

## Towards 100 % Renewable Energy: The Key Role of Local Communities

Stefan Gsänger

Doha, 4 December 2012



World Wind Energy Association  
Uniting the World of Wind Energy  
[www.windea.org](http://www.windea.org)

### Denmark: 100 % Today

Thy Region/Denmark – 44'500 inhabitants, 1093 sqkm:

- 114,6 MW installed wind capacity
- 35,8 MW installed CHP capacity
- 2011/12: power production from wind energy of 297 GWh
- 2011/12: power consumption of 322 GWh
- Electricity Consumption:
  - 92,2% from wind
  - 11% from biogas and CHP waste and PV
  - Fossil free production 103,2%

Source: [www.folkecenter.net](http://www.folkecenter.net)



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## Denmark: 100 % Today

Thy Region/Denmark – 44'500 inhabitants, 1093 sqkm:

- 70,3 % of heat from renewable energy (309 GWh out of 440 GWh)
- Thy also uses:
  - BIOMASS for District Heating
  - BIOGAS in small and large scale facilities
  - GEOTHERMIC Heat
  - WASTE Inceneration for District Heating
  - CHP and Wind Heat & Power, WHP
  - Concentrated SOLAR for District Heating
  - PV on Family Houses

Source: [www.folkecenter.net](http://www.folkecenter.net)



## Rural Electrification in Senegal

- The project «Micro Power 30»
  - Electrification of 30 villages in Senegal until 2014
  - Providing access to reliable power supply to 30'000 rural citizens
- Technical set-up:
  - 5 to 10 kWp PV / 5 kW wind turbine / 10 kW backup diesel generator
  - 60 kWh battery bank / 15 kW battery inverters
  - AC-coupling, modular concept
- Project partners:
  - INENSUS West Africa (associates INENSUS GmbH & CSI MATFORCE)
  - Public funding by the Daey Ouwends Fond, capital borrowed from FMO

Source:  
[www.inensus.de](http://www.inensus.de)

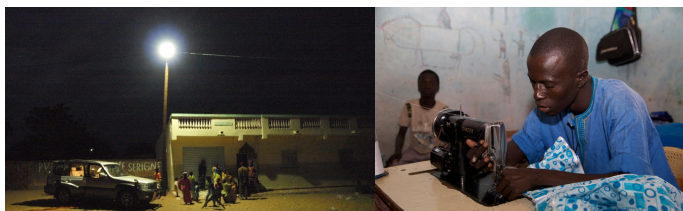


## Rural Electrification in Senegal

- Set-up of for-profit micro utility as joint venture with local partner company
- Close collaboration with and participation of rural communities
- Ownership and responsibility separation of power generation (micro utility) and distribution (village community)
- Fair, profitable and scalable tariff structure based on electricity block trading
- Micro Utility Solution for prepayment metering and demand side management
- Modular design of power systems for expandability



Source: [www.inensus.de](http://www.inensus.de)

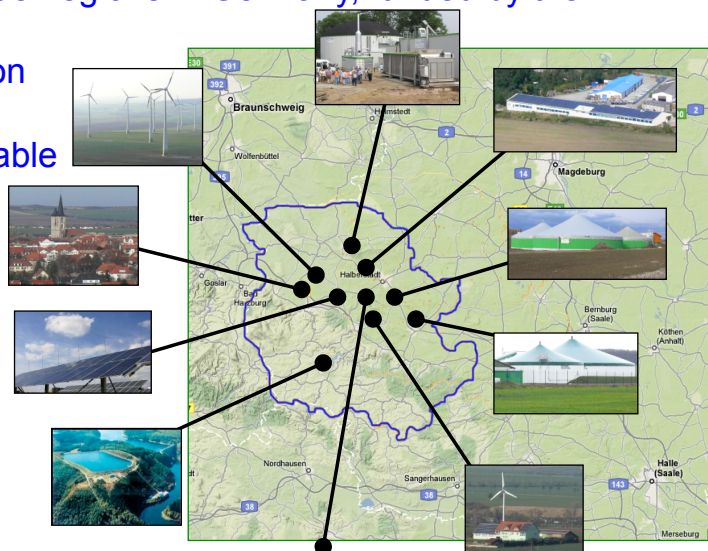


## Germany: ModellRegion Harz

Harz Region, Sachsen-Anhalt – 241'000 inhabitants, 2104 sqkm:

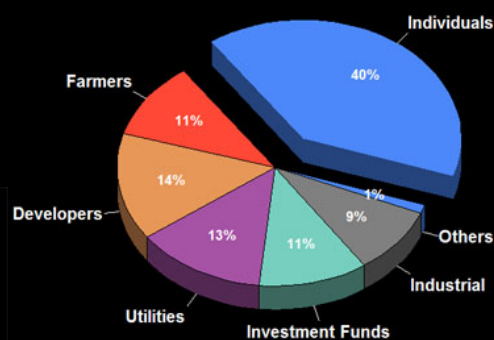
- Today 30 % of electricity from renewables
- Part of a programme of 6 model regions in Germany, funded by the German government
- Objective: Virtual power station for Harz region
- „Market integration“ of renewable energy through technical and economic approaches

Source: [www.regmodharz.de](http://www.regmodharz.de)



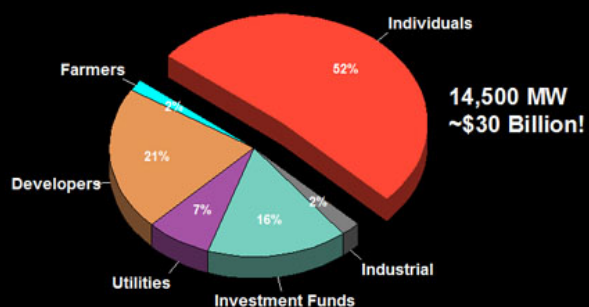


## German Ownership of Renewables in 2010: 53,000 MW



[unendlich-viel-energie.de](http://unendlich-viel-energie.de)  
[gipe, wind-works.org](mailto:gipe.wind-works.org)

## German Ownership of Wind in 2010: 27,000 MW



14,500 MW  
~\$30 Billion!

[www.unendlich-viel-energie.de](http://www.unendlich-viel-energie.de)  
Paul Gipe, [wind-works.org](mailto:wind-works.org)

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Thank you very much for your attention!

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