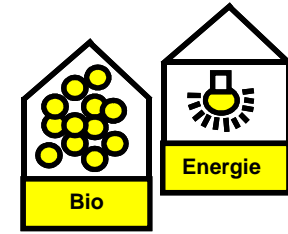


Bioenergy Village Jühnde



Jühnde Bio-Energy Village in Germany

Presentation about renewable energy Jühnde

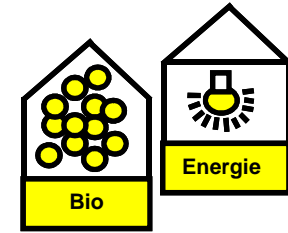
Civil society engaging in local renewable energy production
2013-11-15

Heiko Lohrengel



2013-11-15

Bioenergy Village Jühnde



What is Jühnde and where is it located?



First Bioenergy Village in Germany

SOP=Sept.2005

Jühnde 2011

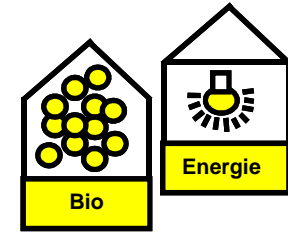
750 inhabitants

9 farmers

1300 ha fields

800 ha wood





Motivation for a Bioenergy Village

The Idea came from University of Göttingen:

„Self-sufficient Heating and Electricity Supply Using Biomass“

Goals of the project:

economical (independent, agricultural income, medium term investment)

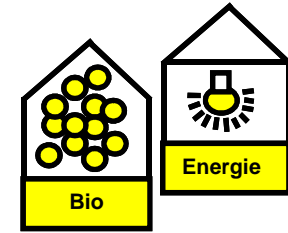
ecological (CO-2 neutral, less mineral fertilizer, biodiversity)

social (stronger local society, responsibility for each other, democratic decisions)

Village Jühnde has been inspired by the idea, took the challenge, has built a cooperative society, made a investment decision for \$7,3 Mil and is now responsible for the business

Electricity produced = 2 x Electricity consumed

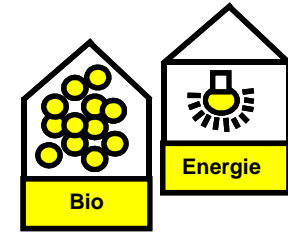
Bioenergy Village Jühnde



Milestones

2001-Jan	Information meeting with inhabitants
2002-Oct	Contracts with customers; 70%
2003-Dez	Building application for approval available
2004-Oct	Build cooperative association, Decision for investment
2004-Nov	Start of implementation
2005-Sept	Start of energy production
...	
2010-Dec	24 Mega kWh Electricity
2013-Sept	8 year experience

