

100%-Renewable-Energy-Regions in Germany

Dr. Peter Moser, deENet

Side Event, **Governance for 100% Renewable Energy in Cities**, June 11, 2011, Bonn



Gefördert durch:



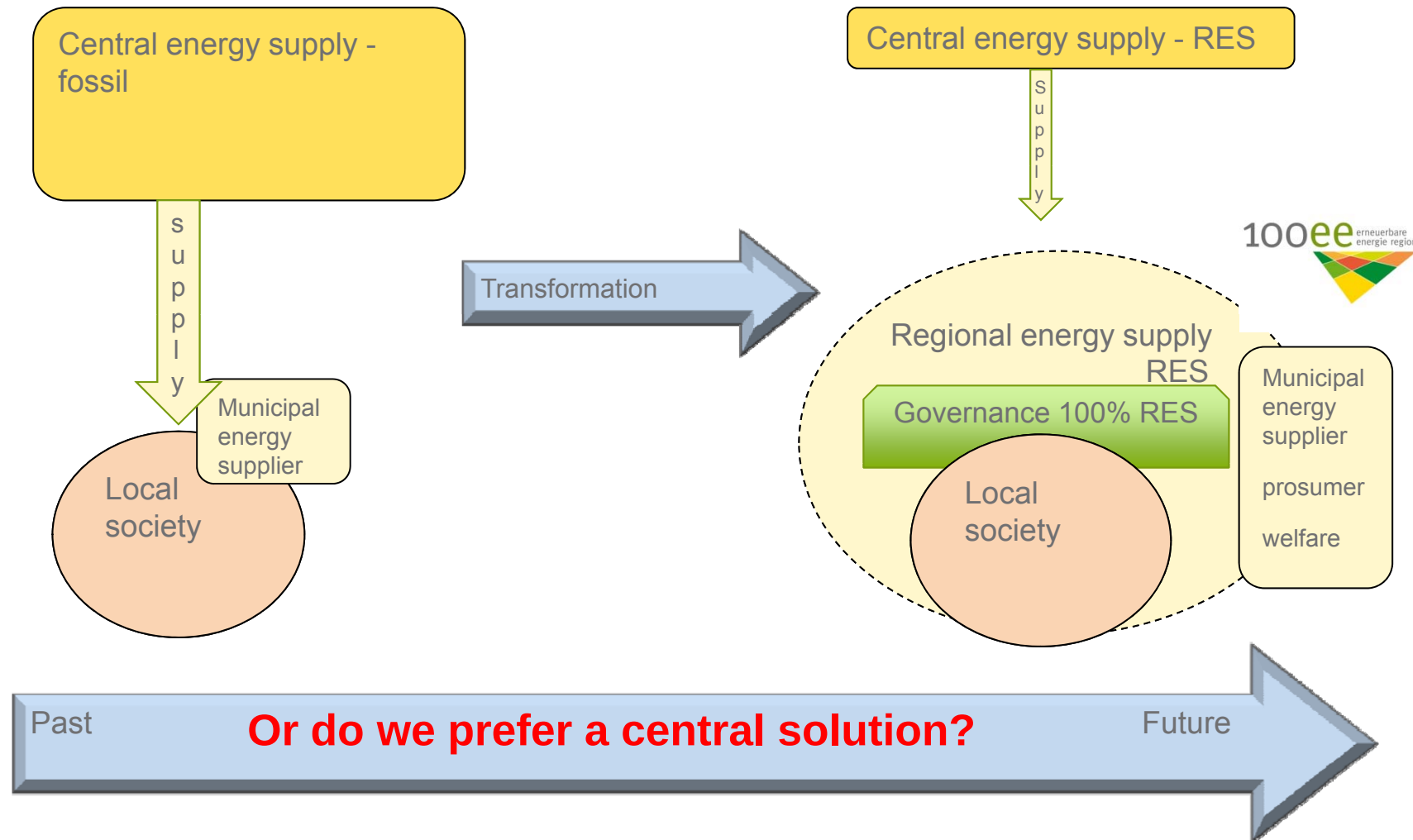
deENet – Network of Competence for Distributed energy technologies





