

# The role of wind energy in the energy change

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- ~ Are 100 % renewables affordable?
- ~ Renewable energies create added value and jobs in the regions
- ~ Projects bringing regions closer to a fully renewable energy supply
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## The potential of wind energy for Germany's electricity supply

- In Germany, nearly 8% of the ground outside of forests and protected areas are suitable for wind energy
  - When using 2 % of the surface of each state 198 GW of installed capacity are feasible, meaning a potential energy yield of 390 TWh.
  - This yield represents 65 % of the German electricity need of approx. 600 TWh.
  - This potential is spread over the whole surface of Germany, not only over the northern states.
- Onshore wind can deliver the highest share of a renewable electricity supply.  
To reach this target the needed surface has to be dedicated to wind.

Quelle: Bundesverband Windenergie 2011



0 100 200 300 400

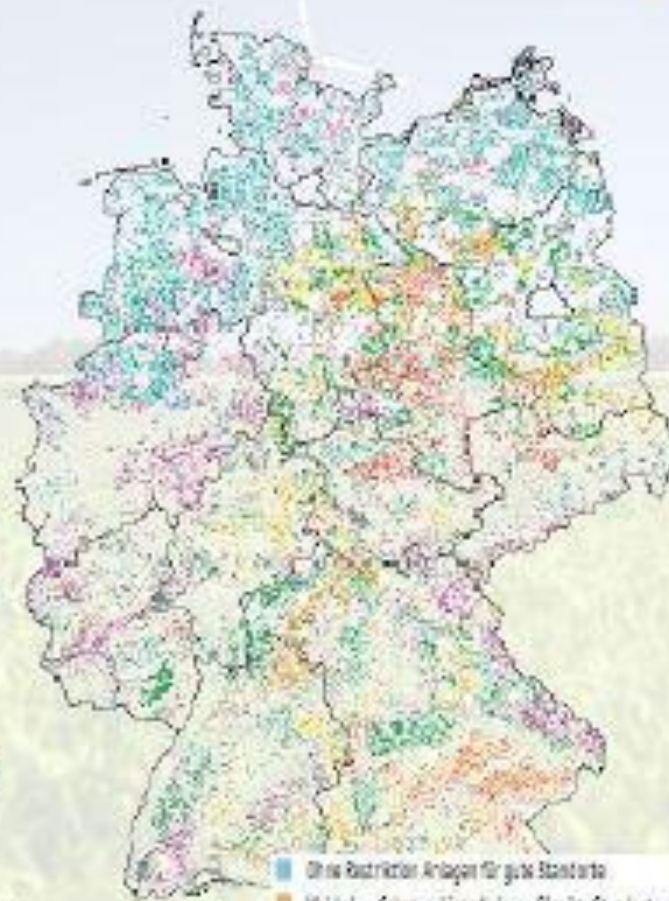
- Ohne Restriktion Anlagen für gute Standorte
- Wald ohne Schutzgebiete Anlagen für gute Standorte
- Schutzgebiete Anlagen für gute Standorte
- Ohne Restriktion Schwachwindanlage
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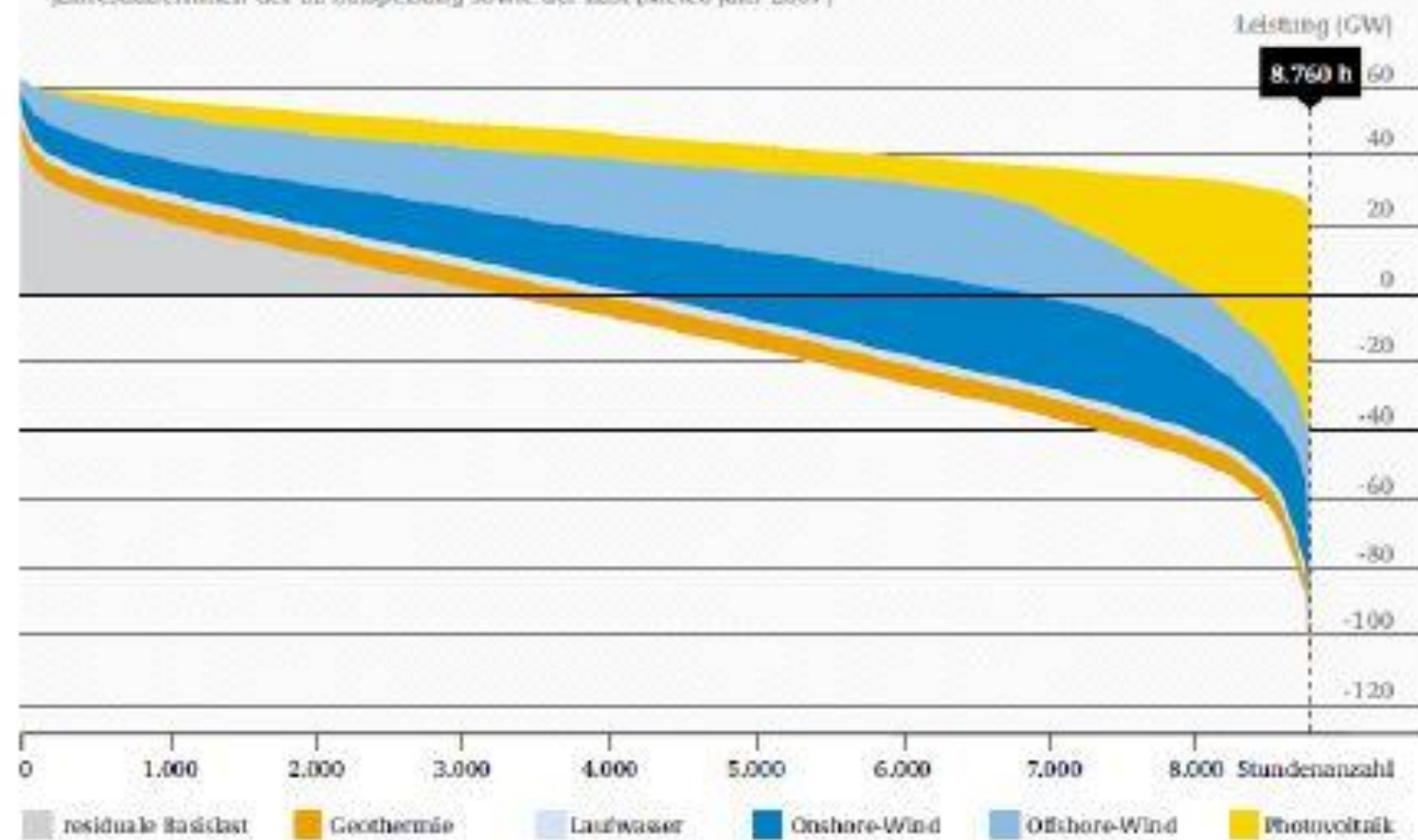
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## Potential of renewable energy for the complete supply of Germany

