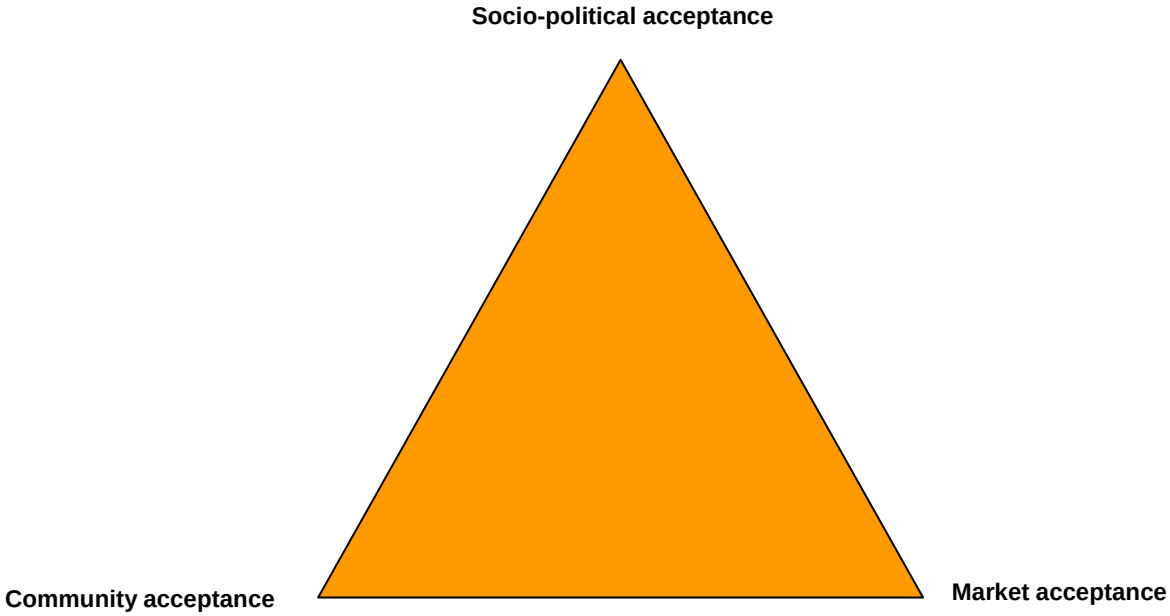
INTERNATIONAL ENERGY AGENCY

Implementing Agreement for Co-operation in the Research, Development and Deployment of Wind Turbine Systems
Task 11

54th IEA Topical Expert Meeting

SOCIAL ACCEPTANCE OF WIND ENERGY PROJECTS

Luzerne, Switzerland, May 2007
Organised by: Swiss Federal Office of Energy



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For more information about IEA Wind see www.ieawind.org

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TASK 11
BASE TECHNOLOGY INFORMATION EXCHANGE

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The objective of this Task is to promote wind turbine technology through cooperative activities and information exchange on R&D topics of common interest. These cooperative activities have been part of the Agreement since 1978.

The task includes two subtasks. The objective of the first subtask is to develop recommended practices for wind turbine testing and evaluation by assembling an Experts Group for each topic needing recommended practices. For example, the Experts Group on wind speed measurements published the document titled "Wind Speed Measurement and Use of Cup Anemometry".

The objective of the second subtask is to conduct joint actions in research areas identified by the IEA R&D Wind Executive Committee. The Executive Committee designates Joint Actions in research areas of current interest, which requires an exchange of information. So far, Joint Actions have been initiated in *Aerodynamics of Wind Turbines, Wind Turbine Fatigue, Wind Characteristics, Offshore Wind Systems and Wind Forecasting Techniques.* Symposia and conferences have been held on designated topics in each of these areas.

In addition to Joint Action symposia, Topical Expert Meetings are arranged once or twice a year on topics decided by the IEA RD&D Wind Executive Committee. One such Expert Meeting gave background information for preparing the following strategy paper "Long-Term Research and Development Needs for Wind Energy for the Time Frame 2000 to 2020". This document can be downloaded from source 1 below.

Since these activities were initiated in 1978, more than 60 volumes of proceedings have been published. In the series of Recommended Practices 11 documents were published and five of these have revised editions.

All documents produced under Task XI and published by the Operating Agent are available to citizens of member countries from the Operating Agent, and from representatives of countries participating in Task XI.

More information can be obtained from:

1. www.ieawind.org
2. http://www.ieawind.org/summary_page_xi.html

iea wind

February 12, 2007

INTRODUCTORY NOTE

IEA TOPICAL EXPERT MEETING #54

ON

SOCIAL ACCEPTANCE OF WIND ENERGY PROJECTS

Dr. Rolf Wüstenhagen, Institute for Economy and the Environment, Univ. of St. Gallen, Switzerland

Robert Horbaty, Managing Director of Swiss Wind Energy Association: Suisse Eole

Bubendorf, Switzerland

Background

Increasing the share of renewable energy is high on the policy agenda in countries around the world. Several governments have set ambitious targets and have started to implement support schemes aimed at facilitating market implementation. The degree to which these policies have been successful varies between countries, but wind energy stands out with the most impressive growth rates in some countries.

As wind turbines are spreading, however, it has been increasingly recognized that there is one factor that can potentially be a powerful barrier to the achievement of renewable energy targets: social acceptance. Germany, as the country with the largest number of installed wind turbines worldwide, has seen the media picking up on the theme of local resistance to new wind energy projects. Countries that are only at the beginning of the diffusion curve, such as the UK, the Netherlands, Switzerland or France, are also facing vivid debates on local and sometimes national levels.

While debates of social acceptance are not totally new to the energy sector - just think of contested siting decisions for nuclear power plants, nuclear waste storage facilities, or large hydropower dams - this issue needs to be urgently addressed if policies are to be implemented successfully.

Techniques

Social acceptance as a part of renewable energy technology implementation has largely been neglected in the eighties and nineties when the policy programs started. Most developers, including energy companies, authorities, and private local investors thought that implementation was not a problem, because the first surveys on the public acceptance of wind power, revealed very high levels of support for the technology.

However, there is more than one aspect of social acceptance that must be taken into account. There are a number of features of wind energy innovation that bring new aspects to the debate on social acceptance. For one, wind energy plants tend to be smaller-scale than conventional power plants, increasing the number of siting decisions that need to be taken. Secondly, as renewable energy conversion such as wind energy tends to be characterized by lower energy densities, the relative visual impact (per MWh of output) tends to be higher. This is partly reinforced by the fact that resource extraction in the case of fossil or nuclear energy happens

below the earth's surface (Sieferle 1982) and is thus invisible for everyday life of a citizen, while wind turbines and other renewable plants harness energy in a more visible way. It also means that renewable energy conversion tends to happen closer to where the energy consumer lives (the "backyard"), thereby increasing its visibility and bringing the environmental impact closer to their residence. Thirdly, given the ubiquitous presence of externalities in the energy sector, most renewable energy technologies compete with incumbent technologies not on a level playing field, thereby making acceptance of them a choice between short-term costs and long-term benefits.

Objectives

To hold a workshop to discuss and gather information on:

- Review experiences with acceptance of wind energy projects in different countries
- Review of relevant studies and investigations on this subject
- Highlight difficulties of applying traditional approaches in site assessment
- Review current guidance and evolution of site assessment methods
- Descriptions of practices for assessing landscapes values for wind farms
- Description of successful projects and strategies , definition of success factors
- Recognize concrete solutions for planners and developers, the discussions on social acceptance of wind energy are often on a very academic level.

The participants are encouraged to prepare presentations relevant to these objectives.

Expected Outcomes

One of the goals of the meeting will be to gather the existing knowledge on the subject and come up with suggestions / recommendations on how to proceed with the following:

- Sociological background to issues like acceptance, etc..
- Rational analysis of existing landscape and peoples perception of the impact of wind turbines on that landscape
- Utilization of photomontages that are perceptually correct to show impact / change
- The expert meeting should be held in order to identify the primary research objectives that could constitute a possible new Task.
- Definition of necessary research activities for "Recommendations"
- The topic seems to have up to now only little impact on wind energy project developers. With few exceptions the discussion is held in the field of the social sciences and not in engineering sciences.
- It may probably be the case that in the future successful project developments makes a co-operation between planning- and sociological competence necessary.

Based on the above a document will be compiled containing:

- Presentations by participants
- Compilation of the most recent information on the topic
- Input to define IEA Wind RD&D's future role in this topic

Intended Audience

Experts are expected from the scientific society and other institutions who have been investigating the effects of wind energy on the public, public acceptance issues and EIA procedures for public consultation and also researchers in the Social sciences, i.e. communication, cognition and social psychology.

In general researchers with an interest in the public perception of wind energy deployment and persons working with wind energy planning within utilities are welcome.

Participants are also expected from utilities and developers who have hands on experience of these issues.

TENTATIVE AGENDA

The tentative agenda covers the following items:

DAY 1

1. Introduction by host
2. Introduction by Operating Agent, Recognition of Participants
3. Collecting proposals for presentations.
   The participants are encouraged to prepare a presentation 15-20min in length including a short discussion
4. Presentation of Introductory Note.
5. Individual presentations

DAY 2

6. Individual presentations
7. Discussion
8. Summary of meeting

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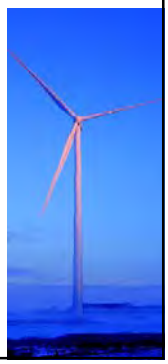
Social acceptance of wind energy projects: Introduction to the Workshop Theme



Dr. Rolf Wüstenhagen
Vice Director
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Lucerne, Switzerland, May 24, 2007

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Outline

1. Background on IWÖ-HSG
2. Conceptualizing Social Acceptance of Renewable Energy Innovation
3. Outlook on Further Research

The Institute for Economy and the Environment at the University of St. Gallen (IWÖ-HSG)

- Part of one of the leading European business schools
- Founded in 1992 with support from the oikos Foundation
- Research and teaching on...
  - Corporate Sustainability
  - Energy Marketing & Policy
  - Environmental Economics
  - Life-cycle assessment
  - Sustainable Entrepreneurship & Venture Capital
- Extensive portfolio of projects related to management of sustainable energy innovation
- Hosting the annual oikos PhD Summer Academy and the annual St. Gallen Forum for Sustainability Management

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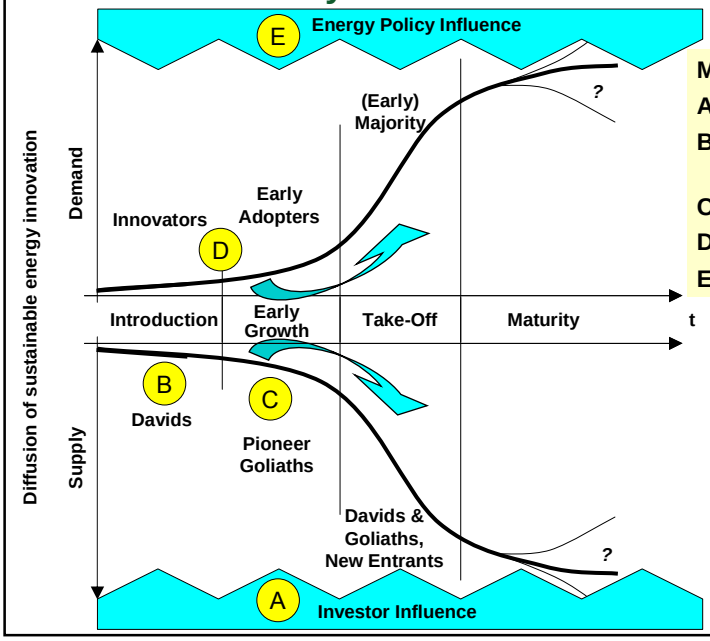
Diffusion of Sustainable Energy Innovation: One-slide summary of IWÖ-HSG research program



Main Research Tracks

- **A** Venture Capital
- **B** Sustainable Entrepreneurship
- **C** Corporate Venturing
- **D** Customer Adoption
- **E** Energy Policy

Source: Wüstenhagen 2007

Outline

1. Background on IWÖ-HSG
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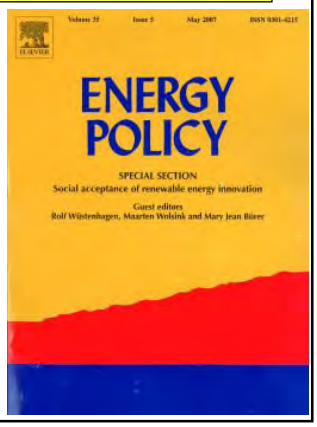

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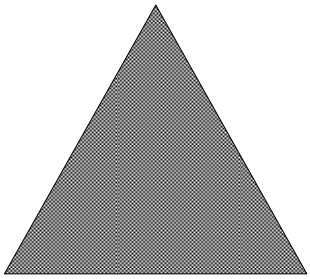
The Triangle of Social Acceptance of Renewable Energy Innovation

Socio-political acceptance

- Of technologies and policies
- By the public
- By key stakeholders
- By policy makers



Community acceptance

- Procedural justice
- Distributional justice
- Trust

Market acceptance

- Consumers
- Investors
- Intra-firm

Source: Wüstenhagen, Wolsink, Bürer 2007

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Key insights: Socio-political Acceptance

- This is social acceptance on the broadest, most general level
- Public acceptance of a given technology (e.g. opinion polls) does not mean specific acceptance of a given project
- Levels of policy making are important, e.g. EU-national-regional-local (Nadaï 2007)
- Even under favorable support schemes on national level, the devil is often in the details (Breukers and Wolsink 2007)

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Source: Wüstenhagen, Wolsink, Bürer 2007

Key insights: Community Acceptance

- This is specific acceptance of siting decisions and renewable energy projects by local stakeholders, particularly residents and local authorities
- NIMBY or not? (Wolsink 1986-2007, Van den Horst 2007)
- A combination of procedural & distributional justice makes projects more likely to succeed (Gross 2007)
- Under high uncertainty, trust becomes important (Huijts et al. 2007)
- Differing views among residents & tourists (Reinshagen 2006)
- Level of community acceptance changes over time (Wolsink)

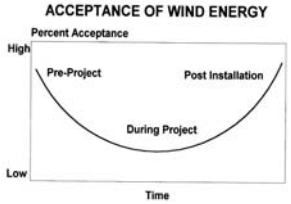

FIGURE 8.5 Sequence of public acceptance of wind power. (Produced by L. Arkesteijn after research conducted by Maarten Wolsink.)[13]

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Source: Wüstenhagen, Wolsink, Bürer 2007

Key insights: Market Acceptance

- This is acceptance of renewable energy in the marketplace by consumers, investors and incumbent energy firms
- If consumers become (co-)investors, they are more likely to accept (Maruyama et al., 2007 – community wind power in Japan). But for many consumers, convenience is important (Litvine and Wüstenhagen 2007).
- Energy technology firms show surprising differences in reaction time to market opportunity in wind energy (GE 2002, Siemens 2004, Areva 2007?, Alstom 2008??), which might be related to processes of intra-firm acceptance of renewable energy innovation
- Investor acceptance of clean energy technologies and policies is currently going through a hype cycle (Bürer 2007, Strohmeier 2007)

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Source: Wüstenhagen, Wolsink, Bürer 2007

Outline

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Further Research: Socio-Political Acceptance

- Bridging the national-local divide
  - Top-down: Translating national policy objectives into locally accepted siting decisions
  - Bottom-up: Enabling local initiatives to foster more ambitious policies
- Policy stability is key for investment, but how can this be achieved longer-term? (e.g. improved lobbying capacities)
- International policy learning (e.g. diffusion of feed-in schemes)
- Feedback loops between socio-political acceptance and market acceptance (e.g. through consumer, firm, investor influence on policy)

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Source: Wüstenhagen, Wolsink, Bürer 2007

Further Research: Community Acceptance

- International learning processes between opponents (or proponents) of windpower
- What are the most effective ways for planners to create a "sense of ownership" among local stakeholders?
- How does perception of landscape influence social acceptance of wind power (onshore and offshore)? (> ESF 2007)
- North-South comparisons of social acceptance (cf. Mallett 2007, Troncoso et al. 2007)
- Methodological note: from single case studies to larger samples

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Source: Wüstenhagen, Wolsink, Bürer 2007

Further Research: Market Acceptance

- Customer segmentation: What is it that really makes consumers buy renewable energy, and how does this key motivation differ between customer segments?
- Intra-firm acceptance: Understanding the current rethinking process in large energy companies towards taking a more or less proactive approach to renewables.
- Investor acceptance: Acceptance of renewable energy technologies and policies in the financial community

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Source: Wüstenhagen, Wolsink, Bürer 2007

I look forward to fruitful discussions!

