



WIND TURBINES IN TOURISM LANDSCAPES

Czech Experience

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Abstract: This study proposes to assess and empirically verify possible negative effects from the construction of wind turbines on the landscape image and tourism potential of affected areas, using the example of two comparative recreational localities in the Czech Republic: one with the construction of a wind farm planned and the other with an already existing farm. The empirical research consisted of two mutually linked parts: a questionnaire survey and focused, semi-structured interviews. Emphasis was placed on the subjective perception of the phenomenon by tourists and local business representatives from the sphere of tourism. The analysis focuses also on the social-geographical factors that shape tourists attitudes to the wind energy development dilemma. **Keywords:** wind energy, landscape, perception, Czech Republic. © 2010 Elsevier Ltd. All rights reserved.

INTRODUCTION

Growing concern over global climate changes, energy sustainability, and security has led to increasing interest in developing renewable energy sources. In this respect, wind energy has become the most dynamically developing sector. However, development is not as fast as had been expected in many countries and wind turbines (hereafter WT) projects are at both local and regional levels subject to considerable social controversy (Breukers & Wolsink, 2007; Van der Horst, 2007; Wüstenhagen, Wolsink, & Bürer, 2007). Among the main arguments of opponents recently is, in addition to the potential impacts of WT on the character of the landscape, also speculation about their negative effects on tourism in the affected areas, owing to a suggested loss of attractiveness of the “visually polluted” landscape (Gordon, 2001). Still, there has been a very limited number of studies (including no examples concerned with East-Central

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Europe) dealing with the specific issue of tourist perception of the phenomenon, unlike the surveys of general public opinion of wind energy development or on the local acceptance of WT projects by residents.

Wind energy development in the Czech Republic (hereafter CR), likewise in neighboring Slovakia, has been delayed compared with most of the European countries, and its realizable wind potential has by far not yet been utilized. This situation has been caused by specific political and economical factors (Cetkovský, Frantál & Štekl, 2010). The recent period may be marked as a new wind energy boom, legislatively supported (with economic subvention) on a national level by the “Act on the Promotion of the Use of Renewable Sources“ (No. 180/2005 Coll.) which assumed a share of 8% of electrical energy production gained from renewable sources until 2010. According to new direction of the European Commission (No.2009/28/ES) the share of renewable energy sources in total energy consumption should raise to 20% on average for the whole EU until 2020; the CR expects the share of about 13%.

Wind energy development has started to effect a fundamental change in the Czech landscape character, especially its visual image. Not only objective factors but to a large extent also the subjective views and preferences of various pressure groups (investors, local and regional political authorities, residents, landscape ecologists, etc.) come into the decision making game about the WT projects. The spatial distribution of realized projects is characterized by strong regional disparities, which reflect not only objective wind potential and physical-geographical limits of area but also (and maybe especially) political-institutional factors (Wolsink, 2000) taking effect in the administration of permitting system. In this respect, the landscape has become a point of contention and negotiation among different ways of seeing, various interests, value judgments, ideologies, myths, and representations (Cosgrove, 1998).

The CR is a relatively small-scale, landlocked country. Most of its area includes neither alpine terrain nor seashore (unlike European tourism leaders such as Austria, Switzerland, Spain, Croatia, France, etc.), and is therefore an example of a country where the prerequisites for tourism lie within various types of rural countryside and where the diversity of the landscape is also determined by its architectural elements, connected with the historical and cultural traditions of each place (Vystoupil & Kunc, 2009). In many areas where the natural potential is combined with a typically rural cultural landscape, the construction of a new dominant feature (not just a WT, but also, e.g., an observation tower, high-rise building, mobile phone base, etc.) is a bone of contention (Klapka, 2008). In this respect, the issue of WT has become a kind of hammer in political battles concerning landscape planning, regional development, and land-use policy. Furthermore, the opinions of individuals are often presented and mediated as impartial judgments, as for example this statement from the former Moravian-Silesian Region regional governor (*hejtman*) (translated from Czech by the authors):

Probably the biggest damage the wind turbines cause is in the landscape. If the Jeseníky Mountains and Beskydy Mountains are protected landscape areas with the dominant function of tourism, wind energetics could utterly destroy this function (Tošenovský, 2005, p. 2).