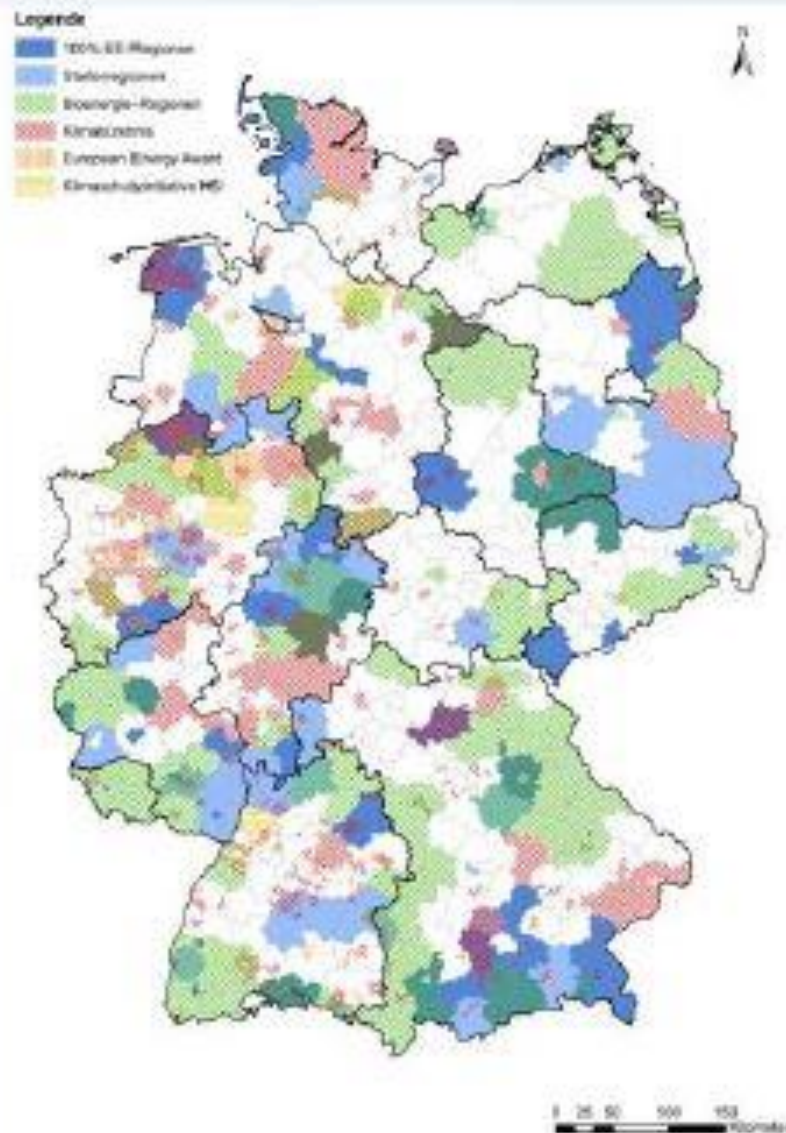
Jahresdauerlinien der EE-Einspebung sowie der Last (Meteo-Jahr 2007)



Source: UBA 2010



## Potential of renewable energy for the complete supply of Germany



- Currently, there are already more than 150 cities and regions planning to switch their energy supply to renewables on the longer run.
- The number is constantly growing!
- These regions with renewable targets are indispensable to the acceptance of the energy change!

## Renewable energies create added value and jobs in the regions

- The added value is higher if all steps from the construction of the turbines to the operation remain in the region.
- Local operators guaranteeing a higher added value are particularly under pressure in the new auctioning system.

### Kommunale Wertschöpfungseffekte einer Windenergieanlage

während 20 Jahren Anlagenbetrieb

Millionen Euro bei 2 Megawatt Leistung

gesamte Wertschöpfungseffekte:  
2,83 Mio. Euro



Annahmen: 2 MW Leistung, 2.164 Volllaststunden;  
8,364 ct/kWh durchschnittliche EEG-Vergütung  
Quelle: IÖW, Stand: 08/2010