**Which kind of energy supply system
do we prefer in the future?**

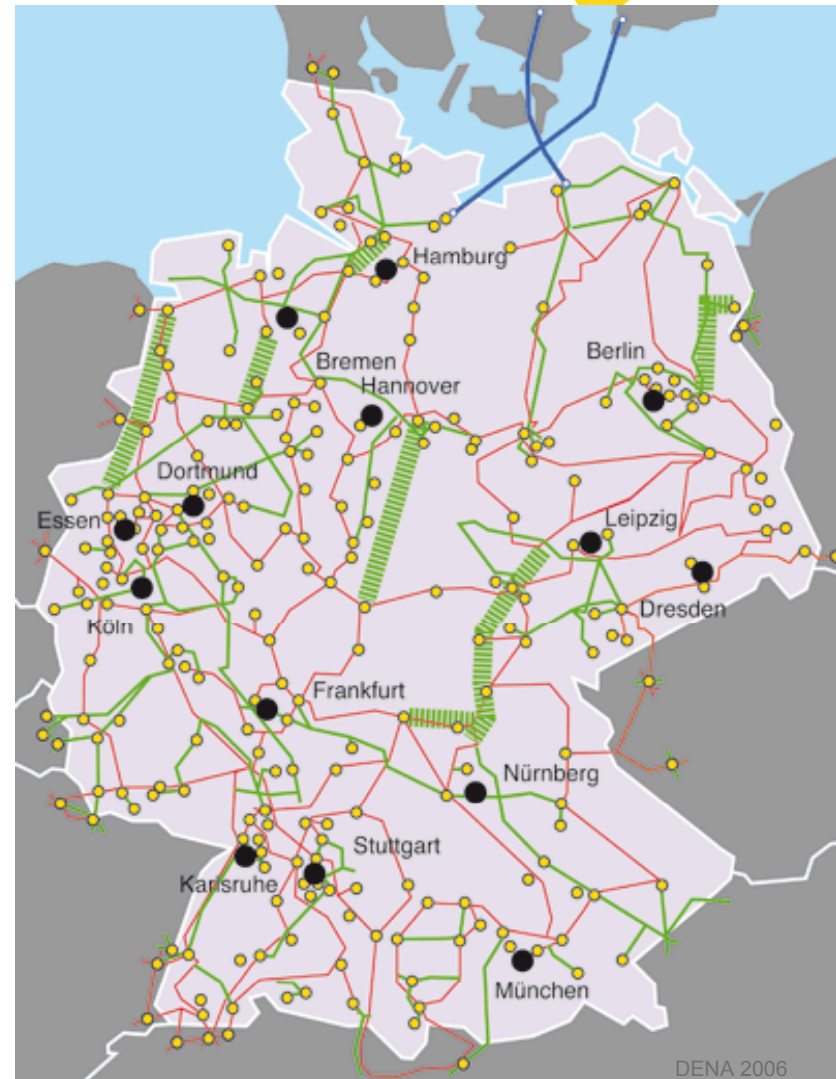
Transformation of the energy supply system



