WinWind

Increasing the acceptance of Wind Energy

Renewable energy communities - good practice examples from Germany

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WinWind Policy Roundtable/Thematic Workshop

Challenges of Policy and Social Acceptance for On-shore Wind Energy Development in Latvia

Riga, 25 April 2019

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 764717. The sole responsibility for the content of this presentation lies with its author and in no way reflects the views of the European Union.

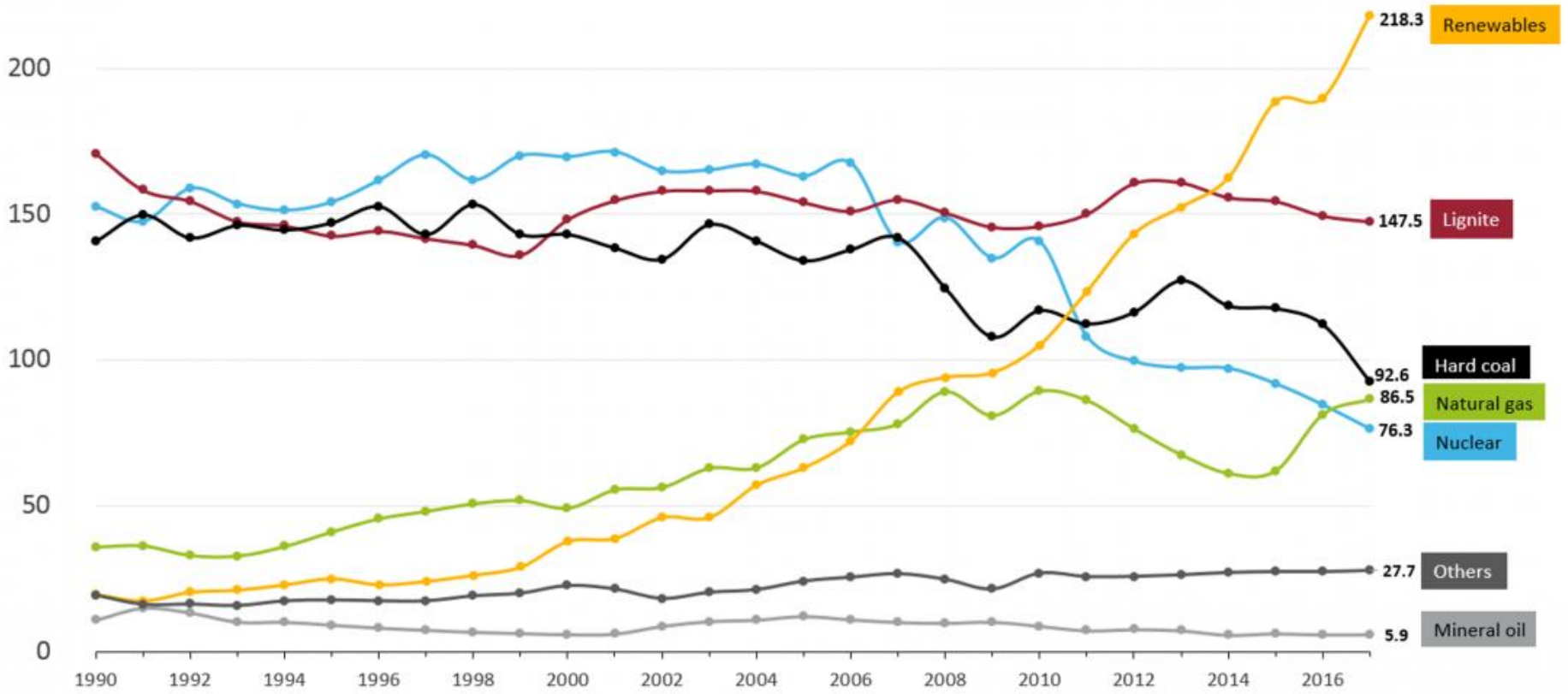
Overview

1. Definition, context and drivers
2. Community Wind Farm in Neuenkirchen (Schleswig Holstein)
3. Key Lessons

Definition

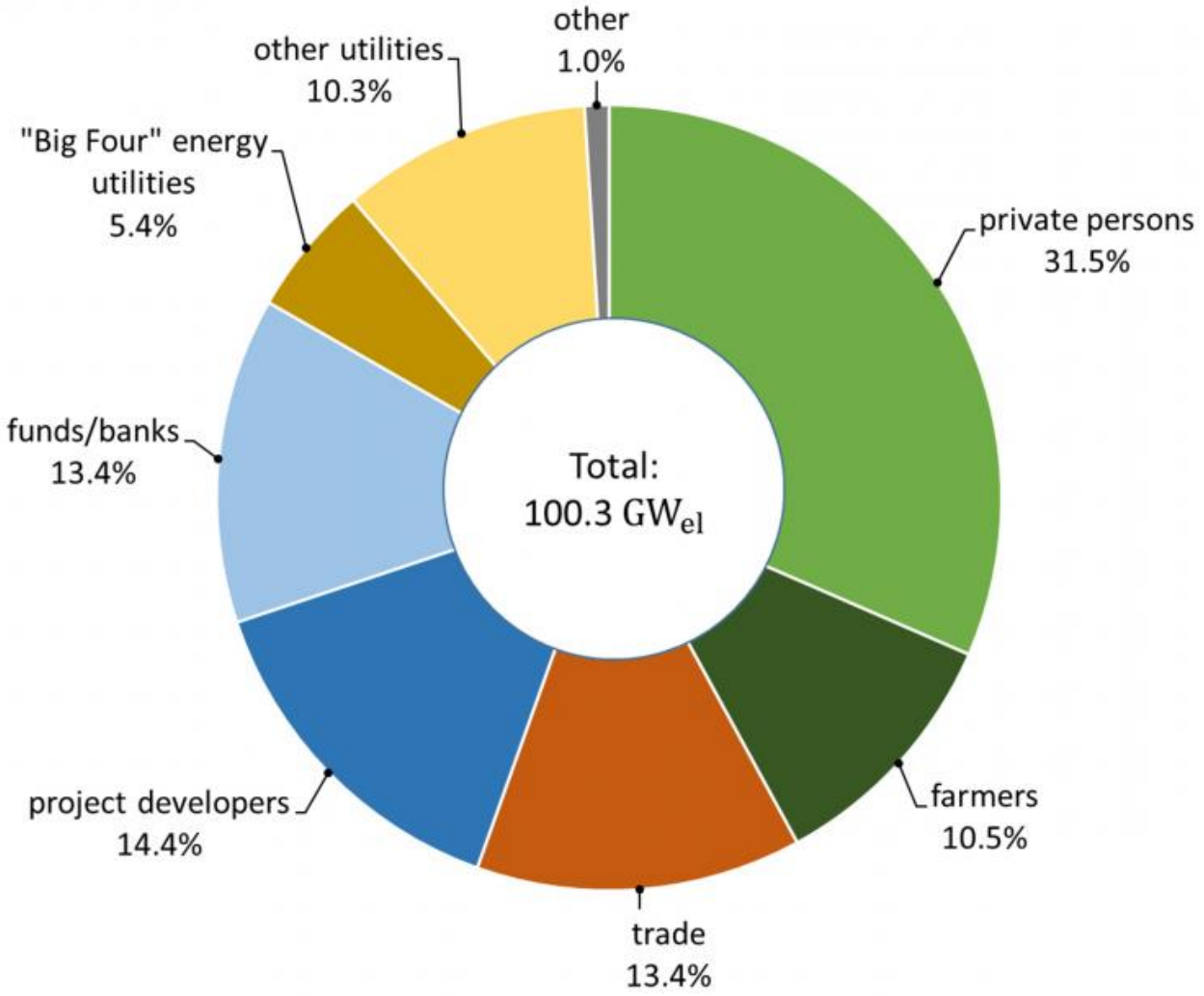
Community energy means the **economic and operational participation** and/or **ownership by citizens or members of a defined community** in a renewable energy project (IRENA 2018).

Gross power production in Germany 1990-2017 in TWh, by source



Source: Clean Energy Wire, data: AG Energiebilanzen 2017, 2017 data preliminary

Ownership structure of installed renewable power generation capacity, 2016



Source: Clean Energy Wire, Data: trend:research, AEE 2017

Community wind farms in Germany

- Common legal forms: limited partnerships, cooperatives
- Most common type: **limited partnership in which the general partner is a limited liability company** *(Gesellschaft mit beschränkter Haftung & Compagnie Kommanditgesellschaft* – GmbH & Co. KG)
  - Hybrid of a **limited liability company** (GmbH/SIA) and a **limited partnership** (KG)

