

# Electricity from wind energy



## Contact:

### ISET

*Dr. Kurt Rohrig*

*Phone: +49 (0) 561/7294-330*

*email: krohrig@iset.uni-kassel.de*

*Peter Caselitz*

*Phone: +49 (0) 561/7294-332*

*email: pcaselitz@iset.uni-kassel.de*

There is huge potential for short to mid-term expansion of wind energy use. The German government's aim by 2025/2030 is to cover 15% of total electricity requirements in Germany from offshore wind installations and a further 10% from onshore wind farms.

## Research and development requirements

Developing offshore wind energy use currently poses the greatest challenge. The associated research and development activities touch on almost all areas of wind energy utilisation. An increase in R&D activities will also be necessary for the further expansion of wind energy utilisation on land, especially with respect to its prospective application in developing and industrializing countries. New challenges arise when new climates and topographical conditions (highly structured terrain) are entered into. One of the main goals of research and development is further cost reductions through fundamental innovations:

- Further development of system technology: new materials, elasticity and noise reduction, innovative control methods, generators and output electronics, new facility concepts
- Investigations of wind climatology and ambient conditions: wind potential, plant siting in complex terrain, forecasting energy yields, design wind characteristics, wind and wave characteristics for offshore applications
- Optimisation of system integration and plant management: control and management of wind farms, early fault recognition and plant maintenance according to the condition, information and communications systems, grid interaction effects, wind power forecasts
- Monitoring of technological development as well as basic surveys of technical, economic, ecological and legal aspects, and prospects for national and international use of wind energy