

Socio-economic Considerations of Technology Choices



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Large Scale Renewable Energy Projects – the Example Wind Energy

opposition

- economy, efficiency, property
- landscape, birds and bats
- health: noise, obstruction markings, shadow flickering



Large Scale Renewable Energy Projects – the Example Wind Energy

support

- independence
- economical growth
- innovation, fascination
- future, climate protection



Social Acceptance – the Issue of IEA Wind Task 28



- embedded in IEA Wind
- collect and provide knowledge how to foster social acceptance and use wind energy potential
- www.socialacceptance.ch
e.g. web data base, best practice report (in progress)
- international, interdisciplinary: e.g. engineers, environmental scientists, planners, psychologists, sociologists
- participating countries from Europe, North America and Asia



Elements of Social Acceptance

policy and strategies

- national framework
- incentive programmes
- spatial planning
- local implementation policy

procedural design

- regulatory requirements
- public engagement
- fair, transparent processes
- sensitivity for local culture

distributional justice

- ownership models
- regional, local welfare
- win-win situations

well-being

- life quality
- valuation of ecosystem
- noise, lights, shadow flickering

implementation strategies

- visualization
- checklists, guidelines
- communication

Policy and Strategies

national frameworks facilitate local implementation

good practice example from Denmark and Germany

- Renewable-Energies-Law, Feed-In-Low
- national energy concept
- designation of priority and suitability areas for wind turbines on regional level (Federal Building Act, Federal Spatial Planning law)

provide reliable knowledge for local and regional authorities

good practice example from Ireland and USA

- regional good practice workshops by Sustainable Energy Authority Ireland, Wind Powering America
- local authority planners, officials, elected representatives, NGOs

Procedural Design

sensitivity to local culture and identity enlarges acceptance

- Waddenmeer, an unsuccessful example from the Netherlands
 - authority planners: turbines into the mud-flats
 - local acceptance: along the dyke
- Nysted, a good practice example from Denmark
 - authority planners: horizontale cross bay
 - local acceptance: verticale cross bay