www.unendlich-viel-energie.de

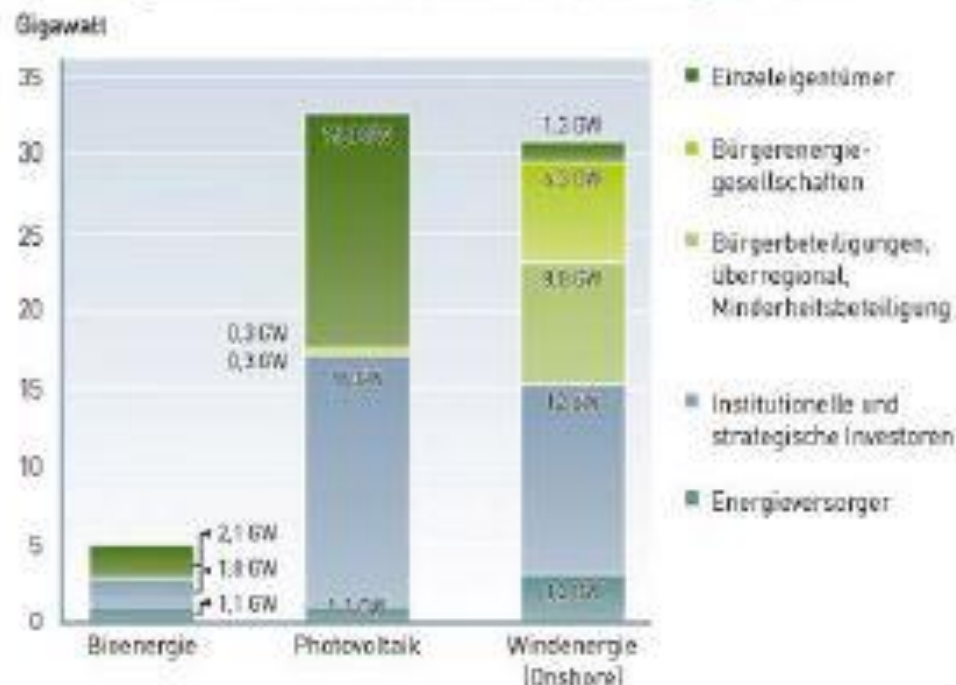




## Renewable energies create added value and jobs in the regions

- Wind energy until today had a particularly high share of local investment.
- These local investors guarantee acceptance of the energy change.
- During the recent auctions real local investors had difficulties getting feed-in permits.
- So, the acceptance of the energy change is in danger!