Central energy supply from wind in the North, solar power in the South



Greenpeace 2011



DENA 2006

Central 100% RES

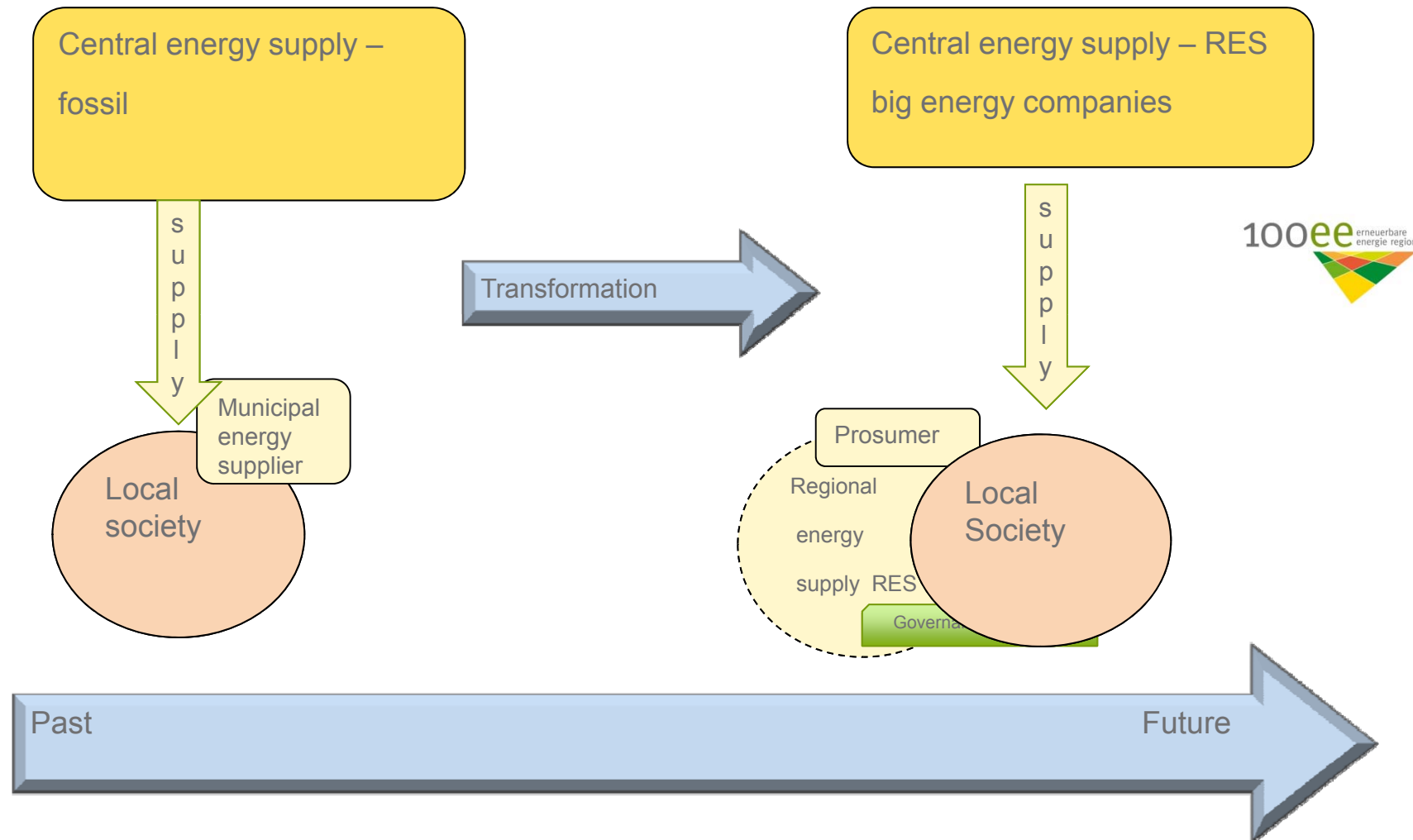
A new European
mega-grid in 2050



“ Within **6 hours** deserts receive more energy from the sun than humankind consumes within **a year**. ”

Dr. Gerhard Knies

Transformation of the energy supply system



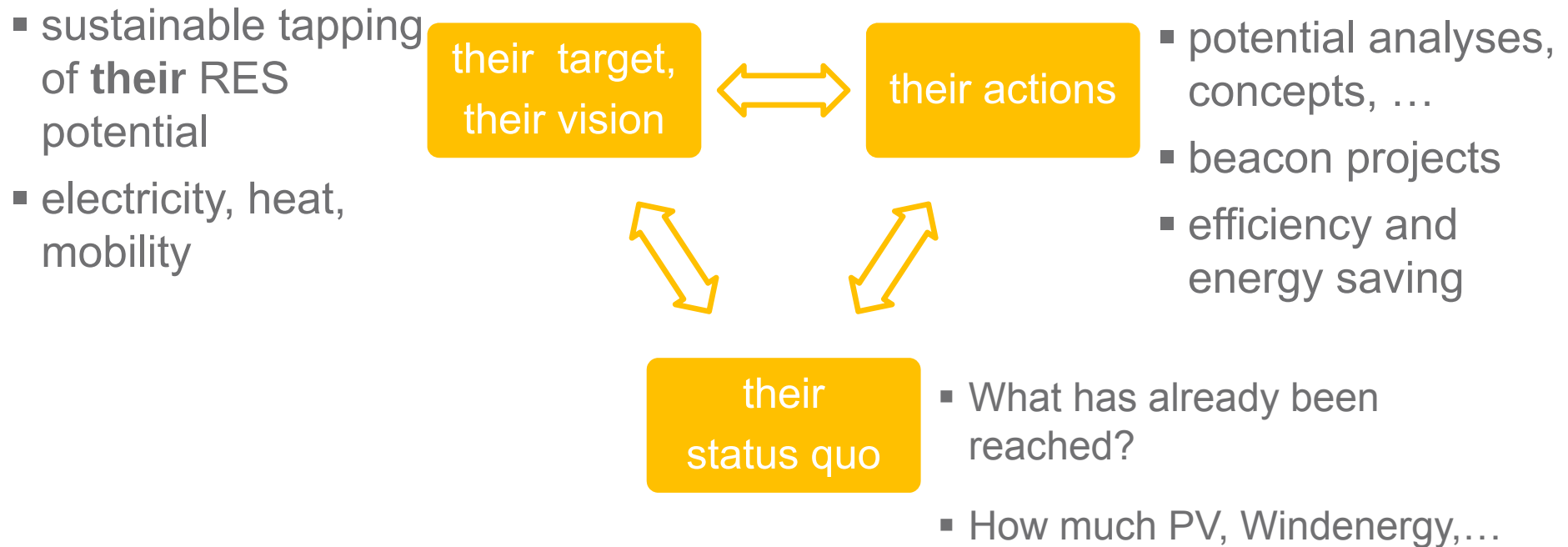
Moser 2011



The project “Development Prospects for Sustainable 100%-Renewable-Energy-Regions in Germany” analyses and supports municipalities and regions that aim at covering their energy demand with RES (www.100-ee.de).