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Annex: Recent IWÖ-HSG Publications on Diffusion of Sustainable Energy Innovation

- Wüstenhagen, R. (2007): Venturing for Sustainable Energy, Postdoctoral Research Thesis (Habilitation), University of St. Gallen.
- Boehnke J., Wüstenhagen R. (2007): Business Models for Distributed Energy Technologies - Evidence from German Cleantech Firms. Paper presented at the Academy of Management 2007 Annual Meeting, Phladelphia PA, August 2007.
- Sammer K., Wüstenhagen R. (2006): The Influence of Eco-Labelling on Consumer Behaviour : Results of a Choice-Based Conjoint Analysis. Business Strategy and the Environment, 15, 3, pp. 185-199.
- Kaenzig J., Wuestenhagen R. (2006): Understanding strategic choices for sustainable consumption: the case of residential energy supply, in: Charter, M. and Tukker, A., (eds.): Sustainable Consumption and Production: Opportunities and Challenges, Proceedings of the Launch conference of the Sustainable Consumption Research Exchange (SCORE) Network, 23 to 25 November 2006, Wuppertal, Germany.
- Wüstenhagen, R. and Bilharz, M. (2006): Green Energy Market Development in Germany: Effective Public Policy and Emerging Customer Demand, in: Energy Policy (in press).
- Wüstenhagen, R. and Teppo, T. (2006): Do venture capitalists really invest in good industries? Risk-return perceptions and path dependence in the emerging European energy VC market. Int. J. Technology Management.
- Bürer, M.J. and Wüstenhagen, R. (2005): The role of government in supporting the emergence of clean energy venture capital investing in Switzerland, report on behalf of the Swiss Federal Office of Energy, Bern/St. Gallen.
- Strohmeier, M. (2007): Hope-Hype-Disappointment Cycles in Cleantech Venture Capital - A Diagnosis for the Photovoltaics Industry, Master Thesis, University of St. Gallen.
- Burkhalter, A. (2007): Einfluss von Öko-Labelling auf das Kaufverhalten bei Ökostrom, Master Thesis, University of St. Gallen.
- Mertes, H. (2007): M&A in the wind energy industry: Drivers, performance and implications, Master Thesis, University of St. Gallen.
- Reinshagen, A. (2006): Akzeptanz von Offshore-Windenergie am Beispiel der deutschen Nordseeinsel Sylt - Ableitung von Massnahmen zur Akzeptanzerhöhung, Bachelor Thesis, University of St. Gallen.
- Simon, A. (2006): Erfolgsfaktoren zur Erhöhung der Akzeptanz der Windenergie in der Schweiz, Bachelor Thesis, University of St. Gallen.

http://www.iwoe.unisg.ch/energy

Changing institutional landscapes for wind power implementation.
An International Comparison

May 24-25th Luzern
Meeting: "Social Acceptance of Wind Power"
Sylvia Breukers
University of Utrecht
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Points of departure

Implementation of wind power: large differences between countries and regions (MW):

	1992	1995	1998	2000	2004
Netherlands	57	257	364	442	1080
England	±15	72	90	123	184
North Rhine Westphalia	±18	110	325	644	2053

Points of departure

Important :

- Willingness to invest
- Siting processes
- Social acceptance of wind projects

Research emphasis: **social-political potential** for wind power implementation

Conceptual Framework

Research focus:

- Wider structural conditions affecting local level approach of planning and project development
- Configuration of stakeholders on various levels and in policy formation

Conceptual Framework

Institutions:

Formal and informal rules, norms, patterns that structure behaviour and interaction.

Conceptual Framework – Single case level

1. **Stakeholders' arguments** about whether and how wind power is to be implemented
   - refer to structural conditions, relations and conflicts
2. **Institutional context & changes: policy domains:**
   a) Energy domain
   b) Spatial Planning
   c) Environmental Policy
3. **Policy community:**
   early formation network; consolidation; grass-roots; government commitment; mobilisation support

Conceptual Framework – Single case level

Combined, per case:
chronological account of how wind power implementation occurred through the coming together of actors and their knowledge, and how support has been mobilised at various levels (local to national) within the context of changing institutional arrangements

Conceptual Framework - Cross-comparison:

Cross-comparison:

1. Differences or similarities between the cases in institutional capacity building?
2. How to account for variation?
3. How does this variation relate to variation in implementation?
4. What other influences?

Findings and comments

Similarities England and Netherlands:

- Early focus national policy on large-scale
- National policy favored large developers (e-sector)
- Little recognition for local economic, environmental and planning aspects
- Developers' strategy: few incentives to involve local stakeholders

Findings and comments

No positive conditions for local project planning created; little support mobilised at local level.

Effects of early choice:

- Many project proposals never built
- Resistance from early onwards

Findings and comments

Netherlands, end 90s:

unintended consequence liberalization: increase in locally owned projects and in implementation

England, since 2002:

new policies, new expectations, but problems at the level of implementation remain

Findings and comments

Success North Rhine Westphalia (NRW):

- installed capacity
- social acceptance of wind projects

Findings and comments

Important factors:

- State and federal government supported local initiatives instead of channelling resources to the energy sector
- German feed-in tariff system: diversity, mobilisation of capital (of private local investors) and of commitment

Findings and comments

- Many projects in local ownership – diversity of actors at the local level involved and committed

→ **no early rise of opposition**

- Early institutionalisation of environmental concern in society and politics
- Succes turbine industry→ broadening of support

Findings and comments

Effects of early policy focus:

- Many project proposals realised
- Early opposition precluded

Successful mobilisation of support:

- Not only from environmental, but also from economic and industrial interests
- At different levels (from local to the national)

Findings and comments

Social and political embedding of wind energy as

- An environmentally acceptable energy source
- As a new economic sector
- As a socially acceptable alternative for conventional energy generation

Findings and comments

NRW later:

- Fewer locally based projects
- Local support waning, resistance increasing,
- Decrease in implementation

→ but at a moment when an impressive level of installed capacity had already been reached.

Findings and comments

In comparison with England and the Netherlands, in NRW more has been achieved in an overall less conflictuous context .

Social and political embedding are crucial conditions for successful market development.

Findings and comments

Similarity 3 cases:

high level of general public support for the deployment of wind power, but increasing resistance against specific projects:

'Gap' between public attitudes and local behaviour.

Findings and comments

- Participative planning – beyond formal consultation – exception rather than rule
- Limited inquiry into the motivations behind opposition
- Trend to prioritise 'the common good' over local level concerns

Findings and comments

Local level, important issues:

•Location and size

•Landscape values (subjective)

•Local economic interests (sharing costs and benefits)

Formal consultation on ready-made plans: insufficient to provide room for considering these issues.

Concluding remarks

Participation:

- Relevant knowledge stakeholders
- Democratic legitimacy (process and outcome)
- Legitimacy through sharing costs and benefits (financial participation)

Concluding remarks

Participation and co-production:

- those fundamentally opposed will not turn into supporters

However, '**gap**' between positive public attitudes and negative behaviour can be **bridged** when it concerns:

- Conditional supporters
- Local stakeholders that want to have a say about decisions affecting their direct living environment

Concluding remarks

Policy making: focus on socio-political potential

• Take existing practices as a starting point; learn about these through interaction with relevant stakeholders active in the field and in interaction with relevant policy domains

•Consider how national policy works out at the level of implementation

• Take into account the unequal positions

•Consider the type of project development that is encouraged by government policies

Thank you.

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IEA Topical Expert Meeting

Lucerne, 24th / 25th of May

The Swiss Wind Energy Concept: Enhancement of the Acceptance for Wind Energy

Robert Horbaty

Managing Director Swiss Wind Energy Association "Suisse Eole"

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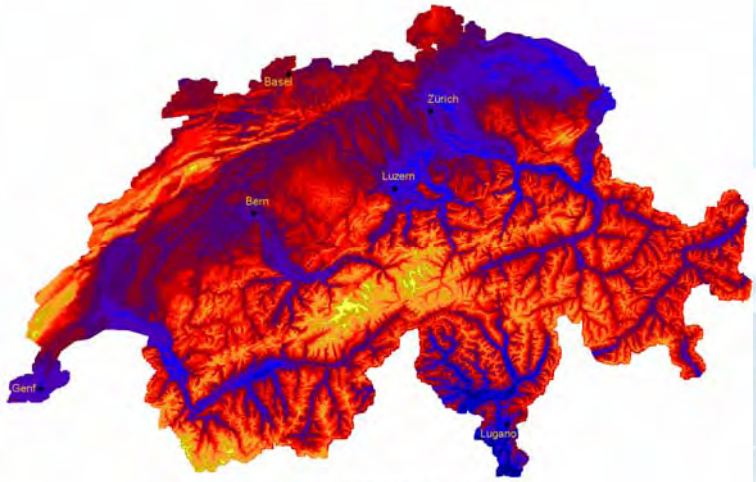
Wind resources in Switzerland



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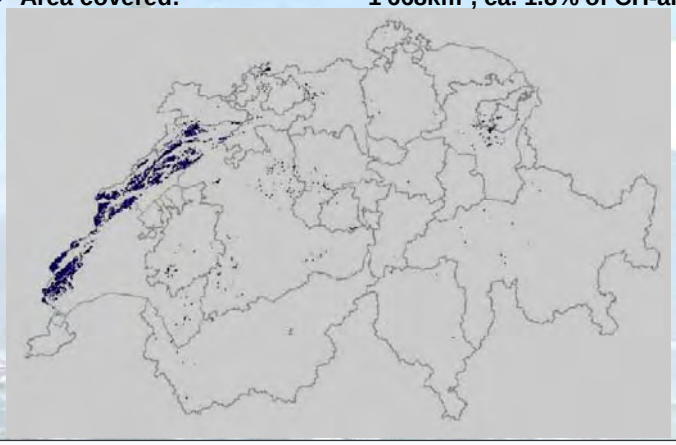
Potential study

- All sites with average production costs < 12 €Cents/kWh
- Numbers of turbines: 3'765
- Energy yield: 12'000 GWh / year ≈ 20 % of CH
- Area covered: 1'668km², ca. 1.8% of CH-area



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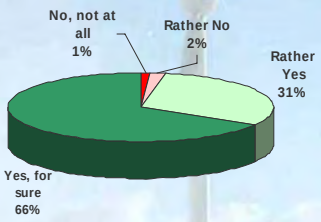
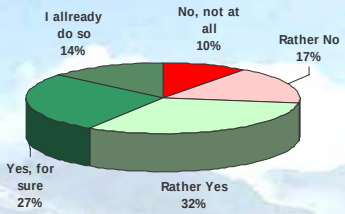
Opinion survey 2002

Numbers of interviewees: 421

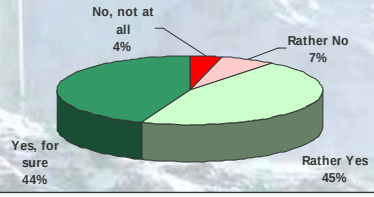
Do you think its sensible to develop renewable energies ?



Could you live next to a wind turbine?



Do you think its sensible to promote wind energy in Switzerland?



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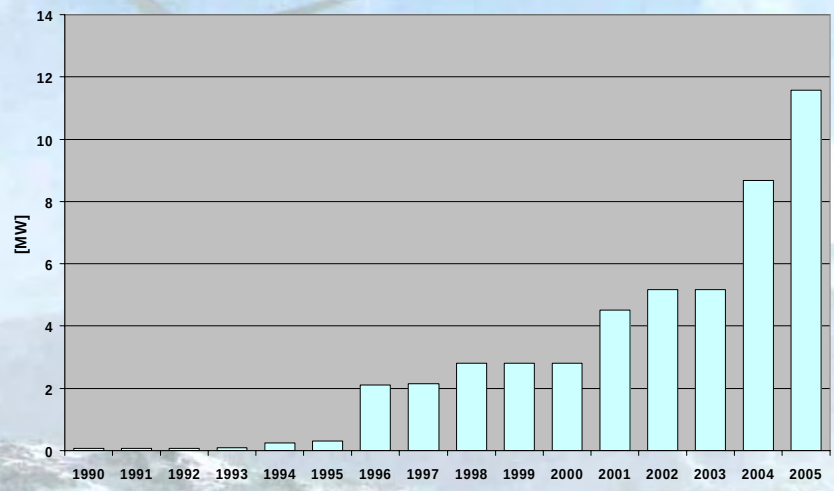
Wind power installed in Switzerland



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Reasons for slow development:

- Complicated and time consuming planning procedure
  - New issue for planning authorities
  - No standardised procedure of the planing process
  - Different planning procedures on communal and state level with various possibilities for opposition
- Very active association for landscape protection
  - Fears proliferation of all kind of wind energy projects
  - Politically well linked
  - Unwilling to any compromise
  - Administrative appeals on every project

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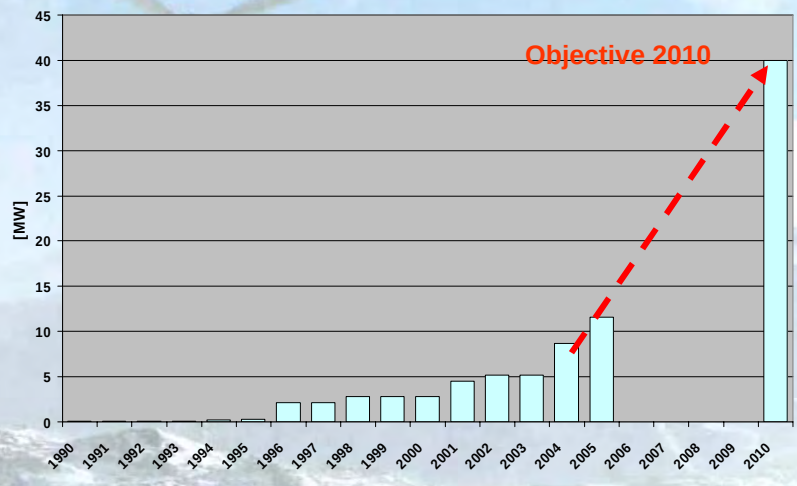
Targets of “Swiss Wind Energy Concept”:

- For the development of wind parks, the Swiss Federal Government develops a comprehensive, conceptual basis for all of Switzerland,.
- To find a consent about principles and criteria for the choice of sites for wind parks until the year 2010
- With the participation of stakeholders from the federal and cantonal (state) governments, as well as associations for energy production and environment.
- To create a basis for the choice of sites for wind parks, accepted by the three federal offices.
- To find sites for the production of 50 to 100 GWh until 2010

Targets of “Swiss Wind Energy Concept”:



Method

- Create a representative accompanying group
- Establish criteria for wind energy sites in Switzerland
- Apply these criteria in a sophisticated GIS-Model to detect sites
- Define “Best Sites” in a consultation process
- Describe these sites for
  - Developers
  - Planing authorities on national, regional (cantons, states) and communal level

Involved parties:

Federal government:
- Federal Office of Energy
- Federal Office of Spatial Development
- Federal Office for the Environment

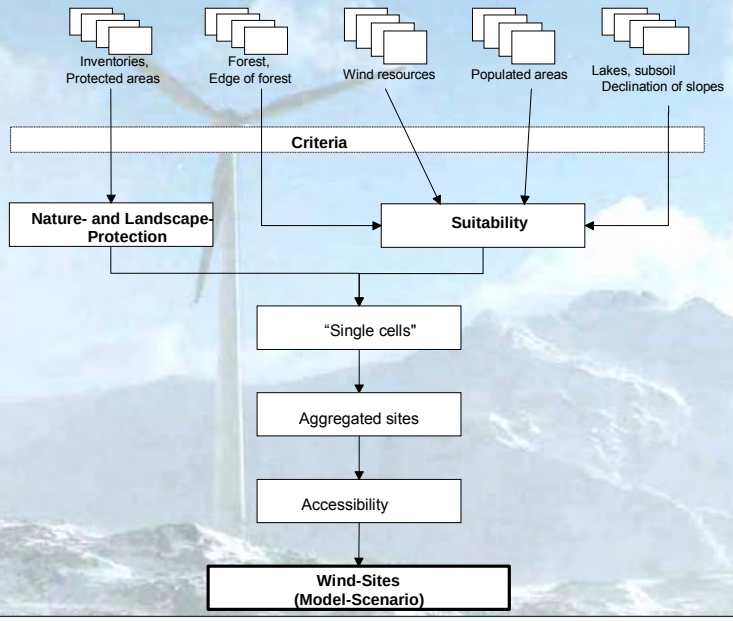
Accompanying Group (17 persons):
- Authorities of cantons (states)
- Energy industry
- Environmental organisations

Mandate (private companies):
- Meteotest
- Nateco
- metron

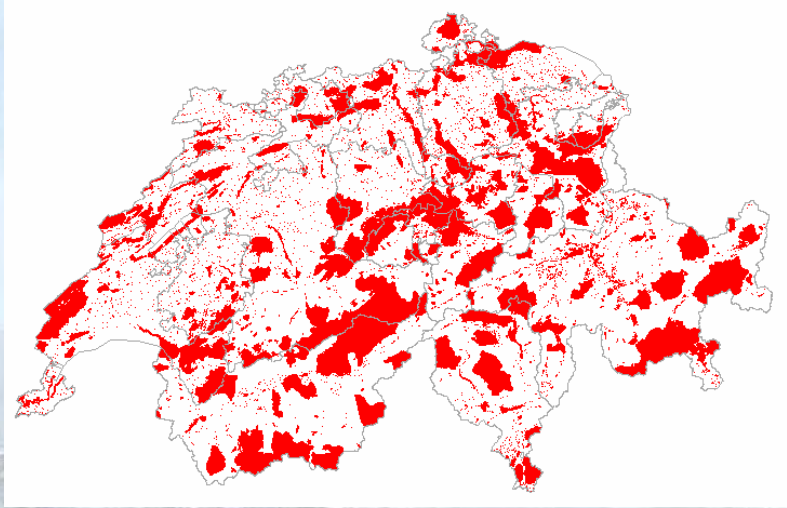
Principles and Criteria

- Definition by all members of the accompanying group in a consensual process:
  - What is a wind turbine site in Switzerland
  - Which criteria have to be considered to define a site
- Defined criteria
  - Exclusion of all national landscape protected areas (15 different inventories!)
  - No sites in closed forests
  - Accomplishment of the noise protection regulations
  - Minimum distance to populated areas > 300m
  - $v_{Wind} \geq 4.5$ m/s at hub height
  - Concentrate in bigger wind parks rather than single units
  - Impact on land scape has to be analysed on site, appropriate to the size of near by hills etc.

