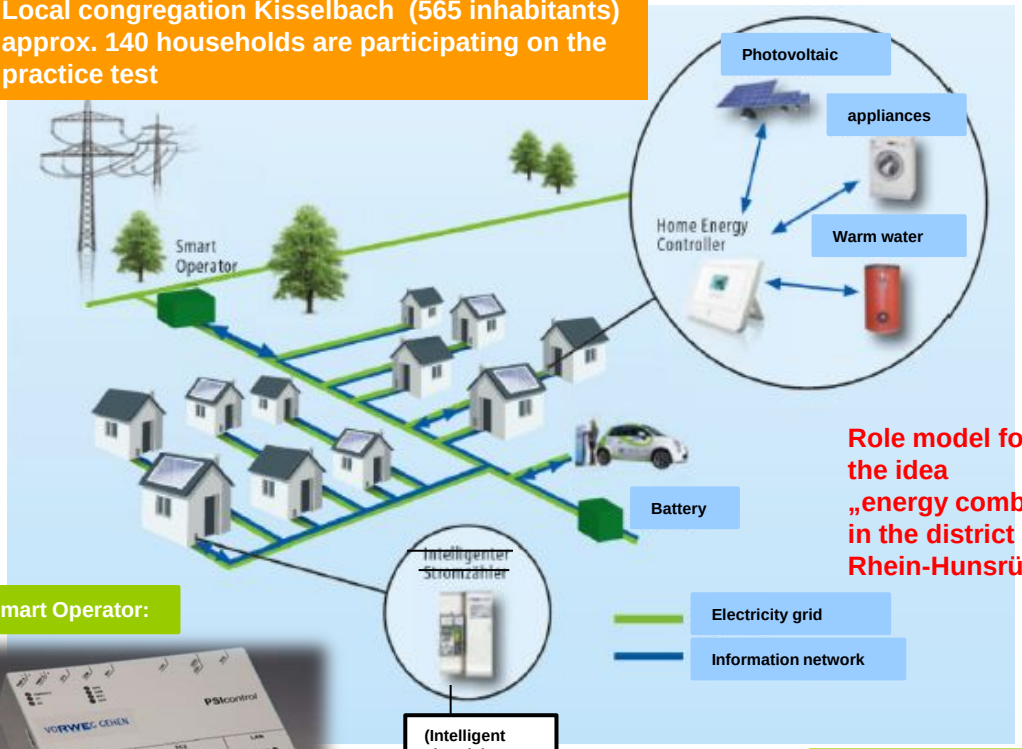
innogy is testing the future intelligent low-voltage-network with partners from the economy and science in practice since 2014

Local congregation Kisselbach (565 inhabitants) approx. 140 households are participating on the practice test



(Intelligent electricity meter)

Role model for the idea „energy comb in the district of Rhein-Hunsrück"

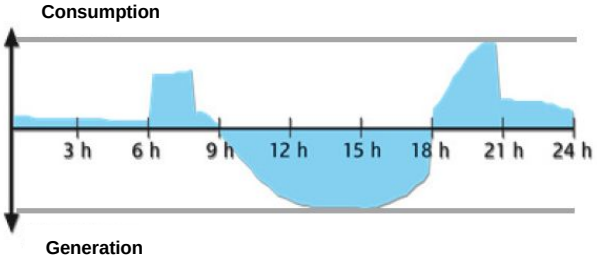
Source: Innogy

Smart Operator:

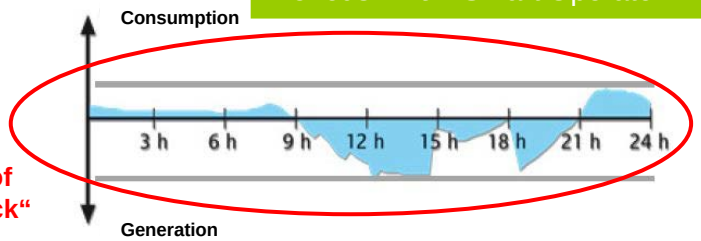
Targets:

- Compensation of the network loads
- Better exploiting of the potential of renewable energies

Periods **without** Smart Operator



Periods **with** Smart Operator



2017 - Kick off in Berlin

The ambitious target of the 46 project partners under the leadership of innogy is to be <u>the</u> „Blueprint" for the energy revolution.