Or this similar statement from the Vysočina Region council authority:

In the event that we turn the Vysočina Region into the wind farm, we can abandon the idea of tourism development. It is hard to imagine a tourist who is going to walk, ride on a bicycle, or gather mushrooms, and finally lodge under the whizzing wind turbines (Bílek, 2007, p. 2).

Similar prejudiced statements arise on the political scene—as well as from the academic sphere—and are mediated in many countries. In regions and locations where tourism is an important source of income and thus a significant part of the local economy, arguments about the negative impacts from construction of WT are a delicate issue, which can significantly influence public opinion and the decision making process on projects. Naturally the extent of resistance and active counteraction against projects differs across localities, regions, and countries (Toke, Breukers, & Wolsink, 2008); opposition proceeds primarily from a subjective perception of risk that is, in principle, socially constructed. Burgess (2002) argues that the media play a key role in shaping public anxieties towards new objects in the landscape, and he asserts that policy makers and other men of influence should avoid a non-scientific precautionary approach in this respect.

Crude construction of WT as new vertical dominants can undoubtedly mean a significant interference with the landscape. In this regard, it is not necessary to deal with clearly justified restrictions (in most countries, stated legislatively) on building WT in the most precious landscapes, that is, national parks and protected landscape areas, which in the CR cover approximately fifteen percent of total area. However, it is not possible to approach the issue of WT construction a priori negatively, and thus to yield to groundless speculations and myths about their negative impact that can prevent their constructions in suitable locations with no conflicts between interests. WT are often considered symbols of clean, dynamic energy, and they can present “positive esthetic value, like Hi-Tech product” in some landscapes, for example, segments of visually open cultural landscape, or industrial or post-industrial landscapes (Vorel, 2009).

The authors propose to verify empirically the possible negative effects of the WT construction on the landscape image and tourism potential of concerned areas. Two comparative rural recreational localities have been chosen as case studies, one with construction of a wind farm planned and the second with a farm already existing. The field research consisted of two parts: an on-site questionnaire survey with tourists, and focused, semi-structured interviews with local business representatives running accommodation and catering establishments. The aim of the survey was to identify what impact the presence of WT in the landscape has or may have on the perception

and experience of tourists, their preference of landscape type for prospective WT installations, and whether there may be any potential interest in visiting these locations specifically for their WT. The intention of the focused interviews was to map the situation of local entrepreneurs (who can be considered local experts in the given domain) and their opinions on the effects of WT on tourism and recreation in the study areas. In contrast with the studies previously undertaken, the analysis was also targeted on the socio-demographical and geographical factors which shape the individual attitudes of respondents to the wind energy development dilemma.

THE IMAGE OF WIND TURBINES IN TOURISM LANDSCAPES

Natural potential can be considered the decisive factor in the location of most tourism and recreation activities, as it is this which determines both the functional and the spatial distribution in land use. However natural potential cannot be identified with the overall potential for tourism since the cultural subsystem—historical, religious, technical, or military sights; village monument conservation, vernacular architecture, and other cultural facilities—also play an important part in the overall potential of the area (Pearce, 1995). In many current national strategic documents (e.g., The Program of Rural Development of the CR for 2007–2013; Department of Agriculture, 2007), the assessment and utilization of natural and cultural heritage through rural tourism is identified as the strongest force function of rural areas. Natural and cultural-historical potential can also be understood as part of the objective identity of a location, which includes the physical setting and qualities, activities, and meanings that create the individuality and distinctive character of a place.

Nevertheless, this identity has its subjective dimension as well: the images, which are products of subjective perception, beliefs, ideas, impressions, attitudes, and immediate sensations made according to personal experiences as well as information gained from other people or media (Gertner & Kotler, 2004). Analyzing images of a place has a key role in the strategic planning of development activities and their realization in contemporary place competition (Gallarza, Saura, & García, 2002; Kotler & Gertner, 2002). As concerns tourism development, the objective potential of an area often does not have to be the most important factor (Selby & Morgan, 1996). It is rather a matter of how the whole area is perceived and assessed in its total complexity by key constituents (e.g., tourists, investors, the media), by its residents, local authorities, and entrepreneurial subjects—where they see its strengths and weaknesses, and on which qualities (natural attractions, historic or architectural sights, cultural or sporting life, etc.) they will establish strategies for place branding (Anholt, 2006; Freire, 2006).