Bioenergy Village Jühnde



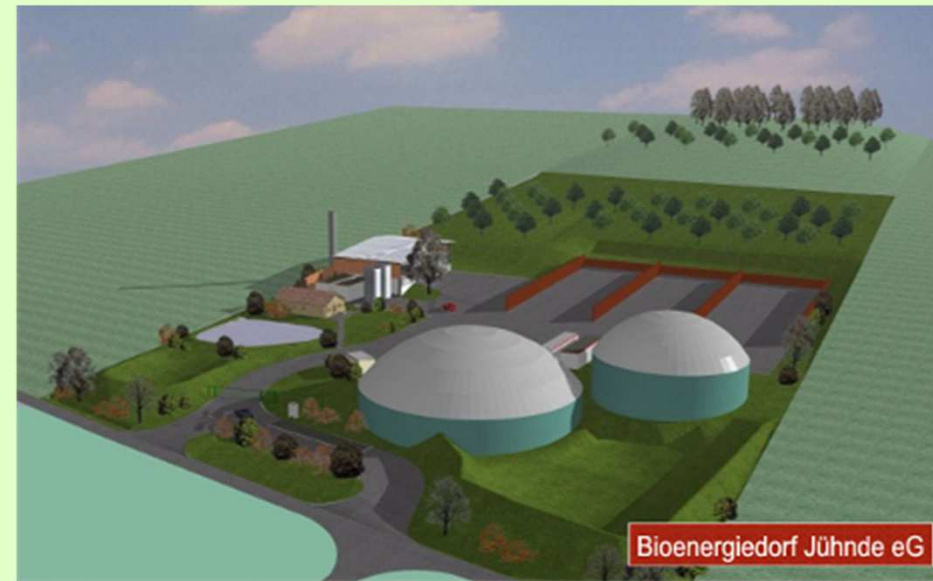
Main components

Biogasplant 712 kW

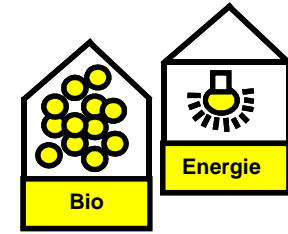
Heating system
550 kW

Peak load system
for heat
oil bases 1.700 kW

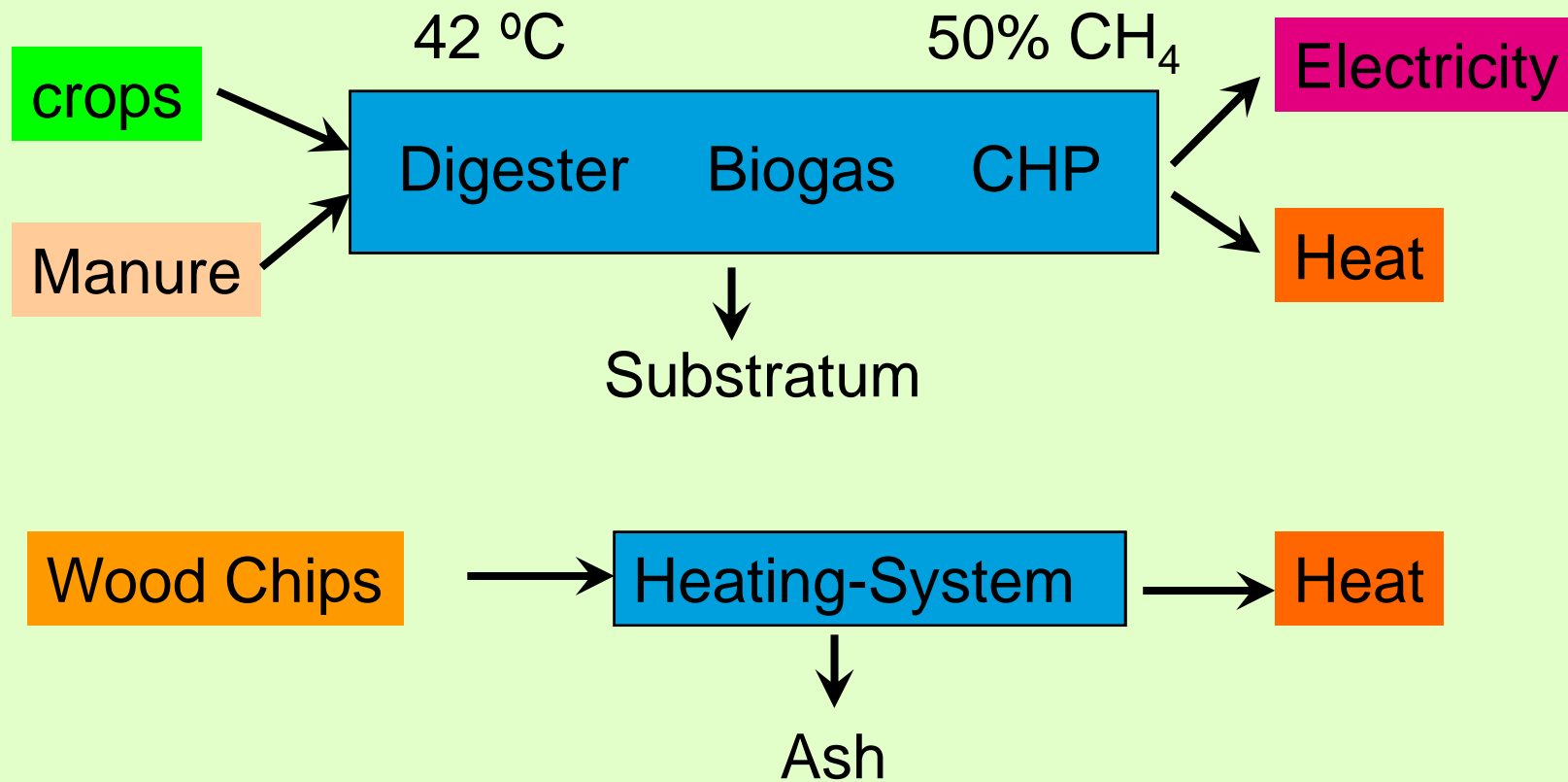
Hot water grid app. 3.3 miles (5.5 Km)



Bioenergy Village Jühnde

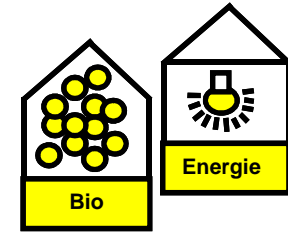


Process



Saving > 3.000 to/a CO₂

Bioenergy Village Jühnde



Silage storage

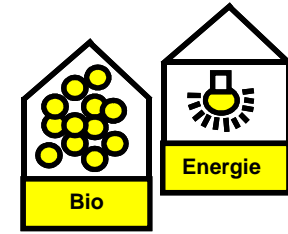


Input material:

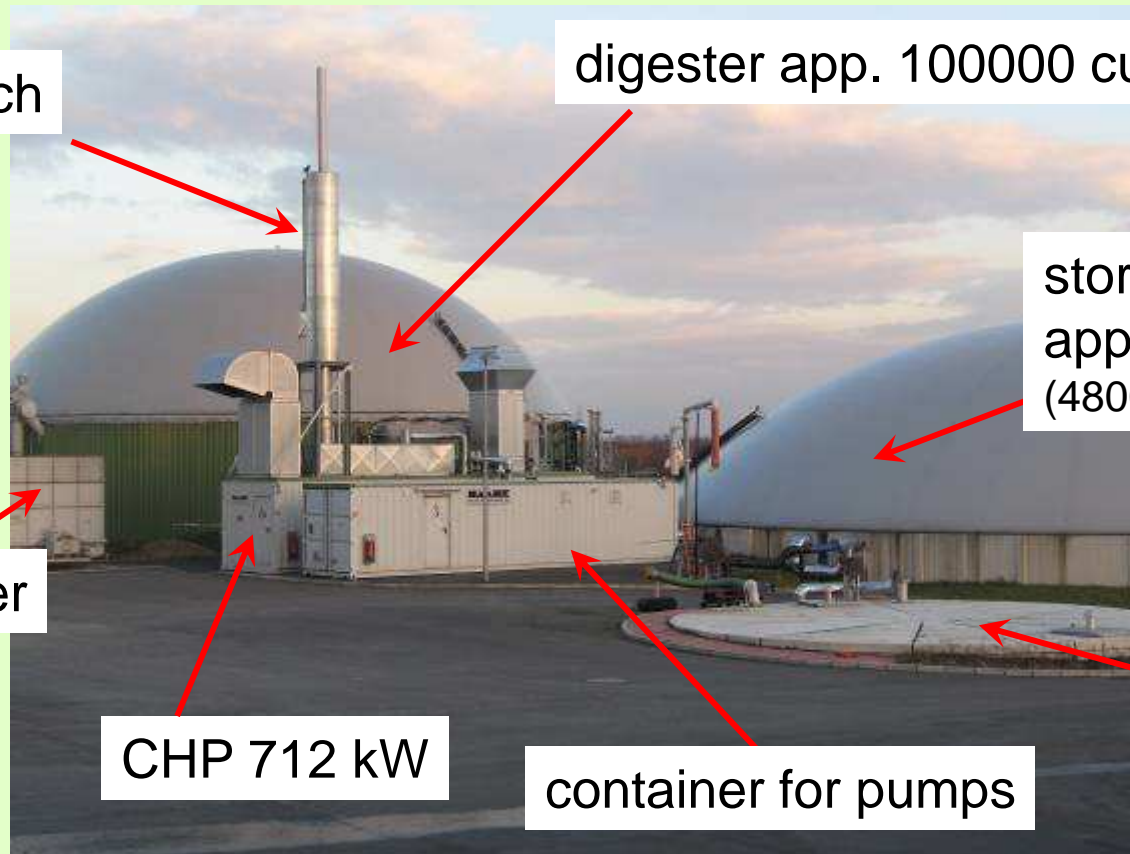
- maize
- gras
- wheat

- manure

2013-11-15



Biogasplant



torch

digester app. 100000 cu. feet (3000m³)

storage for substrate
app. 170000 cu. feet
(4800m³)

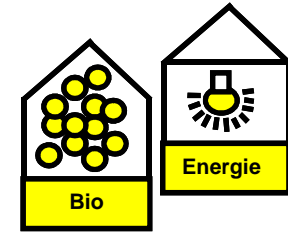
loader

CHP 712 kW

container for pumps

tank for liquid
manure
app. 10000 cu. feet
(300m³)

Bioenergy Village Jühnde



Wood based heating system



Storage app. 32000 cu. feet (900m³)