GIS-Modell



Inventories of all protected areas:



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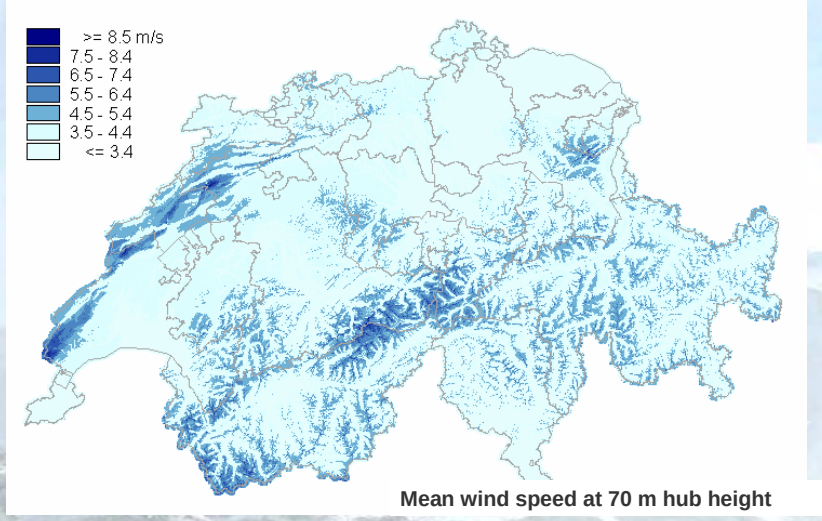
Suitability of wind resources:



Mean wind speed at 70 m hub height

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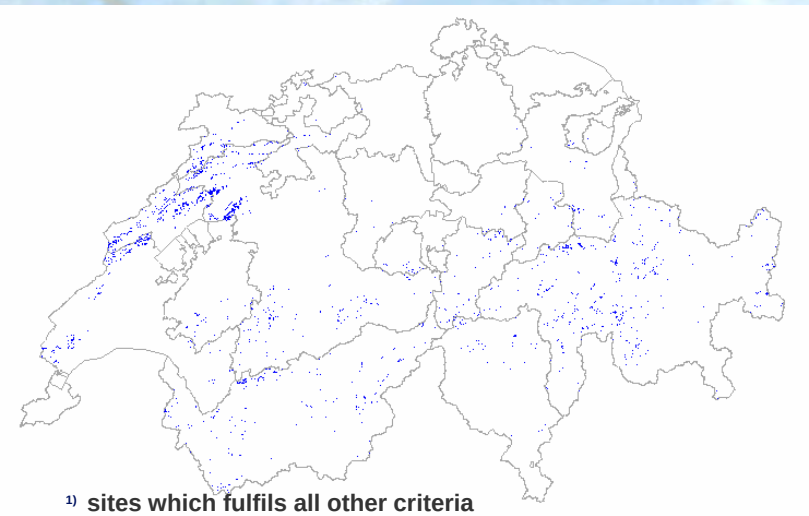
“Single cells[1)] "



[1)] sites which fulfils all other criteria
including sites with room for only 1 or 2 turbines

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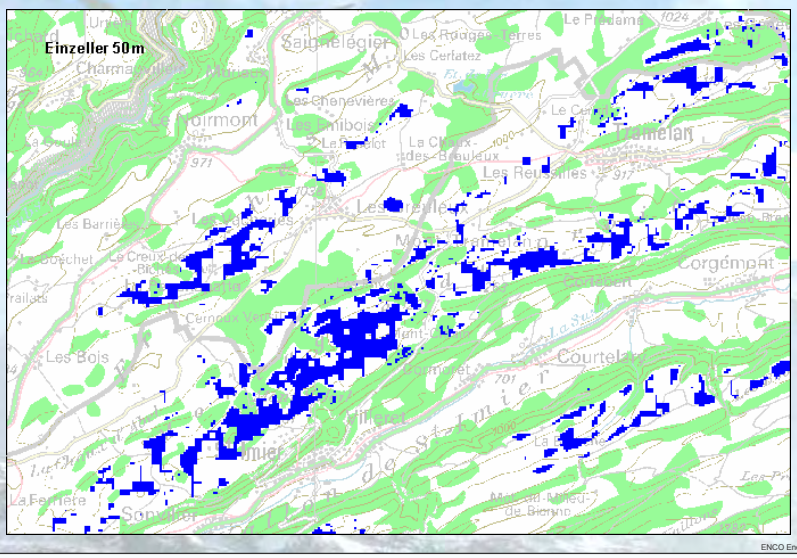
Example of “Single cells"



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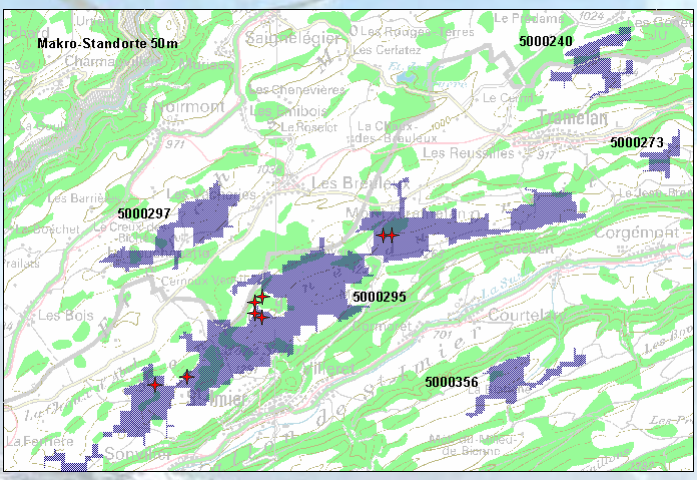
Example of aggregated “Single cells“ to “Sites”



Existing wind turbines

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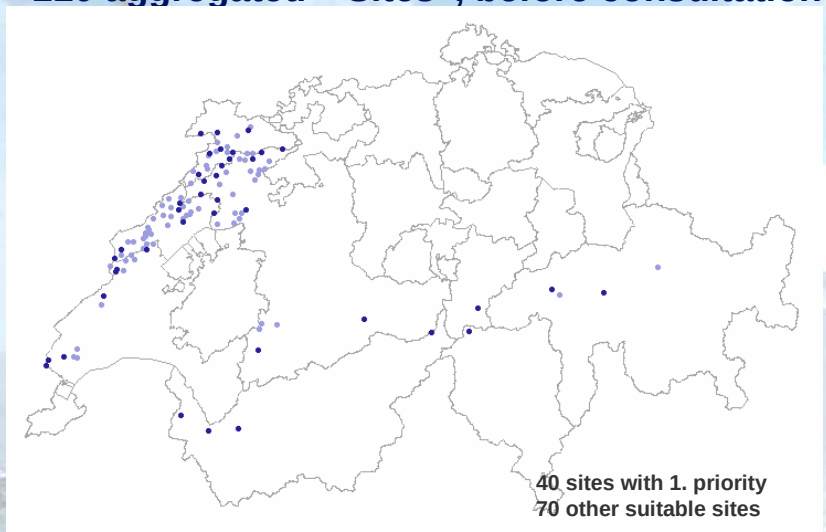
110 aggregated “Sites”, before consultation



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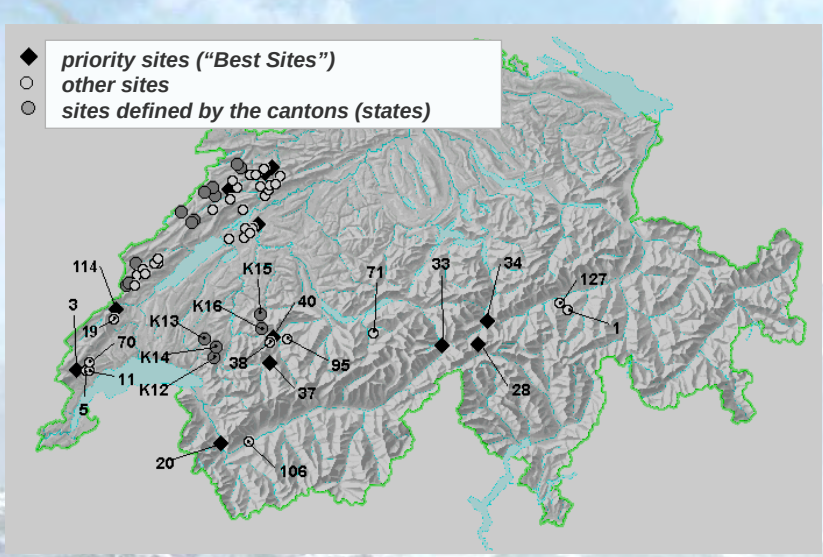
Consultation of defined sites

- By states and members of accompanying group
- Results:
  - The concept was accepted very positively and acclaimed as a new basis.
  - Environmental organisations like WWF or “Pro-Natura” welcomed the concept
  - The principle: “Concentration of more than 3 turbines at optimal locations" is welcomed.
  - Criteria: numerous new requests (distance, forest)
  - Sites: numerous, much detailed requests
- Foundation of landscapes protection does not agree with the concept and the criteria: “We only accept wind turbines smaller than the trees”

Adaptation of concept

- “Re-shape“ sites according to consultation and new criteria
- Exclude sites with mayor opposition
- Exclude sites within state protected areas (not available for GIS)
- Add some new sites already in planning procedure within the cantons (states)
- Concept is only suitable for wind parks with 3- 10 wind turbines
- The installation of single turbines is not excluded, however the development of wind energy in Switzerland should concentrate on bigger projects

Results of consultations



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Suitable sites, after consultations

Sites	No. of Sites	No. of Turbines	Energy Yield (in GWh)
Canton (States)	16	113	198
"Best Sites"	12	76	118
Total "Accepted Sites"	**28**	**189**	**316**
"Other Sites"	68	539	841
Total	**96**	**728**	**1157**

- **Only sites listed for more than 3 turbines**
- **"Accepted sites " with possible energy yield for 3 x more than targets**

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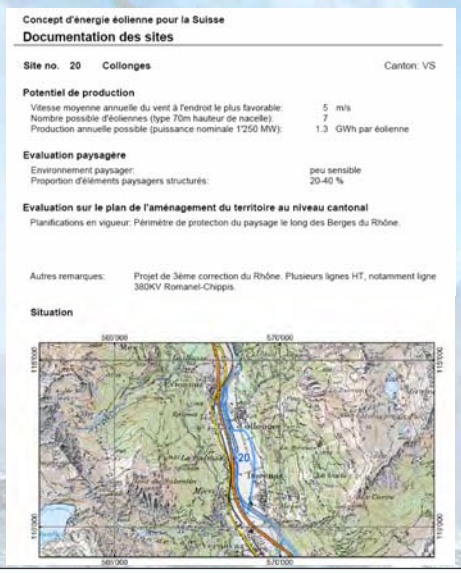
Site description of “Accepted Sites”



Concept d'énergie éolienne pour la Suisse

Documentation des sites

Site no. 20 Collonges Canton: VS

Potentiel de production

Vitesse moyenne annuelle du vent à l'endroit le plus favorable:	5	m/s
Nombre possible d'éoliennes (type 70m hauteur de nacelle):	7	
Production annuelle possible (puissance nominale 1'250 MW):	1.3	GWh par éolienne

Evaluation paysagère

Environnement paysager:	peu sensible
Proportion d'éléments paysagers structurés:	20-40 %

Evaluation sur le plan de l'aménagement du territoire au niveau cantonal

Planifications en vigueur: Périmètre de protection du paysage le long des Berges du Rhône.

Autres remarques: Projet de 3ème correction du Rhône. Plusieurs lignes HT, notamment ligne 380KV Romanel-Chippis.

Situation

- Mean wind speed
- No. of possible turbines
- Possible energy yield / a (very conservative!)
- Validation of landscape
- Validation of planning process on cantonal (state) or communal level
- Detailed map

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Significance of the concept

- Has established a harmonised strategy for the development of wind energy within (nearly) all stakeholders.
- Is a excellent base for site definition of wind parks for planning authorities and developers.
- Will concentrates developers on “Best Sites”, gives basics description of these sites.
- Has established important fundamentals, relevant to regional and communal planning.
- “Concept” has no “official” legal effect, since planning procedures are not a sovereign function of federal authorities.
- The official acceptation of the concept by three federal offices gives it a legal status.
- Has NOT stopped the landscapes protection organisation in its fundamental opposition to wind power.

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Ongoing activities

- Distribution of concept to all cantons (states) and other involved parties. It is also available on: http://www.wind-energie.ch
- Implement the results of the concept in planing instrument on cantonal (state) and communal level to obtain legal effects
- Establish a experience exchange group amongst cantonal (state) authorities to coordinate and harmonise these activities
- Development of detailed zone plans for the ”Best Sites” on communal level by various developers.
- Detailed site assessment by developers, installation of turbines
- Result of decision of federal court concerning site “Crêt Meuron” from 31.8.2006:
  “Landscape protection has no higher value than clean energy production from wind energy!”

2 MW wind turbine at „Collonges“

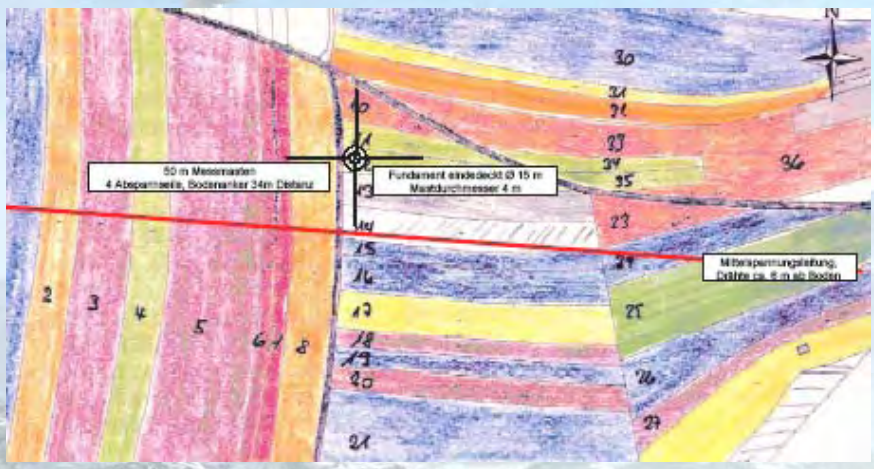
- Theoretical (conservative!) energy yield in concept for 1 turbine: 1.3 GWh
- Energy yield Dec.05 to Aug 06: 2.9 GWh ≈ 1‘750 full load hours

Example Titterten:

- Invitation by the community for project presentation

Titterten: Different proprietors

- **Who gets Fr. 5‘000.- / a**



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The social acceptance of wind power ?

Planning Policy as an issue

Alain Nadaï, CIRED / Nogent-Sur-Marne

Wind power

- Good perception of the technology in general
  - green, contribution to the reduction of CO2 emissions…
- Problems of local acceptance when faced with concrete project developments
  - Frequent oppositions,
  - Noise, landscape, environmental impact (avifauna, flora), assets (property, toursitic assets, patrimonial assets…).
- Qualified support to the current development of the technology
  - Industrial and financial dimension,
  - Question about the need for wind power in the current French energy mix.

« Green on green » *

"Society has gone green (at least in its rhetoric), but what kind of greenness do we want?"

- Usual environmental controversies
  "economic benefits versus environmental costs"

- Wind power
  - Benefits at the global level (contirbution to green house gas mitigation),
  - Local environmental impact (noise, landscape, fauna, flora)
  - Environmental arguments in both camps,
  - Reversed positions in the debates,

➢ a foretaste of future environemental issues.

*"Blue on blue incident" = occurrence of friendly fires

Debated acceptance factors …

- Concertation (early in the process),
- Share holding,
- Economic gains (land rental, wind power tax, compensatory measures),
- Proximity to existing projects,
- Siting quality: choice of the site, co-visibility, local impact …

NIMBY in debate

- **« Social gap » : opposition is a minority in surveys but blocks wind power development**

  1. "**Democratic deficit** " based on asymmetry in gains and benefits of collective actions for either support or contest of wind power projects, leads to over representation of opponents compared to opinion surveys .
  2. **"Qualfiied support"** people are supportive of wind power but not without qualification, qualification concerns wind power impact on environment landscape animals or humans
  3. **"Nimby"** Individual gap, people supportive of wind power but not close to their home or in their place, special case of the democratic deficit, case of free riding on public good,)

- **Nimby has triggered a lot of debates**
  - not considered as significant compared to the other forms of democratic deficit
  - difficult to sort out from qualified opponents.

Planning as an issue

- Balancing gains and losses

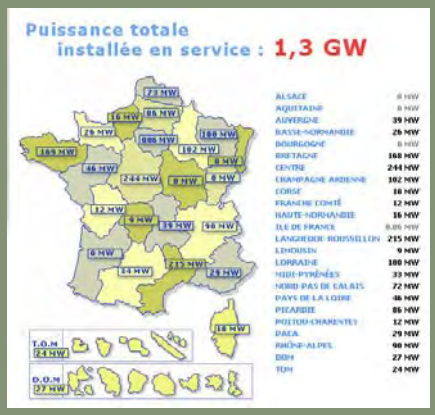
  Share holding, wind power tax, compensations, compensatory measures …

- Taking into account the qualification of support and/or the opposition to wind power

  Prior concertation, avoid "decide-announce-defend",

The French case

- Granted capacity (construction permits) 2.46 GW (september 2006)
- Potential (granted capacity + capacity under instruction) 5.88 GW (march 2006, Minefi)



Source : suivi éolien.com 24/04/2007

Reversed planning*

- 2000: Fixed tariffs (Loi de modernisation" n° 2000-108 du 10 février 2000)
- 2003: Constrcution permits, study of impact , public inquiry, regional schemes (optional) (loi 2003/8 sur le marché du gaz et de l'électricité)
- 2005: Wind Power Development Zones (ZDE, wind power tax …) (Loi POPE)

*NADAI A. (2007) "Planning, Siting and the local Acceptance of Wind Power: Some Lessons from the French Case", Energy Policy, 35, 2715–2726.