Distributional Justice

sharing of benefits can alleviate some concerns of injustice

good practice examples from Switzerland and Japan

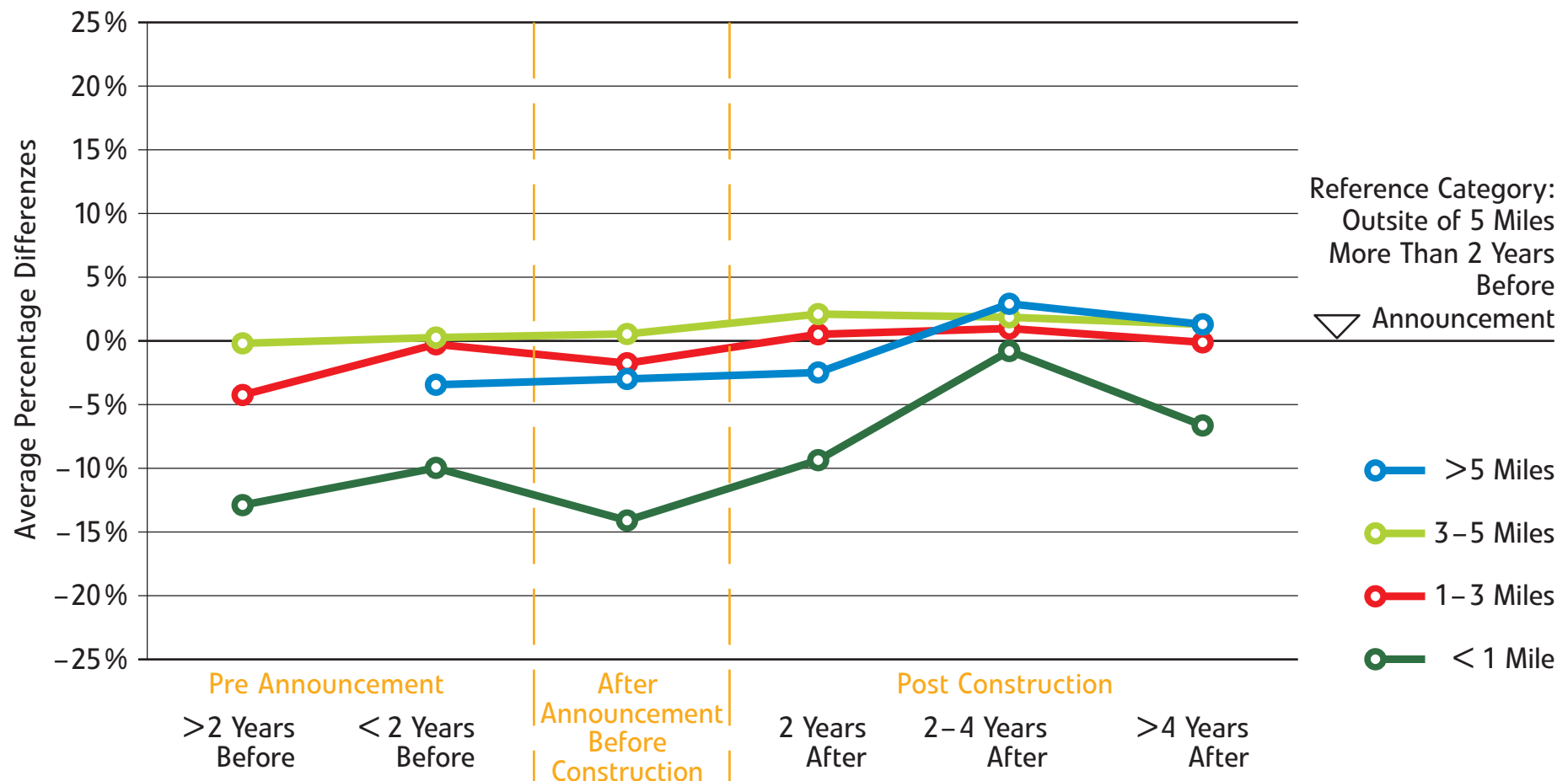
- community wind turbines
- low threshold
- local identity
- alternativ – cheaper electricity, community funds
- 70 % business taxes (Germany)



Well Being – Life Quality

now reliable hints for impact on sales prices

The Impact of Wind Power Projects on Residential Property Values in the USA



Health

no health impact found – if existing standards are applied

- shadow flicker (Pohl et al., 2000)
 - duration of shadow flicker \leq 30 min per day
 - maximum: 30 hours per year
- noise
 - complaints despite noise limits, e.g. 45 dB at night
 - topography, reduce power at night, react immediately
- high-voltage and very-high-voltage transmission lines
 - keep distance to residential buildings
 - combine overhead and underground lines

Aircraft Obstruction Markings

(Hübner & Pohl, 2010)

- increased total wind turbine, > 100 m
- aircraft obstruction markings obligatory
- neighbour complains