### Anteile von Eigentümergruppen an der installierten Leistung einzelner Erneuerbarer Energien 2012



Quelle: trand-research, Leuphana Universität Lüneburg  
Stand: 10/2013

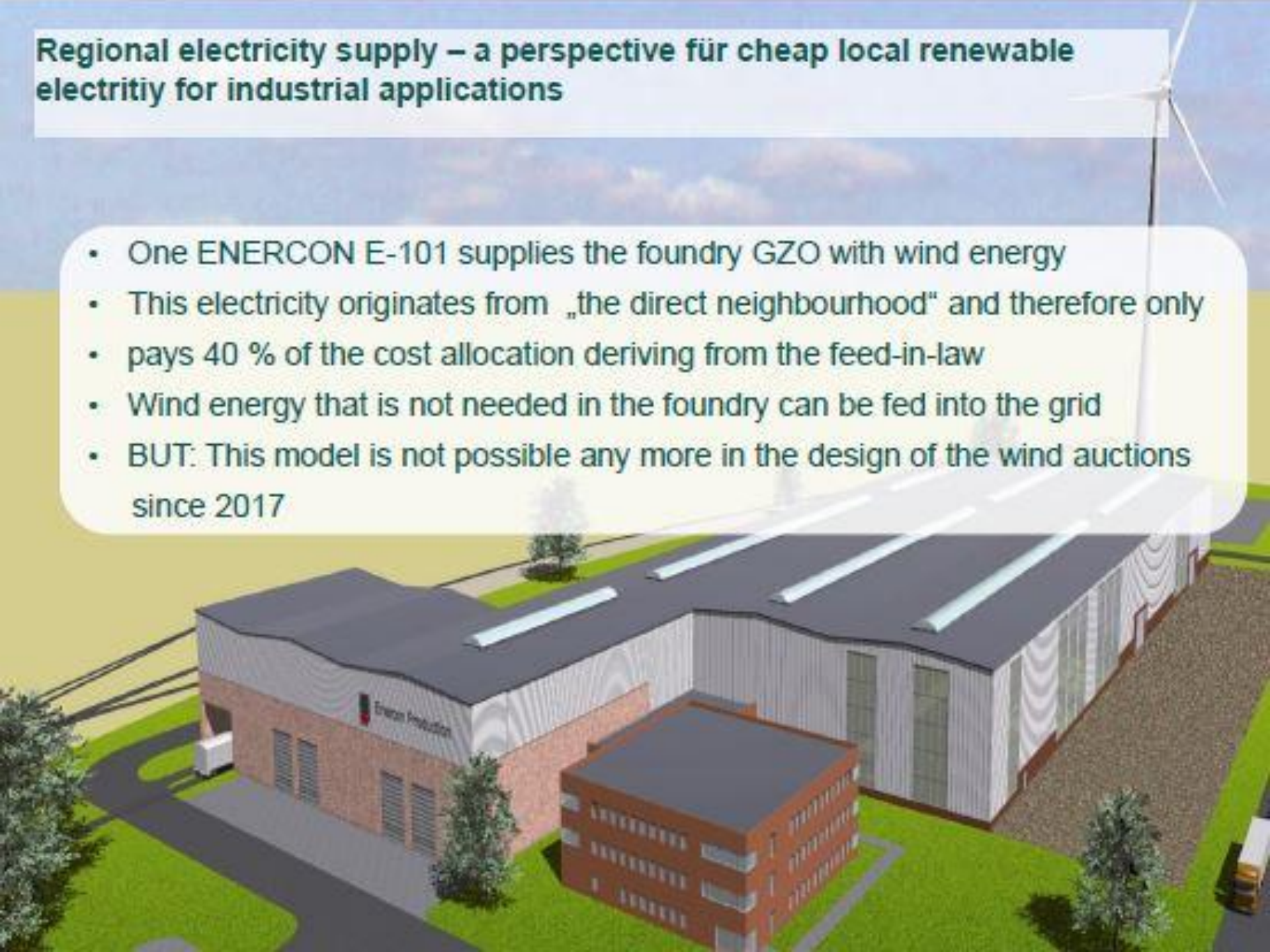
www.unendlich-viel-energie.de





## Regional electricity supply – a perspective für cheap local renewable electricity for industrial applications

- One ENERCON E-101 supplies the foundry GZO with wind energy
- This electricity originates from „the direct neighbourhood“ and therefore only pays 40 % of the cost allocation deriving from the feed-in-law
- Wind energy that is not needed in the foundry can be fed into the grid
- BUT: This model is not possible any more in the design of the wind auctions since 2017