New anthropogenic elements in the landscape always present controversy, particularly if the area has a rare or unique natural or cultural-historical potential. There are many studies concerned with the effects of constructions of diverse character, type, and structure on tourism;

attitudes are different with respect to the reality of a given location, environment, or population segment. It is hypothesized that the perceptions of tourists can significantly differ from those of residents. People in environments that are out of the everyday for them perceive and experience the surrounding world with different eyes, and they want “to gaze on different landscapes and townscapes that are unusual for them” (Urry, 1990, p. 1). Therefore, objects that residents might often find irritating could have an attraction to tourists. Attraction to tourists can be based on any unfamiliar element, depending only on the tourists’ interests and preferences which objects are perceived and experienced as tempting (Leiper, 1990; *op. cit.* Löytynoja, 2008).

In countries with significant industrial traditions, a variety of technical objects have been revitalized in order to support new forms of tourism (Edwards & Llurdés, 1996). The former industrial complexes (e.g., copper mines in Røros, Norway; the Ironbridge Gorge area in the UK; the Zollverein coal mine industrial complex in Essen, Germany, etc.) have been placed on the UNESCO heritage list and enjoy the interest of tourists. On the other hand, a number of objects recently installed in the landscape, mostly connected with new technologies, have been negatively perceived by both residents and tourists. Probably the most criticized constructions are telecommunication facilities (mobile telephone transmitters or towers). The research by Park, Jorgensen, Swanwick, and Seman (2008) shows a generally prevailing public antipathy toward telecommunication facilities located in national parks in England. In the tourists’ opinion, the negative effects on the landscape character outweighed the socio-economic advantages connected with the use of the technology. Mobile telephone stations are mostly perceived as industrial objects counterworking against “landscaping of the rural as scenic countryside and disrupt the tourist rural idyll and authenticity of the heritage industry’s staple of mannered country life” (Law, 2005, p. 1). In recent years also the photovoltaics (or solar power plants) passed through a dynamic development. But these objects are not as expanded and conflicting as WT; they used to be located mostly at plain fields (often at agricultural or industrial zones, fabric roofs, etc.), they are not visible far and wide and change the landscape character moderately. Some studies proved even a positive effect of solar technologies for sustainable tourism development (Michalena & Tripanagnostopoulos, 2010).

An important evaluative criterion for perceiving the visual effects of different objects on the landscape are the symbolic associations (positive or negative) attached to them. Thus wind energy may be associated with such “higher concepts” as global climate change and the like. An example of such a symbolic dimension of perception is demonstrated by Devine-Wright (2005, p. 129). The small-scale hydroelectric generating stations in an English national park are perceived very positively thanks to their association with historic water mills also preserved in several places around the park. This example shows how innovation in technology can be perceived positively when it represents continuity between the past and the modern. Suitable marketing strategies could lead to a more positive perception of WT if they symbolically

emphasize a continuity with historic wind mills or symbolize a material reconnection to the energy we use (Pasqualetti, 2000). Historic wind mills are today regarded as symbols of a nature-considerate approach of the past and serve as obvious tourist attractions, whereas modern WT are often presented as alien structures.

There is prevailing divergence between broadly high rates of support for a larger-scale utilization of renewable sources (including the wind energy) as a general idea and the rate of acceptance of WT as real constructions with impacts on a specific landscape. This divergence, which appears in polls across countries (Devine-Wright, 2005; Krohn & Damborg, 1999) is often related to so-called NIMBY (*Not In My Backyard*) syndrome. The NIMBY theory (Marks & Von Winterfeld, 1984; Thayer & Hansen, 1988) assumes people do not want WT constructed in their place of their residence but do not mind them being placed anywhere else. Validity of the NIMBY theory in context of the wind energy research was impugned by studies of Wolsink (1994, 2000, 2007), however the concept has not been definitively falsified. Wolsink detected a multidimensionality of the oppositional behavior and argued (*op. cit.* Devine-Wright, 2005, p. 131) the NIMBYism actually “represented constellation of different attitudinal positions to both wind energy policy and development”. After all, environmental concerns, landscape contexts, their subjective perception, and tendencies for the preservation of local identity play a dominant role in the process of forming opposition to WT.

