

We think in generations.





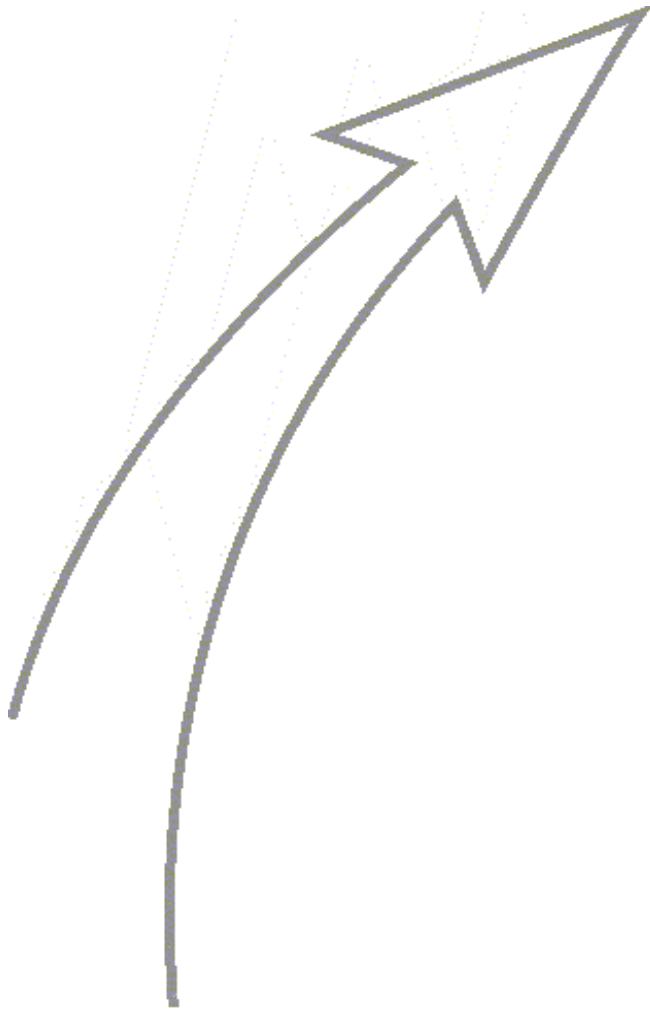
**Involving the community in wind
power development**

**Ecological and economic benefits of
wind energy**

Vasil Rashev
Project Manager, EWS Consulting EOOD
Sofia · 20.11.2012

- EWS introduction
- Economic factor wind energy
- Energiebaukasten – Cubes (Energy Saving Program)
- Best practice. Develop a wind farm together with the community
- Ecological benefits of wind energy
- Concept for a Bulgarian community

Development of the company



- Goal 2012: Expansion of research and development at **Munderfing**
- 2011: Office Construction Management in **Bruck ad. Leitha/Austria**
- 2010: EWS Consulting EOOD, **Bulgaria**
- 2010: EWS Consulting Corp **USA, Chicago**
- 2008: First activities **abroad**
- 2004: Centre for Renewable Energy **Munderfing/Austria**
- 1994: Energiewerkstatt GmbH, **Foundation**