Outcomes

- In practice, ex-post sharing made difficult at the local level
- **2000-2005:** ad'hoc local planning with contrasted outcomes

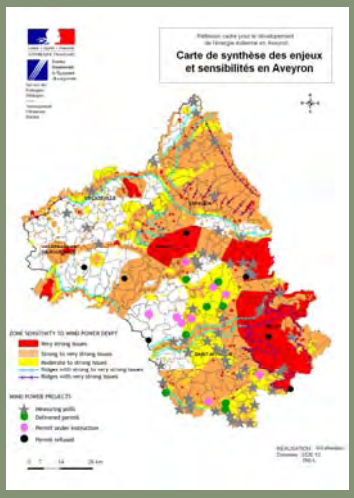
*NADAI A., Labussière O. (2007) "*Wind power planning in France (Aveyron), from State regulation to local planning*", working paper, CIRED, France.
**NADAI A., Labussière O. (2007) "*Birds, wind and the making of wind power landscapes in South-France ('Aude)*", paper presented at the ESF Exploratory Workshop "Emerging Energies, Emerging Landscapes: Revisioning the Past, Constructing the Future", June 2007, CIRED, France.

Contrasted outcomes

- **Aveyron*** : zonage administrative zoning; hierarchical ; fragmented / project by project instruction and public meetings
  - Avoiding co-visibility with tourisitic areas,
  - Logic of « conformity », « *Hole map* »
  - Territorial concentration of projects in delimited areas,
  - Rising opposition.
- **PNR de la Narbonnaise (Aude)**** : concertation for wind power « Charter » and « Scheme » ; definition of wind power « envelopes » associated with differenciated siting principles ; validation by local representatives (mayors, NGO's, terriotrial institutions…) ; made legally binding through SCOT (Territorial Coherence Scheme)
  - Choosing areas for « compatible » wind power,
  - Limitation of project proliferation,
  - Taking into account of multiple issues (avifauna, flora, landscape, acceptance local),
  - Existence of limited local opposition.

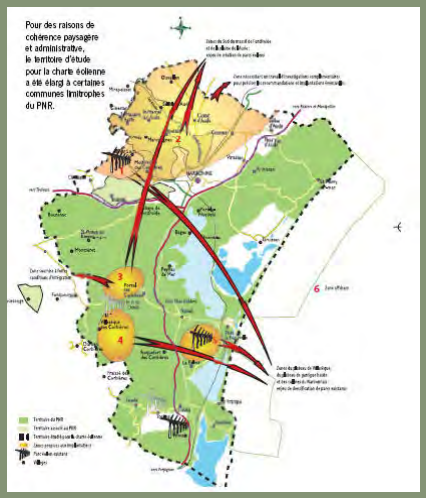
*NADAI A., Labussière O. (2007) "*Wind power planning in France (Aveyron), from State regulation to local planning*", working paper, CIRED, France.
**NADAI A., Labussière O. (2007) "*Birds, wind and the making of wind power landscapes in South-France ('Aude)*", paper presented at the ESF Exploratory Workshop "Emerging Energies, Emerging Landscapes: Revisioning the Past, Constructing the Future", June 2007, CIRED, France.

Conformity / « *Hole map* »



Source : réalisation d'après DDE 12 et INEA.

« Compatible » wind power



Source : PNR de la Narbonnaise en Méditerranée, « Une charte éolienne pour la Narbonnaise ».

Planning is « Planning ***and*** siting »

- **Planning**
  - Concertation on a territorial project, goals, ex-ante rules for sharing,
  - Zoning, pointing at sectors / wind power envelopes,

  ➢ **From** the ***multiple*** territory (places, landscapes, sites …) **to** the ***generic*** territory (zone, area, layer, envelope …).

- **Siting**
  - Inserting a wind power park in a wind power envelope,
  - Choosing the site, developing a wind power project (co-visibility, landscape, fauna, flora, public meetings …),
  - « Wind power sites » ?

  ➢ **From** the ***generic*** territory (zone, area, layer, envelope …) **to** the ***multiple*** territory (the site, the place, the landscape)

Good planning ?

- **Ex-ante** rules for **sharing**,
- Taking into account « **qualification** » in support,
- Pointing at « **wind power sites** »,
- **Calling for re-interpretation** in « **siting** » (« compatibility » to the project rather than « conformity» to the rule)
- **Simultaneously « holding » two states of the territory / technology :**
  - ✓ the ***generic*** (wind power technology / zone, area, layer, envelope …)
  - ✓ the ***multiple*** (wind power parks / places, landscapes, sites, …)

Conclusion

- Distinguish between **generic** and **local** projects acceptance,
- **Jointly hold** two sates of the technology : « generic » and « multiple »,
  - Do not limit the technolgoy to its functionality (producing energy) ,
  - Take account of related links and issues (reformulation of environmental controversies, related environmental issues (fauna, flora …) …)
- Approach social accceptance as a **public policy** issue (do not reduce opposition to nimby, take account of qualification)
- Make public policy into an issue for **social acceptance**.

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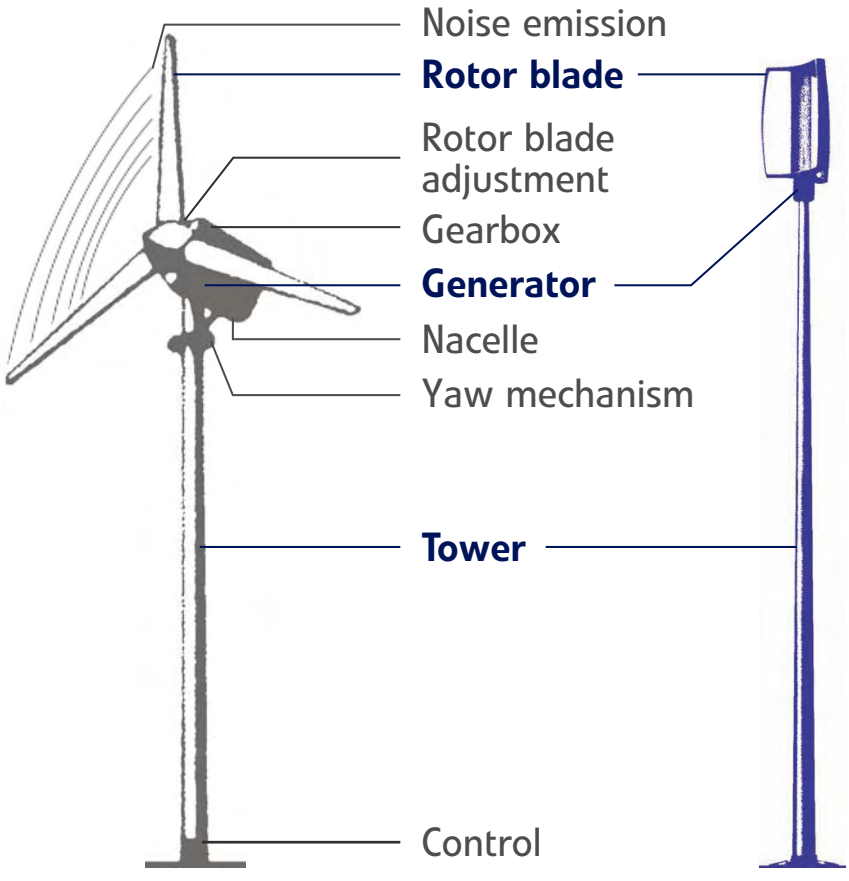
Pilot study: Acceptance of vertical wind turbines

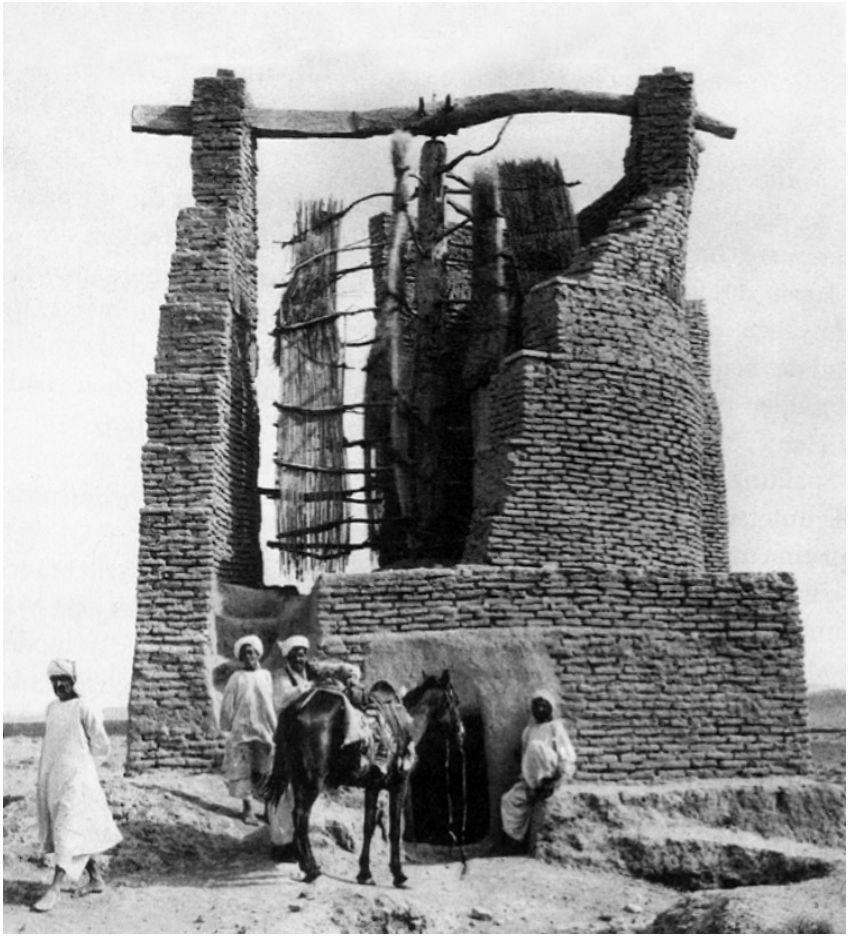
Gundula Hübner
Institute of Psychology
Martin-Luther-University Halle–Wittenberg
Germany

supported by
Federal Environment Ministry

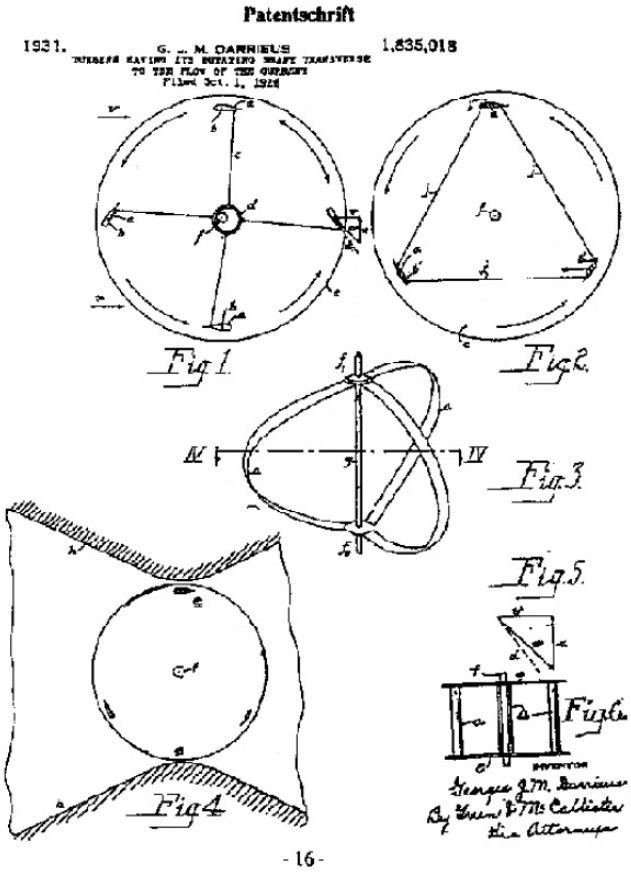
Bundesministerium
für Umwelt, Naturschutz
und Reaktorsicherheit



Comparison horizontal – vertical turbines



Oil-mill, Persia
dating back ~ 1.700 BC



Georg-Jean-Mari Eugène **Darrieus**
Patent 1931

4 MW Darrieus turbine
St. Lorenz River, Canada 1985 www.eole.org/cap_chat.htm

1980th:
large scale
material problems
insufficient

today:
small scale < 50 kW
new materials
aerodynamical optimization

3-kW-pilot turbine by TASSA®, Wolfsburg

Goals and target groups

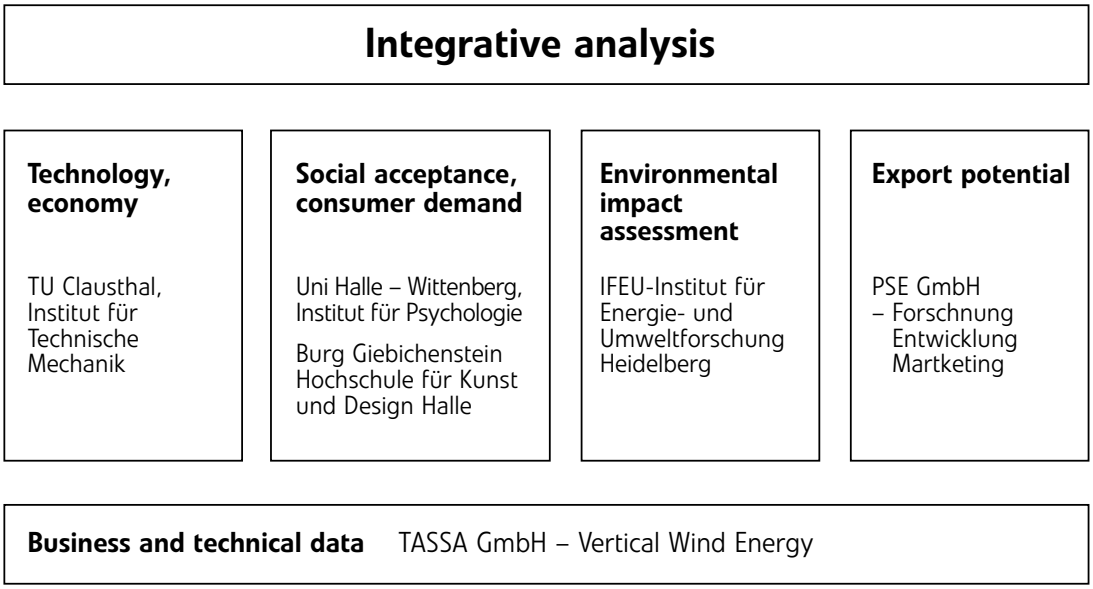
goals

- applicability
- carbon dioxid reduction
- consumer analysis

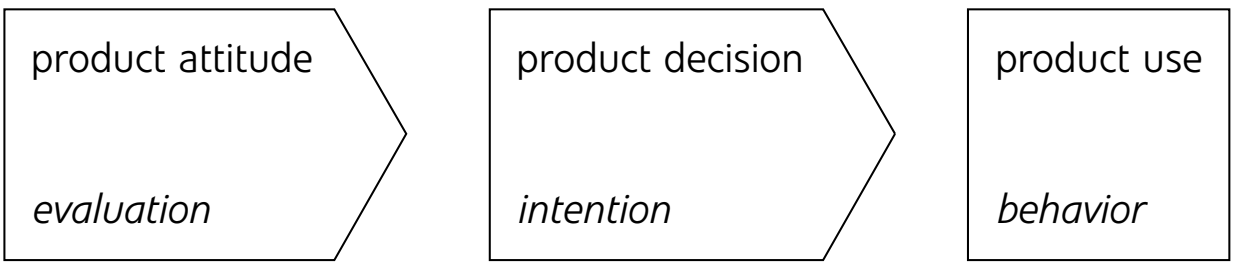
target groups

- farmers
- horticulture enterprises
- house owners

Project structure



Acceptance definition – 3-component model



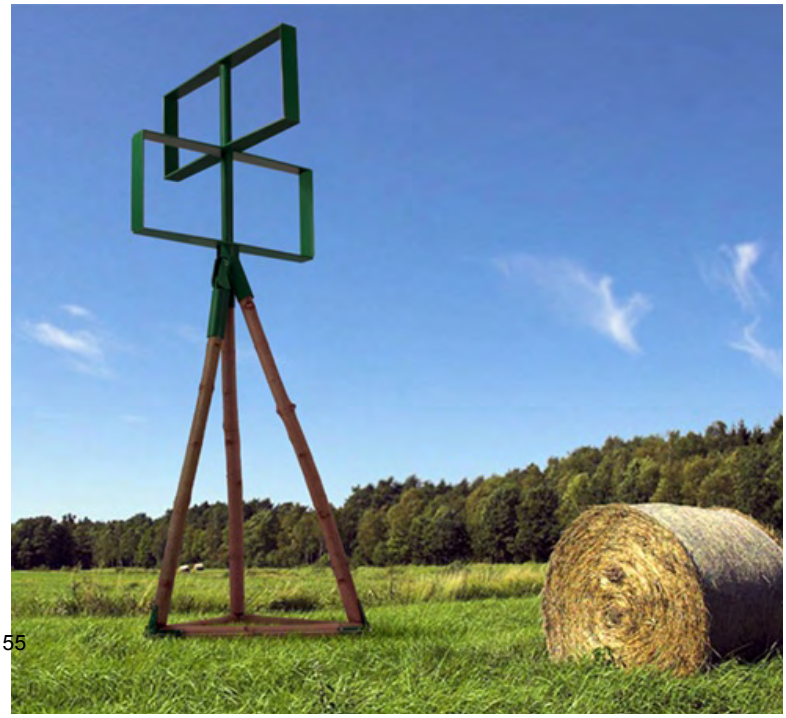
Determinants of acceptance

basic theories:	**specific factors, e.g.:**
diffusion of innovation	compatibility
consumer psychology	affective evaluation
social- and environmental psychology	benefits and costs
product design	appearance