The reason for the deficit in more complex empirical studies dealing with impacts of the wind energy development on tourism is of both subjective and objective character. In many countries where there exist high levels of public support for renewable energy (e.g., Denmark, Germany, Austria, etc.), the question of their possible negative influence on tourism is practically not dealt with; on the contrary they are often effectively used in marketing support for “green tourism” (British Wind Energy Association, 2006). Objective reasons relate to the difficulties of research validity—in other words, to the difficulty (or even impossibility) of measuring the direct effects of the construction of WT on tourism, a complex sector where a great number of partial factors (e.g., the social situation within the country, the value of the local currency, extended options of traveling abroad, the changing prices of fuels, seasonal variations of weather, fashion trends, etc.) act upon one another and develop relatively independently of the construction of WT in a given location.

One possible research method is an indirect measurement of the effects of WT via questionnaires or interviews with tourists or the general public and via inquiries with business subjects in the sphere of tourism and affiliated services, as well as with representatives of local government, and so on, to assess preferences and tendencies toward changing current behavior. Such kinds of polls were executed for the British Wind Energy Association in Scotland (MORI Scotland, 2002) and for the Wales Tourist Board (NFO World Group, 2003). The general results can be summarized as follows: most tourists perceive WT neutrally or even positively, and the presence of WT has no effect on their

decision about visiting a given location. WT and tourism are also partially dealt with by Hauer (2003), who examines the effects of wind energy development on the economic position of disadvantaged peripheral regions through the case of the Waldviertel region in Austria. The most recent study of Dalton, Lockington, and Baldock (2008) surveys tourist attitudes to use of the photovoltaic and wind facilities in Australian hotels; proving a prevailing positive support for renewable energy and a willingness of tourists to pay some extra money for “environmentally friendly accommodation”. Still, there is a lack of deeper social-geographical analyses of the issue in the context of different national, regional, and cultural landscapes.

There can never be 100% support from local communities for wind energy projects; on the other hand, they do represent a possible financial benefit for municipalities, which can then be used for the development of the location’s infrastructure and its promotion (including the tourism development). Real cases from different countries show that WT can attract a large number of tourists and together with suitable marketing promotion can contribute to better place brand and development of new forms of tourism (“green tourism” or so-called “turbine bagging”) in peripheral rural localities (BWEA, 2006). Many WT projects include *ab initio* plans for their use as ecological educational centers (e.g., Lamma Islands, Honk Kong), as observation towers (e.g., Lichtenegg, Austria; Swaffham, Great Britain; Zoetermeer, Netherlands) or as nature trails (e.g., Kotka, Finland), with the aim of fully utilizing their tourist potential. For some municipalities, WT have become icons which go toward creating their place brand. This kind of projects may be the first step in the process of embracing wind energy visibility not as a problem but as an asset in contemporary place competition.

Study Areas

Two comparative rural areas were chosen for the purpose of this study, similar as far as their natural conditions and the landscape character are concerned (Figure 1). These areas can be regarded as typical (not only in the CR) representatives of areas suitable for WT construction: they are located in less populated, upland, or piedmont areas with proper wind potential and without any special nature or landscape protection status. At the same time, they are the areas with significant tourism potential and recreational function. The first study area (hereafter SA1) is the surroundings of the Slezska Harta dam and reservoir in the Moravian-Silesian region (as a location where the construction of WT has been considered). The second one (SA2) is the vicinity of the Křstofovy Hamry municipality in Krusne Hory Mountains, located on the Czech-German borderland (as a locality where a large wind farm has been in operation for a few years).