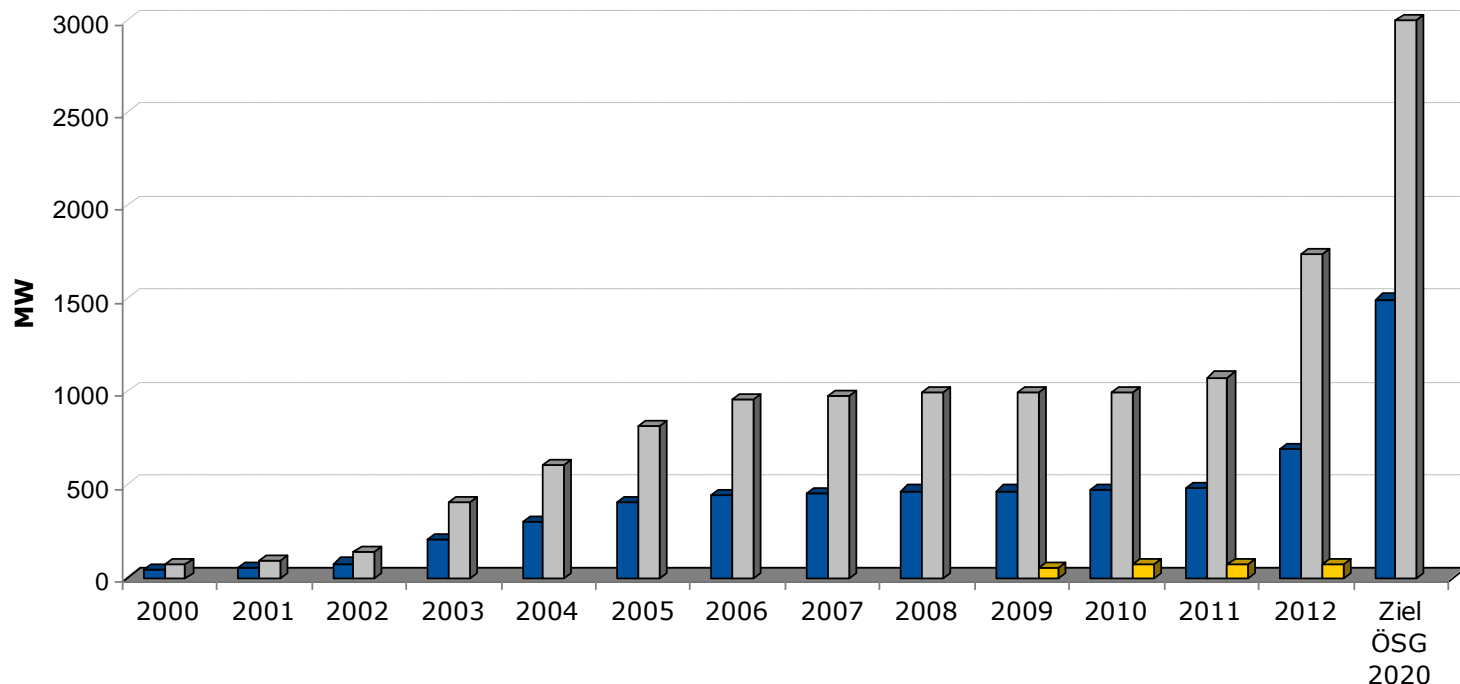
Our Customers



Our competence comes from years of experience



Wind energy in Austria – Total installed MW capacity and part planned by the Energiewerkstatt GmbH



■ Planned by Energiewerkstatt for Austria ■ Total installed capacity in Austria ■ Planned by Energiewerkstatt for other countries

Economic factor wind energy in Austria



- Volume of investment of the projects
540 million €
- Revenues from construction
146 million €
- Revenues during ongoing operation
540 million €
- Jobs / year
2300 during construction
9000 over life span of wind turbine

This information refers to projects which were planned and realized by the end of 2011 for customers of the EWS group.

