



Renewable Energies

A cost effective
alternative for Morocco

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juwi key figures



Founded 1996 by
Fred **Jung** and Matthias **Willenbacher**

Employees
> 1,800 in 14 countries

Turnover
1 billion € in 2011



juwi HQ in Würzburg Germany

Number of PV installations: 1,500
▪ Installed capacity: approx. 950 MW

Number of wind turbines: 540
▪ Installed capacity: approx. 950 MW

Annual energy output
▪ 3 billion kWh
▪ demand of 1 million households

CO₂ reduction
▪ 2.2 billion tons of CO₂

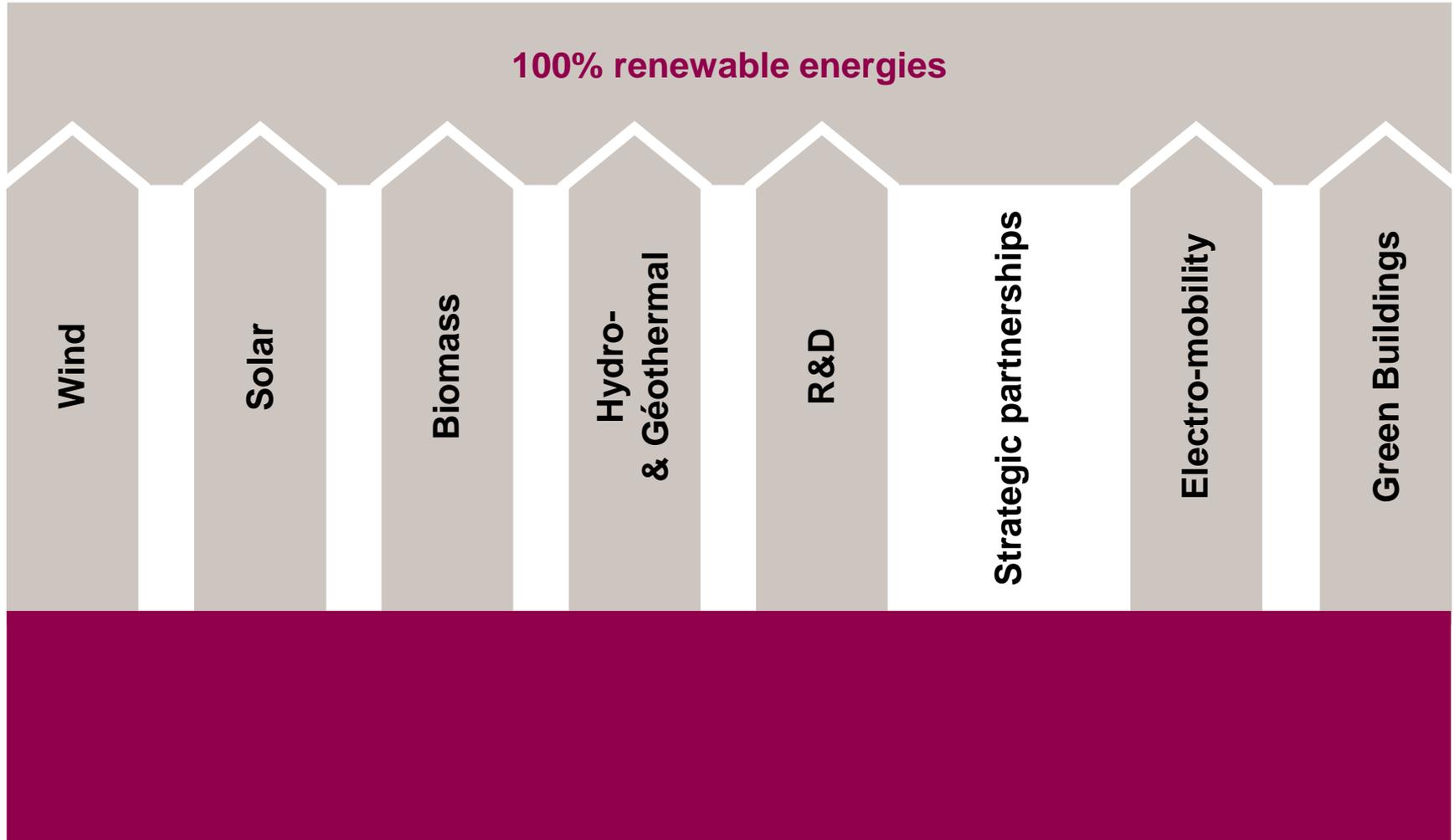
Our services



juwi – your partner from A to Z

- Consulting
- Planning
- Development
- Finance
- Construction
- Operation & Management