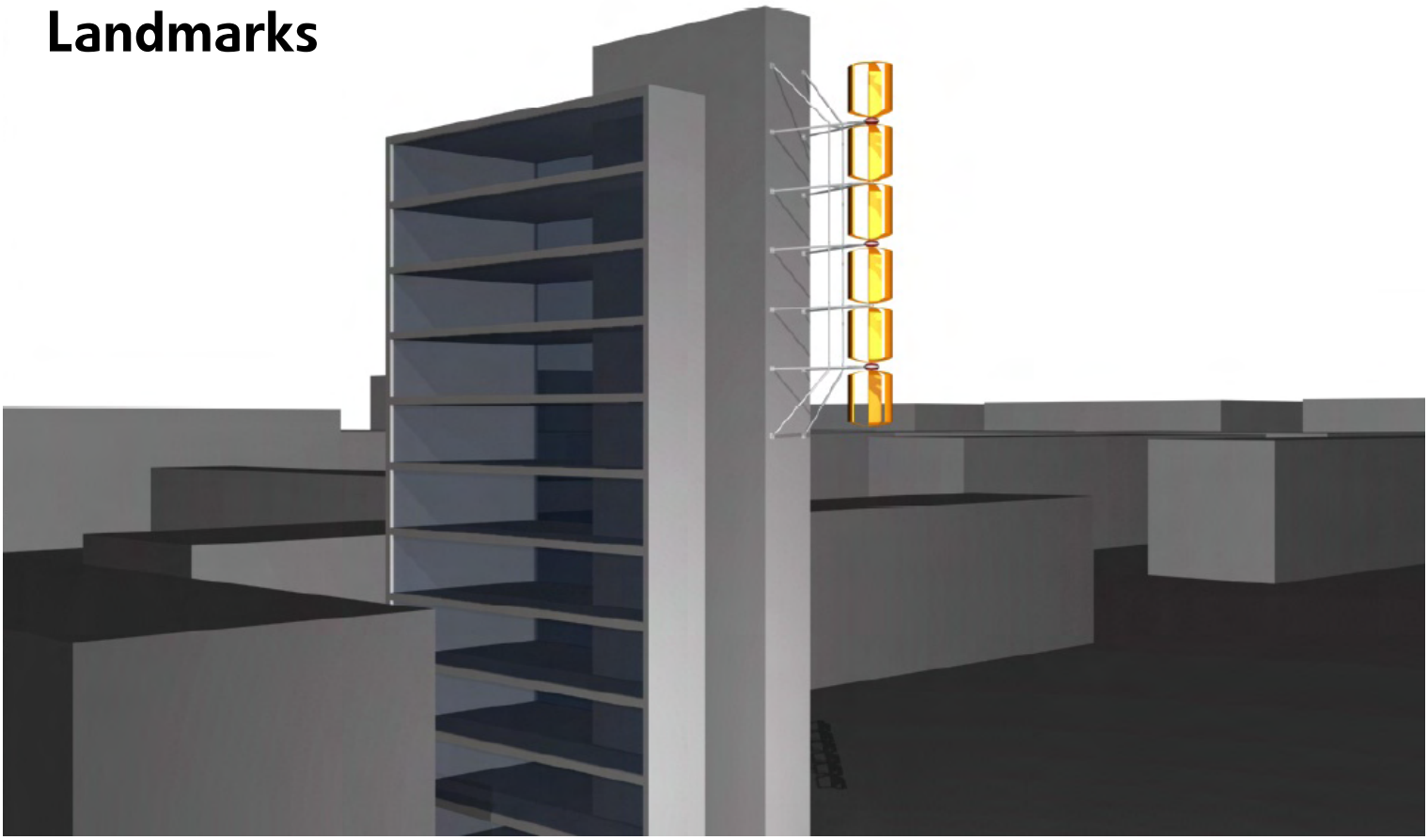
Impact factor design

industrial area

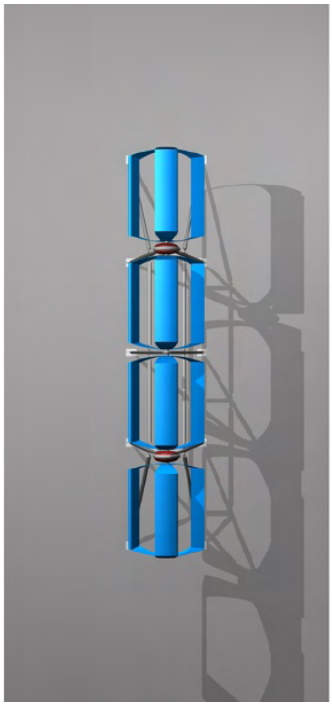
agricultural area

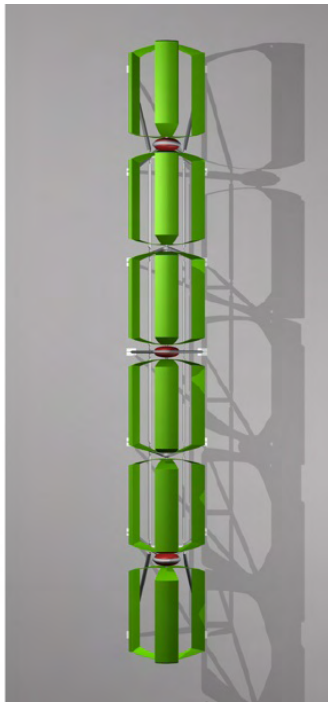


Landmarks

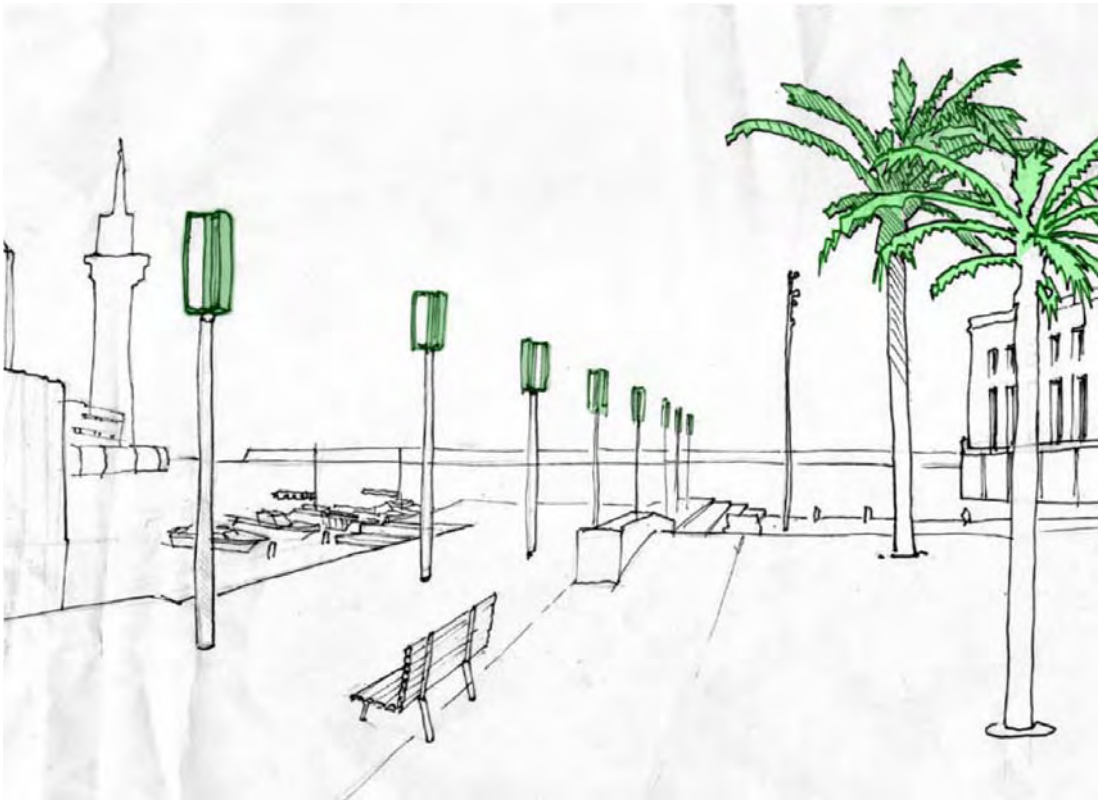


Modular rotor design





Symbolising local identity



Work in progress

- 3-component model of acceptance
- design as acceptance factor
- modular design
- categorisation of plant elements, e.g., rotors, towers

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FACULTEIT DER MANAGEMENTWETENSCHAPPEN

Empowering wind power

On social and institutional conditions affecting the performance of entrepreneurs in the wind power supply market in the Netherlands

IEA Topical Expert Meeting 24/25 May 2007
Social Acceptance of Wind Energy Projects

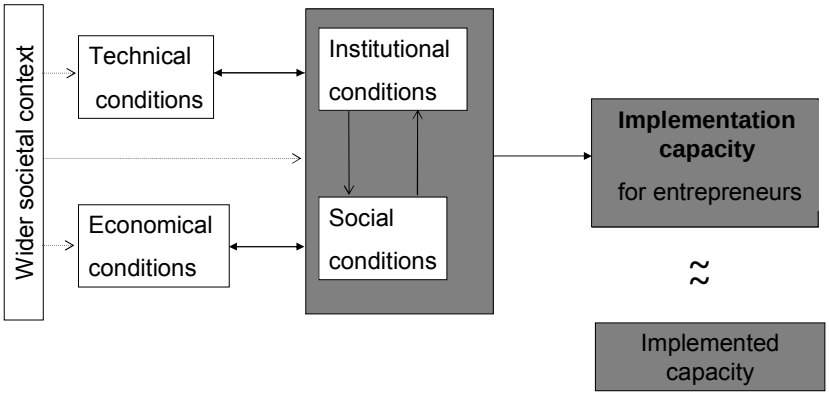
Susanne Agterbosch **s.agterbosch@fm.ru.nl**
Radboud Universiteit Nijmegen

Introduction

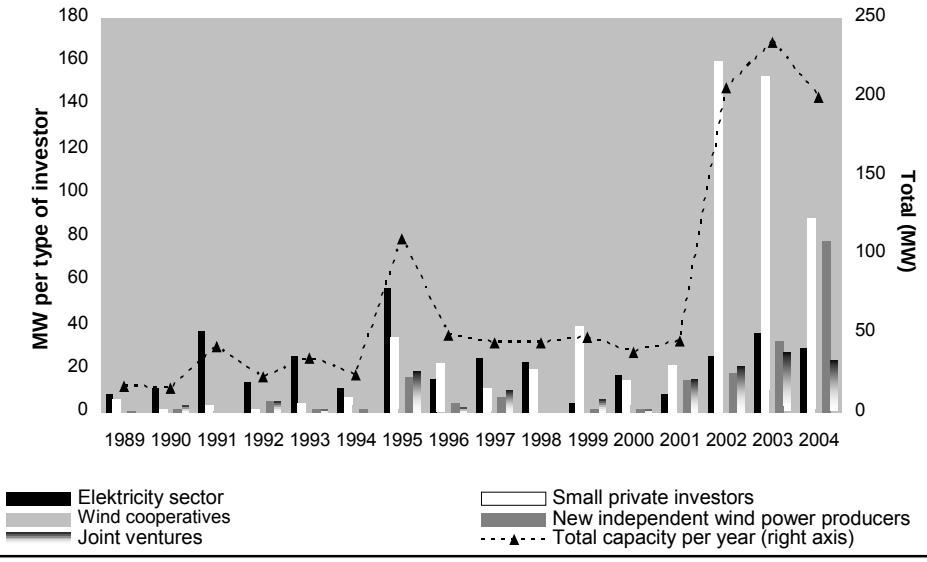
Explaining how the market of wind power project development has evolved in the Netherlands over the period 1989-2004

- Composition of the market in different types of wind power entrepreneurs:
  - Electricity sector (energy distributors)
  - Small private investors (mainly farmers)
  - Wind cooperatives
  - New independent wind power producers
- Performance of these entrepreneurial groups
- Different developments in different Dutch provinces

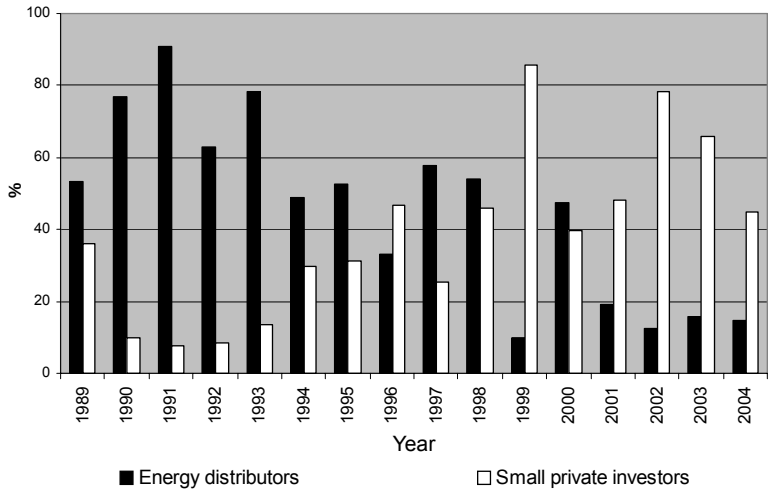
Historical new institutionalist approach



Wind turbine capacity installed per year (MW)



Contribution to wind turbine capacity installed per year (%)



Institutional conditions

1. Positions of actors on the electricity market
2. Financial feasibility
3. Planning / securing sites and permits

Social conditions

1. Characteristics of entrepreneurial groups:
2. Social constellation of stakeholders and their perceptions
3. Interaction between wind power entrepreneurs and other stakeholders involved

Steering strategy

For long the renewable energy policy theory predominantly comprised ideas about

- strategic energy policies and the proper type of investor
- the proper type of financial incentive system
- solutions for planning problems mainly focused at procedural solutions: no attention for socio-political embedding

Performance and position of different types of entrepreneurs can be explained at large by institutional and social conditions on national / sector level

However:

Implementation rates and entrepreneurial groups involved differ significantly in different Dutch provinces;

national conditions cannot satisfactorily explain these differences

Case studies on local level performance

Energy distributor in the municipality Zeewolde

Pre-planning took 1 year

- Strategy of informal and closed top-down decision making
- No public participation in planning

Small private investors in the municipality Zeewolde

Pre-planning took several years

- Self-strengthening process of local capacity building
  - in which the importance of social conditions prevailed
  - and in which the shared economic interest was a main driver

Energy distributor in Zeewolde
Planning and permitting / complex legal framework

- Inconsistency between different (levels of) authority
- Inconsistent administrative behaviour
- Incorrect implementation of procedures

Small private investors in Zeewolde
Planning and permitting / complex legal framework

- Inconsistency between different (levels of) authority
- Inconsistent administrative behaviour
- Incorrect implementation of procedures

But also

- Local administrative and political capacity building
- Social capacity building

Energy distributor
Fierce social resistance
driven by feelings of procedural and distributive injustice

- no attention for public participation in planning
- driven by mismatch between local common interests and external private or global environmental interests
- opponents use a wide aray of arguments

Small private investors
Absence of social resistance
no feelings of procedural and distributive injustice

- collaborative arrangements between local stakeholders; driven by a shared economic interest
- coincidence of the private and the local common interest

Conclusions

1. National renewable electricity policy:

   one-sided focus on enlargement production capacity and implementation by energy distributors failed

   heterogeneity of the market should be a central point of departure

   securing possibilities of local, flexible and creative market players

2. Effectiveness of national renewable electricity policy:

affected by restrictions in other policy domains and local social political climate

'The narrative of wind energy as a clean form of energy falls to bits and pieces on the local planning level'

social conditions (management styles/ interests and informal contacts) determine the effect of a formal institutional structure and thus implementation at the local level

3. Social and political embedding is crucial for successful implementation

- Shared economic interest is an important driving force of local social and political capacity building
- Attention for local issues / knowledge in planning

Attention for procedural and distributive justice planning improves social acceptance of a technology


Questions?

SenterNovem

Polarisation

- **Euphoria about turbines**

- **Aversion to turbines**

The progress towards the establishment of windturbines has stagnated. The debat remains.