The Slezska Harta dam and lake is not only a fresh water reservoir but also a popular recreational area with significant natural potential (typical for summer activities as camping, cycling, hiking, bathing and fishing). The whole area is located in the natural area of the Nizky



Figure 1. Map of the Czech Republic with Two Study Areas

Jesenik Mountains, which is not particularly protected on a large scale: there are no legal restrictions resulting from status as a protected landscape area. The related area is composed of five small municipalities; the cadastre of one of the municipalities was identified by developers as a suitable candidate for the construction of five WT. The plan for the construction of a wind farm was received with enthusiasm both by local authorities (for potential economical benefits) and was accepted by residents (with more than two thirds of the inhabitants expressing support in the public inquiry; the overall return was 80%). However, the project has been perceived negatively by some representatives at the regional level (in the Moravian-Silesian regional authority). For them the project is in conflict with plans for tourism development, owing to a suggested loss in the attractiveness of the landscape, and so the regional authority blocked the project.

The comparative area of the Krusne Hory Mountains represents on the one hand a tourist district with super-regional significance for both summer and winter recreation, and on the other a location with the highest installed capacity of wind energy in the CR (thanks to its outstanding wind potential and the absence of limiting factors from natural protection). The wind farm of Krystofovy Hamry is located in the central part of the mountain area (installation altitude is over 800 a.s.l.) near the Prisecnice reservoir. At the present it is the largest wind farm in a country, consisting of 21 turbines with the output of 2 MW each. The whole region is characterized by the legacy of coal-mining industry in the foothills, by relatively more positive attitudes of local and regional political authorities towards the wind energy (probably for the reasons of seeing the “good practices” of wind energy exploitation on the German part of border), and by dynamically improving the environment quality and tourism development during last twenty years.

Research Methods and Hypotheses

In the course of July and August 2008, field research was carried out. This research consisted firstly of a standardized questionnaire survey of tourists in the study areas completed via on-site interviewing by trained interviewers and secondly of focused, semi-structured interviews made by the authors themselves with representatives of local business subjects from the sphere of tourism (specifically accommodation and catering establishments). The sample comprised together 229 respondents: 156 tourists and 73 entrepreneurs, with approximately half coming from each area.

The tourists were selected for questionnaire interviewing by semi-quota sampling in proportion to their basic demographic characteristics (gender, age, place of residence). The aim was to include approximately equally gender representation, a complete age spectrum, and respondents from a variety of regions. The aspect of respondents' education was not a priori controlled since the previous studies (e.g., Frantál & Kučera, 2009) proved the education does not have a significant effect on opinion differences. The strongest age demographic in the sample was the category of 30–39 year olds (25%) and the weakest was the category of 19 and younger (5%); the other age categories (20–29, 40–49, 50–59, and 60 and older) comprised approximately 17% each. The youngest (up to 19 years) and oldest (older than 60) age categories were underrepresented in the sample as against the basic population. In practice, representatives of all thirteen Czech regions were involved in the survey, even if not proportionally according to total population of regions. The quantitative data were analyzed using the SPSS statistical program, including descriptive statistics and correlation analysis.

The sample of business subjects (running accommodation and catering establishments) comprised representatives of all existing establishments in the municipalities located within the study areas; in the course of the research undertaking, these subjects had to be actually engaged in business. Practically the sample consisted generally of males; only two female subjects were interviewed. On one hand, we regard the entrepreneurs as local experts on the tourism issue and as local residents with a potential NIMBY attitude towards WT in the area of their residence on the other hand. The aim of the interviews, which lasted 20 minutes on average, was to investigate via qualitative methods the flip side of the tourist perspective upon WT, which is the entrepreneurs' point of view, including the economic and social-cultural contexts that influence the local business environment, and also the actual residents' point of view.

The hypotheses that drive this study were defined as follows:

H1. WT are perceived more positively in contrast to other industrial and infrastructural constructions and facilities;

H2. most tourists do not regard the presence of WT in recreational landscapes as negative for their experience;

H3. tourists' perception of landscape image and the sense of attractiveness differ that of local residents;

H4. socio-demographic characteristics, psychographic (travel behavior and preferences) and geographical (place of residence) variables have an influence on perceptions of the phenomenon.