Economic factor wind energy in Bulgaria



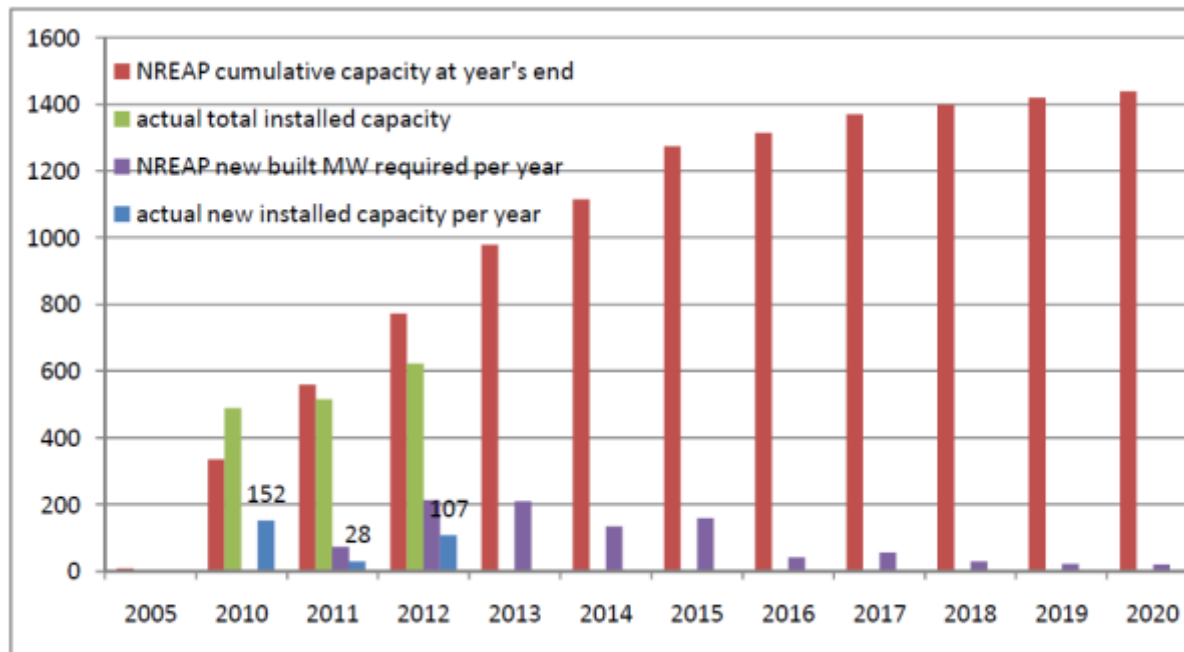
- Volume of investment of the projects
140 million €
- Revenues from construction
45 million €
- Revenues during ongoing operation
140 million €



This information refers to projects which were planned and realized by the end of 2011 for customers of the EWS group in Bulgaria.

Economic factor wind energy

- NAP- expansion scenario 1,440 MW in 2020
- Increased capacity of 820 MW
- 3.3 TWh electricity
- 1.3 billion Euro investment
- 1.5 million tons CO2 savings



- **Investment in wind turbines (specific)**
- 6 annual jobs per installed MW
- 0.4 – 0.8 yearly jobs per MW for equipment removal at the end of its lifespan
- 470,000 Euro per MW added value during plant construction

- **Operation of wind turbines**

- 0.54 permanent jobs per installed MW for maintenance and repair

- 55,000 Euro yearly per MW added value

- Lifespan of turbine is approx. 20 years

□ Added value and jobs

	NAP – Scenario Additional 820 MW
Investment	0.4 billion Euro added value 5,700 jobs created
Operation time	0.9 billion Euro added value 12,845 jobs created
Total	1.3 billion Euro added value 18,545 jobs-gross created

□ Economic balance 2011-2040

	NAP scenario additional 820 MW
Gross effect	1.3 billion Euro 18,545 jobs created
Displacement	0.3 – 0.7 billion Euro 5,948 – 13,052 jobs
Net effect	0.6 – 1 billion Euro 5,493 – 12,597 jobs