Limited partnership with a limited company as general partner

General partner

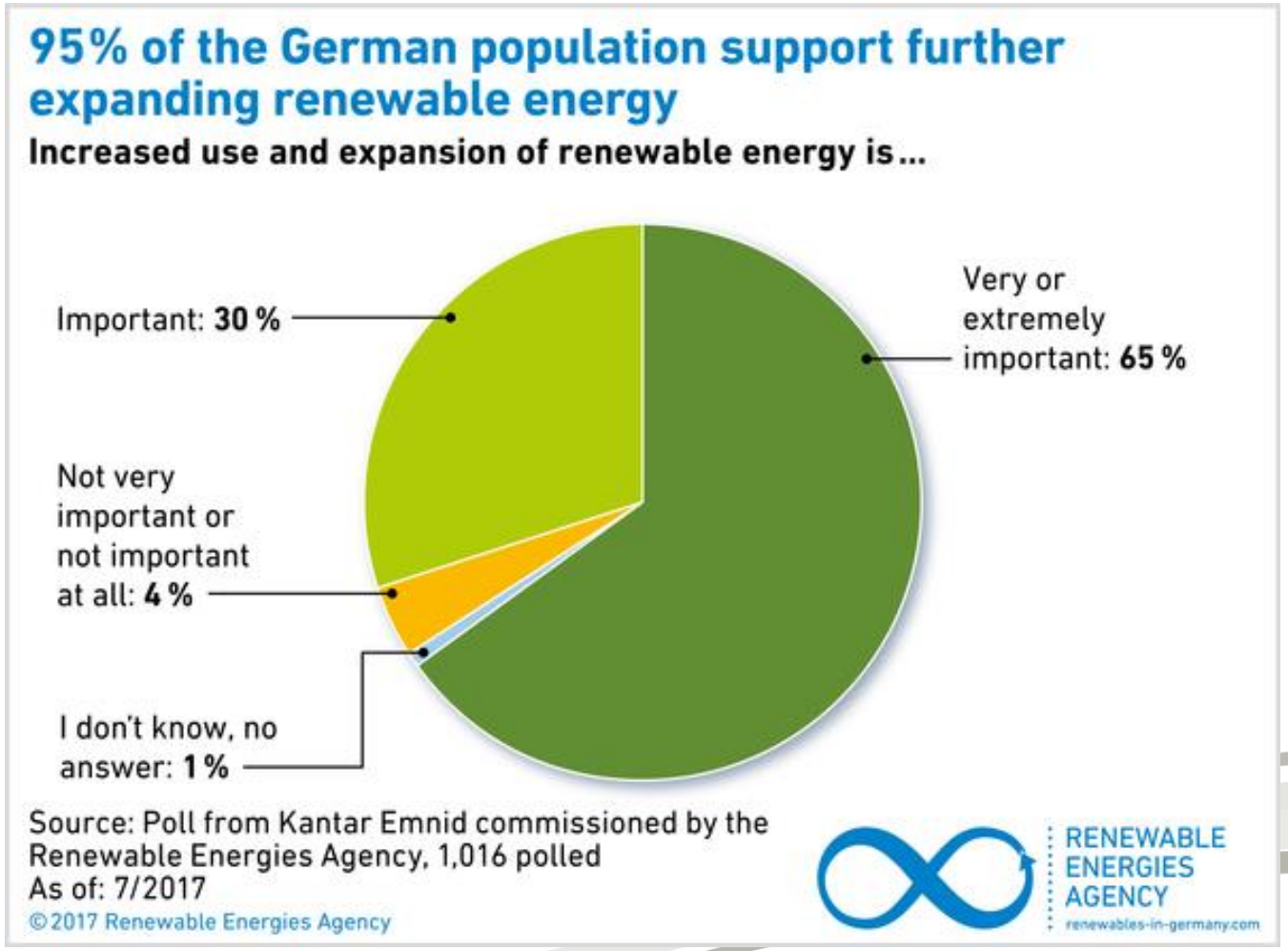
Limited company
(GmbH, SIA)