Survey of Tourists

Travel behavior. Survey respondents in the sample can be divided into five groups: the first group (almost 15%) of tourists were traveling on their own, almost 15% as a pair or couple, a smaller third as families with children, and another third in groups of friends/fellows, while one in ten respondents came in a package tour. In both study areas, a majority of the people (more than two thirds) questioned was not visiting the location for the first time. Actually every fifth person visited the area regularly and considered the location a "familiar place". Almost half of those questioned were tourists who had gone out on a one-day trip to the locations (i.e., they did not stay overnight); the second group (approximately 10%) stayed in the area between one and three nights; and the third group (40%) spent more than four nights in the area. As concerns the one-day trippers (regarded as excursionists in established terminology), only 40% of them were regional residents, and the rest were from other regions. Just 10% of one-day trippers were in the area for the first time and other 10% for the second time; 80% of them visited the area already several times; hence they know the area very well. Both the study areas are typical for frequent one-day trips (actually as most of the localities in the CR because of its small-area and good traffic accessibility), so it was natural to include the excursionists into the sample. It was also purposeful to include the segment of regional residents touring in order to analyze the influence of spatial variables on perceptions. In practice, only respondents who have had personal experience with WT in the area were included in the sample in SA2.

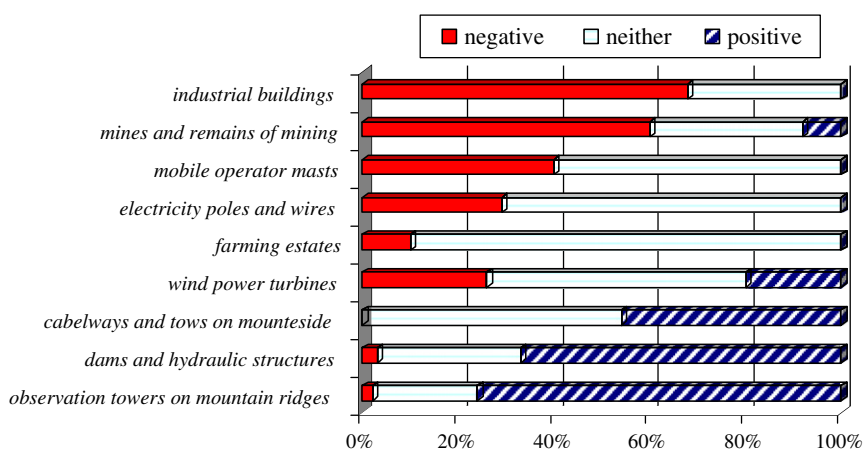
Destination choice. In both researched areas the respondents selected, out of fifteen given options, attractive landscape and scenery as the most important factor of their destination choice. This preference implies that these subjects should be sensitive towards objectionable interferences of WT on the landscape character. Among other aspects which were emphasized as considerably important were interesting history and sights, the number of tourist (nature) trails and cycling routes, a wide selection of activities, hospitable people, and facilities for sport. Aspects which proved the least important were good traffic accessibility, need for cultural events and festivities, and the availability of virgin (meaning untouched by human activity) nature. Minimal differences in these preferences between the respondents in both study areas can be regarded as statistically insignificant; therefore the results were merged into one table (see Table 1).

Perception of industrial objects: One question asked concerned to what degree different objects of human activity dissuade tourists from

Table 1. Importance of Destination Attributes

| Attribute | Rank | Relative importance [%] |
|---|-------|-------------------------|
| Attractive landscape and surrounding scenery | 1 | 85 |
| Interesting history and sights | 2 | 55 |
| The choice of tourist trails and cycling routes | 3 | 35 |
| Hospitable people | 4 | 29 |
| Wide spectrum of options of what to do and to see | 5 | 28 |
| Options of sport self-realization | 6 | 25 |
| (...) | (...) | – |
| Good traffic accessibility | 13 | 11 |
| The offer of cultural events and festivities | 14 | 11 |
| Virgin (wild) nature without traces of human activity | 15 | 8 |

visiting a certain location. As the most disturbing elements in both areas were voted industrial buildings, mines and the remains of mining operations, mobile phone masts, and electrical poles and wires (Figure 2). Again there minor differences of perceptions appeared respecting the area sub-samples (except the perception of mining activities); therefore the results were merged for both areas. It is interesting to clarify that mines and relicts of mining were also experienced positively by one in ten respondents. This tenth was represented mainly by tourists in the SA2, wide areas of whose foothills have been afflicted by long-term opencast coal-mining. This result demonstrates how a phenomenon which the residents find extremely irritating can exercise a certain attraction on a specific sort of tourist (mainly middle-aged males coming from non-industrial regions). Generally, on a fifth of the respondents, the WT also did not make a good impression; on

**Figure 2. Relative Impacts of Anthropogenic Objects in Landscape on Tourist Experience**

the other hand a fifth of the respondents also expressed the opinion that WT acted positively in the landscape (in contrast to other forms of industrial facilities, mining activities, or coal-fired power plants) and represented a symbol of “clean energy”. However, there significant differences were evident in attitudes according to geographical variables (place of residence), which will be analyzed below.