- Analysis and evaluation of success factors and constraints
- Development of fundamental solution strategies
- Transfer / communication between the regions
- Case analyses and accompanying research
- Identification of model regions
- GIS-based RES regions map

What makes a 100% RES Region?



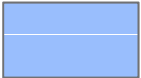
**➡ If most factors are positive, it is a „100% RES Region“
If it is not sufficient, we call it „Starter Region“**

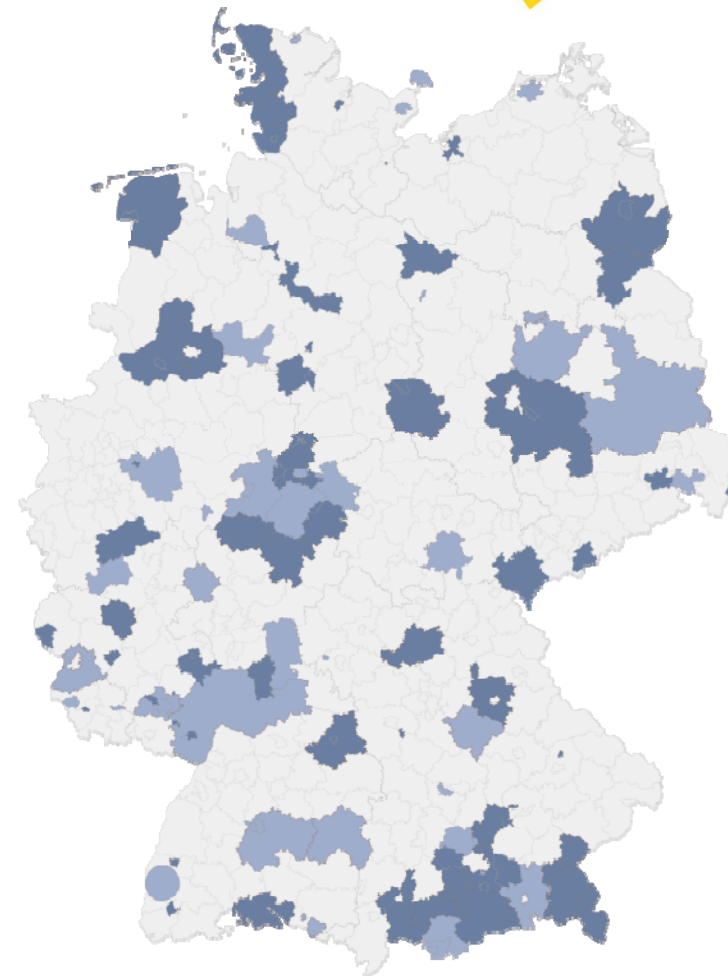
100% RES Regions in Germany



- 14% of the federal territory
- 8.3 million people in 100% Regions
- 9 million people in Starter Regions

 = 100%-RES Regions

 = Starter Regions



100% RES Regionen
Starterregionen
Andere Regionen ohne offizielle Bezeichnung

Wiederholungsrate der 100% RES Regionen ist ein Ausnahmefall. Die
Vielzahl der 100% RES Regionen und Starterregionen ist ein Ergebnis von
den regionalen Besonderheiten der Energiepolitik und der
Energiepolitik der Bundesländer und der Bundesregierung.