SenterNovem

Table of Content

- Windpower in the Netherlands
- How do we site turbines today?
- Fitting in…?
- Challenge
- Monster-theory
- Designs
- Adding significance
- Advice Chief Government Landscape Architect
- National Plan Windenergy

SenterNovem

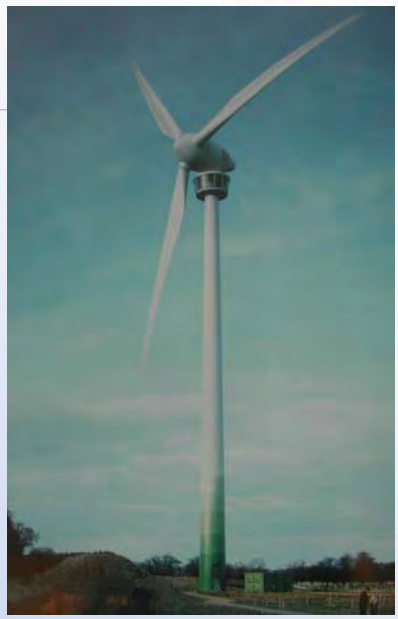
Windpower in the Netherlands

- 1500 MW – BLOW
- 1.800 turbines
- Growing towards at least 4000 MW in 2020

1980 2006

Technical development

History till past: hobby to profession



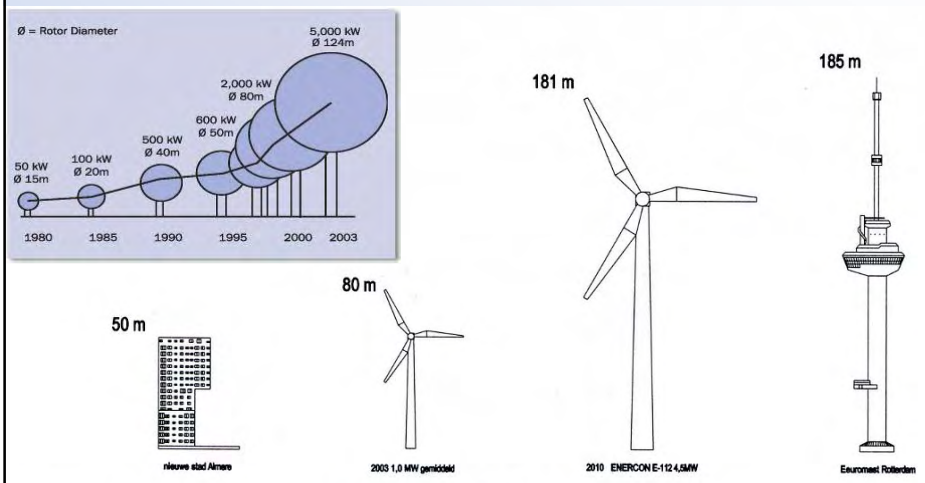
SenterNovem

Future: 5 MW electricityplant & landscape

How do we site windturbines today?

- **Replacing and concentrating windturbines**
- ***Fitting* turbines *into* the landscape**
- **Siting by choose the less worse location**

….. Fitting in ???



Schaal van windturbines. (BAR, dec 2003)

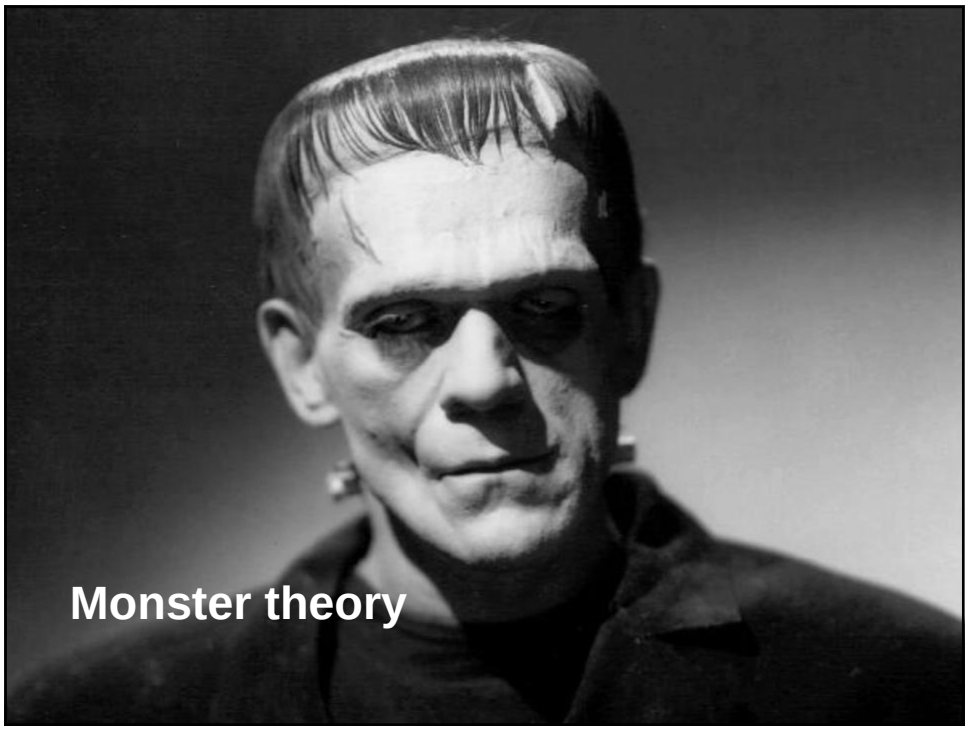
SenterNovem

Challenge:
Which meaning can turbines give to the landscape?

The Chief Government Landscape Architect was asked for his view on this issue.

His starting point:

- **Siting needs a complete different approach**
- **Siting is also a semantic question**



SenterNovem

Monster theory (M. Smits):

- Cast out
- Accept with open arms
- Adapt
- Assimilate

- So put the cultural/semantic element into the approach.

SenterNovem

Design: Cast out to offshore

SenterNovem

Design: Adapt

Accept and adapt

- **Synchronization**

SKYSCAPE *dVd*

Synchronous
Skynet
System

Adapt a new environment

Adapt

Assimilate

Adding significance

- **Siting by chances**
- **Use the turbines to create a new landscape: marking points to reinforce the geographical cultural or historical significance of an area.**
- **Take the culture as the start**
- **An energy politic is required**

Advice Chief Government Landscape Architect

- **Construct large wind farms of cultural significance in concentrated areas leaving the rest of the Netherlands free of the big windturbines.**
- **Therefore: calling for the development of a National Wind Energy Plan in which cultural and spatial components play an essential role.**

National Plan Windenergy

- **Big turbines: Vides – Concentration areas**
- **Smaller turbines: siting strategies depends on the type of landscape**
- **Commitment by local, regional and national authorities & stakeholders**
- **Different disciplines**
- **Enery politics**
- **Start with a program including pilots for areas**

Example Haarlemmermeer

- Polder - developing 20 MW windpower
- Landowners / inhabitants / entrepeneurs
- Initiative group
- 3 designs
- Choice by inhabitants
- Shares landowners and inhabitants

Thanks for your attention

IEA: "Social Acceptance of Wind Energy Projects"
Lucerne, 22./24. April 2007

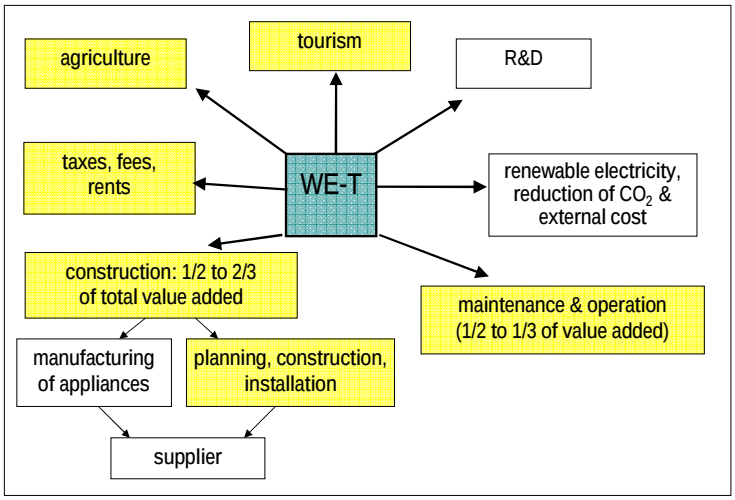
Importance of Image and Impacts of Windenergy as Acceptance Driving Factors

Walter Ott, economist, spatial/regional planner
econcept AG Zurich
walter.ott@econcept.ch / www.econcept.ch

Guidelines for planning processes

- **Survey of existing impact analyses and evaluation of past experiences** from available investigations (FOE and suisse-éole)
- An **accompanying case study** on a new installation of a wind energy turbine with respect to
  - Procedures, Obstacles
  - Best practice planning and approval processes
  - Development of attitudes among stakeholders
- **Goals: Development of guidelines for environmental impact analysis, planning and approval processes for wind energy turbines**
  - Accelerate and ease planning and approval processes
  - Reduce/prevent obstacles, increase acceptance
  - Reduce planning and procedural risks for investors

Wind energy: regional impacts and relevance



relevance for regional economy:

- construction phase
- maintenance & operation
- taxes, fees
- agriculture
- tourism

Regional benefits of wind energy

- **Planning and installation :** approx. 1/3 of investment, i.e. 1/3 of 1.4 million € (1.25 MW wind energy turbine)
- **Operation and maintenance**: 1/3 to ½ of total value added → app. 3-4% of the investment of 1.4 million € → 37‘000 - 50‘000 €/a (1.25 MW)
- Agriculture: compensation for land use, participation, establishment of local investment associations
- **Tourism**: evt. negative impacts on recreational quality (view and noise)? 75% of BRD-tourists don't feel affected by wind energy! Marketing chance for local tourism?
- **Public administration**: taxes

Impacts on environment and landscape: Relevance in the light of judicial rulings in Germany

Issue	Number of judicial rulings		
	ordinary jurisdiction	administrative jurisdiction	total
society			
noise	2	202	204
shadow	5	160	165
disco-effect	0	27	27
sunlight reflexes	0	10	10
lighting	0	8	8
Falling ice/accident	1	48	49
landscape	1	212	213
environment			
birds	0	76	76
bats	0	2	2
flora-fauna-habitats	0	18	18
cattle	0	2	2

basically little impacts on environment

Relevance for the environment (in the following order):

- landscape
- noise
- shadow
- birds

Impacts on birds and bats

- **Limited knowledge – risks:**
  - Impacts on and changes of habitats and effects on migration routes (diversion, collision)
  - **Dayly active birds**: risks for large birds which are less maneuvreable
  - **Migration during nights**: low level flight if bad weather
  - **Endangered species**: large species, long living, late breeding, few offsprings, protected species: falcons, eagles, vultures, owls, storks, ect.
  - **Migrating birds**: hilltops, passes, valleys with migration routes
  - **Bats**: limited risk, mainly during migration
  - Keep off conservation areas: **EU- bird conservation areas**
- **Limited impacts** if evaluation of location is ok

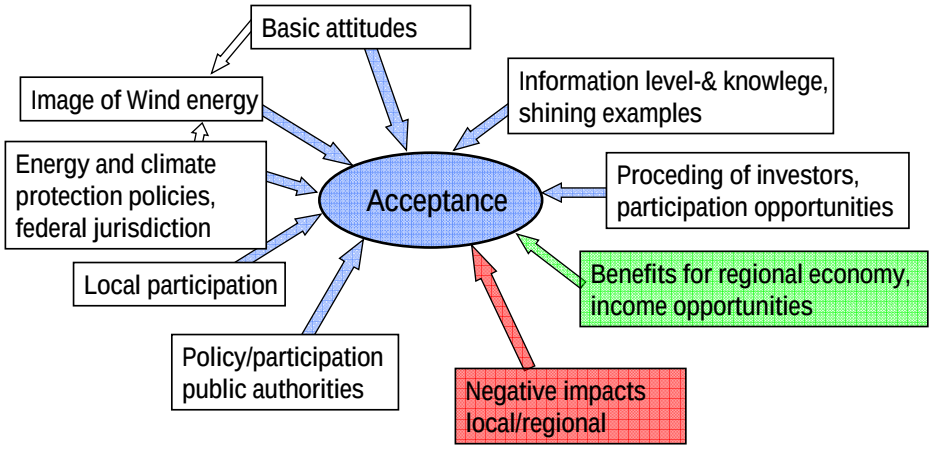
Landscape impacts: difficult valuation

- „Swiss wind energy concept“ (FOE/FOEN/FOSD & NGO's):
  - National evaluation of and concentration on potentially appropriate locations
  - Jurisdiction and competence for implementation: only cantons with the help of cantonal directiv plansand within approval procedures
  - Swiss landscape conservation agency doesn‘t accept wind energy fundamentally
  - Federal jurisdiction makes clear that there is public interest for Swiss wind energy production
- Valuation of wind energy impacts on landscape: vast individual differences
- Landscape matters! Take into account this local effect: sensitiveness of specific landscapes, visibility (assessment by viewshed-analysis, 3D-visualization)

Guidelines for spatial planning

- Spatial planning for wind energy is obligatory → absolutely crucial issue: early involvement of spatial planning authorities!
- Conditions for lean planning approval processes : actualized cantonal directive plans with
  - Cantonal attitudes concerning wind energy
  - Determination of clear approval procedures
  - Eventual exclusion criteria
  - Allocation of favorite locations
- Communal zoning plans:
  New zone for wind energy or extension of definition of existing zones or exeptions in accordance to Art. 24 federal law for spatial planning (RPG)?

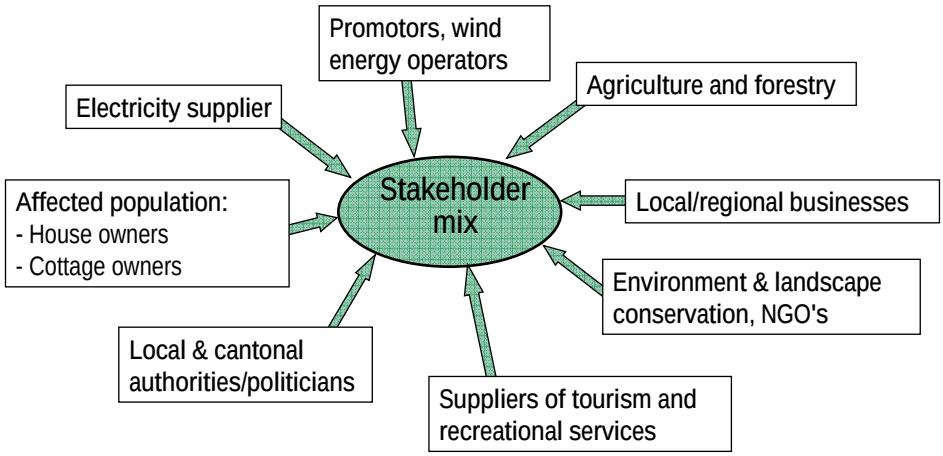
Social acceptance by the population



Acceptance and acceptance drivers

- Acceptance by population basically is high
  - 57% think spontanously of wind energy if asked for renewables (Médiactif 2002)
  - Aesthetics and landscape: varying preferences, 75% could imagine to live near a wind energy turbine
  - No significant differences among affected/not affected rural population
  - Survey in France: Aesthetic impact most important obstacle, negativ attitude among affected population ist weaker (36% vs. 44%)
- Acceptance drivers (Droz et a. 2003)
  - Transparency and good practice during negotiations and planning processes
  - Good visual integration into landscape
  - Transparency with respect to economical viability of wind energy

Social acceptance: key persons, relevant stakeholders



Successful planning of wind energy turbines

- Make clear the relevance of spatial planning prerequisites and issues
- Get involved with the local/cantonal planning authorities from the very beginning
- Make sure that the location is basically eligible and appropriate (before expensiv investigations!)
- Optimize locally → important: apply existing guidelines and criteria!
- Look for an early committment of stakeholders, affected population, organizations and NGO
- Make affected people to participants
- Cultivate transparent and pro-active information, communication and demonstration with good examples
- Push the communication of benefits (regional added values, etc.)

Past experiences with spatial planning

- **Baubewilligung WKA und Windenergieparks:** Raumplanungsbericht gemäss Art. 47 RPV, (bisher) keine UVP-Pflicht
- **Unterschiedlicher Stellenwert Windenergie in Richtplanung der Kantone:**
  - JU: WKA nur an 4 potenziell interessanten, im kant. Richtplan festgelegten Gebieten
  - NE: Vier geeignete Gebiete im kant. Richtplan, vorläufig Entwicklung von 2 Gebieten
  - VD: Projekt in einer Gemeinde
  - FR: Energiekonzept mit Standorten für WKA, sind in kant. Richtplan aufgenommen
  - BE: Plan directeur régional Mont-Soleil, Mont-Crosin, Montagne du Droit
- **Die meisten WKA bisher nach Art. 24 RPG bewilligt -** in Zukunft jedoch saubere Planungsgrundlage anstreben (Art. 22 RPG)
- **Baubewilligungspflichtige Windmessungen:** Test Koorperationsbereitschaft

Landschaftsbild: Merkmale/Auswirkungen WKA

Merkmale	Modifikationen und Auswirkungen	Auswirkungen auf Betrachter
Mass der Ausprägung (Höhe, Anzahl Turbinen)	Modifikation der ländlichen oder natürlichen Landschaftsmerkmale Blickfang Hohe Sichtbarkeit auch bei grosser Entfernung Kontrast zum Horizont Abwertung von Kulturgütern Beeinträchtigung von Flora & Fauna	 Positiv/negativ – je nach pers. Auffassung Verlust (bei Kompensation kann aber auch eine Aufwertung resultieren)
Konstruktion	Blickfang Modifikation der ländlichen oder natürlichen Landschaftsmerkmale	Positiv oder negativ – je nach persönlicher Auffassung
Bewegung des Rotors	Sonnenreflexion, Diskoeffekt Blickfang Lärm Vogelschlag	Störend Entspannend oder lästig störend Verlust
Farbe Turm oder Rotorblätter	Kontrast zur Umgebung	Auffällig oder unauffällig
Ort des Transformators	Modifikation der ländlichen oder natürlichen Landschaftsmerkmale Verringerung des Reizes der Landschaftskulisse	Dominierend Modifikation oder Verlust
Position in Landschaft	Modifikation der ländlichen oder natürlichen Landschaftsmerkmale	Positiv/negativ – je nach pers. Auffassung

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Topical Expert Meeting on
social acceptance of wind energy systems

Public Acceptance of Wind Energy

Otto-von-Guericke-University Magdeburg
Prof. Dr. Petra Schweizer-Ries
Juniorprofessor for Environmental Psychology

Public acceptance of renewable energy systems and socio-scientific questions

Research project promoted by the Federal Ministry for the Environment, Nature Conversation and Nuclear Safety (BMU) concerning social issues of power generation by