ENERGIEBAUKASTEN®

100 % erneuerbare Energie



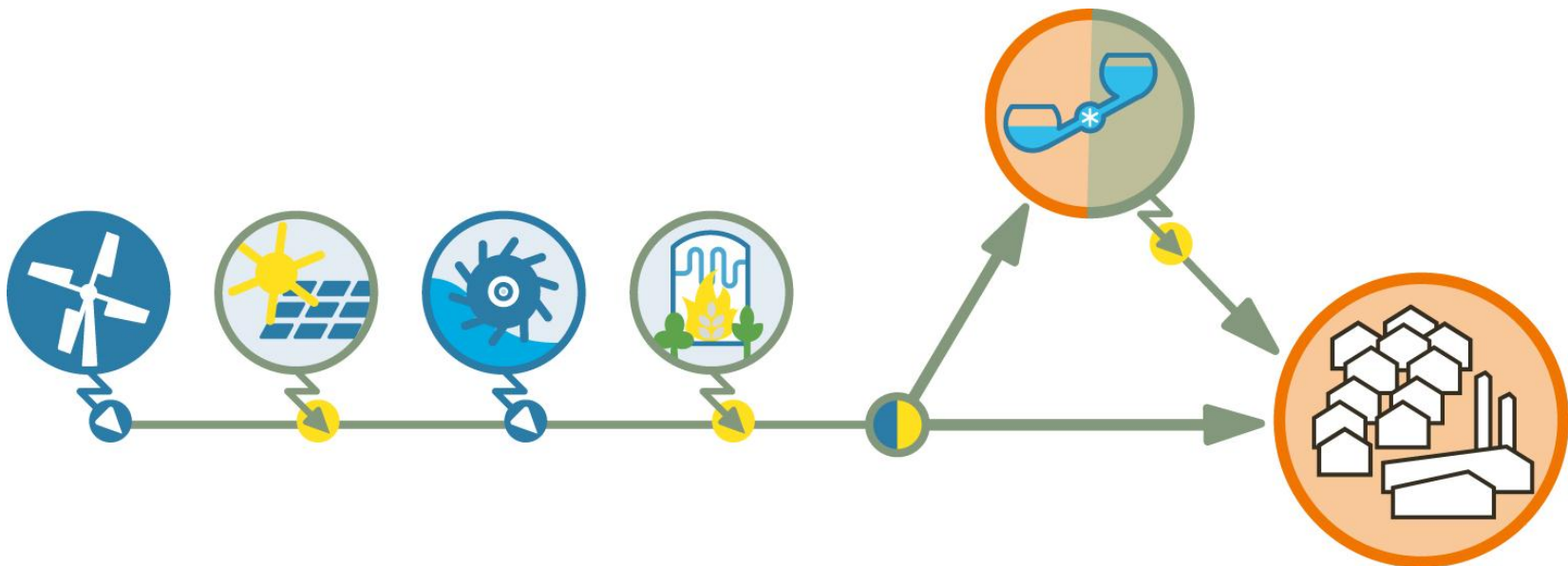
Cubes® - 100 % renewable energy in 30 years



- Energy concepts for communities
- Guide for energy consultants
- Solutions for companies

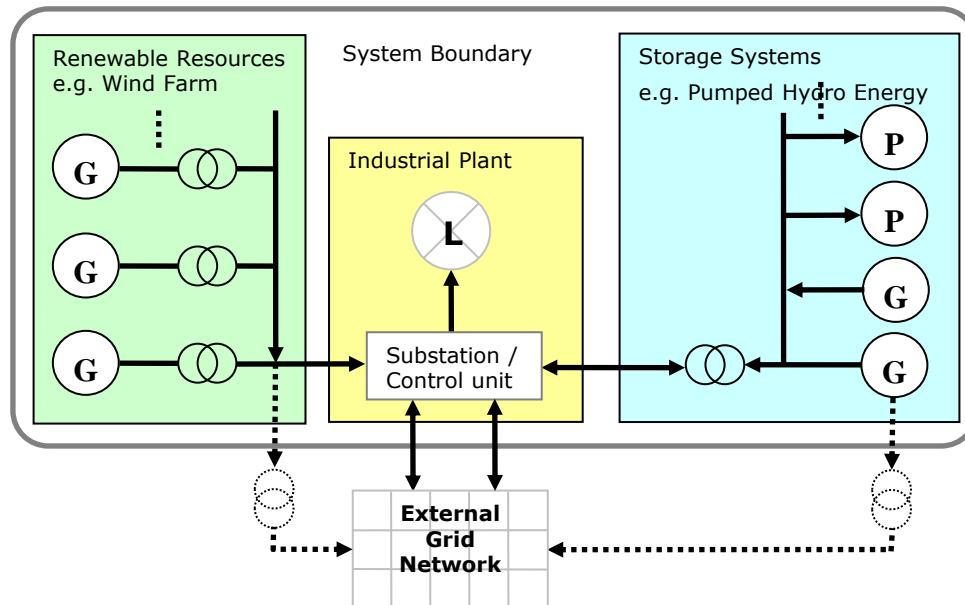
100% Renewable energy at the push of a button