Limited partners
(liability limited to the partner´s capital contribution

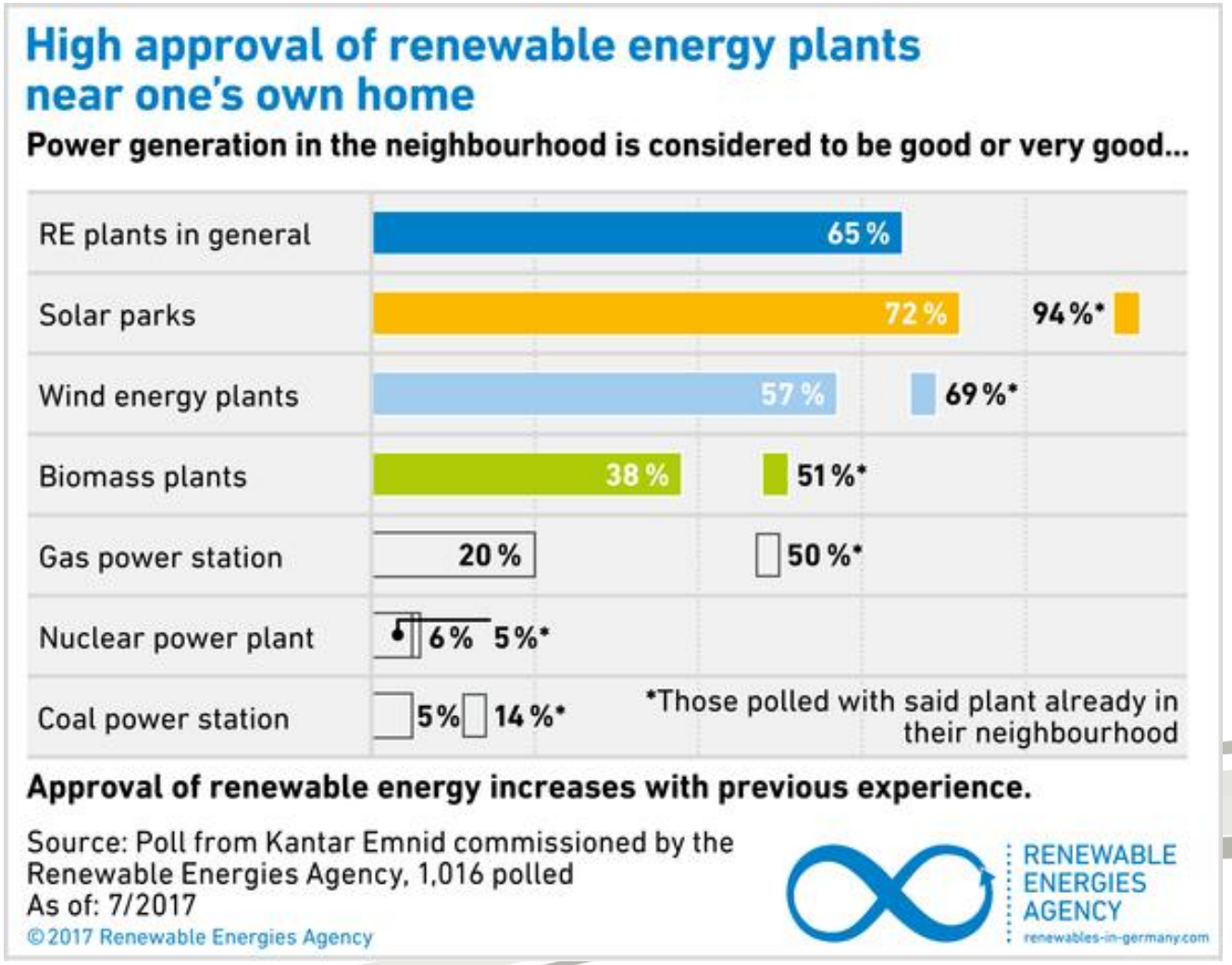
Limited partnership

Source: Hanus, Müller-Wrede & Partner

Socio-political acceptance



Community acceptance



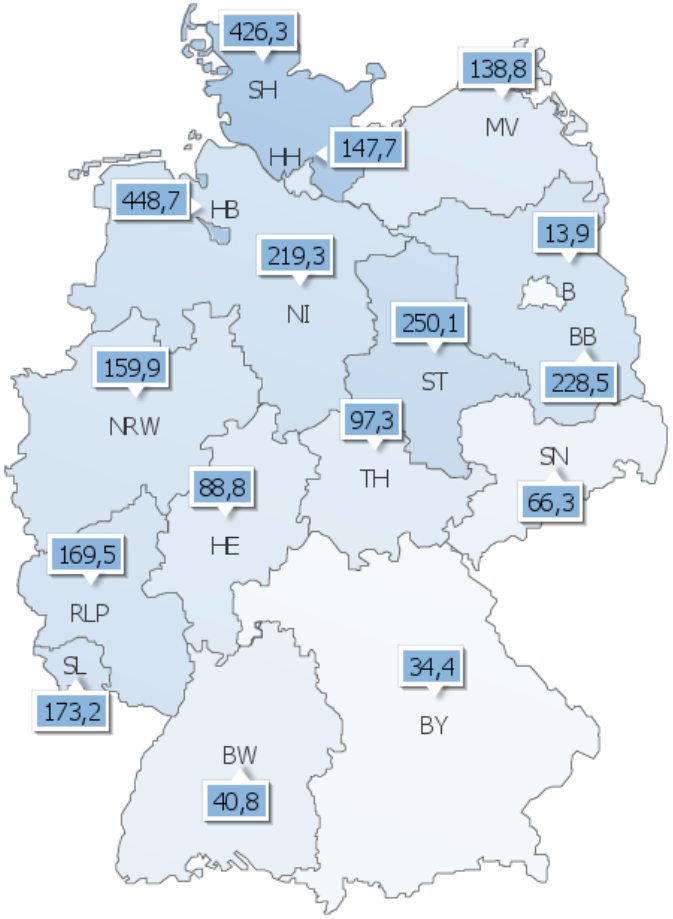
Key drivers of community wind energy

- Favorable national policy framework and comparatively low market risks
- Guaranteed minimum remuneration via feed-in tariffs/premiums (Renewable Energy Sources Act)
- Low market risks and high investment security: farmers, local communities, and cooperatives to access finance and invest in wind energy projects.
- Region-specific driving factors
- Example Schleswig-Holstein
  - Long standing tradition and high share of community wind farms (80%)
  - Traditionally high level of community acceptance

Drivers of community wind energy in Schleswig-Holstein

- Favourable wind conditions
- Early attempts of pioneering farmers to become energy autonomous (“wind farmers”, wind millers”)
- Structural weakness of the coastal regions and rural depopulation
- Inspiration from early community wind projects in Denmark
- Political commitment and continuous policy support
- Early technology and industry development

Installed wind energy capacity per square kilometer (2017, in kW)



Sources: Agentur für Erneuerbare Energien, BNetzA 2018a, Statistische Ämter des Bundes und der Länder, Wikipedia

Deutschland
141,1

AGENTUR FÜR ERNEUERBARE ENERGIEN

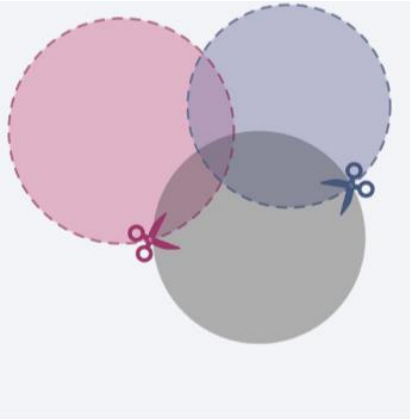
Context: Wind energy zoning

- Spatial plans are widely used to concentrate wind farm developments in designated areas (e.g. **priority areas** or **suitable areas** for wind energy)
- Organisation of spatial planning varies among the 16 federal states
  - Regional level: Regional plans
  - Municipal level: Land-use plans
- Multi-step approach based on **consecutive exclusion** of „hard“ and „soft taboo zones“