→ survey, 13 wind farms, > 500 questions

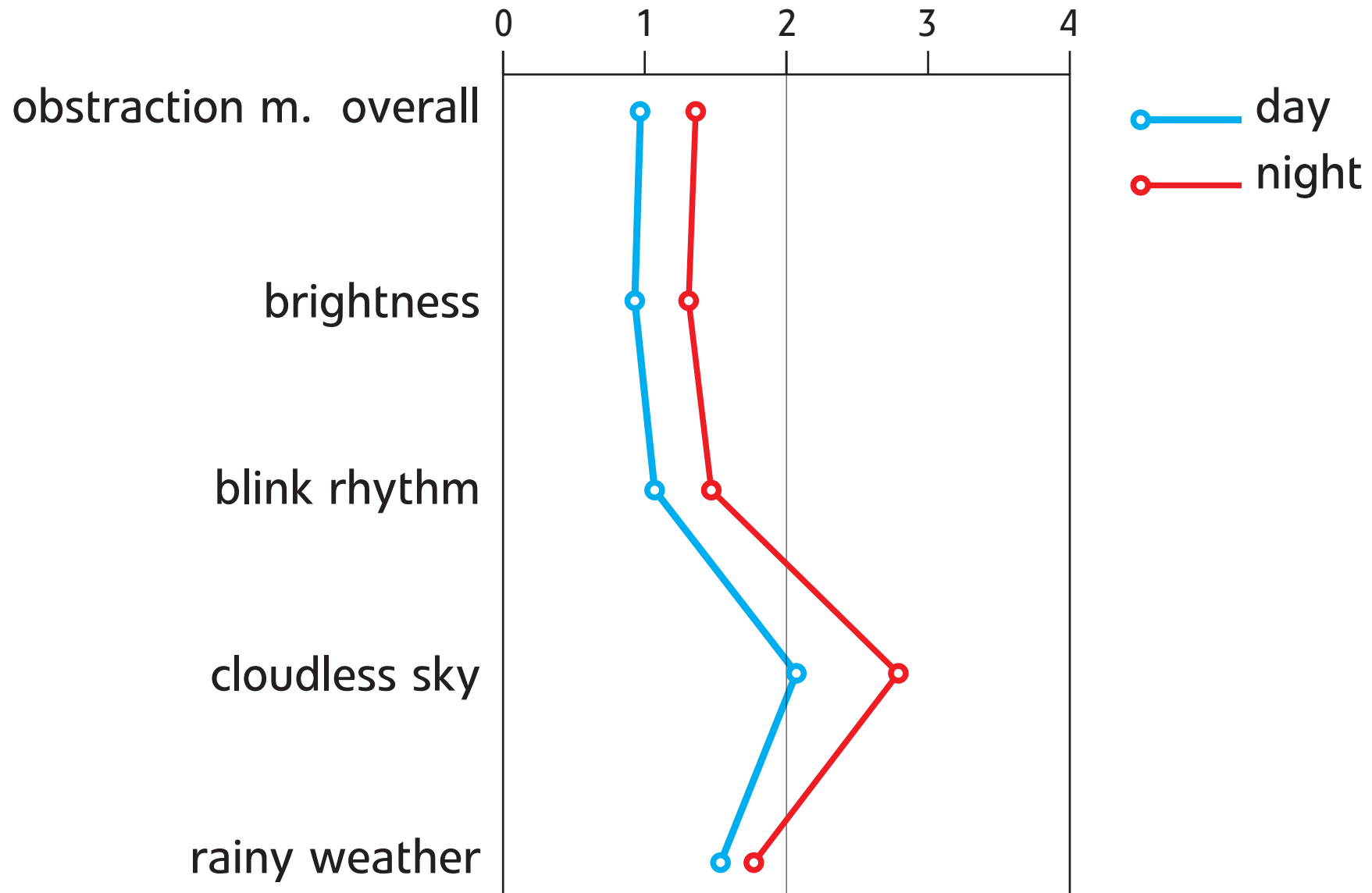


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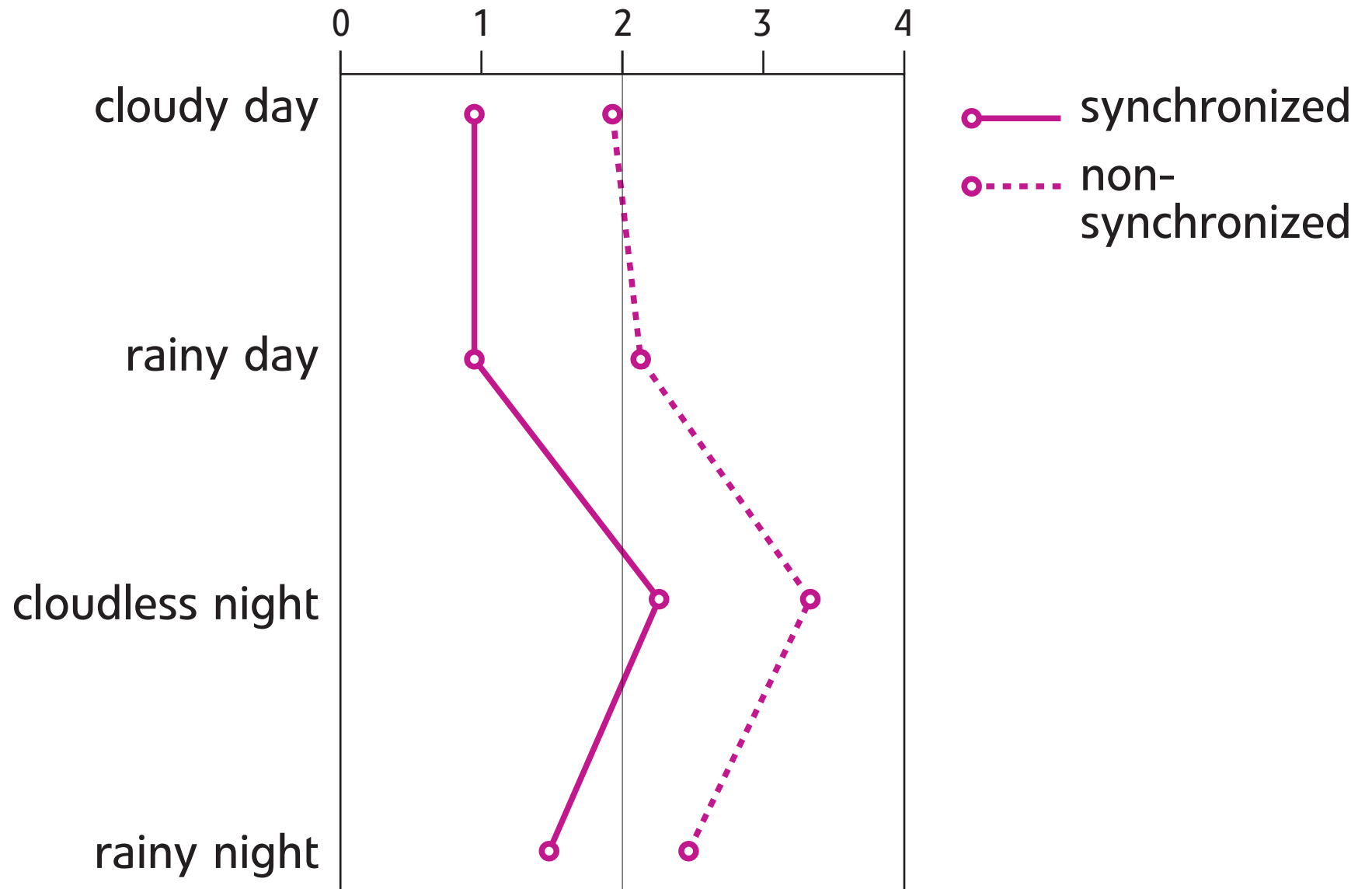


Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety

I myself feel annoyed by ...



I myself feel annoyed especially by ...



Results

no stress effect or substantial annoyance, but acceptance impact

- reduce light emissions
 - synchronize, apply intensity adjustment, no Xenon
 - needed: demand-oriented navigation lights
- 16 % of sample strongly annoyed
 - take complains serious
- experience as moderator
 - create low stress planning and construction periods

Summary and Recommendations

- establish long-term stable policy
- provide informed guidance for permitting and approval standards and processes
- fairness, win-win situations
- design policy to facilitate democratic participation
- take concerns and emotions seriously
- no linear acceptance process, no 100 % guarantee
- interdisciplinary, socio and economic approaches are essential

The Task 28 Team

IEA Wind Task 28
www.socialacceptance.de

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Thank You! And Groeten uit
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