



Rural Clean
Energy Tour of
Germany
Sept. 22-29, 2012



- Organized by the **Heinrich Böll Foundation**
- Part of their **Climate Network Initiative**
- Funded in part by the **European Union**
- **Tour Goals:**
 - Foster a transatlantic exchange on energy and climate issues
 - Provide American stakeholders with an in-country opportunity to learn about German renewable energy policy and projects



-  Berlin - September 23-25
Germany
-  Kassel - September 25-26
Germany
-  Rhön-Grabfeld September 26-27
Germany
-  Grafenwöhr - September 27
Germany
-  Frankfurt - September 27-29
Germany
-  Morbach - September 28
Germany



Meeting Stakeholders:

- **German Federal Ministries**

- Environment, Nature Conservation and Nuclear Safety
- Economics and Technology

- **Members of German Parliament**

- **Cooperative Leaders and Project Developers**

- **Mayors, Local Business Owners, and Community Leaders**

- **Farmers and Facility Operators**

- **Renewable Energy Consultants**

Congress on 100% Renewable Energy Regions



Advantages of Community Renewable Energy Projects

- Increased local control
- Strengthen the local economy
 - Tax and lease payments
 - Jobs and income for local farmers
 - Energy dollars stay in community
- Concentrates small capital for big projects
- Decentralized, on-site, eco-clean energy
- Independence from big utility companies
- Increased energy security / reduced vulnerability
- Increased local support

Three Models of Community Renewable Energy Projects

- **Grossbardorf** (Rhön–Grabfeld region) – single community coop
- **Grafenwoehr** – multiple community coop
- **Morbach** – municipal public/private partnership

Energy Cooperatives

Each for all, all for each



Images from a Michael Diestel (of Agrokraft) presentation

Germany Cooperative Societies Act – 1889

- Promote and support members' economic and social interests
- Sound corporate governance
- Every member has only one vote
- Member liability is limited to coop share
- Mandatory corporate audit



Coops have the smallest insolvency rate of all German organizations (< 0.1 %)

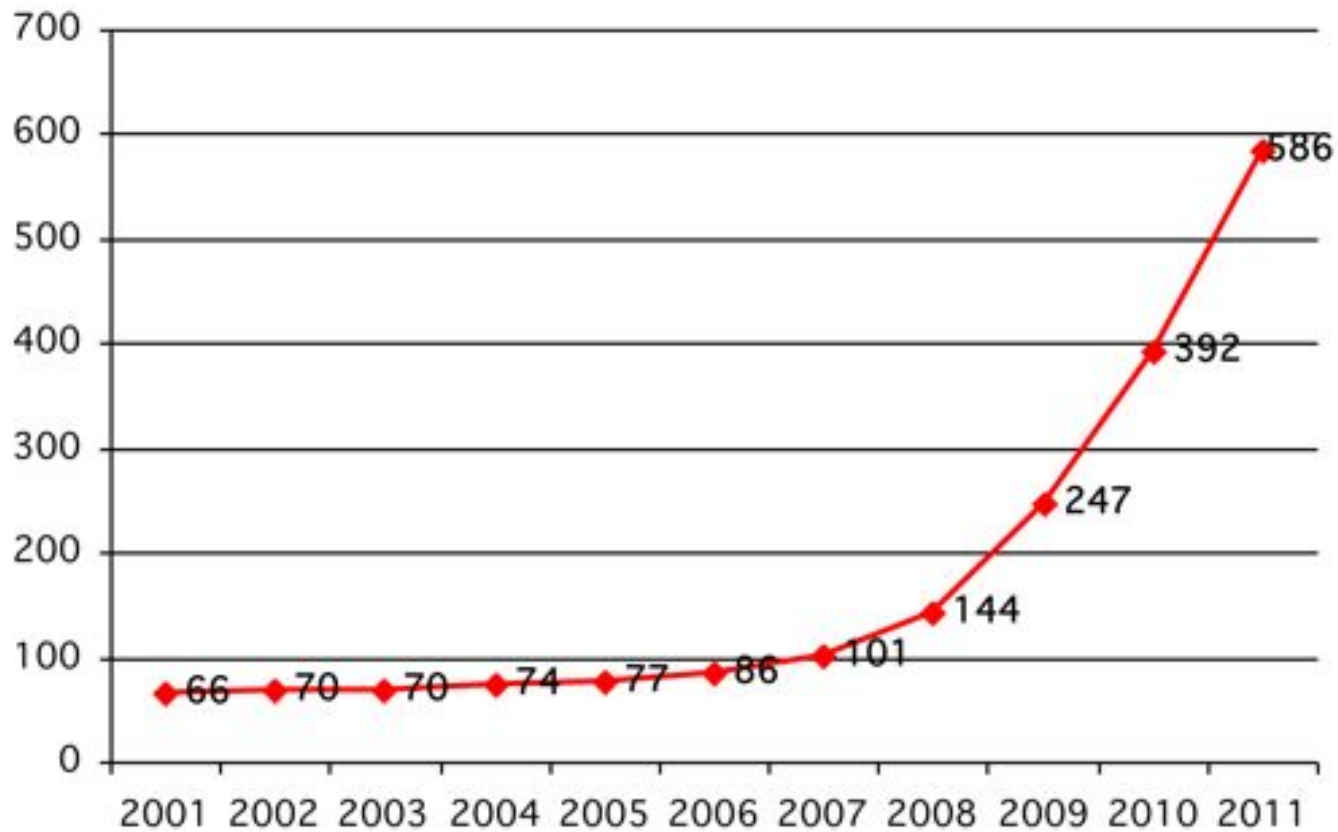
DGRV – German Cooperative and Raiffeisen Confederation