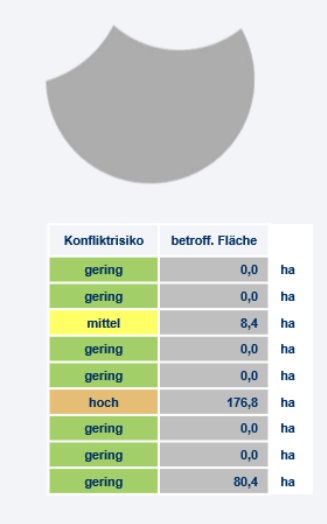
Multi step approach

1. Hard taboo zones

2. Soft taboo zones



Potential areas
(*Potenzialfläche*)



Konfliktrisiko	betroff. Fläche	
gering	0,0	ha
gering	0,0	ha
mittel	8,4	ha
gering	0,0	ha
gering	0,0	ha
hoch	176,8	ha
gering	0,0	ha
gering	0,0	ha
gering	80,4	ha

Priority zone
(*Vorrangfläche*)

Konfliktrisiko	betroff. Fläche	
gering	0,0	ha
gering	0,0	ha
gering	0,0	ha
gering	0,0	ha
gering	0,0	ha
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Community wind farm in *Neuenkirchen* (Schleswig-Holstein)

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Neuenkirchen – regional context

- 1,035 inhabitants
- Location close to the North Sea coast
- Rural, peripheral region
- Low population density, large number of small municipalities
- Flat, open, forest poor marsh landscape
- Intensive agricultural use
- Located in one of the wind energy pioneer regions of Germany (Dithmarschen)
- Very high density of wind turbines
- Neuenkirchen is a latecomer regarding wind energy

Community wind farm Neuenkirchen

- Commissioned in 2015
- 12 x 3 MW *Senvion* turbines on 3 sites plus 1 x 3 MW Enercon turbine
- Total investment cost: 56.5 million EUR
- Initiators: local farmers, land owners
- 7 founding shareholders
- Financial participation of citizens (in total 145 shareholders as limited partners)
- Land lease pool model (*Flächenpoolmodell*)
- Benefit sharing via civic association (*Bürgerverein*)
- **http://www.buergerwindpark-neuenkirchen.de/projekt/infos/**

Key technical and economical data

Technical data

Manufacturer:	Senvion SE (former REpower)
Type:	3.2 M 114
Nominal capacity:	12 x 3,200 kW
Rotor diameter:	114 m
Hub height:	93 m
Total height:	150 m

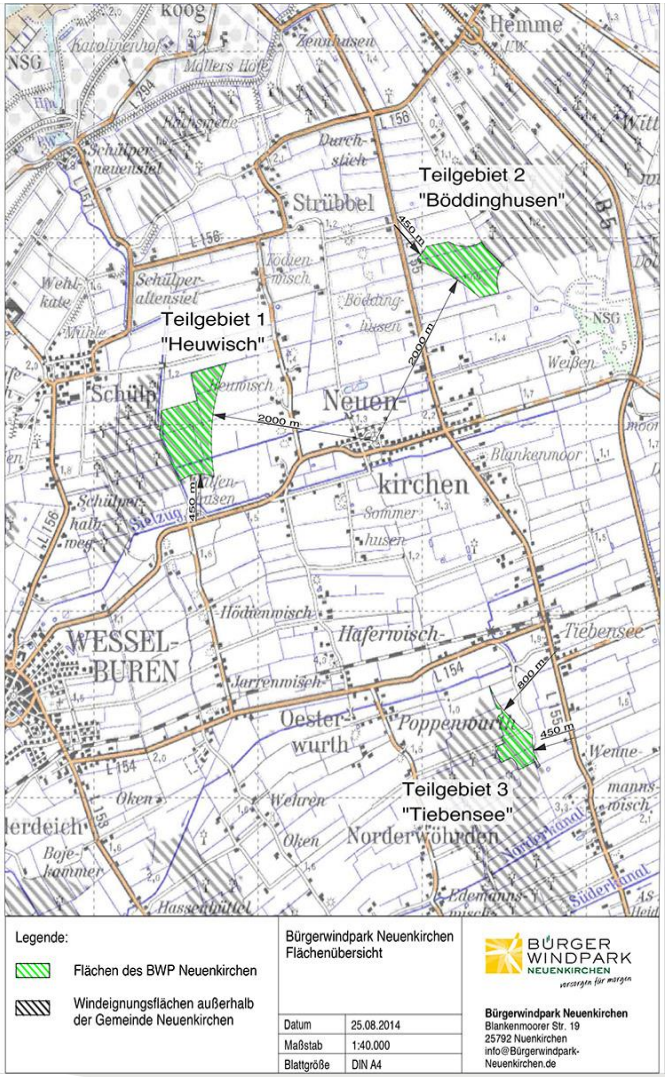
Setback distances

Distance to church:	2,000 m (historical heritage)
Distance to single houses:	450 m
Distance to settlements:	800 m

Economical data

Investment:	56.5 mEUR
Revenues (2017):	10.83 mEUR
Annual profit (2017):	5.13 mEUR
Business tax payments:	0.64 mEUR