Stand: Februar 2017

Active regions for RES

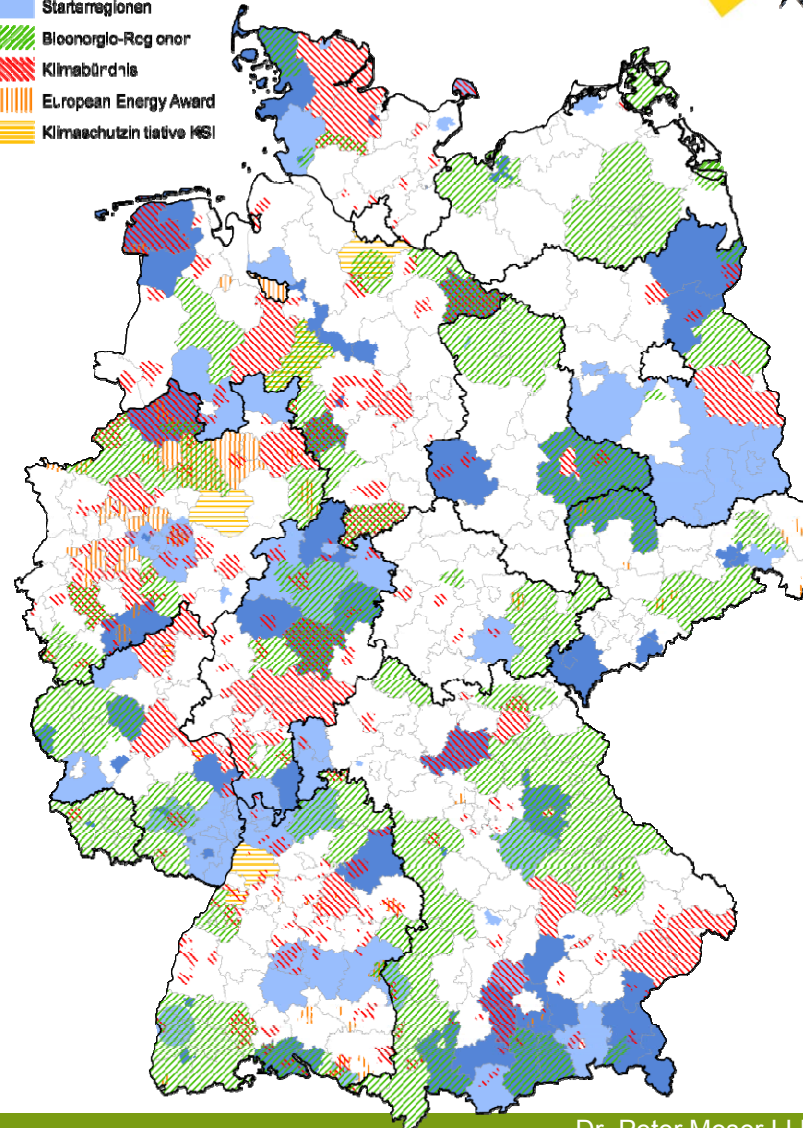
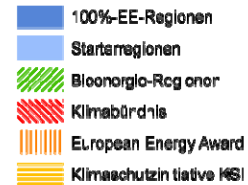
100ee erneuerbare
energie region



Legende



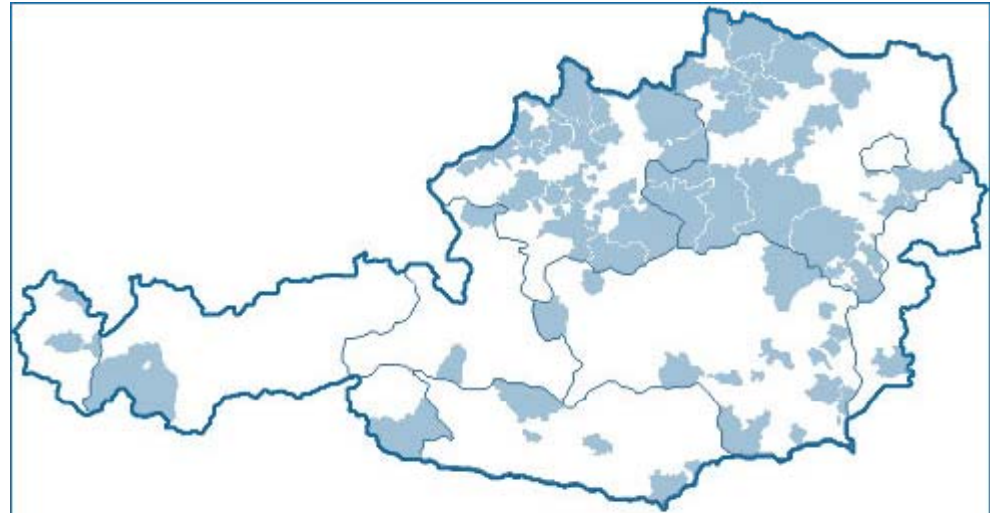
Legende



More than 50% have set off!

Source: Author's research, September 2010

- 66 climate/energy model regions
- 1.7m (20% of the population)
- Supported by the Klima- und Energiefond (Climate and Energy Fund)
- Several local approaches
- Strong civic participation