- Wind energy utilisation (On-Shore)
- PV solar energy utilisation (ground-installed systems)
- Biomass utilisation

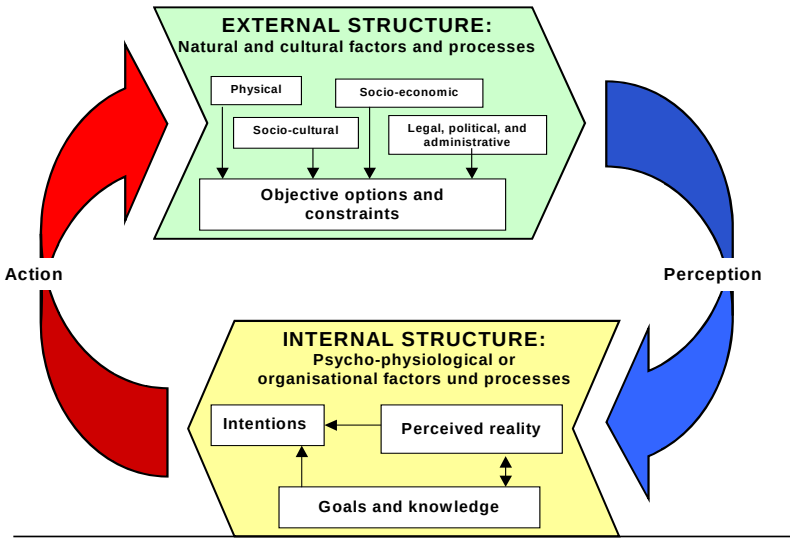
Topical Expert Meeting on social acceptance of wind energy systems; Luzern, 24.05.2007
OvGU: Schweizer-Ries

Research aims

- Detailed understanding of actual **degrees of acceptance** and their determinants
- Systematisation of relevant **influence factors** to the formation process of public acceptance
- Regarding possible **differences** between different regions in perception and assessment
- Developing a standardised **measurement instrument**
- Outlining of **recommendations** of possible conflict solution strategies

A simplyfied model of human action

(Kaufmann-Hayoz/Gutscher 2001, p. 23)

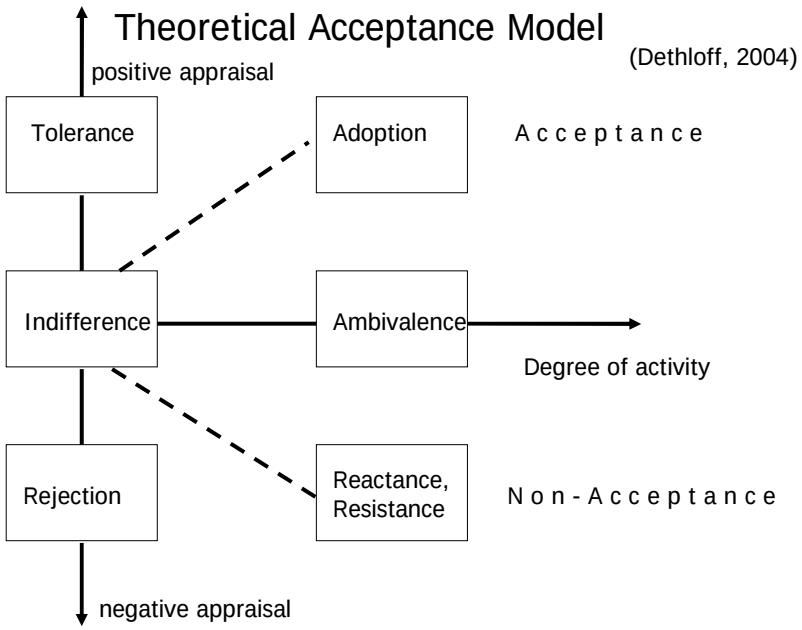


Method

- Multi-methodological approach
- Quantitative polls (standardised questionnaires)
- Qualitative interviews
  (expert interviews, process analysis)
- „Action research“

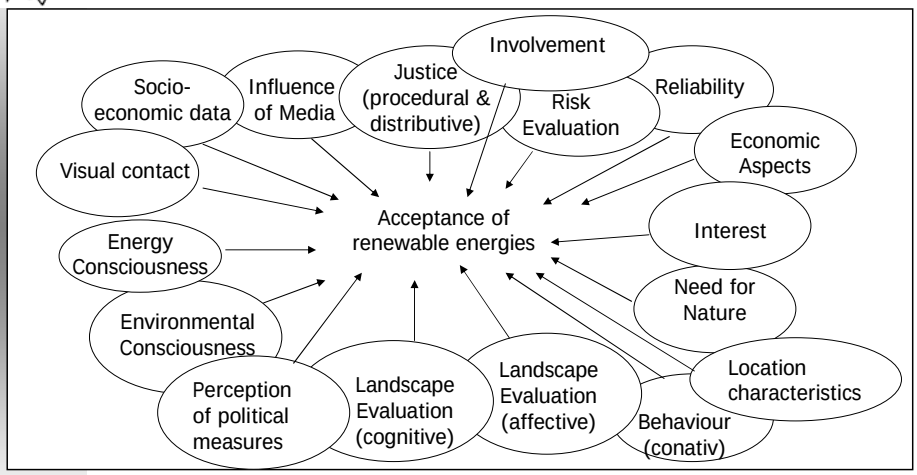
Theoretical Acceptance Model

(Dethloff, 2004)



Topical Expert Meeting on social acceptance
of wind energy systems; Luzern, 24.05.2007
OvGU: Schweizer-Ries

Acceptance of RES: variable collection



Example Items

- In general, I support wind energy plants (WEP).
- It is very important for me to be informed early when WEP are planned to be built in my community.
- I feel disturbed by the view if there is a WEP near my house.
- WEP fit in well in the characteristic landscape.
- WEP as part of the landscape do not attract my attention.

Conclusion

- Voluntary resident-involvement beyond legal requirements
- Benefit for the Regions in economic and cultural values + communication about it!
- Support the identification process in the “affected regions”

contact

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Topical Expert Meeting on social acceptance of wind energy systems; Luzern, 24.05.2007

OvGU: Schweizer-Ries

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EIfER

The European Institute for Energy Research (EIfER) is an European Economic Interest Group (EEIG). It is aimed at developing or improving innovative clean energy technologies and tools and approaches for sustainable development of territories and industries

Activities

- Energy in Urban Context
- Regional Sustainable Energy
- Distributed Resources (Systems and New Business)
- Energy Environment Economics

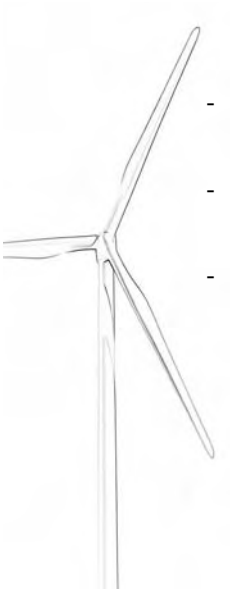
The Social Implementation of Technologies is one of EIfERs Fields of Research:

→ Information and communication processes
→ Policies, strategies
→ Acceptance, Adoption
→ Actor analysis
→ Participatory approaches

Project Example:

Local acceptance of wind energy: Factors of success identified in French and German case studies

Five case studies in France and Germany in the framework of a project on acceptance of EDF R&D in cooperation with EIfER



- *Goal: Identifying factors of success for local acceptance*
  Developers of wind-energy parks need to know how to manage social acceptance at the different stages of planning, realization and operation
- *Perspective*:
  Acceptance seen as the goal of the developer and his/her allies in the project
- *Methodology*:
  Qualitative case studies with 11 to 15 interviews with key actors for each case
- *Conclusions*: Identified Factors
  → Two dimensions:
  - Institutional conditions: such as economic incentives and regulations
  - Project-specific conditions: such as local economy, geography, (local) actors and discourses, ownership, former use *(→ territorial factors)* and local integration of the developer, communication, „justice", integration of the local actors in a network of support, integration of the project in local development strategies, financial participation (access to shares for the local population)*(→ project management)*

Publication

Jobert, Arthur, Laborgne, Pia, Mimler, Solveig, Local Acceptance of Wind Energy: Factors of Success identified in French and German Case Studies, In: Energy Policy 35 (2007) 2751-2760

EIfER
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IEA Topical Expert Meeting #54
on
Social Acceptance of Wind Energy Projects

Wind power development: localisation, control and gains

A case study of the Smøla wind power project planning processes

A PhD Theses
from
Aalborg University January 2007, Denmark

Presentation
by

Øyvind Ottersen PhD
Wind power project developer in
Agder Energi Produksjon
Norway
Oyvind.ottersen@ae.no

Abstract

This thesis presents an approach for analysing the implementation of technologies that involves the exploitation of place specific resources like waterfalls or wind. The implementation of hydro power and wind power has been discussed in relation to the following three subjects:

- Who should control these resources?
- How should the benefits be distributed?
- How should other interests, like environmental issues, connected to these localisations be handled?

The processes for deciding the outcome of the discussions related to these three subjects has been analysed in a historical case of the institutionalisation of hydro power in Norway from 1906 to 1920 and a case study of the first large wind power plant in Norway, on the island of Smøla.

The processes are analysed by using how- and why-questions based in an evolutionary approach, focusing on the selection between competing interests for achieving access to the hydro and wind resources. To understand the selection process, the exercise of power in influencing the political decisions in the planning process has been analysed.

The main result from the thesis was that the process for deciding the outcome of the three discussions had great similarities in the hydro power case and the wind power case on Smøla 90 years after. The decisions concerning these three subjects were mainly taken in democratically elected assemblies, with the municipality as the player with most influence on the results, concerning both hydro and wind power. One result from influencing the municipality in the planning of wind power was that local development and minimising visual impact were prioritised more highly than protection of previous “untouched” natural areas. In the hydro power case the municipalities’ importance as a decision-making arena created a diversity of organisational solutions for electricity production and distribution. The identification of the municipalities as a similar important decision-making arena for wind power may indicate that a diversity of different project developers will achieve access to suitable localisations for wind power in the future.

Main aspects summary from analysing the Smøla case

Concerning societal decision making in general, six main aspects may be extracted from the analyses of the Smøla wind power case. The first aspect shows that nature protection values is likely to achieve minor influence in a decision making process that is limited to the geographical area of one municipality. The second aspect concerns the credibility of a result from a process that does not follow established procedures in formal planning processes. The third aspect deals with the considerable level of influence a co-operation between a municipality and a player with knowledge and financial capacity to accomplish a project, is able to achieve on public decision makers on a county or a national level. The forth aspect deals with the considerable level of influence a municipality with democratic legitimacy from unanimous decisions is able to achieve on the national level. The fifth aspect is that natural protection interest seems not to be prioritised on a municipality level. The last aspect shows that professional knowledge may be overruled when it is contra dictionary to important political prioritises.

Based on the six aspects from the paragraph above, the following two points are the most important. The first point is the remarkable high level of influence the municipality has been able to achieve on county and national authorities together with a player who want to establish wind power in the municipality. The second point is how natural protection value systematically is given minor influence on municipality decisions and decisions influenced by the involved municipality preferences.

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Eoliennes Montagne du Droit (BE)

Paysage et éoliennes

Mandant: JUVENT SA

Paysage - définition de base

Le paysage est le miroir des relations, actuelles et anciennes, de l'homme avec la nature qui l'environne. Le paysage a donc une histoire à raconter et que l'on peut essayer de retranscrire.

Le paysage pose toujours des questions, mais les réponses sont généralement ailleurs, dans la compréhension de l'histoire du territoire concerné.

Un paysage est **le résultat de multiples décisions et actions politiques et administratives, avec leurs conséquences sociales, économiques et environnementales.**

GROUPE DE TRAVAIL

Direction de projet

Y. Leuzinger, biologiste, licencié ès sciences, ing. Environnement

Collaboration

E. Contesse, Ing. HES en gestion de la nature
C. Brossard, biologiste, licencié ès sciences

Groupe d'accompagnement

Richard Patthey - sIfp Fondation suisse pour la protection et l'aménagement du paysage

Rita Wider - OFEV Office fédéral de l'environnement - Section paysage et infrastructure

MANDAT

L'appréciation du paysage est souvent une attitude essentiellement subjective. A cet égard, les goûts se fixent souvent dès l'enfance. Nous nous attachons à ce qui fut le décor de notre éveil physique et de notre initiation à la connaissance du monde. Nous tolérons mal que soit défiguré cette image qui se confond avec notre développement.

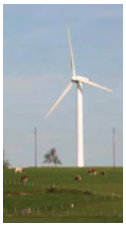
Dans le cadre de l'élaboration du plan directeur régional pour l'implantation d'éoliennes, nous avons défini les limites du site à accueillir de nouvelles éoliennes en fonction des caractéristiques paysagères locales et régionales.

Cette analyse débouche sur des propositions de mesures concrètes en lien avec les dimensions et l'organisation du paysage.

CONSTAT

Partout en Europe, les éoliennes sont en question. Personne n'a trouvé une solution généralisable! Chaque cas est unique, à l'image des paysages rencontrés.

Il s'agit donc de définir le contexte puis de trouver des paramètres qui permettent de conserver certaines caractéristiques du paysage, tout en intégrant les nouveaux constituants que représentent les éoliennes.



Le but de l'étude n'est donc pas de remettre en question le site, mais bien de fixer des limites que le promoteur et les partenaires peuvent accepter.

PAYSAGE CONCERNÉ

Un paysage consiste en divers composants, dont certains sont objectifs, c'est à dire indépendants de l'observateur, et d'autres subjectifs.

Les premiers donnent des informations sur les caractéristiques physiques du paysage, les structures qui le composent ainsi que leurs arrangements. Les dimensions respectives du paysage font aussi typiquement partie de ces constituants dits objectifs au même titre que les éléments historiques ayant abouti à leur arrangement.

CONSTITUANTS OBJECTIFS

Types de constituants			
1.1	Routes et chemins		Eléments techniques
1.2	Lignes aériennes		
1.3	Mâts		
2.1	Eléments de séparation		Eléments d'exploitation
2.2	Ouvrages d'exploitation		
3.1	Habitations		Constructions utilitaires
3.2	Locaux divers		
4.1	Forêts		Eléments naturels et semi-naturels
4.2	Bocage		
4.3	Mileux particuliers		
5.1	Surfaces agricoles		Surfaces exploitées
5.2	Cultures privées		

Les constituants doivent être confrontés aux nouveaux éléments que représentent les éoliennes.



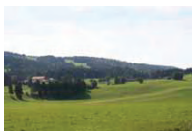



Constituants		Dimensions (m)
1.2 Lignes à basse tension	**Lignes aériennes**	10.5
1.3 Eoliennes	**Mâts**	70 - 100
	Hauteur totale	110 - 140
	Eléments de séparation	1.5
	Habitations	9
	Locaux divers	4
	Forêts	20 - 25
4.2 Bosquets arborescents	Bocage	10-15
	Géomorphologie	
Des Bises au Mont Crosin	Pli nord min	1100
	Pli nord max	1260
Du Mont Crosin au Mont-Soleil	Pli sud min	1200
	Pli sud max	1290
	Variation moyenne crête	40 à 45
	Variation maximale	110 à 170
	Hauteur théorique du pli	1370

5

6


UN ARRANGEMENT EN ZONE OUVERTES ET FERMÉES


CONSTITUANTS SUBJECTIFS

Toute personne traversant ce paysage **est influencée par la vision des éoliennes.**

Le vécu antérieur est alors primordial pour expliquer les effets que cette vision fournit à la personne concernée. Son **attente** d'un paysage agricole pourra mettre ses sens en éveil et susciter une réaction négative à la vue de structures non conformes au schéma de son vécu.

Au contraire sa connaissance du contexte, sa volonté de se rassurer concernant la possibilité de créer de l'énergie sans effets indirects sur la santé lui donnera un sentiment de satisfaction. Cet aspect du vécu initial est un élément subjectif par excellence sur lequel nous reviendrons en détail.

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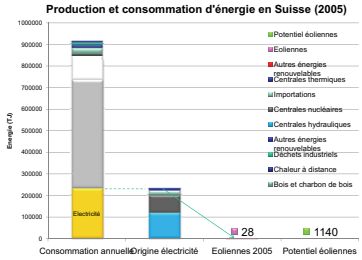
❑ Déterminer les constituants objectifs et subjectifs

- ✓ Géomorphologie
- ✓ Topographie
- ✓ Couleurs et agencement des couleurs
- ✓ Structures et types de végétation
- ✓ Bâtiments et monuments
- ✓ Microstructures
- ✓ Odeurs
- ✓ Vents
- ✓ Bruits
- ✓ Mouvements humains
- ✓ Agencements et imbrication des constituants
- ✓ Succession et répétition des événements
- ✓ Etc.

Production et consommation d'énergie en Suisse (2005)



Les éoliennes sont des installations anachroniques qui ont été intégrées sans réflexions préalables au paysage récent, et dont la perception est bonne en raison de l'utilité reconnue, dans notre monde technologique non remis en question, de ces installations utilisant la force du vent au profit de l'homme.

Elles permettent de nous rassurer sur un futur possible !

Dans notre approche de travail, force est de constater que les éléments subjectifs prennent le pas sur les éléments objectifs!

Actuellement, les visiteurs du site sont persuadés que **la force éolienne est une solution, voire la solution**, de la production énergétique en Suisse. Les promoteurs de cette énergie savent eux quelles en sont les limites dans notre production globale, tant en terme de quantité de production que de régulation de la distribution.

Quelle sera la réaction des personnes concernées lorsque cette évidence sera consciente? **Cette question doit être abordée** si on ne veut pas que les acteurs percepteurs du paysage se sentent trompés dans quelques années.