- efficient and carefully utilized
Security of supply – stabilized energy prices



Renewable Energy (RE) „at the push of a button“ ...for industrial companies

- Energy independency
- Energy security
- Stabilised energy prices
- Efficient use of renewable energy

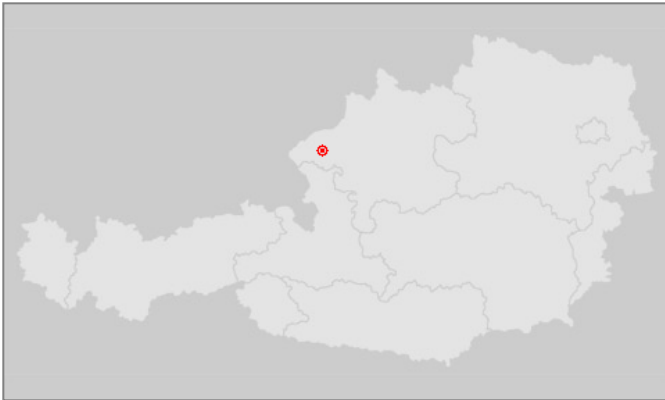




Municipality Munderfing/A

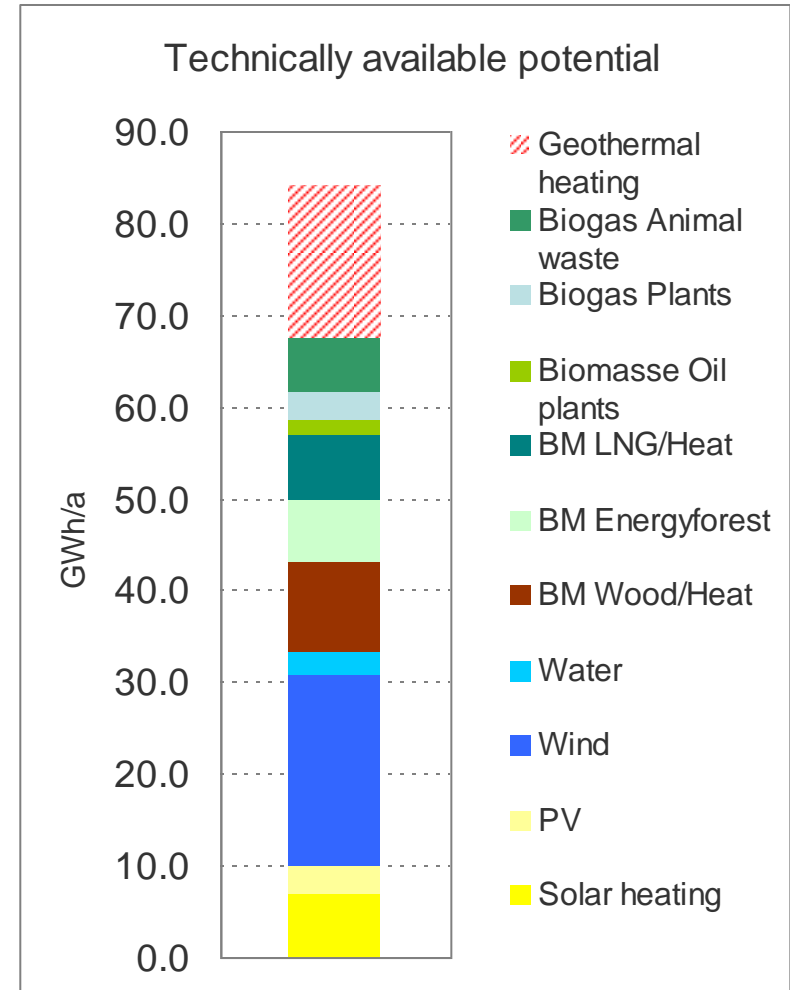
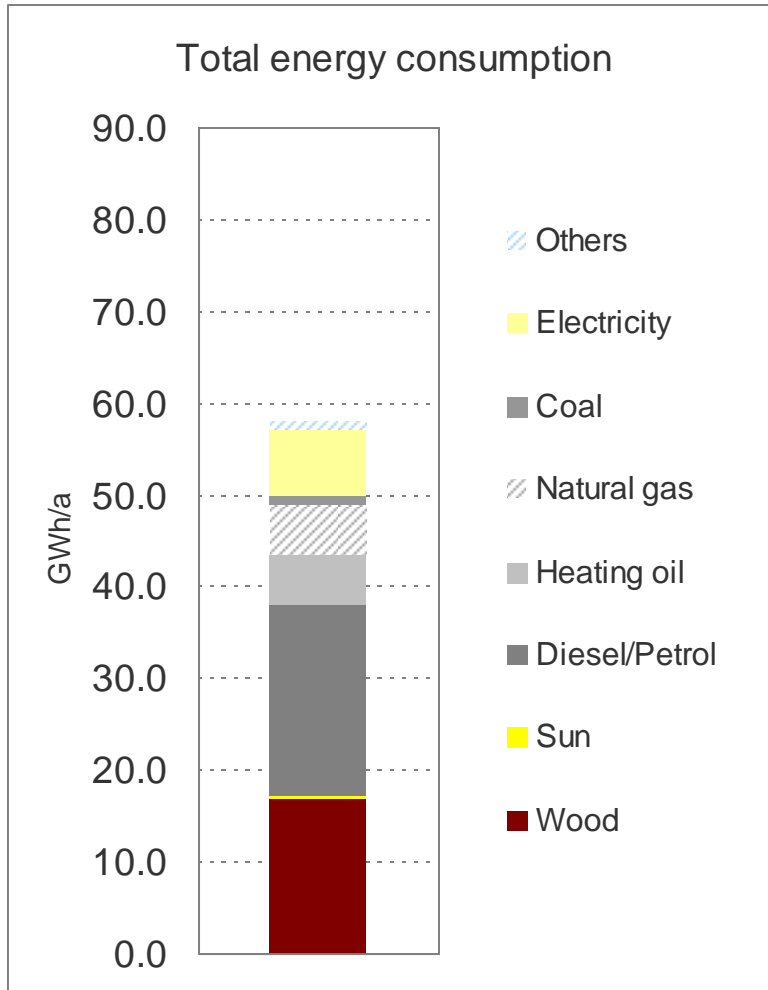