3 Questions



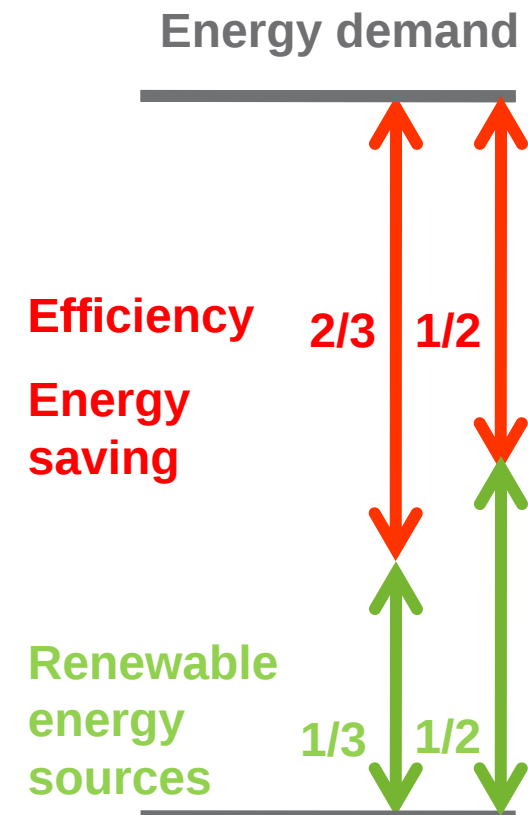
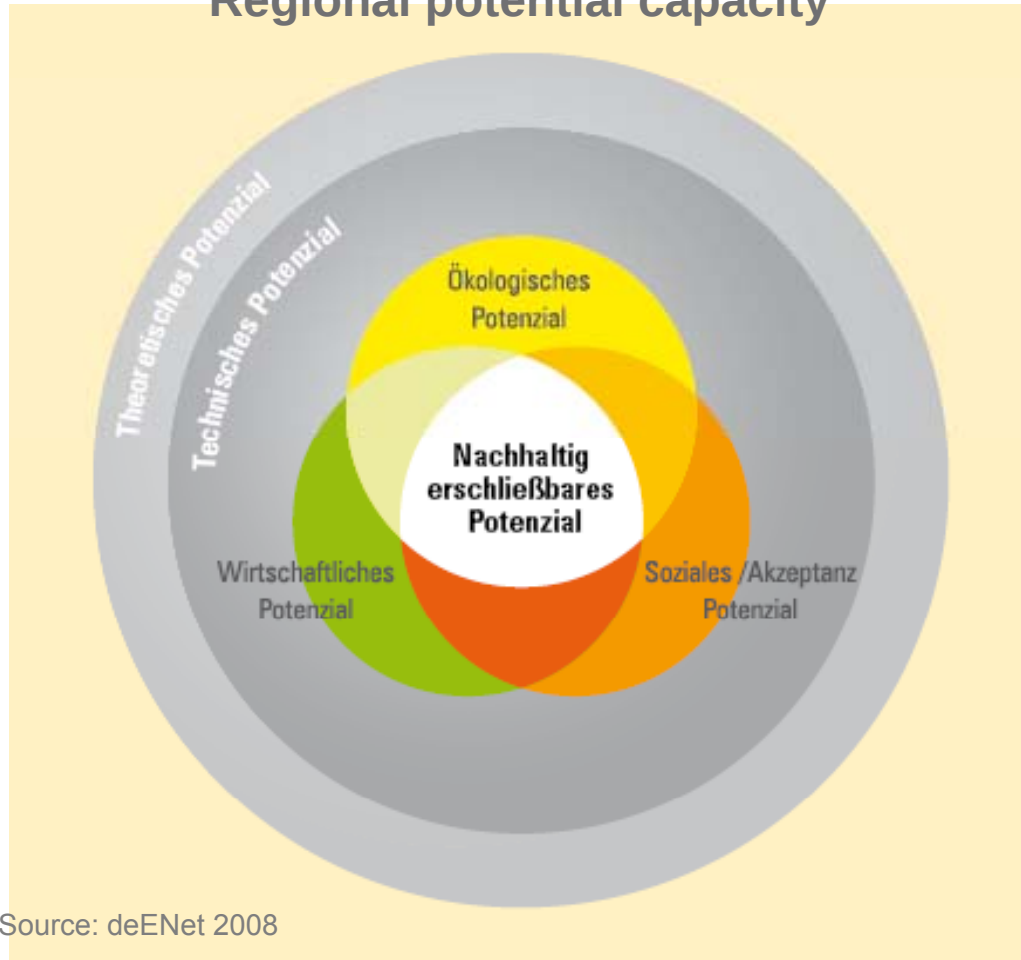
How can cities and regions meet the target of 100% renewable energy?

What does governance of 100% renewable energy in cities and regions look like?

Which instruments can pave the way for truly regenerative city regions?

How can regions meet the target?