Wind energy zoning



Chronology

Year	Steps
Before 2008	Plans by local land owners to develop a community wind farm
2008	Municipal elections, change of mayor
2009	Council decision to **propose wind energy suitable areas** to the district administration
2009	Foundation of a **local citizens' group opposing the wind farm plans**. Initiates local referendum
2009	→ 1st **referendum**: rejects council decision
2011	Mayor and council initiate a 2nd **referendum** about the notification of 4 suitable areas → 2nd referendum positive → Council proposes to include 4 wind energy suitable areas in the regional plan
2012	Regional plan takes effect (designation of 3 of the 4 proposed suitable areas)
2013	Foundation of **Bürgerwindpark Neuenkirchen UG & Co. KG**
2014-2015	Construction works
2015	Commissioning of the plant
2016	Foundation of a **civic non profit association** (1% of the annual profits)

Active financial participation of citizens

- 20% of the total investment cost to be covered by equity capital (11 million EUR)
- **Direct financial participation** of **citizens** as **limited partners**
  - Minimum deposit 500 EUR, maximum deposit 50,000 EUR
  - No investor to own more than 25% of voting rights
  - 145 citizens finally registered as limited partners (July 2014)
  - Municipality obtained shares (20,000 EUR)
  - Municipal councilors

Passive financial participation of citizens

Individuals

Land lease pooling model

- Land owners receive financial compensation for the use of their land
- 5% of the annual remuneration for the electricity fed into the grid

Land owner group	Share
Land owners on whose land the turbines are installed	20%
All land owners in the wind energy suitable zone	70%
Owners of land used for road transport and other infrastructure measures	10%

Community

- Benefit sharing via a civic non-profit association (*Bürgerverein*)
- Agreement: **1 % of annual profit** flow to a association
- Association receives donations also from other local organizations
- Revenues used to purchase community bus, PC equipment for school, construction of community building, etc.

Passive financial participation (II)

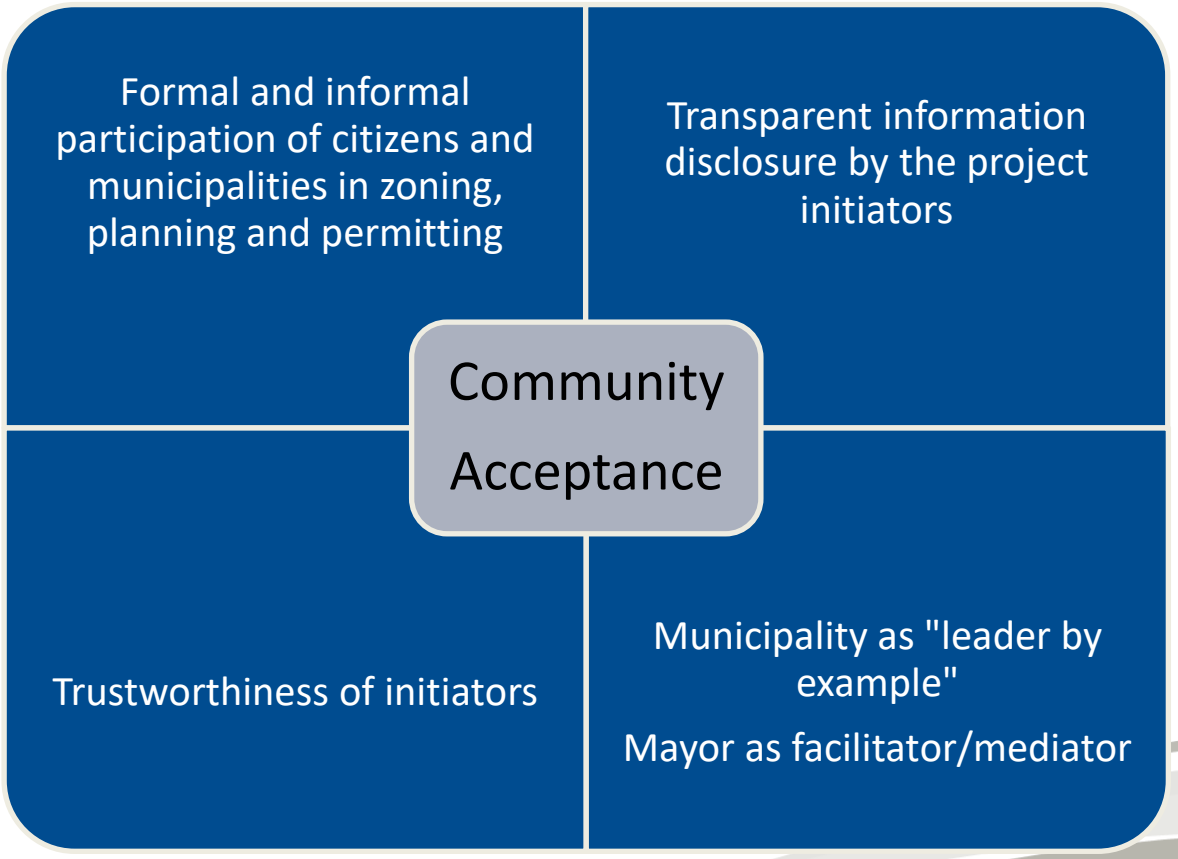
Community level

- Community business tax revenues (*Gewerbesteuer*) (2017: 640,000 EUR)

Other benefits

- Compensation/mitigation measures nature and landscape effects
- Monetary compensation to offset negative landscape impact
- Problem: revenues are often not used locally, but regionally, only limited local benefits

Acceptance drivers



Acceptance drivers (II)