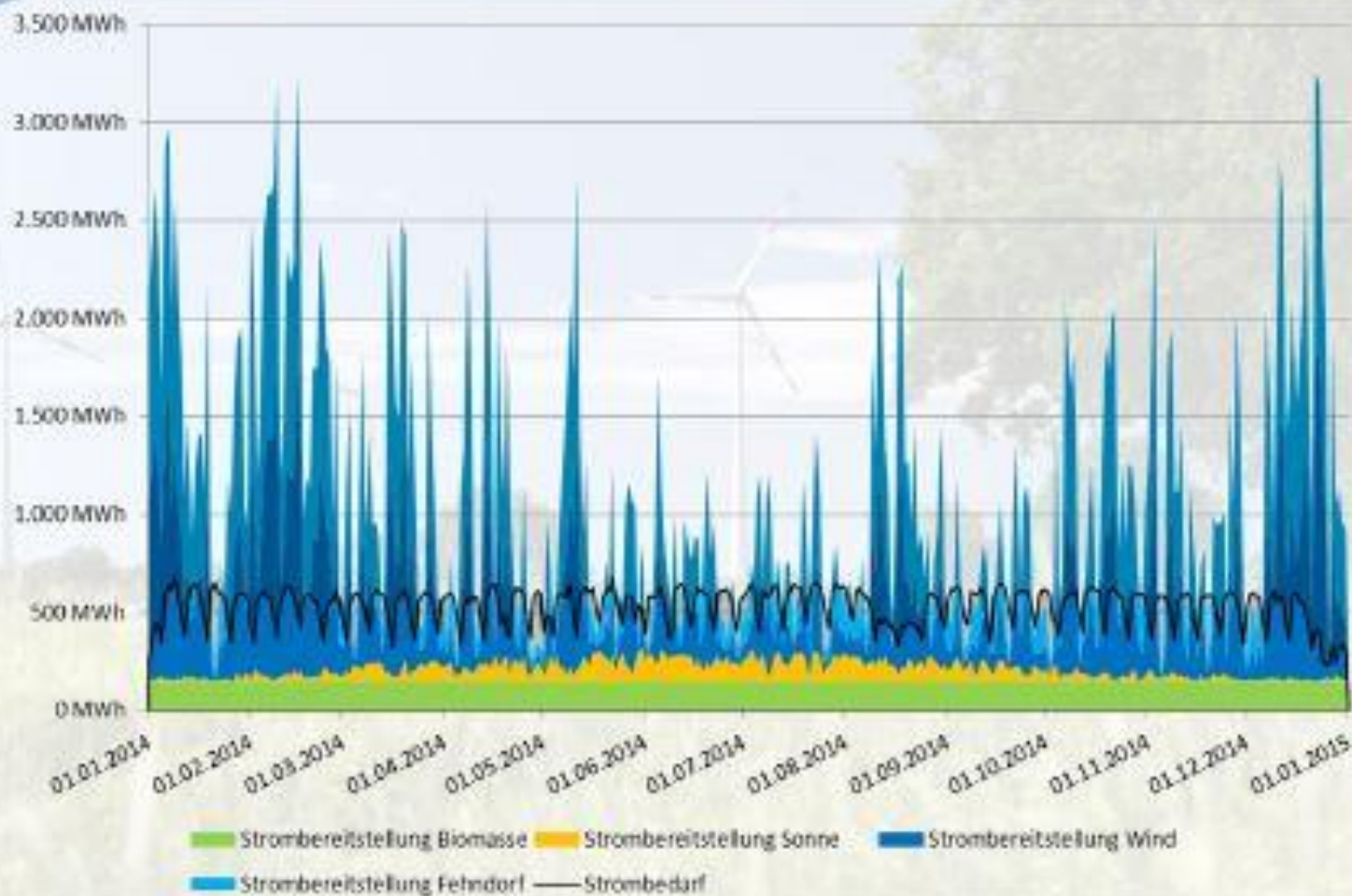
Projects bringing regions closer to a fully renewable energy supply:  
Windfarm Fehndorf-Lindloh