Future visits: According to most respondents (90%) the prospective construction of WT in the SA1 would have no impact on their future visits to the area (i.e., they would return irrespective of WT), and in their view the presence of WT in the location would have no significant effect on tourism and recreation development. Similarly in the SA2, the majority (95%) stated that the presence of WT in the locality had no impact on their present and future visits. In other words, we can say that the presence of WT was shown to have only a minor effect on the attractiveness of the location and on the tourist destination-choice. A minority even expressed their belief that the presence of WT could have a positive impact, meaning an increase in the number of tourists. Only 6% of the respondents in the SA1 and 4% in the SA2 saw the construction of WT as having a real negative effect. According to these the main reason would be damage to the landscape character, the WT being perceived as disturbing features. This group of people stands opposed to wind energy development in the CR in general.

WT versus tourism: Table 2 presents the assessment of answers to more specific questions related to the problem. The data were again merged for both study areas because the differences between them were statistically insignificant (varying between 3% and 5%). We can sum up that although a quarter of people view the WT as affecting the landscape character and a third are skeptical of their use in promoting tourism, in spite of this a clear majority (84%) confirm that these objects would not influence their potential visits to the concerned areas. Only 6% of the respondents stated clearly that they would rather not visit locations where WT were installed; on the other hand, two thirds welcomed the

Table 2. Relative Frequencies of Responses to the WT Dilemma Statements

| Statement/response [%] | Agreed | Hesitant | Disagreed |
|--|--------|----------|-----------|
| WT as a renewable energy source contribute positively to the protection of the environment | 69 | 13 | 18 |
| WT significantly affect the landscape character | 27 | 5 | 68 |
| If I knew that there are WT in a location, I would rather not visit the location | 6 | 10 | 84 |
| I would be interested in visiting the WT as long as there would be an information (excursion) centre | 65 | 8 | 27 |
| WT can be effectively used to support the tourism development | 35 | 30 | 35 |

(N = 156)

presence of WT as they would become places of interest for them. Generally, more than two thirds of respondents believed that the use of WT as a “clean” renewable source contributes positively to the protection of the environment.

Positioning wind turbines: The question of what kind of landscape is suitable for prospective WT construction is perhaps the most controversial aspect of the ongoing debate. A majority (60%) prefer a larger number of smaller wind farms (consisting of 3–5 turbines) located in a number of different places to one large wind park with 80–100 turbines in one “sacrificed” area (an option preferred by only 10%). As expected, already used agricultural areas are preferred (70%) to untouched virgin nature areas (5%). And (surprisingly) highland areas are preferred (58%) to lowlands and plain fields (12%). This preference for construction in highland areas seems to be opposed to the preference for development in agricultural landscapes mentioned hereinbefore as well as to the assertions of some expert landscape character assessment studies, which presuppose a restriction on the WT construction precisely on knolls and ridges due to their contamination of the “visual horizon” and visibility from great distances (Cetkovský & Nováková, 2009).

