



Center for Geopolitics of Energy and Raw Materials
(CGEMP)



In partnership with:



French Association of Energy Economists

Power in Germany: The turning point of 2011

One year later, lessons for neighbouring countries

German unique factors of success

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German unique factors of success

Implementing the energy transition at the local level: the experience of energy cooperatives

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Outline



« The energy transition is a collective project that requires an active involvement of all parts of society.»

Local dimension:

- RES potential is a local asset
- potential for energy efficiency is mostly local and diffuse (buildings)
- local climate action plans often more ambitious than national strategy

Challenges:

- double RES-E generation between 2010 (104 TWh) and 2020 (217 TWh)
- cumulated investment needs of € 250 billions (KfW)
- rhythm of grid development has to be accelerated exponentially

Why civic participation ?

Acceptance :

- raising awareness and acceptance through active participation and profit sharing
- « the more you know it, the more you like it »
- citizen involvement in planning process and realization reduces opposition and thus risks & costs

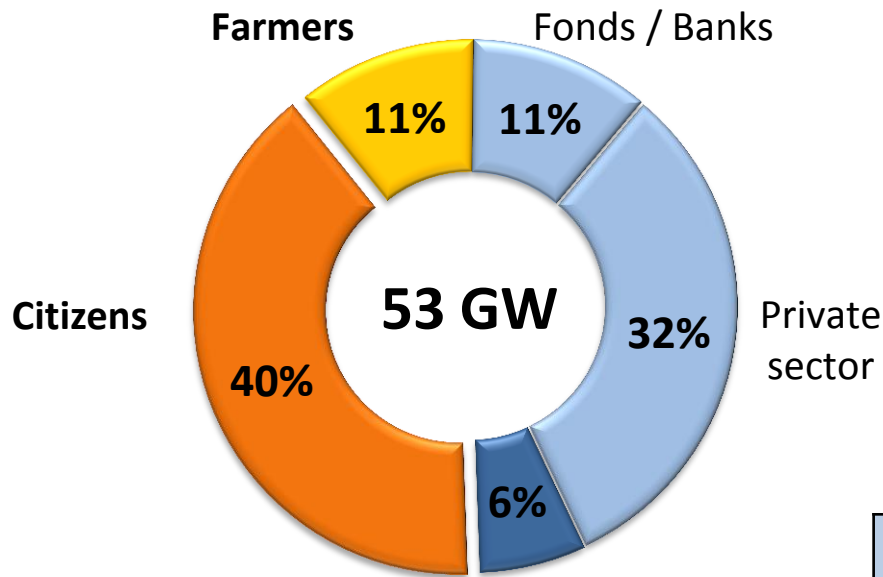
New economic opportunities:

- huge investment needs → attract new sources of capital
- high private saving ratio of German households
- low profitability requirement
- creation of local added value, mostly in rural areas

A new vision: citizens as « prosumers »

Does it matter?

Ownership structure of RES capacities until 2010



The « Big Four »

Source: trend:Research (2011)

- Citizens and farmers own more than 50% of total RES capacities installed between 2000 – 2010
- share of citizen-owned capacity increases every year since 2004

Share owned by citizens & farmers by source	
Photovoltaic	60,6 %
Wind (onshore)	53,3 %
Biomass	71,5 %

Restructuring the German power market

Current situation:

- High concentration on the supply side: the big 4 represent 82% of total generation, municipal utilities only 10%
- high competition on the distribution side: over 1000 distributors, market share of 52% for the 800 municipal utilities,

The shift towards decentralization:

- about 20.000 local concessions for power and gas will expire in the coming five years → growing interest in « re-municipalization »
- more generation capacity connected to distribution grid (90 GW) than to transmission grid (78 GW)
- Stadtwerke: only 2% of RES capacities (1,2 GW) but growing potential, especially for local CHP

Restructuring the German power market (2)

BUT....

- financial capacities of municipalities are limited and often already overstretched
- individual citizens do not have financial leverage and know-how to develop bigger projects
- large investors' projects often face strong local opposition
- feasibility of new projects by municipal utilities is very dependent on stable customer base

**→ *need for new networks of actors with
a multi-stakeholder approach***

Energy cooperatives in Germany

Cooperative societies:

- idea goes back to early 19th (UK, W. Raiffeisen & H. Schulze-Delitsch in Germany).
- up to 52.000 cooperatives in all sectors in the 1930s; almost 10.000 with 20 million members today

In the energy sector:

- first wave in the 1910s to develop access to electricity in rural areas
- new and more attractive framework in the last decade:
 - energy market liberalization and unbundling since 1998
 - renewable energies act (2000)
 - reform of cooperative societies law (2006)

➔ number of energy cooperatives x 10 in the last decade (over 600 in 2012)

What makes them so attractive?