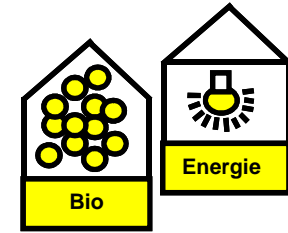


shredder

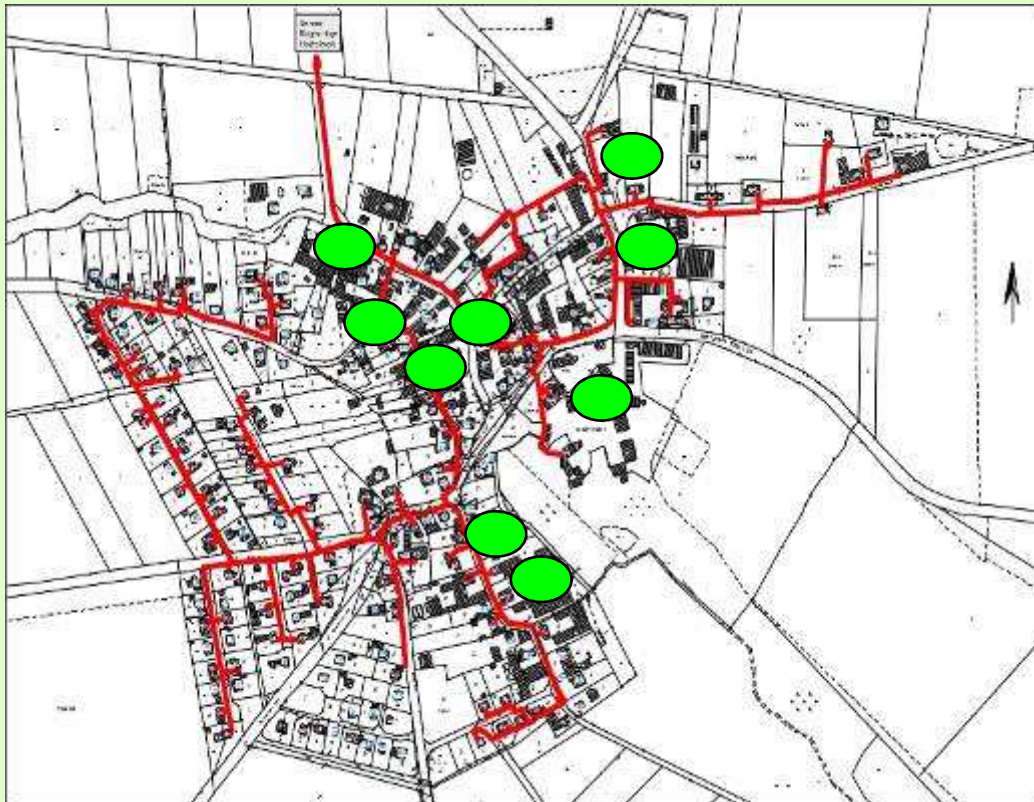


550 kW

Bioenergy Village Jühnde



Jühnde structure

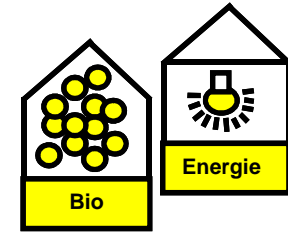


750 inhabitants
200 buildings
9 farmers ●
500 cows and 150 pigs

145 heat-contracts

currently
134 using the heat

Bioenergy Village Jühnde

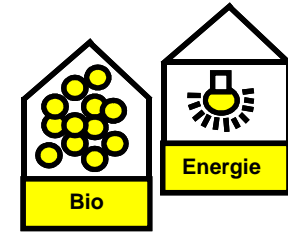


Hot water Grid

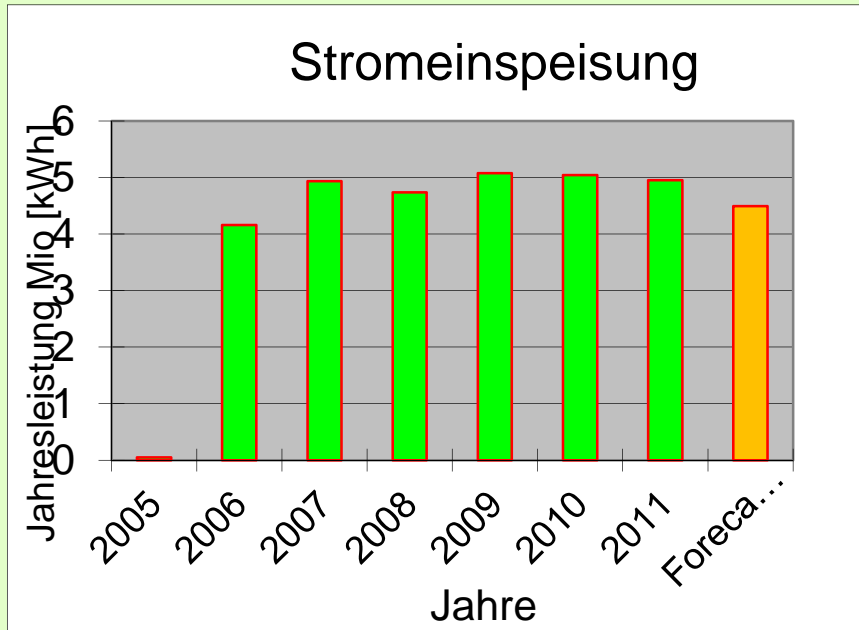
- approx. 3.2 miles long (5.5 km)
- diameter approx. 0.70 inch to 7.87 inch (18mm to 200mm)
- flow temperature 176 – 185 °Fahrenheit (80-85 °Celsius)



