













- North Sea Sustainable Energy Planning
- Picture based analysis
- Results
- Summary and perspective







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North Sea Sustainable Energy Planning

JADE HOCHSCHULE Wilhelmishaven Oldenburg Elsfleth

Leadpartner: Jade Hochschule

Project lifetime: 09.2009 – 08.2012

Volume:appr. 5,2 Mio €Jade Hochschule:appr. 0,6 Mio €

Project partner: 14 partners from 6 countries Germany, Netherlands, Belgium, Denmark, Sweden, Scotland

(plus subpartners in the partner regions)





North Sea Sustainable Energy Planning

JADE HOCHSCHULE Wilhelmshaven Oldenburg Elsfleth

Aberdeen City Council (UK) **EMC** - The Coalition **Campus Varberg** (Municipality of Varberg) (SE) for Energy and Envi-Dundee College - Construction ronment Varberg (SE) Energikontor & Built Environment Centre (UK) Sydost (SE) Institute for the Study of Science, Technology and Innovation (ISSTI), University of Edinburgh (UK) Green Network (DK) REON AG (DE) Jade University of Applied Sciences (DE) City of Osterholz-Scharmbeck (DE) County of Osterholz (DE) Provincie Drenthe (NL) **U.A.N.** Municipal Environmental Campaign (DE) Intercommunale Leiedal (BE) Imog (BE)







Development of models for regional planning under special consideration of renewable energies and development of procedures for a higher energy efficiency incorporating regional (international) aspects.









- stronger use of sustainable energy planning
- innovative processes for regional development
- education and training
- identification of new cooperation models in the North Sea Region
- new methods, concepts and tools for a sustainable energy planning





North Sea Sustainable Energy Planning JADEHOCHSCHULE Work Packages 1+2: Projektmanagement and communication (Jade Hochschule, D) **Development and implementation** Work Package 3: of energy strategies (Provincie Drenthe, NL) Work Package 4: Tools, methods and concepts for a sustainable energy planning (Energikontor Sydost, S) **Evaluation**, benchmarking Work Package 5: (Dundee College,/GB)





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- 1. conception of GIS-tools / GIS-applications / sensitisation for using GIS
- 2. subsequent insulation for private and public buildings
- 3. heat exchanger systems for heat recovery from waste water
- 4. regional analysis for the implementation of solar power plants
- 5. economic feasibility studies / development of local/regional added value chains





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space requirement for a solar world full supply





The base area of Bavaria and Austria is sufficient to cover the actual world electrical energy demand.

www.solarpraxis.de

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Optimal Design









Optimal Design





- trees
- antennas, dormers
- neighbor buildings
- terrain
- other roof constructions

Output losses up to more then 50%

N O





Picture based analysis





AerialPicture





Picture based analysis





Overlap with an aerial picture





Preciseness

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Comparison Aerial Picture <> Google Earth



Aerial Picture



Google Earth





Preciseness

JADE HOCHSCHULE Wilhelmshaven Oldenburg Elsfleth

Comparison Aerial Picture <> Google Earth













Orientation



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- longitudinal-/cross overlapping of min. 40% resp. 60%
- information about the picture:
 - time of photo
 - position of the plane (x, y, z)





Orientation





manual detection of control points, to correct position errors





Orientation





automated calculation of additional data points





Classification of objects

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IAPG Institute for Applied Photogrammetry and Geoinformatics



JADEHOCHSCHULE

Classification of objects





SQL-typical scans, to filter adresses here: SELECT * from hauskoordinaten_klassifiziert WHERE [Str] = "Gefkensweg"



Clear

Verify

Help Load... Save...

Close

Apply



Selection of single objects

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GRASBERG

appr. 7.700 inhabitants developped area: appr. 6 km²







Results

2462 house coordinates (adresses) 6095 investigated objects

2687 applicable3213 limited applicable178 not applicable17 not investigated

Power:	6 kWp (800 kwh/kWp/a)
12.900.000 2580	kWh/a 4-persons households (consumption: 5.000 kwh/a

ca. 10.000.000 kg CO₂/a









Results

2462 house coordinates (adresses) 6095 investigated objects

2687 applicable3213 limited applicable178 not applicable17 not investigated

Price / PV plant:	ca. 18.000,- €				
= appr. 48.000.000,- €					













http://solarinitiative.energiewende-osterholz.de/index.php?id=28





Results



	Grasber	g (GER)	Tynaarlo (NL)			
		%		%		
house numbers	2462		2135			
investigated objects	6095		2530			
applicable	2687	44,1	1185	46,8		
limited applicable	3213	52,7	245	9,7		
not applicable	178	2,9	1066	42,1		
not investigated	17	0,3	34	1,3		

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Results





Grasberg (Germany)



Tynaarlo (Netherlands)









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Regional analysis of

- cities / municipalities,
- urban districts,
- residential areas.

Transfer of results into an webbased information system.





Summary and perspective



Target groups

- Cities, municipalities, ...
- Planning agencies
- Consultancy firms
- Solar firms
- Sales organisations
- Investors
- •

During the running INTERREG project further actions are planned in Sweden and Scotland.







Jade Hochschule

Institute for Applied Photogrammetry and Geoinformatics



JADEHOCHSCHULE

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