High flexibility:

- membership open to all kinds of actors (citizens, public institutions, companies), no min. or max. treshold.
- no fixed amount of capital, rapid and straightforward evolution, no prospectus requirement
- potential for evolution: cooperative can start as PV producer, extend to wind, grid concessions, distribution etc.

Democracy:

- « one member - one voice » ; joint decision making
- direct involvement of citizens and local administration fosters acceptance and streamlined procedures (reducing risk & costs)

What makes them so attractive?

(2)

Economic efficiency:

- regular control by regional cooperatives association
- partly based on volunteering and honorary counseling (by local cooperative banks, policy makers, municipal utilities) → low operational costs
- low profitability requirement for capital (in practice: 3% to 7%)
- limited financial liability and no entry barriers (small unitary contributions) → considerable accumulation of capital at the local scale: **average investment capacity of € 1,9 to 3 million**
- « In-kind » contributions: free or cheap access to roof areas / properties in the public domain (schools, town halls, etc.)
- cooperatives are mostly created in rural areas and generate new opportunities for economic development
- new cooperation partner for local utilities: joint investments in production capacities

Conclusion

- ➔ Energy cooperatives are not THE solution but can be part of it:
 - Foster acceptance and active involvement
 - implement new networks of actors and projects that would otherwise not be initiated
 - attract new sources of capital with low profitability requirement
 - requires coordination with national strategy

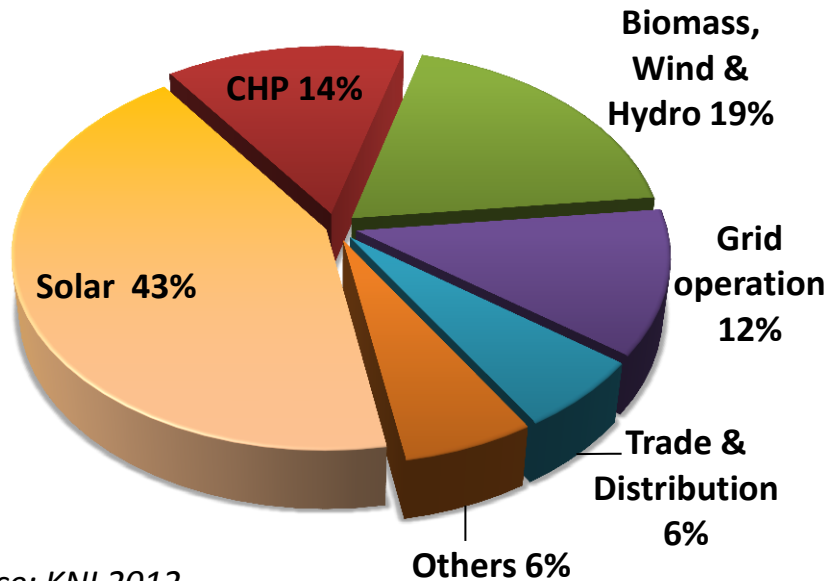
- ➔ EnCo might be a means to develop energy efficiency and infrastructure:
 - Smart grids on the local scale: more efficient if citizens are involved from the beginning (behavioral aspects, rebound effects)
 - transport grid development: financial participation as a solution to overcome local opposition ?

What are the conditions of success ?

- **culture of local participation**
- **adapted regulatory framework:**
 - flexibility
 - low entry barriers
 - active support from public institutions
- **economic incentives:**
 - Feed-in tariffs for RES-E and heat

Annex

Energy cooperatives by activity



Source: KNI 2012

- **Average capital :**
€ 0.7 to 1 million
- **Average investment capacity:**
€ 1.9 to 3 million

Examples

EWS Schönau

- started after Tchernobyl as a citizen cooperative for energy efficiency
- creation of local cooperative utility in early 1990s
- purchased local grid in 1997
- Today: national green power supplier with over 120.000 clients and ongoing support to new local initiatives
- 2011: 1800 cooperative members and € 11,4 Mn capital



Examples

Energy cooperative Honigsee:

- district heating system with CHP built from scratch
- 30% less CO2 for heating energy



**ENERGIEGENOSSENSCHAFT
STARCKENBURG**

Energy cooperative Starckenburg

- started Dec. 2010 to invest in 2 wind power plants
- € 4,5 Mn of equity and subordinated loans by the members to invest in 1 wind and 6 PV projects
- **no external financing**

Thank you!

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SciencesPo.

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