Municipality Munderfing



- Location: Upper Austria / District of Braunau
- Population: 2,757 inhabitants
- Households: approx. 1,000
- Area: 31 km²
- Goal: 100 % renewable energy by 2030

Energy consumption and potential



A community as a wind farm operator (1/2)



□ 2005:

- The energy concept „Cubes“ is created with the community inhabitants under EWS process support
- Unanimous resolution of municipal council for realization

□ by 2010:

- Doubling of thermal solar plant area
- Fivefold increase of photovoltaic area
- Modernization of 5 small hydropower plants
- Changeover of school supply heating from natural gas to biomass

□ 2011 (Nuclear catastrophe in Fukushima)

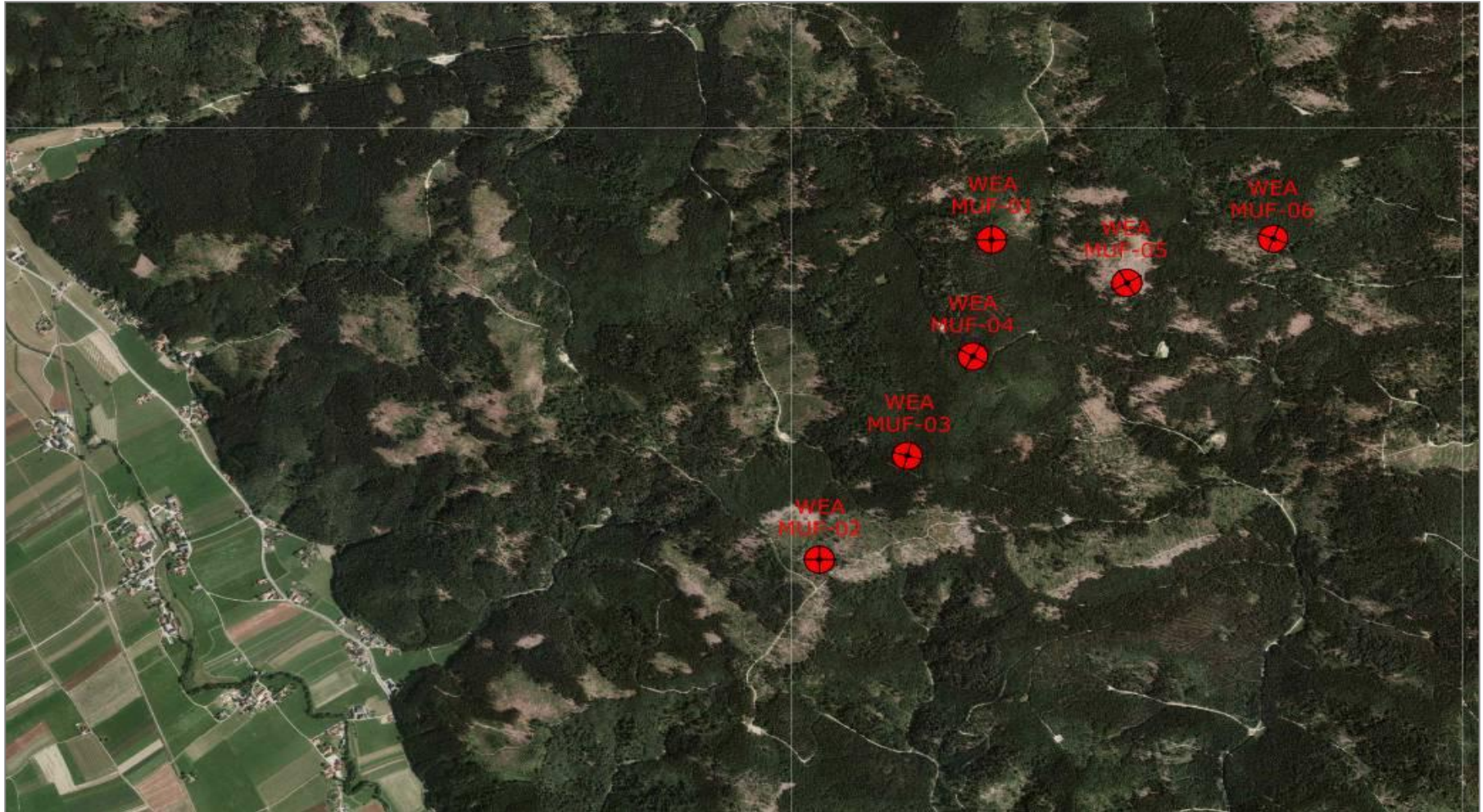
- Establishment of company „Energie Munderfing GmbH“ to implement key projects „public wind farm“ and “PV-field park“ to achieve the goal of 100% renewable
- Starting the approval procedures of „ public wind farm“



- 2012:
 - Completion of the approval process
 - Decision for implementation by the community
 - **Financing negotiations**

- 2013:
 - Construction of public wind farm

Wind Farm Munderfing



Wind Farm Munderfing: Electricity for approx. 10,000 Households



- **Annual energy output:
38 million kWh**

30 % of Households from the Braunau district will consume as much electricity as the wind farm produce