Our vision



Solar

Grid connected PV-Systems

- Easy engineering
- Short implementation time
- Investment costs decreased in 2011 due to PV module price by ca. 40%
- Generation costs of 0,08 €/kWh and less are possible.



71 MWp free-field installation, Lieberose, Germany

Off Grid

- High potential for sparsely populated areas with low electrification rate
- Generation costs depend on battery



250 kWp free-field installation, Kigali, Rwanda

Wind

- High potential
- but very site dependent (wind measurement!)
- Generation costs of 0,09 €/kWh and less are possible



50 MW, Wind farm, Costa Rica



Enercon E-126 7.4 MWp, Schneebergerhof, Germany

Example: the Morbach Energy Landscape

- 14 wind turbines with 2 MW each
- Free-field PV systems ca. 2MW
- Roof-top PV system ca. 30 kW
- Biogas power plant 500 kW_{electrical}
- Wood pellet production facility
- Wood-based heating plant
- Tourist hotspot: more than 30,000 visitors from more than 60 countries since 2002

Source: <http://www.energielandschaft.de/fr/accueil>

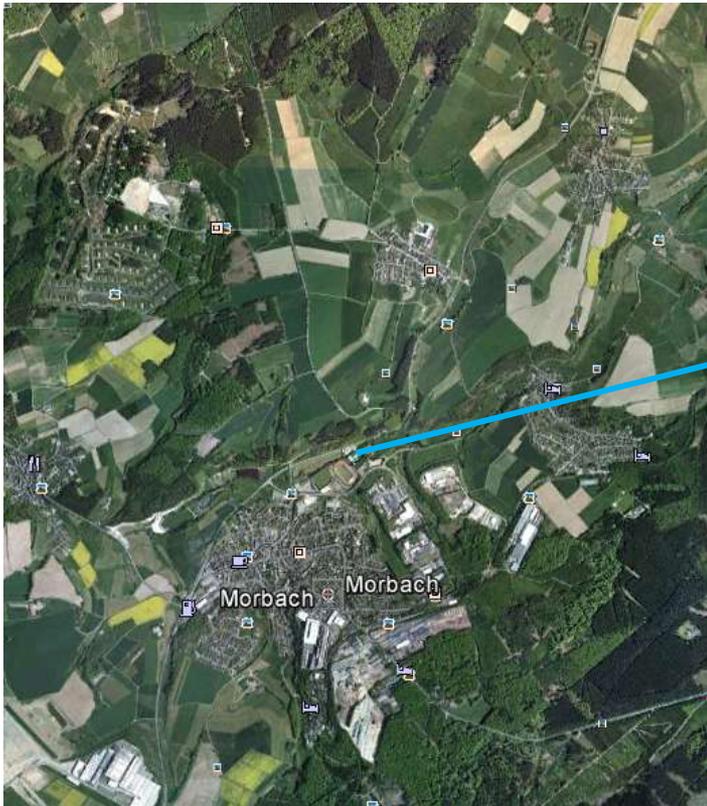


Wind, solar and bio energy at the Morbach Energy Landscape



Wind, solar and bio energy at the Morbach Energy Landscape

Morbach



Source: <http://www.energielandschaft.d/fr/accueil/>

Renewables in Morocco



- High solar irradiation
- High wind speeds
- High energy demand
- Space
- Interest

Regional Value Creation and Participation Models for Morocco

- Climate protection & sustainability
- Income from land lease
- Income from energy sale
- Low-priced energy
- Independence of fossile fuels
- Regional financial participation & job creation
- Regional training and know how
- Tourism



Instead of spending money on raw materials, prosperity is created in the region.

Challenges



- Legal framework
- tax
- Who will buy the energy at what price for how many years?
- Grid capacity

Merci!

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