- National Co-op support organization
- Provides commercial, legal and auditing services
- Largest economic organization in Germany in terms of members:
 - 5,800 cooperatives
 - 20+ million members



From a Andreas Wieg (from DGRV) presentation

The number of German energy cooperatives has quadrupled during the last three years.



From a Andreas Wieg (from DGRV) presentation



Grossbardorf Energy Coop Systems

- Biogas Digester – 625 kW electric & 680 kW thermal district heating system with option to connect and purchase heat - connection fee of 5-7K €
- 2.4 MW Solar: Farm, Stadium Roof, Community Rooftop
- Produce 5x electricity use and .9x heat use in Grossbardorf (pop. 1,000)



Grossbardorf Coop Investments

- 154 Coop members invested 940,000 € in roof-top PV
- 44 Local farmers invested 1,200,000 € in biogas plant
- 1,900,000 € equity capital from the region
- 11,000,000 € from local and federal development banks
- Total investment = 15,260,000 €

1 €/Euro = \$1.28 US



Grossbardorf Return on Investments

- About 10% –15% Return On Investments on biogas plant and community solar system
- About 5% – 8% ROI on residential roof-top solar

625 kW Digester: Producing electricity and heat for community, serving as a revenue stream for local farmers



Machinery Plant Built next to Biogas Plant



1.9 MW Solar Farm



110 KW Solar Stadium Roof



German Farmer Alternative Activities & Revenue Streams:

Providing crops for community digester, hosting PV panels, B&B for families, and burning waste wood for drying grain



Grafenwöhr

- Collection of 19 towns and individuals who invest in renewable energy projects in the region
- Mayors form board of directors
- Collected 9.7 million € already
- 22.3 MW of solar installed
- Large wind project being planned



Morbach – Energy Landscape

- **Municipality formed Public/Private partnership with UWE – log homes, wood pellets and pellet stove company.**
- **Converted former U.S. artillery base into an Energy Landscape**
 - 28 MW of Wind (14 - 2 MW turbines)
 - 2.1 MW of Solar PV
 - 500 KW Biogas Digester (dries wood pellets)
 - Climate Change and Cold War Educational Center
- **Used feed-in tariff and invested in renewable energy to spur local economic development**



Solar and Wind Farm



Solar Water Purification



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