Lessons for policy

- Supportive policy framework
- Ensure calculability for investors, reduce market risks
- Create opportunities for active and passive financial participation of citizens
- Enabling framework for community energy (see also RED II!), e.g. seed money facilities
- Promote awareness raising and training for municipalities
- Promote pilot projects, disseminate good practices
- Ensure procedural participation of citizens
- Support municipalities and communities by providing neutral information

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WinWind Project

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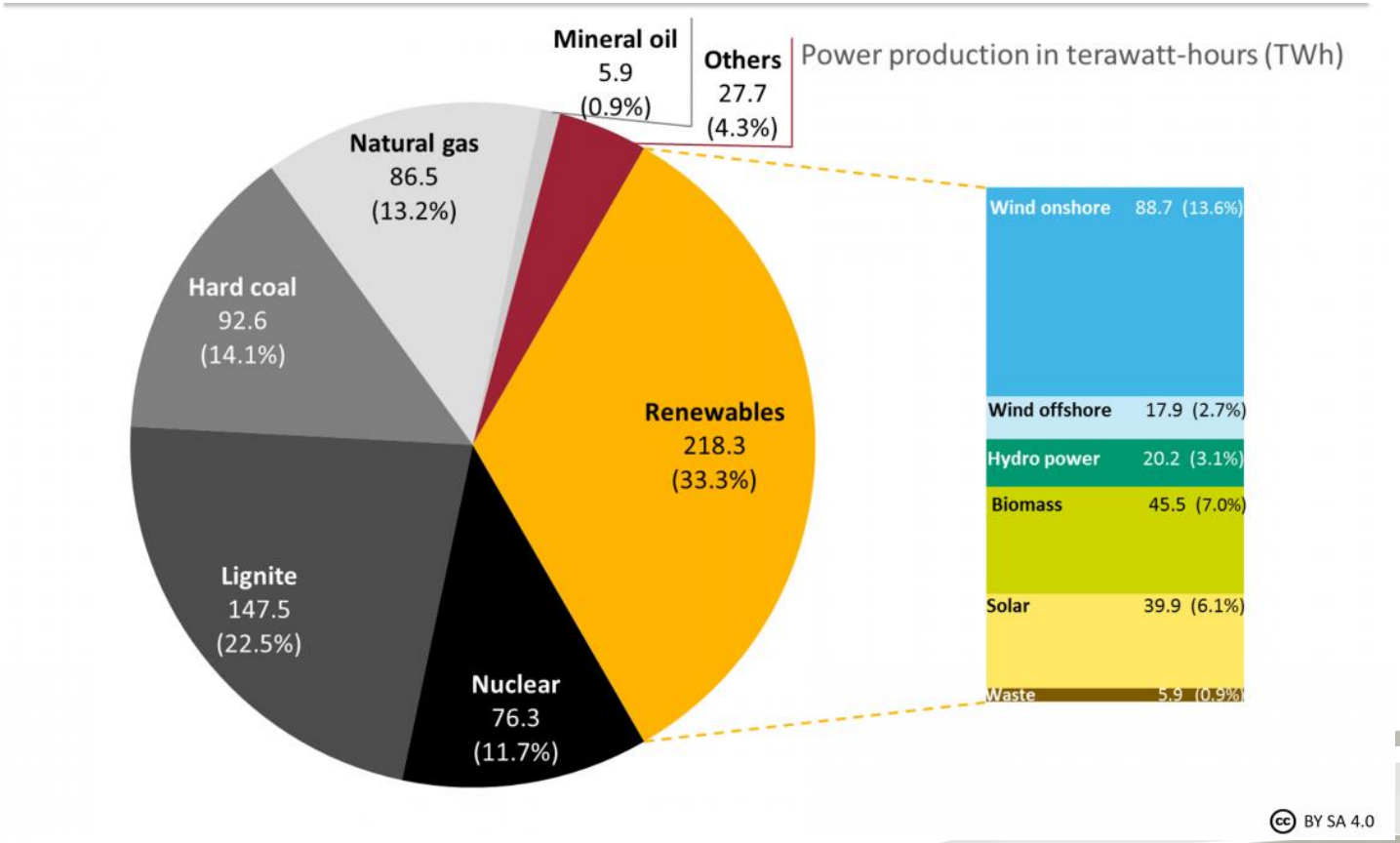
Additional slides