## Projects bringing regions closer to a fully renewable energy supply:

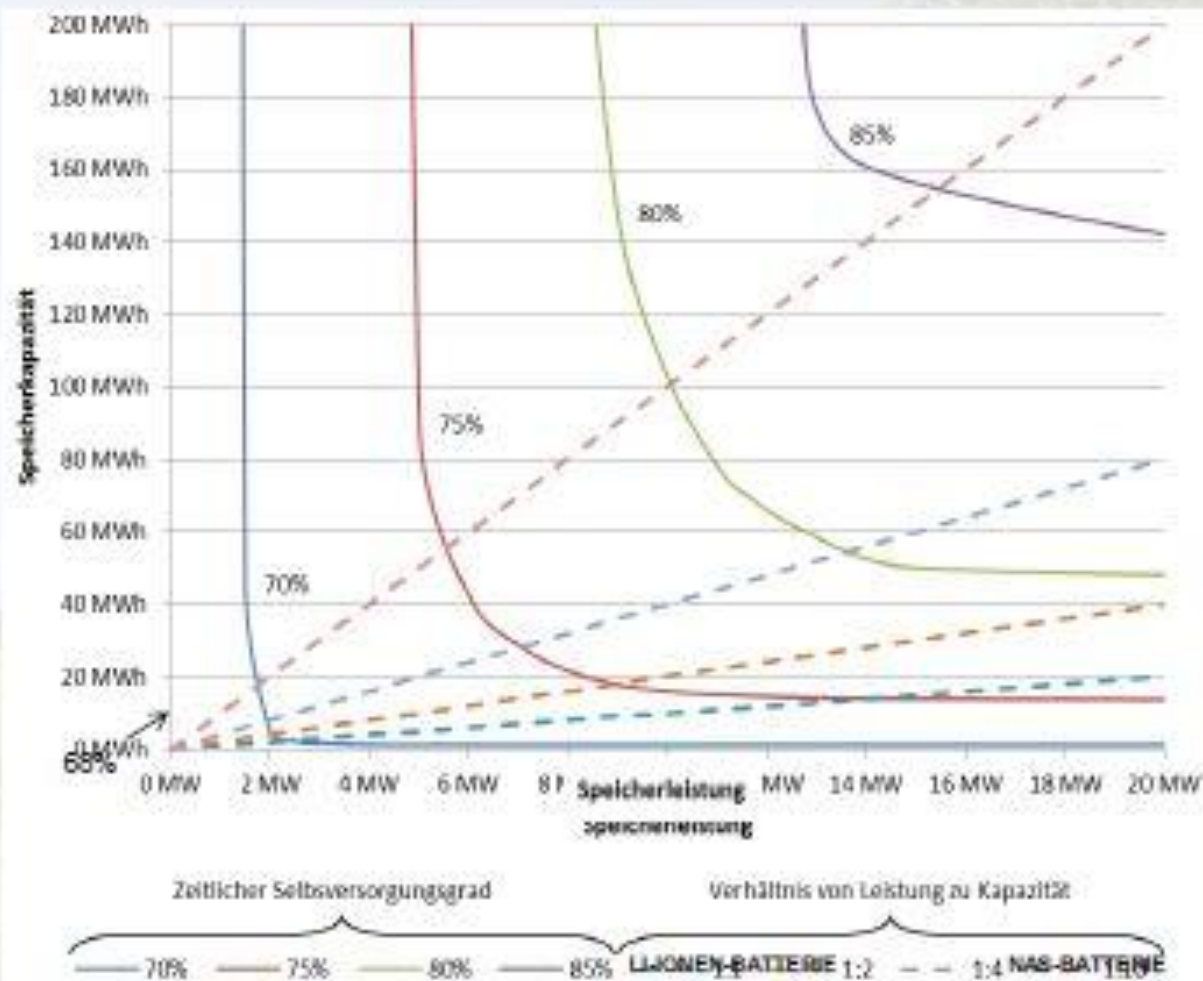
### Windfarm Fehndorf-Lindloh



A storage combined with the wind farm can bring the share of 15-minute-periods with a fully renewable supply of Haren from a share of 45 % auf 68 %

1) Berechnet auf Basis des Windjahrs 2014 – abhängig von der Windsituation des jeweiligen Jahres und der Veränderung des Verbrauchsverhaltens in der Stadt Haren