Regional potential capacity

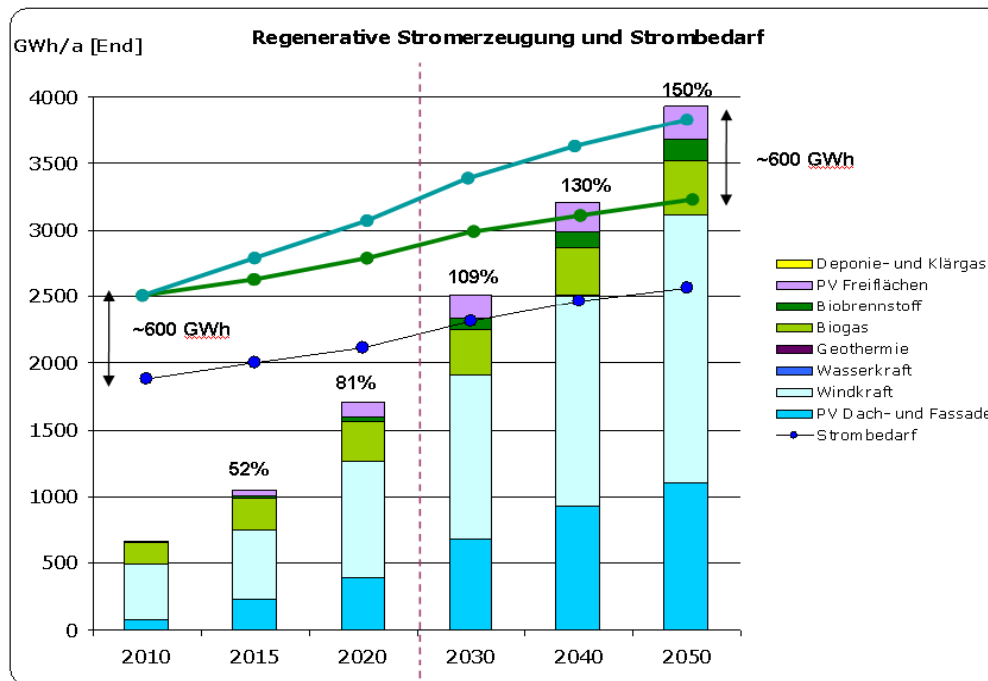


The crucial question is not whether regions and municipalities can achieve a 100% supply of renewable energy sources but how quickly this can be done sustainably.

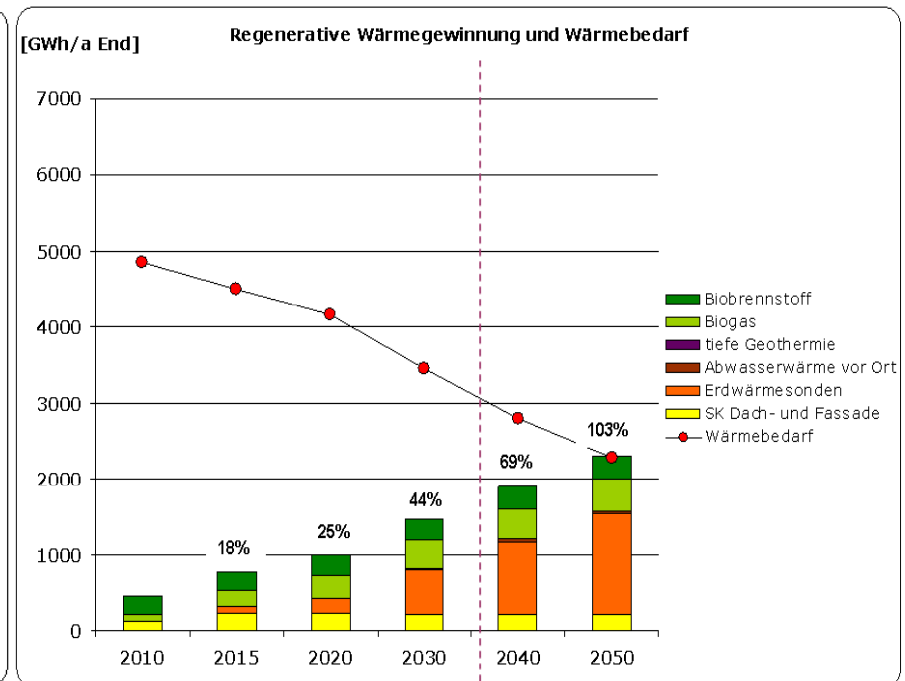
This does not apply to cities and urban regions. Rather, cooperation with and supply by surrounding areas is necessary.

How can regions meet the target?