Quantitative targets of the German Energiewende

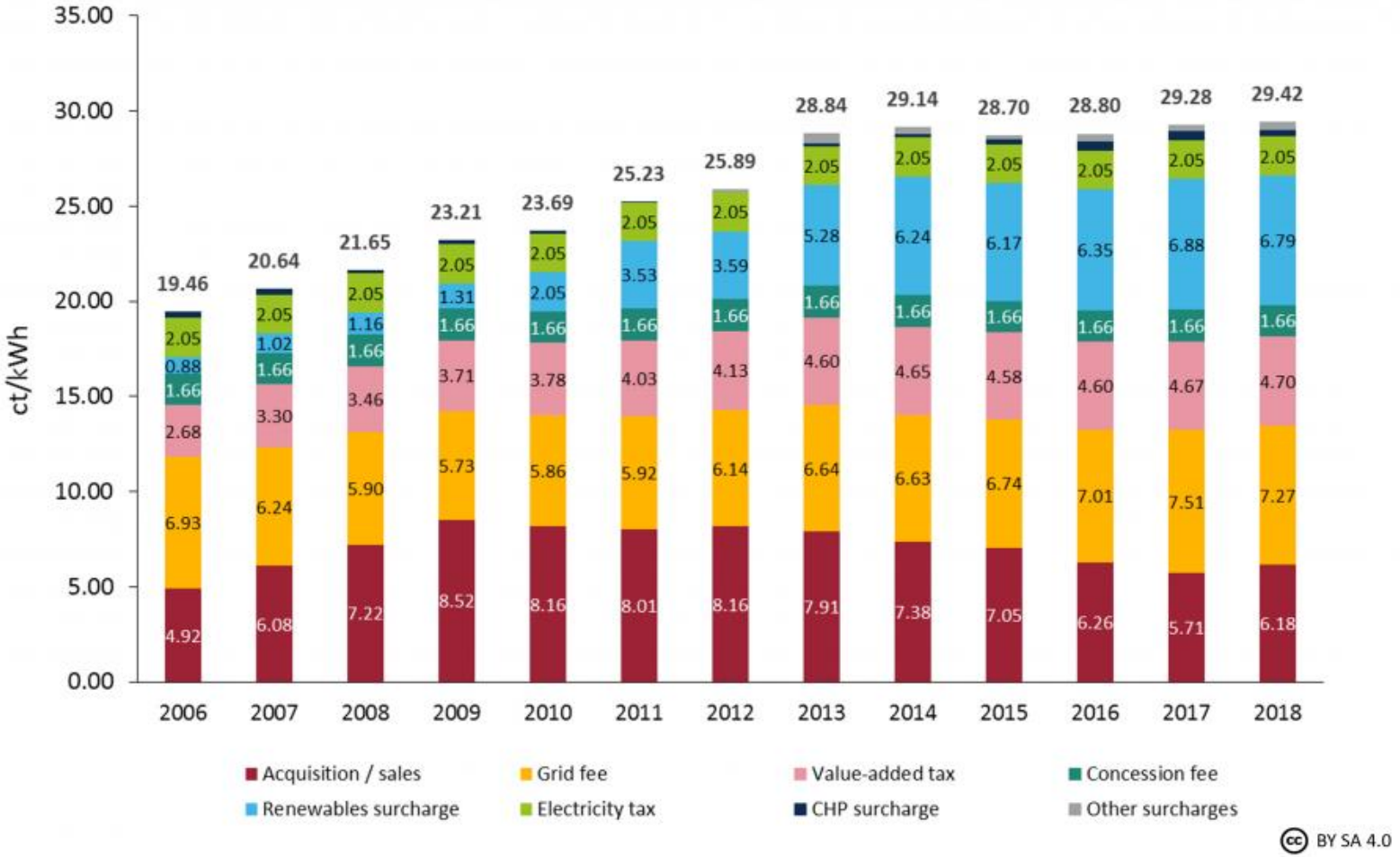
	2014	2015	2020	2030	2040	2050
Greenhouse gas emissions						
Greenhouse gas emissions (compared to 1990)	-27.7 %	-27.2 %	minimum -40 %	min -55 %	min -70 %	min -80 to 95 %
Increase in share of renewable energy in final energy consumption						
Share in gross final energy consumption	13.6 %	14.9 %	18 %	30 %	45 %	60 %
Share in gross power consumption	27.3 %	31.6 %	min 35 %	min 50 % (2025: 40-45 %)	min 65 % (2035: 55-60 %)	min 80 %
Share in heat consumption	12.5 %	13.2 %	14 %			
Share in transport sector	5.6 %	5.2 %	10 % (EU goal)			
Reduction of energy consumption and increase in energy efficiency						
Primary energy consumption (compared to 2008)	-8.3 %	-7.6 %	-20 %			-50 %
Final energy productivity	1.6 % per year (2008-2014)	1.3 % per year (2008-2015)	2.1 % per year (2008-2050)			
Gross electricity consumption (compared to 2008)	-4.2 %	-4 %	-10 %			-25 %
Primary energy demand buildings (compared to 2008)	-19.2 %	-15.9 %				around -80 %
Heat demand buildings (compared to 2008)	-14.7 %	-11.1 %	-20 %			
Final energy consumption transport (compared to 2005)	1.1 %	1.3 %	-10 %			-40 %

Share of energy sources in gross German power production in 2017



Source: Clean Energy Wire, data: AG Energiebilanzen 2017, 2017 data preliminary

Composition of average electricity prices in €ct/kWh for German households*, 2006-2018



* Annual electricity consumption of 3,500 kWh

Source: Clean Energy Wire, Data: BDEW 2017

Recommended setback distances for wind turbines in spatial planning

Category	Region/ federal state	Responsibility for designating priority/suitability zones	Setback distances for residential areas	Setback distances for individual dwellings, splinter settlements
Target region	Thuringia	Regional Planning Associations	Turbines <150m: 750 m Turbines >150m: 1,000 m	600 m
Target region	Saxony	Regional Planning Associations	No uniform setback distances	No uniform setback distances
Model region	Brandenburg	Regional Planning Communities	1,000 m	1,000 m (lower distances possible)
Model region	Schleswig-Holstein	State Planning Authority (state level)	800 m (planned: 1,000 m)	400 m (planned: 500 m)