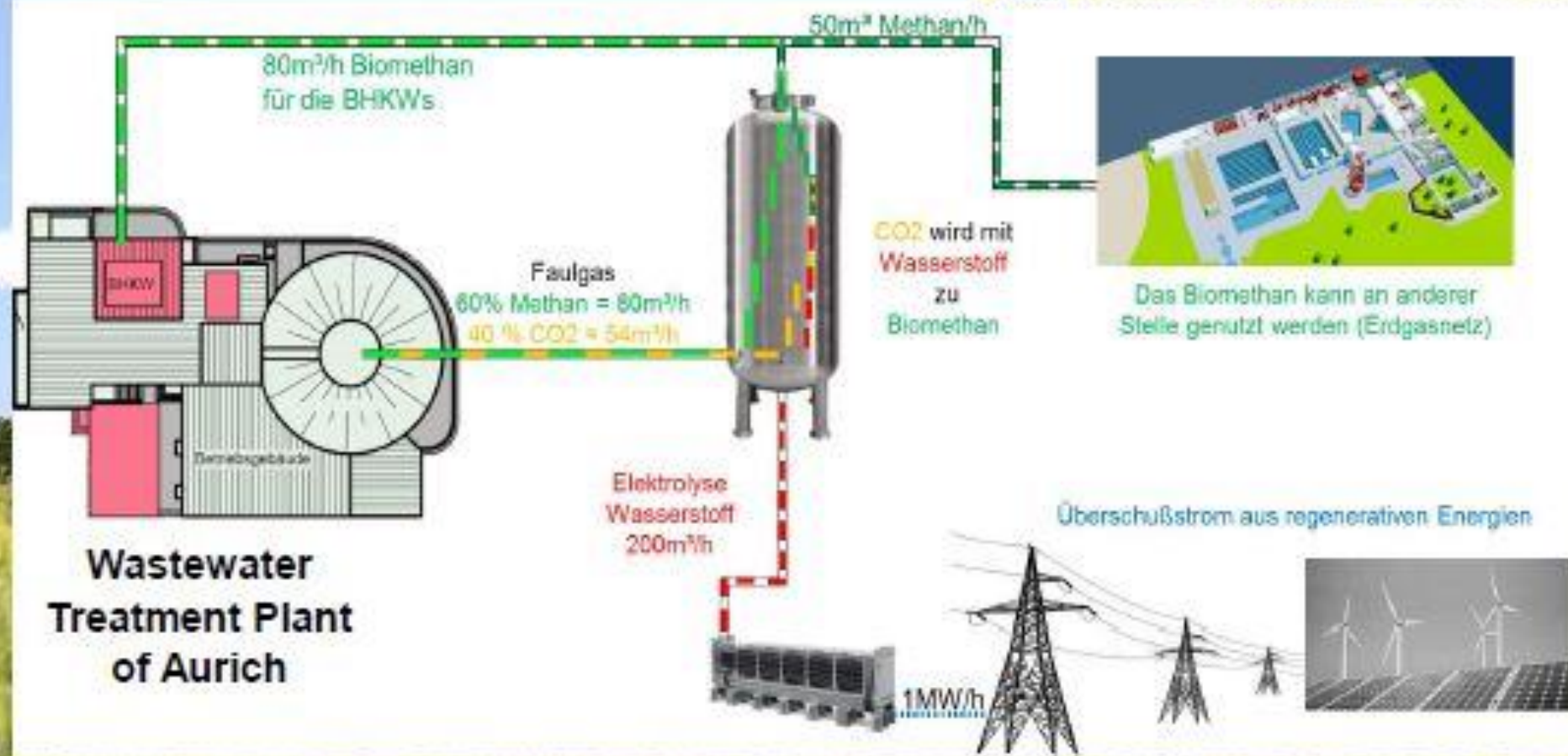
# Projects bringing regions closer to a fully renewable energy supply: Windfarm Fehndorf-Lindloh



The capacity and power of the storage define the degree of regional full supply



# Projects bringing regions closer to a fully renewable energy supply: Windfarm Fehndorf-Lindloh



## Summary:

- ~ A fully renewable electricity supply is possible – and onshore wind will play a crucial role in it!
- ~ The energy change has to be carried out as a bottom-up approach – by citizens in the regions. Auctions and the trend back to only big companies threaten the acceptance of wind energy.
- ~ The energy change is financially feasible because renewables have become cheap and a direct supply of industrial consumers is possible.
- ~ Renewable energies bring added value and jobs to the regions.
- ~ Various examples show that regional projects bring the system closer to a fully renewable supply.



**Many thanks for your attention!**

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