7. Regional value creation and Public service Recognation of interfaces and use!

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Step by step we convert energy import costs into regional jobs and value creation by way of energy efficiency and renewable energies!

	Total investment sum of all renewable energy plants	Regional value creation (earnings)	
		Thereof regional investment sum	Annual regional value creation
Sum in 2015	1.35 Billion €	Approx. 102 Million €	approx. 43.5 Million €

- Rental income and taxes for the local communities
- Feed-in remuneration for local operators (private PV- plants and cooperatives)
- Orders for the domestic craft and construction companies
- New Jobs through maintenance orders
- Development opportunities for local agriculturists and forest owners

Renewable energies/ energy efficiency

Demographic change/ Public service

Extracurricular learning center for environmental education

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Educational concept : Energy from regional sources

Extracurricular learning facilities

Learning stations:

Sun

Usage of PV

Biowaste

Methane is produced from bio-waste

Tree and shrub cuttings

Heat for school centers

Wind

Wind turbine for the generation of electricity

If you want to change the world, you shall start with the children!

Climate protection concept: Zero Emission Rhein-Hunsrück District

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Development of the Concept 2010-2011 by the Institute for applied Material Flow Management (IfaS)

- Set up of an energy and pollutant opening balance sheet
- Determination of renewable energy and energy efficiency potentials
- Holding 9 workshops with different topics and more than 300 participants - Networking
- Set up of an energy and pollutant closing balance sheet, scenarios 2020 and 2050

The District will on the balance sheet become a zero emission District in electricity, heat and transport sectors already in 2020.

- Set up of a catalogue with 92 individual measures
  First Activity: Measure Modernization of Heating systems and Exchange of Pumps
- Appointment of a Climate Protection Manager 2012-2015 for the implementation of individual measures

By using all potentials, annual energy delivery costs amounting to 250 Million € can be saved in 2050.

Measure of Climate protection concept: District of Rhein-Hunsrück saves electric power

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Year in and Year out
Saving electricity costs

Start in September 2014

Exchange of Pumps

Who have the oldest heating pump? We present you the up-to-date heating pump !

Exchange of Icebox

Who have the oldest Icebox? We present you the up-to-date Icebox !

consequences: meanwhile 40 Communities create energy saving concepts for their citizens

Not only private households – also SME are able to halve their energy costs

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Best-Practice: „Gesundheitszentrum-Hunsrück Holger Merg GmbH“

(Health center)

GESUNDHEITS-ZENTRUM HUNSRÜCK
Ambulantes Reha-Zentrum
Therapiekompetenz-Zentrum
Fitness & Präventions-Zentrum

- **Three companies in one location**
- **Construction of the building in 1997**
- **Increase in 2005 and 2008**
- **approx. 130 employees**

The concept: Three action steps

- Conversion to LED-lightning
- Photovoltaic plant for internal consumption
- Base-load cogeneration unit (primarily for the sauna area)

→ **Energy costs were halved**

”Our slogan for the topic energy is:
Make the energy revolution suitable for every day life!“

(Holger Merg)

Summary of our challenges and experiences

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The way to a successful local energy revolution:

- Leaders with visions
- Full-time employees (Carers)
- Acceptance by political bodies
- Climate protection concept as guideline
- Taking the exemplary and guideline function serious as a commune
- Formation of local networks with communes, schools, agriculturists, craftsmen, architects, consulters, economy, …
- Involvement of the citizens through workshops, information and consulting offers
- The transition of citizens from consumers to producers “Prosumers”
- Establishing a systematically press and public work
- Support private citizens´ activities
- offers special environmental education for children and citizens
- participate at competitions
- exchange with other municipalities and districts

A lot of energy is hidden in district of Rhein-Hunsrück
- we are making use of it!

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Friedrich Wilhelm Raiffeisen (1818–1888),
founder of the worldwide-acting cooperative movement

RES CHAMPIONS LEAGUE
Renewable Energy Competition between European cities and towns

It always seems impossible until it´s done !

Nelson Mandela

Thank you very much for your attention!