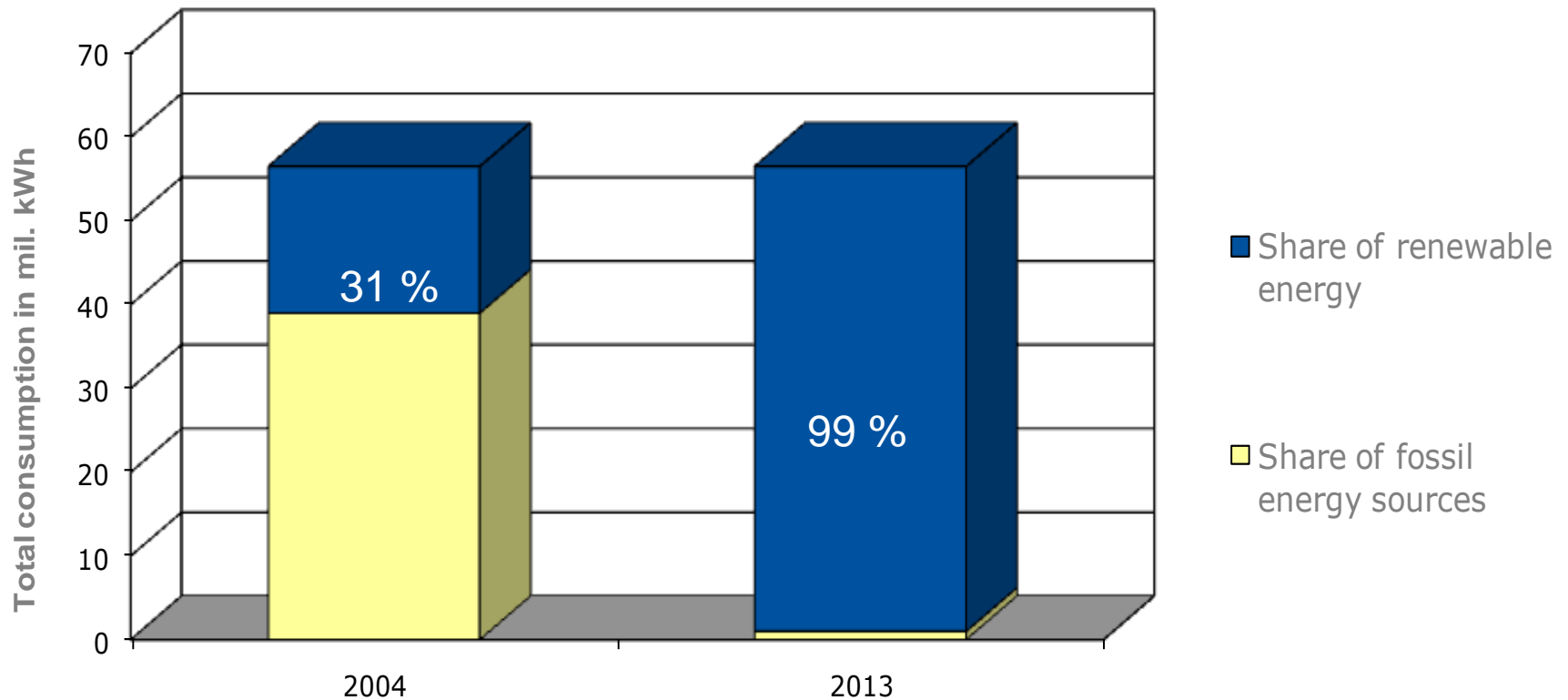
- **Savings / year:**

Natural gas: 4.75 million m³ +
heating oil: 1 million liters +
coal: 4.75 million kg

- **CO₂-reduction / year (A-mix):
26,448 tons**

„100 % renewable energy“ Cubes Munderfing

- Total energy consumption of Munderfing according to data from 2004: approx. 58 million kWh



Public Wind Farm Munderfing

Good for the climate – good for everyone



- Environmental balance WEA MUF-1

Emission reduction potentials WEA MUF-01			
	EU-Mix	A-Mix	
CO ₂ - reduction potential	2.214,5	3.802,9	[t/a]
SO ₂ - reduction potential	5,6	2,0	[t/a]
NO _x - reduction potential	3,5	4,0	[t/a]
Fine particles reduction potential	0,3	0,2	[t/a]
Fuel reduction potentials WEA MUF-01			
	EU-Mix	A-Mix	
Natural gas reduction potential	246.230	656.623	[m3/a]
Heating oil reduction potential	47.575	95.211	[l/a]
Coal reduction potential	453.741	620.509	[kg/a]
Enriched uranium reduction potential	48	0	[kg/a]

This is how the children see the future of the community of Munderfing.



A concept for Bulgarian municipalities?



- Individually adapted public participation plan for our communities
- Creating new sources of revenue
 - Profit and taxes can be used for the realization of the future community projects (value remains in the community)
- Increase of social acceptance, through the participation of all residents
- Project participation for financially weak persons
- Use of development program and subsidies

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