100% RES scenarios for the district of Osnabrück



3.900 GWh/a electricity from RES
(150%)



2.300 GWh/a heat from RES
(100%)

Fig. 7: Renewable energies in the city of Kaiserslautern

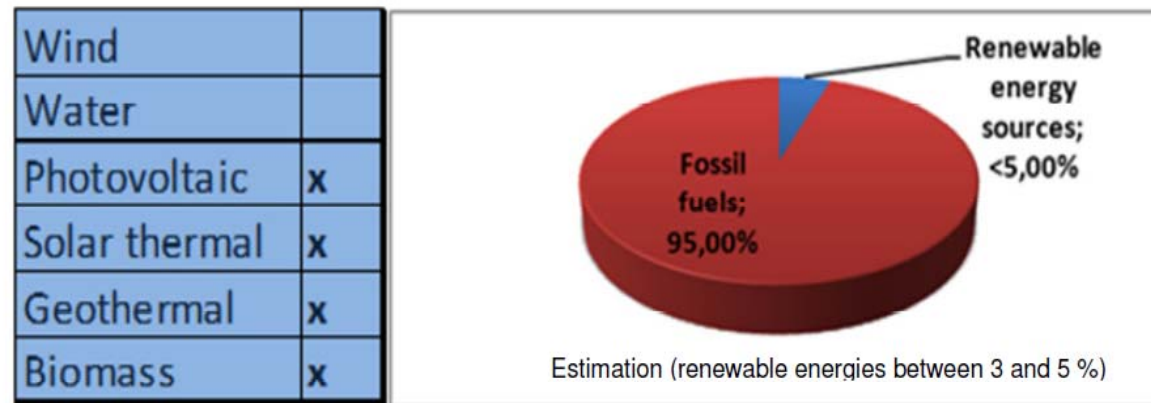
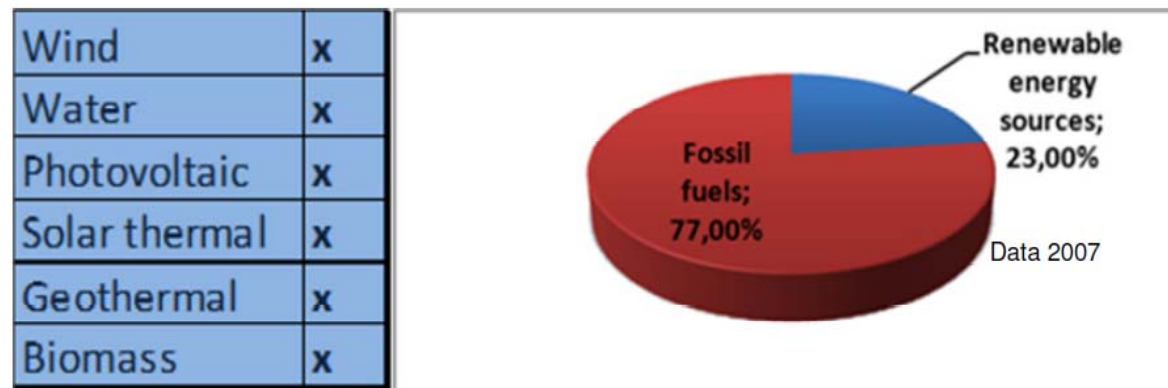


Fig. 8: Renewable energies in the district of Kaiserslautern (electricity percentage)



Source: Albrecht, 2009.

The local energy turn of the city of Wolfhagen Network of a local renewable energy policy

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- **Mayor and city parliament** (100% RES target: renewable energy sources as an economic chance for structurally weak municipalities)
- **Municipal energy agency:** „Energie 2000“ (aquisition of financial funds, efficiency in energy)
- **Municipal energy supplier:** Stadtwerke Wolfhagen took over power grid from E.on-Mitte in 2006 (supply safety, regional value creation)
- **Regional energy cooperative society founded** (acceptance through civic participation)
- **Citizen's initiative for wind power:** „Klimainitiative Wolfhagen“ / “Climate initiative Wolfhagen“ (local value creation)
- **Citizen's initiative against wind power :** „Keine Windkraft in unseren Wäldern!“ / “No wind power in our woods!“ (protection of birds and landscape)
- **Experts for regenerative energy sources:** University of Kassel, Competence Network for Distributed Energy Technologies – deENet (development and transfer of technologies)
- **Partner region:** Waldviertel in Austria (best practice exchange)
- **Regional economic cooperation:** Union of municipal energy suppliers in northern Hesse since 2011 (synergy effects)
 - > Governance process with strong public participants (incl. municipal energy suppliers)
 - > Governance innovations: involvement of various civic participants and municipal cooperations

7 steps to become a sustainable 100% RES Region.



Problem perception

Decision to develop sustainable regional energy supply

Mobilisation

Analysis of the current state

Qualitative and temporal objectives

Strategies, instruments, schedules, projects, measures

Implementation

**Sustainable
100% RES Region**

Success factors

- Key participants
- Strong partners in politics and economy
- On-site energy supplier
- Networking with other participants
- Mix of renewable energy sources
- Sustainable use of resources
- Sufficient financial resources
- Competent process management
- Regional energy sectors
- Convince the centre of RES



Sources: Author's own research, NOVA Institut, BAUM, u.a.



Thank you for your attention

Further information:

www.deenet.org

www.100-ee.de

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