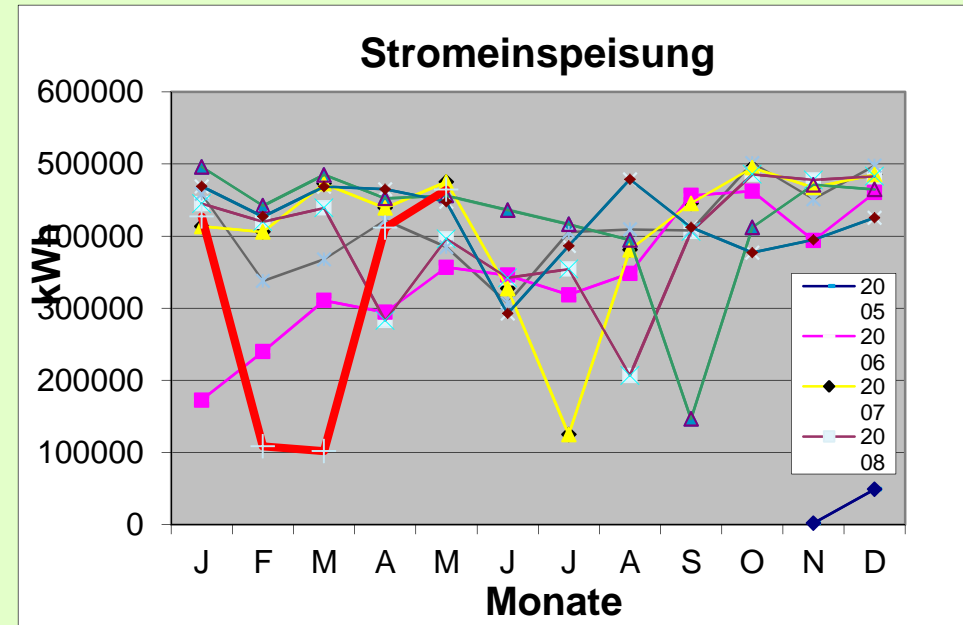
Bioenergy Village Jühnde



Electricity Production

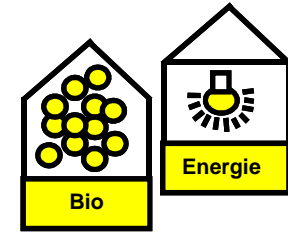


annual



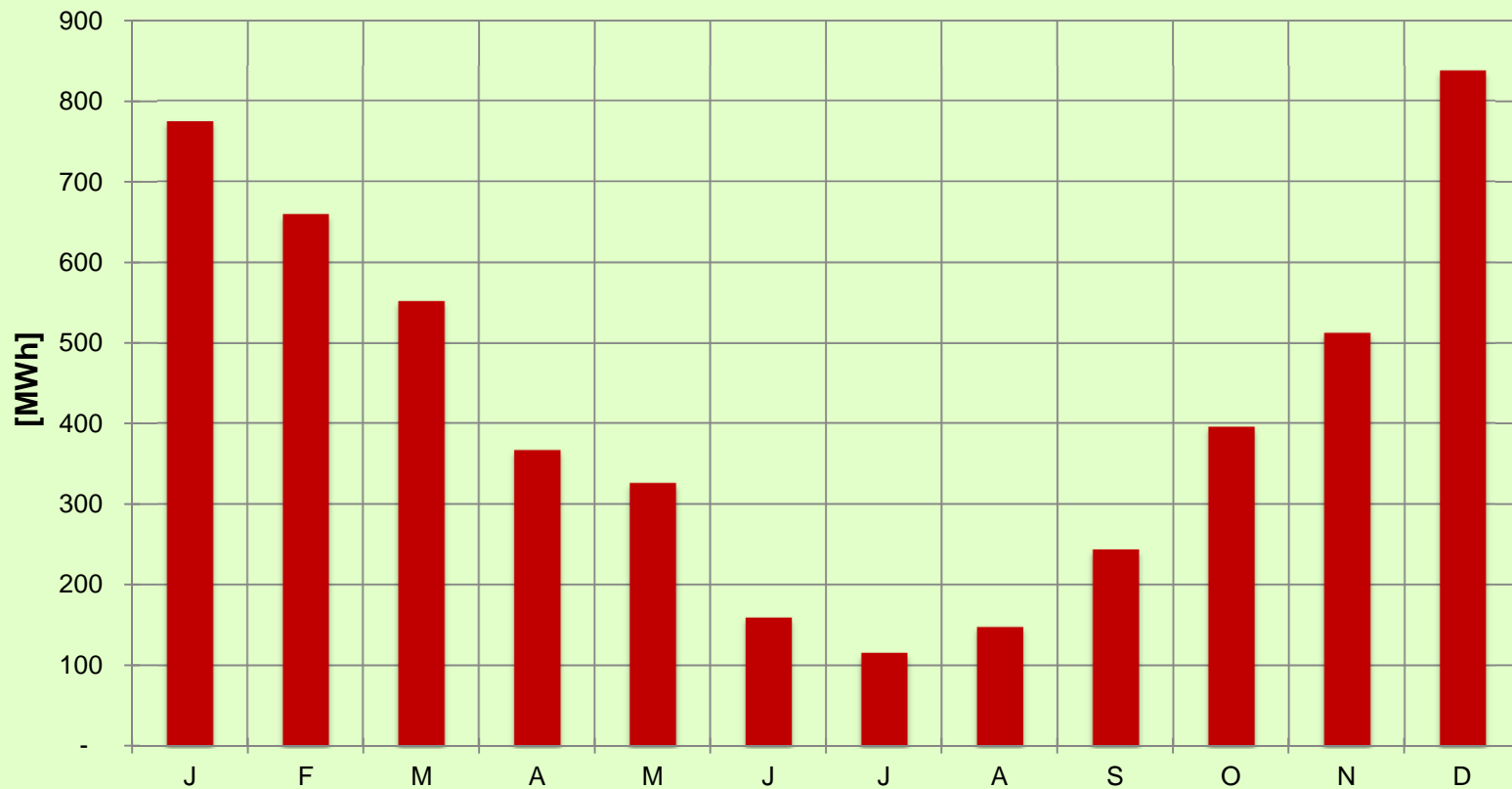
monthly

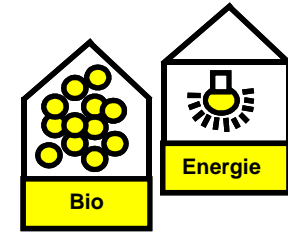
Bioenergy Village Jühnde



Self-sufficing heating

8° F in Dec 2010



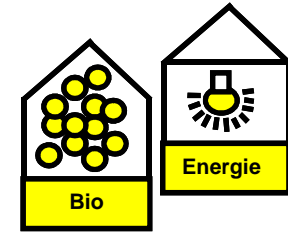


How much house technology is needed?



- Direct transit
- High energy efficiency
- very comfortable
- Only pay for the heat consumed (head meter installed)

Bioenergy Village Jühnde



R&D PV Cooperation Project with SMA

SF80=10KWp

SF60=8,6KWp



pesos® SunFlex Tracking systems will achieve an increment of energy of 40%

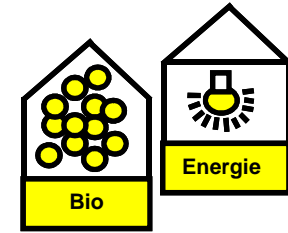


Technical Details	SF 60SD	SF 80SD
Module	48 x Ulica 180 Wp mono crystalline	60 x Sharp 175 Wp mono crystalline
Inverter	PVI 8000	PVI 10.000

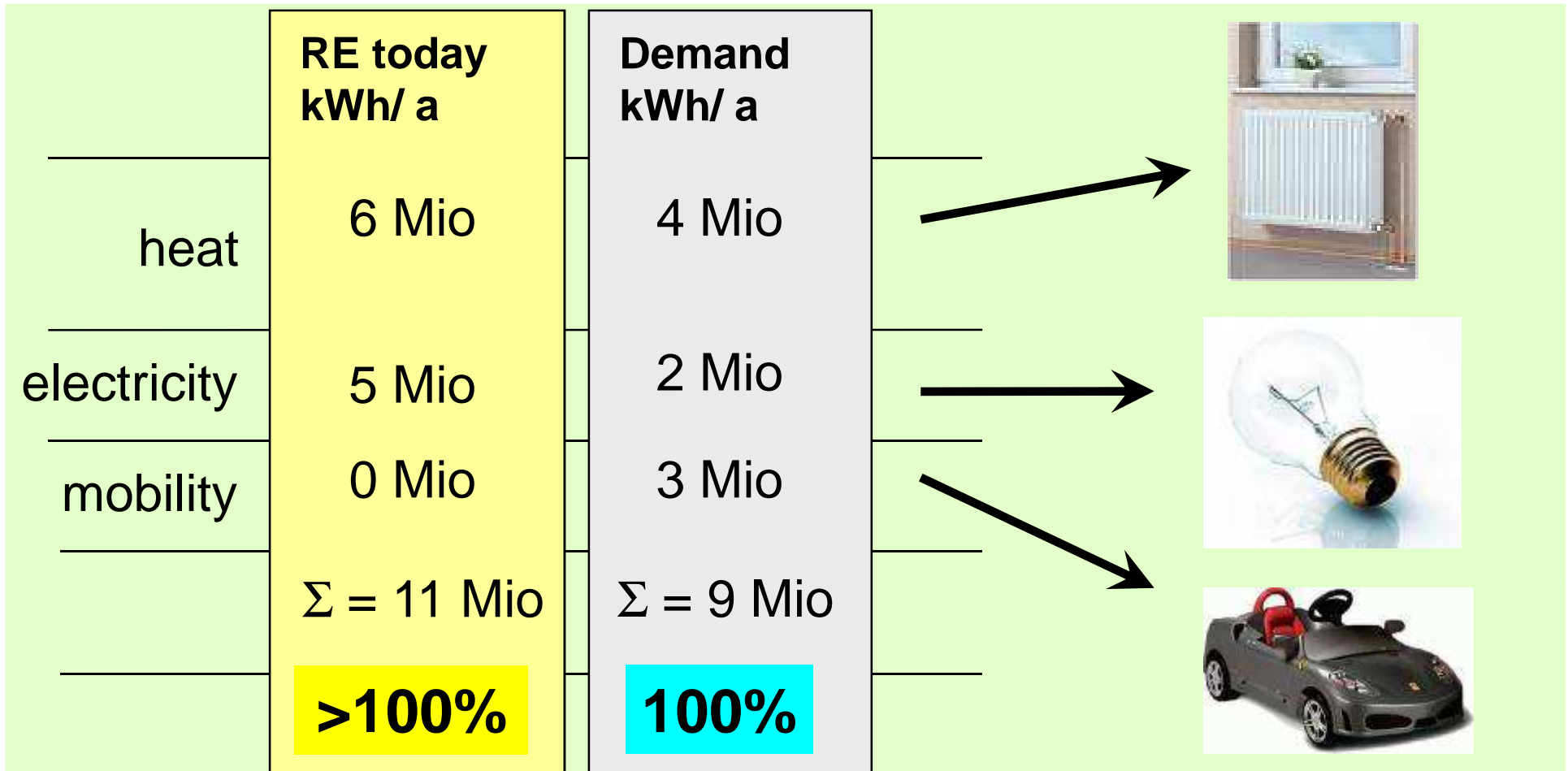
pesos® communication and monitoring systems