Même s'il est rassurant de savoir que de les énergies renouvelables ont un potentiel de développement, il redevient logique de se poser aussi la question de savoir dans le contexte éolien **jusqu'ou on peut transformer le paysage de nos crêtes** pour une **production aussi minime** par rapport à nos besoins !

VALEUR CULTURELLE DU SITE

La notion de **valeur culturelle** est en lien direct avec l'esthétique du paysage. L'organisation de ce dernier est primordiale.

Si elle correspond à sa vocation actuelle et qu'un **lien** peut être fait entre la **connaissance historique du site et la structure du paysage** lors de sa perception, il sera généralement perçu de manière positive.

Dans notre cas, les traces historiques montrent une utilisation sylvo-pastorale du lieu. Son utilisation actuelle, avec les adaptations d'échelle et de temps, correspond toujours à cette vocation.

Les éoliennes sont des éléments nouveaux déconnectés de cette utilisation historique du site. Cependant, le lieu est adapté en raison des vents, ce que chacun peut ressentir et intellectualiser.

La naturité du site, c'est à dire le sentiment de se trouver dans un espace ou les éléments naturels dominent, influence aussi la perception du lieu. Les éléments naturels sont certes gérés et entretenu de manière très forte par l'agriculture et la sylviculture, mais la rencontre est positive.

Les **éoliennes** jouent ici un rôle non négligeable. Elément de haute technologie, cette **contradiction** dans un paysage considéré comme naturel est l'exception qui confirme la règle et qui donne le sentiment que technologie et naturité sont compatibles.

La diversité d'un site est aussi un des garants de la sensation d'adéquation à la culture du lieu. La diversité des structures est grande dans notre cas, même si la biodiversité est limitée (altitude, climat, types de milieux, etc.).

Les éoliennes ne perturbent pas cette diversité tant qu'elles n'occultent pas la perception des divers constituants et des structures.

L'ampleur de la vue est digne des crêtes les plus abruptes, mais les constituants sont différents. En effet il est rare de pouvoir bénéficier d'une part d'un milieu semi-ouvert, agricole et forestier, tout en bénéficiant d'une vue panoramique tant vers le sud que vers le nord.

Le secret de l'attrait de ce lieu pour la promenade réside certainement dans cette combinaison!

Ainsi la culture du lieu est très fortement liée à l'agriculture de montagne et à la sylviculture.
La culture, l'élevage, le bois, nécessaire au chauffage, sont depuis des décennies indissociables de ces crêtes.
L'absence de grandes infrastructures relie passé et présent.

La technologie moderne se greffe dans ce contexte culturel et les atteintes au paysage, notamment aux dimensions de ce dernier, sont minimisées dans la pensée collective.


DIFFÉRENTES PERCEPTIONS






LIMITES DU SITE

En reprenant les éléments marquants de l'analyse, une démarche de ce type doit tenir compte des paramètres et caractéristiques physiques du site.

En premier lieu, on peut citer le **respect des dimensions topographiques** en termes de grandeur des installations, mais aussi de leur **emplacement et de leur regroupement.**

Ensuite, il semble primordial de maintenir **l'ampleur du paysage**, c'est à dire les diverses vues et les dégagements. Si le paysage éolien devient trop fort ou prédominant, la diversité du site sera cachée et sa lecture réduite à la seule composante technique des éoliennes.

Les **parcelles de naturité originale doivent** continuer à être perceptibles par les acteurs, la sensation du paysage avant éolien doit toujours être dominante.

Les unités d'exploitations du parc éolien doivent s'individualiser et ne pas couvrir tous le site.

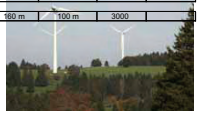
Ainsi les limites physiques du site sont déterminées par :

- ✓ Les dimensions des installations en relation avec celles du paysage
- ✓ L'emplacement et l'implantation des éoliennes dans des volumes cohérents
- ✓ Les regroupements des installations et leur implantation
- ✓ Les distances d'implantation par rapport aux zones habitées en permanence.

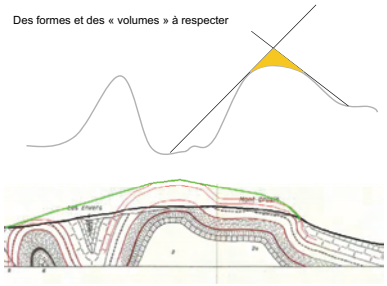
DIMENSIONS EN QUESTION

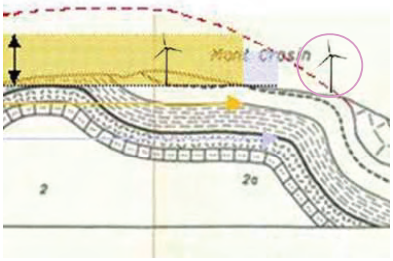
Lieu	Nr.	H tot	Diam. Rotor	kW Max	Tours / mn
MC Ost CB Courtelary	F1	140 m	80 m	2000	6 - 20
MC West Augsburger	F2	140 m	80 m	2000	6 - 20
MC Ost Fankhauser	F3	140 m	80 m	2000	6 - 20
St. Imier		140 m	80 m	2000	6 - 20

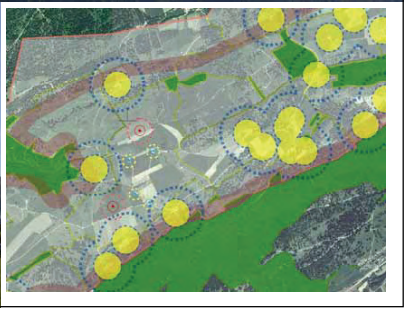
Lieu	Nr.	H tot	Diam. Rotor	kW Max	Tours / mn
Vision future	FX	160 m	100 m	3000	



Des formes et des « volumes » à respecter

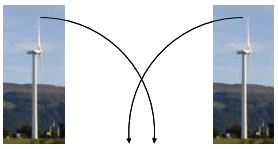






Le paysage pré-éolien est structuré autour des centres de production agricole, les fermes. Cette organisation laisse des plages importantes de paysage sans habitations.

Nous proposons de prévoir les installations selon le même modèle, à savoir des « unités de productions » de quelques éoliennes regroupées, séparées par des poches exemptes d'installations.

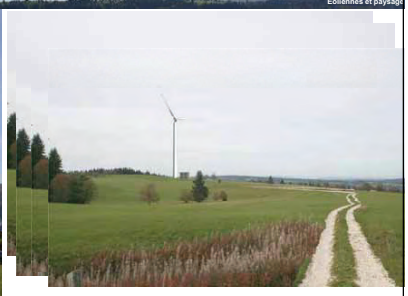


En fonction des sites déjà occupés par des éoliennes, des espaces ouverts libres d'éoliennes doivent persister.

Sur la base de la structure de la végétation, nous avons défini des poches de zones ouvertes. Elles sont déterminées par des barrières visuelles telles que haies, lisières forestières, lignées de bâtiments ou les crêtes.

Délimitées sur les cartes puis validées dans le terrain, ces poches représentent une succession de divers paysages ouverts qui accompagne toute découverte de ce paysage semi-ouvert.

Les poches sans éoliennes permettent de vivre le paysage "initial" et d'éviter sa banalisation. Les éoliennes sont aussi redécouvertes d'une poche à l'autre.




Éoliennes et paysage
Vivre avec
et faire les bons choix pour demain
Avril 2007

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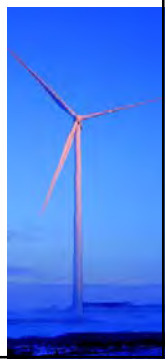
Social acceptance of wind energy projects: Updated ideas about further research



Dr. Rolf Wüstenhagen
Vice Director
Institute for Economy and the Environment
University of St. Gallen

Lucerne, Switzerland, May 24, 2007

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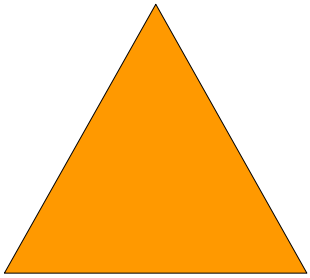
The Triangle of Social Acceptance of Renewable Energy Innovation

Socio-political acceptance

- Of technologies and policies
- By the public
- By key stakeholders
- By policy makers



Community acceptance

- Procedural justice
- Distributional justice
- Trust

Market acceptance

- Consumers
- Investors
- Intra-firm

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Source: Wüstenhagen, Wolsink, Bürer 2007

Further Research: Socio-Political Acceptance

- Bridging the national-local divide
  - Top-down: Translating national policy objectives into locally accepted siting decisions
  - Bottom-up: Enabling local initiatives to foster ambitious policies
- Policy stability is key for investment, but how can this be achieved longer-term? (e.g. improved lobbying capacities)
- International policy learning (e.g. diffusion of feed-in schemes)
- Feedback loops between socio-political acceptance and market acceptance (e.g. consumer, firm, investor influence on policy)
- Media analysis of wind energy discourse: Is one side over-represented, and if so, why?
- Analysis of public votes on "Verbandsbeschwerderecht": Key motives of opposing wind energy vs. shopping centres?
- Discourse on wind energy in low- vs. high-CO2 countries?
- Communicating individual benefits of wind power projects
- Impact analysis of communication campaigns for wind power
- Content analysis of websites of wind opponents
- Policy mix to stimulate a healthy level of competition between incumbents and new firms

Source: Wüstenhagen, Wolsink, Bürer 2007
Source: IEA-TEM Lucerne 2007

Further Research: Community Acceptance

- International learning processes between opponents (or proponents) of windpower
- What are the most effective ways for planners to create a "sense of ownership" among local stakeholders?
- How does perception of landscape influence social acceptance of wind power (onshore and offshore)? (> ESF 2007)
- North-South comparisons of social acceptance (cf. Mallett 2007, Troncoso et al. 2007)
- Methodological note: from single case studies to larger samples
- Empirical evidence for the U-curve [acceptance = f(time)]? > longitudinal analysis
- Landscape architects and monster theories
- Likelihood of acceptance vs. speed of implementation
- Fair distribution of value created by wind project (local wind tax; land owners vs. "visual stakeholders" vs. financial capital providers...)
- Objective measures for landscape perception? (cf. automotive design)

Source: Wüstenhagen, Wolsink, Bürer 2007
Source: IEA-TEM Lucerne 2007

Further Research: Market Acceptance

- Customer segmentation: What is it that really makes consumers buy renewable energy, and how does this key motivation differ between customer segments?
- Intra-firm acceptance: Understanding the current rethinking process in large energy companies towards taking a more or less proactive approach to renewables.
- Investor acceptance: Acceptance of renewable energy technologies and policies in the financial community
- Target segments for different designs of vertical axis wind turbines
- In-depth case study of the internal diffusion process of pro-wind energy attitudes within an energy company
- Business models for wind energy developers
- Effects of education and training on bankers‘ financing decisions for renewable energy projects
- Behavioural finance approaches to wind power investment

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Source: Wüstenhagen, Wolsink, Bürer 2007
Source: IEA-TEM Lucerne 2007

Other potential parties to be involved

- UK researchers (C. Haggett?, ...)
- EU consortium Create Acceptance (B. Farkas, E. Heiskanen, ...)
- CAN researchers (M. Jegen, I. Rowlands, ...)
- Portuguese & GER researchers (from Alain Nadaï‘s project)
- CRES Greece?
- Spanish researchers?
- Italian researchers?

- Project planners, utilities, regional authorities (appropriate format? > shorter training course?)

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Summary of IEA RD&D Wind – 54th Topical Expert Meeting on

Social Acceptance of Wind Energy Projects

May 2007, Luzerne, Switzerland

Reto Rigassi and Sven-Erik Thor

Background

Increasing the share of renewable energy is high on the policy agenda in countries around the world. Several governments have set ambitious targets and have started to implement support schemes aimed at facilitating market implementation. The degree to which these policies have been successful varies between countries, but wind energy stands out with the most impressive growth rates in some countries.

As wind turbines are spreading, however, it has been increasingly recognized that there is one factor that can potentially be a powerful barrier to the achievement of renewable energy targets: social acceptance. Germany, as the country with the largest number of installed wind turbines worldwide, has seen the media picking up on the theme of local resistance to new wind energy projects. Countries that are only at the beginning of the diffusion curve, such as the UK, the Netherlands, Switzerland or France, are also facing vivid debates on local and sometimes national levels.

While debates of social acceptance are not totally new to the energy sector - just think of contested siting decisions for nuclear power plants, nuclear waste storage facilities, or large hydropower dams - this issue needs to be urgently addressed if policies are to be implemented successfully.

Objectives of the meeting

The objective was to hold a workshop to discuss and gather information on:

- Review experiences with acceptance of wind energy projects in different countries
- Review of relevant studies and investigations on this subject
- Highlight difficulties of applying traditional approaches in site assessment
- Review current guidance and evolution of site assessment methods
- Descriptions of practices for assessing landscape values for wind farms
- Description of successful projects and strategies, definition of success factors
- Recognize concrete solutions for planners and developers, the discussions on social acceptance of wind energy are often on a very academic level.

Participants / Presentations

A total of 15 participants attended this meeting with representatives from Germany, Sweden, the Netherlands, and Switzerland. The participants mainly represented National Research Organizations.

The following presentations were given:

- Introductory note
- Changing institutional landscapes for wind power implementation. An International Comparison
- The Swiss Wind Energy Concept: Enhancement of the Acceptance for Wind Energy
- The social acceptance of wind power ? Planning Policy as an issue
- Acceptance of vertical wind turbines
- Empowering wind power. On social and institutional conditions affecting the performance of entrepreneurs in the wind power supply market in the Netherlands
- The wind turbine as a cultural signifier
- Importance of Image and Impacts of Windenergy as Acceptance Driving Factors
- Public Acceptance of Wind Energy

In addition to this two papers were submitted to the proceedings, from two persons who did not attend the meeting. They were:

- Wind power development: localisation, control and gains. A case study of the Smøla wind power project planning processes
- Paysage et éoliennes

Summary of Discussion

At the concluding discussion a number of different topics were handled. As a starting point for the discussion Dr. Wüstenhagen made a presentation of ideas about further research. See previous pages.

What have we learned?

- International comparison is very instructive
- The type of planning (negative and/or positive planning) is a very important item
- Sites for wind turbines have a multidimensional character

What is missing?

General remarks:

- International comparison
- Planning process: how to do participation process
- Collecting results to get a bigger sample of case studies, ev. coordinated projects
- Homepage to put R+D-studies on to be downloaded
- Conference with developers, politicians in 2-3 years - perhaps around the ewea-conference
- Other potential parties have to be involved (UK, EU, CAN, P, SP, etc.)

The discussion on ideas for future research was focused around the three main themes which was presented by Dr. Wüstenhagen:

- Socio-political acceptance
- Community acceptance
- Market acceptance

Socio-political acceptance:

- Policy:
  - Discourse on wind energy in low- vs. high-CO_2 countries
  - Policy mix to stimulate a healthy level of competition between incumbents and new firms
  - Bridging the national-local divide:
  - Top-down: Translating national policy objectives into locally accepted siting decisions
  - Bottom-up: Enabling local initiatives to foster ambitious policies
  - Policy stability is key for investment, but how can this be achieved longer-term? (e.g. improved lobbying capacities)
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- Communication:
  - Media analysis of wind energy discourse: is one side over-represented and if so, why?
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  - Communicating individual benefits of wind power projects
  - Content analysis of websites of wind opponents
- Key motives of opposing wind energy vs. shopping centres (Analysis of public votes on "Verbandsbeschwerderecht")
- Feedback loops between socio-political acceptance and market acceptance (e.g. consumer, firm, investor influence on policy)

Community acceptance

- Likelihood of acceptance vs. speed of implementation
- Empirical evidence for the U-curve [acceptance = f(time)] > longitudinal analysis
- Fair distribution of value created by wind project (local wind tax: land owners vs. "visual stakeholders" vs. financial capital providers...)
- What are the most effective ways for planners to create a "sense of ownership" among local stakeholders?
- Landscape:
  - Landscapes architects and monster theories
  - Objective measures for landscape perception?
  - How does perception of landscape influence social acceptance of wind power (onshore and offshore)? (> ESF 2007)
- International learning processes between opponents (or proponents) of windpower

- North-South comparisons of social acceptance (cf. Mallett 2007, Troncoso et al. 2007)
- Methodological note: from single case studies to larger samples

Market acceptance:

- Business models for wind energy developers
- Investor acceptance:
  - Acceptance of renewable energy technologies and policies in the financial community
  - Effects of education and training on bankers financing decision for renewable energy projects
  - Behavioural finance approaches to wind power investment
- In-depth case study of the internal diffusion process of pro-wind energy attitudes within (large) energy companies
- Customer segmentation: What is it that really makes consumers buy renewable energy, and how does this key motivation differ between customer segments?
- Target segments for different designs of vertical axis turbines

Interest in further activities

The participants of the topical experts meeting expressed a large interest in further joint activities on the subject of social acceptance. In the participating countries (Germany, Netherlands and Switzerland) social acceptance will be the issue of further research activities. A second topical expert meeting would attract wide interest.

The creation of an IEA Annex should be considered. Switzerland's members of the executive committee (ExCo) will take the lead, to bring this issue up at the next ExCo meeting, which will be held in Spain in September.

List of participants

IEA R&D Wind Task 11, Topical Expert Meeting
Social Acceptance of Wind Energy Projects
Luzerne
24-25 May 2007

The following persons have registered

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Walter Ott

Gert Heider

Neeltje Muselaers

Sylvia Breukers
Alain Nadaï

Not in picture:
Gundula Hübner