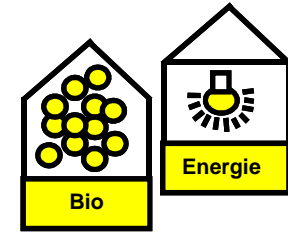
voltage increment for a year	ca. 10.000 kWh	ca. 13.000 kWh
rate of voltage for a year	3 households	4 households
reducing of carbon dioxide (CO ₂) for a year	ca. 9.000 kg	ca. 12.000 kg

Bioenergy Village Jühnde



Energy balance Jühnde (750 people)



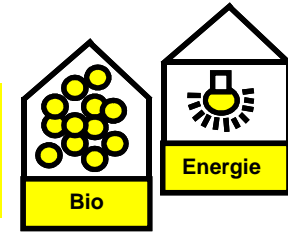


The power cycle to integrate people

Information
Motivation
Participation
Action



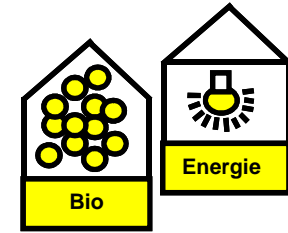
70% Participation



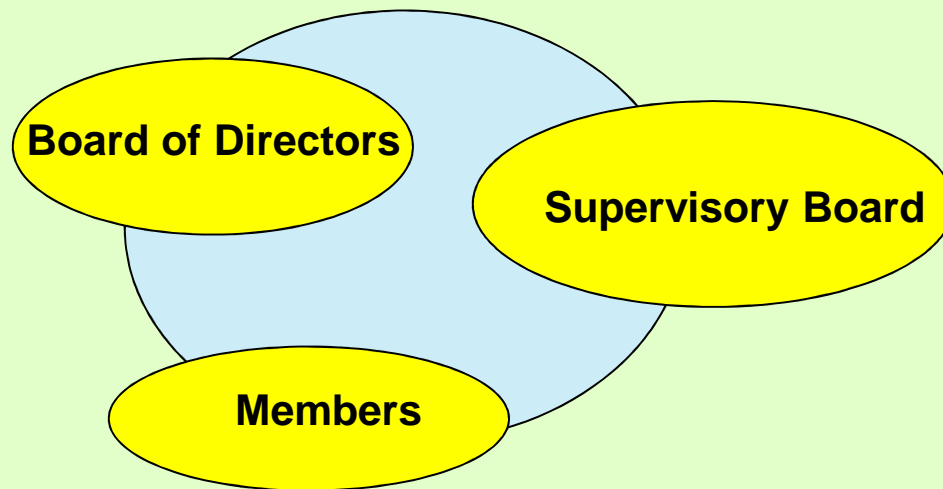
Information-Motivation-Participation-Action

- Village assembly
- Street discussion
- Individual discussion
- Workshops, etc.





Bioenergiedorf Jühnde eG (Cooperative)



Members

- 195 members

Workers:

- plant-Manager
- deputy
- Administration
- Specialist for electro

Board of Directors:

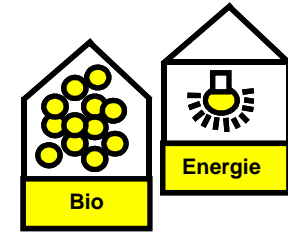
- 2 Executive Directors

Supervisory Board

- 8 directors

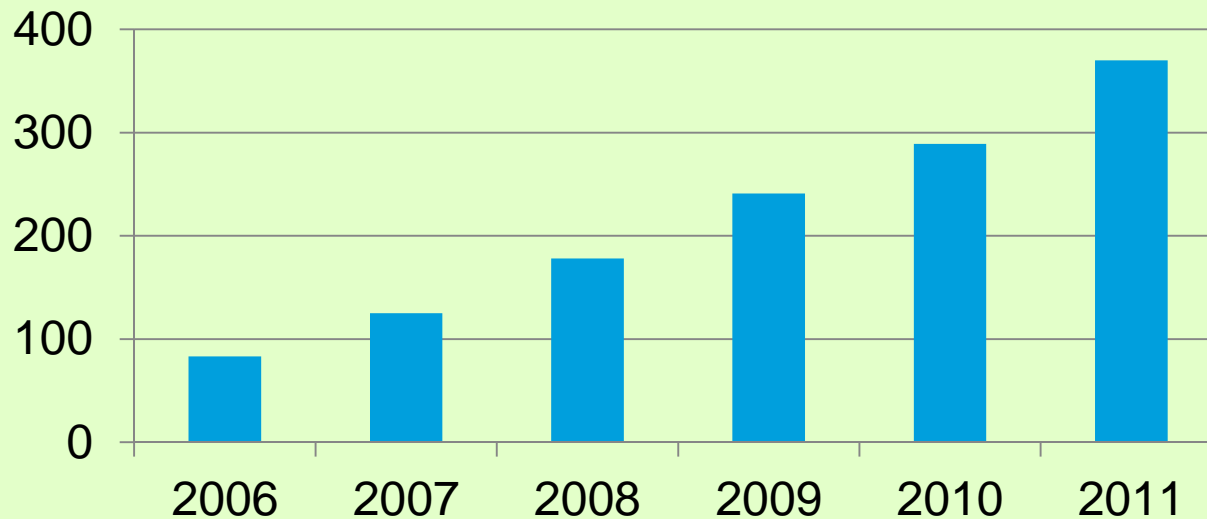
Bioenergy Village Jühnde

International year of Cooperatives (United Nations)

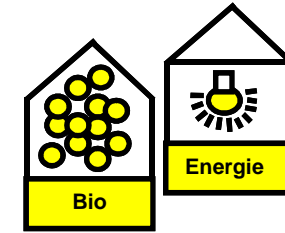


- More than 7600 Cooperatives in Germany
- Every 4th citizen is member of a cooperative (21 Mio)
- UN says more than 800 Mio worldwide in 100 countries

New Cooperatives in Germany



Bioenergy Village Jühnde



Financing and Funds

- Planning ca. 512 T\$

BMVEL	382T\$	75%
EU LEADER+	78T\$	15%
Jühnde	52T\$	10%

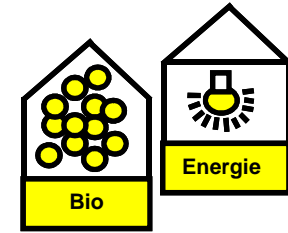
risk capital
from the village

- Implementation 7,560 T\$

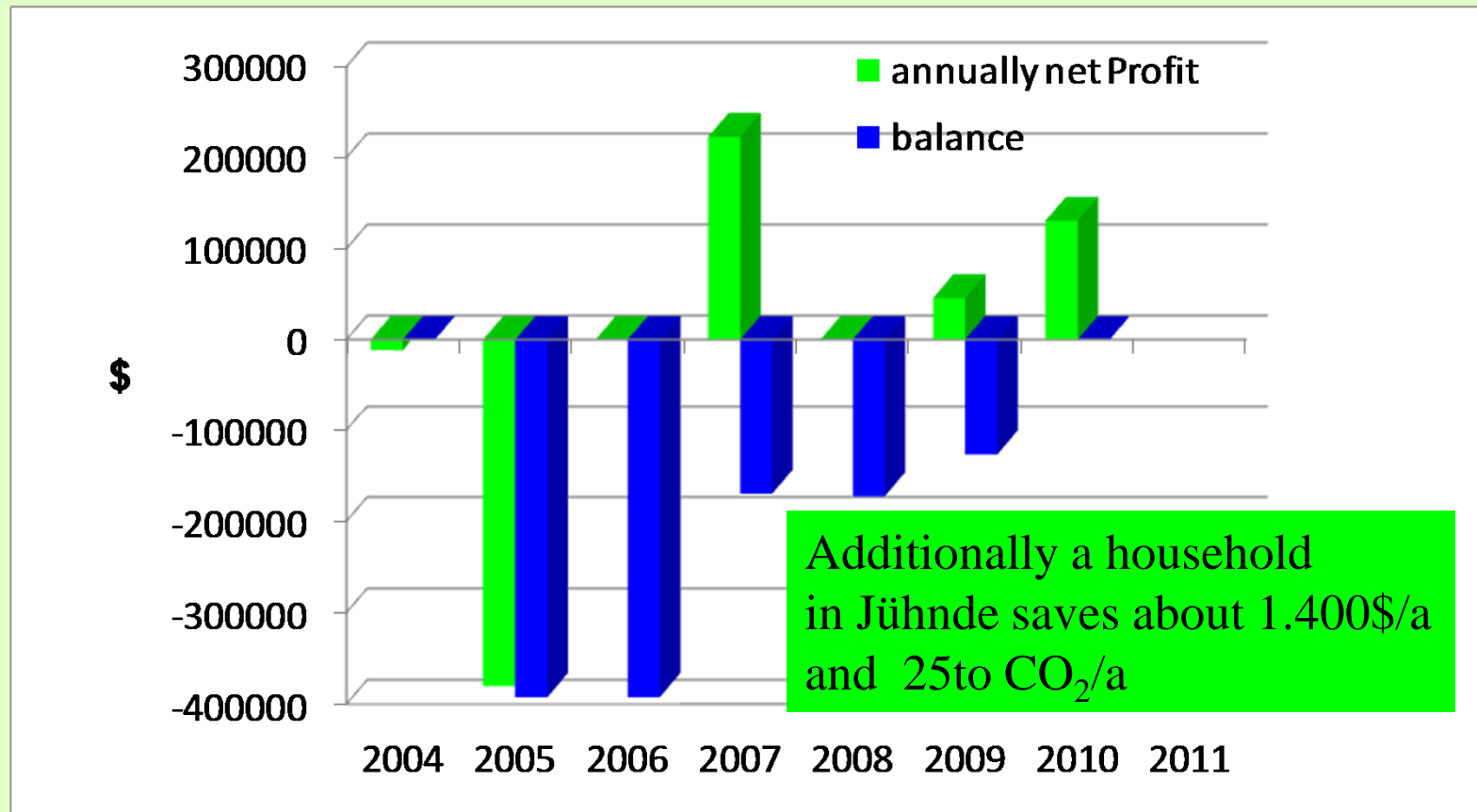
Capital	700 T\$
Credit	4,760 T€
Funds	2,100 T\$

70%
from the village

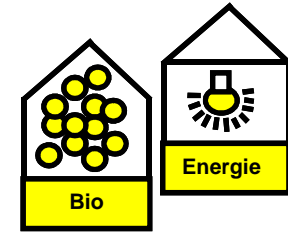
28,8%



Economic development

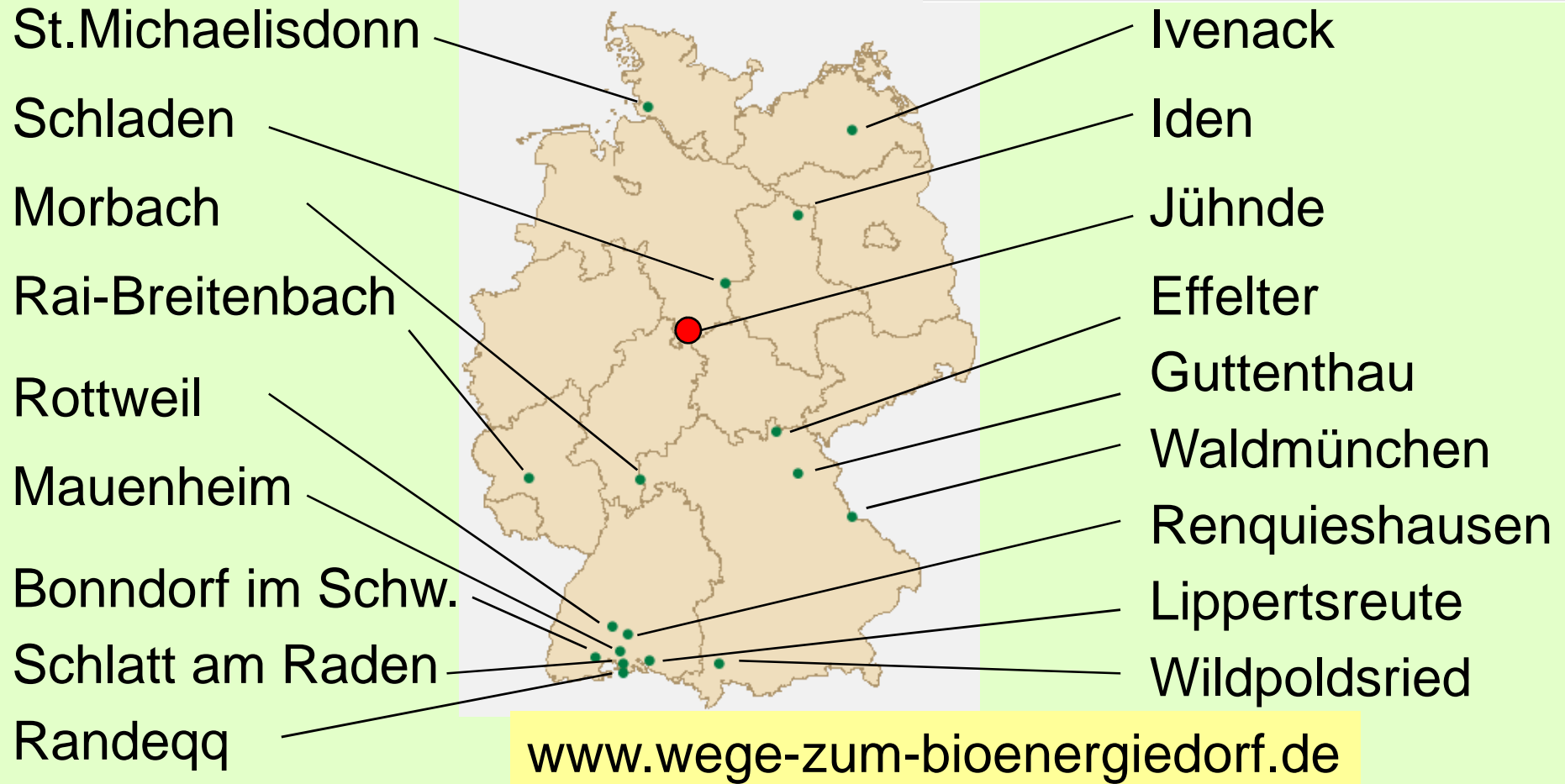


Bioenergy Village Jühnde

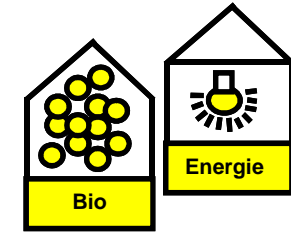


Bioenergy-Communities in Germany

© Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz



Bioenergy Village Jühnde



Summary

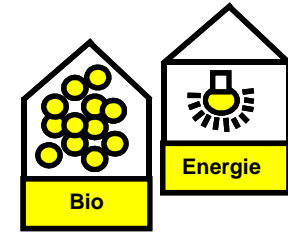
- Jühnde is the first Bioenergy Village in Germany
- A huge step for a small Village!



That is our part to change!

www.bioenergiedorf.de

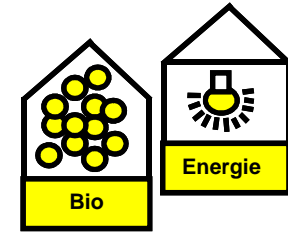
Bioenergy Village Jühnde



Awards



Bioenergy Village Jühnde



Contact



Heiko Lohrengel
Managing Director

Bioenergiedorf Jühnde
Centrum Neue Energien GmbH
Koppelweg 1
D-37127 Jühnde

Mobil: +49 (0) 171 3054155
Phone: +49 (0) 5502 911973
Fax : +49 (0) 5502 911974

E-Mail: Heiko.Lohrengel@c-ne.de
Internet: www.c-ne.de