Perception divergences: Via the correlation analysis method, it was tested whether there a relation exists between the perception and attitudes and selected socio-demographic characteristics of the respondents, their travel behavior and preferences. It was proved that there are no statistically significant differences in perception and attitudes as far as the gender (apart from a slightly larger percentage of females with neutral or indecisive attitudes) and even the education level of respondents were concerned. The younger age groups (18–29 and 30–39 years old) tended to support WT more often than did the older ones (but only up to 60 years; the oldest group was again more tolerant or simply indolent). More critical were those visiting on their own or with coeval friends (most commonly groups of middle-aged or older males). The pairs and families with children were more tolerant or they focused their attention on destination attributes other than WT. Whereas the first-time visitors were more likely (by two thirds) to be neutral in their perception of WT presence in the SA1, the repeat or periodical visitors had a more pronounced attitude (approximately a third were positive, another third were negative, and only one third remained neutral). Thus it is hypothesized to clarify own opinion takes some time over one visit. Thus a typical opponent would appear to be an individual aged 40–59 years, most commonly a male, traveling alone or with fellows, just for a one- or two-day trip, visiting regularly the same “familiar” places. The local or regional residents as tourists were also more likely to oppose WT in the areas where spending a holiday.

Geographical variables: A spatial factor plays a significant role in the process of attitude formation in two different ways. Figure 3 illustrates how the rate of acceptance of WT declines according to the rate of interference into the personal space of respondents. The first spatial aspect represents the acceptance of wind energy development as a

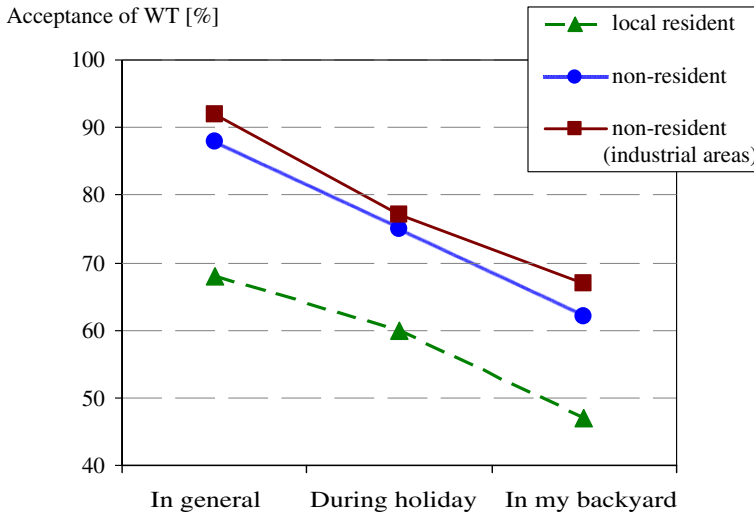


Figure 3. Relationship Between Acceptance of WT and Respondents Domicile

general idea; the second one stands for the acceptance of WT sited in tourist or recreational landscapes (i.e., potential holiday spots); and the third aspect is the acceptance of WT being potentially constructed right in the vicinity of respondents' residence. Analyzed thusly, the factor of respondents' residence (or one can say "regionality") proves to be of a doubly considerable importance. Respondents from the sample were *post factum* sorted into three categories: (a) local or regional residents, living permanently in the contiguous localities but not directly in the immediate vicinity/visibility of WT; (b) non-residents with a permanent abode outside of the region, coming mostly from large cities such as Prague, Plzeň, Pardubice, Kroměříž, Karlovy Vary, etc. from various regions; and (c) non-residents living in environmentally affected localities (here represented by the (ex-)mining, heavy, and/or chemical industry areas in the Ostrava region, Mostecko region, the cities of Chomutov, Litvinov, etc.).

The local/regional residents were more likely to oppose WT than the ones living outside the region. Wolsink (2000, p. 57) identified in his study four different forms of resistance towards the wind energy contexts that could explain the divergence between the support of wind energy as a general idea and local opposition, from which the "classical NIMBY", "anti-process" and "anti-project" attitude seem to act here as well. Moreover, we found the people from environmentally affected areas showed a higher rate of acceptance with respect to all three spatial aspects mentioned above. The *Pearson's* correlation coefficient (R) equals 0,64 (general aspect); 0,43 (holiday aspect); 0,79 (backyard aspect); the correlation is significant at the 0,01 level. In additional, open-ended questions concerning the factors motivating support for wind energy, the respondents from environmentally affected regions mostly mentioned the environmental argument—the

preference of WT as a clean source over coal-fired power plants. In this connection, there was many times mentioned as an outstanding example, the visual or symbolical contrast in real constructions in the landscape, between “clean” wind turbines and “polluting” coal-fired power plants. These findings agree with the results from similar studies from the UK cited by Van der Horst (2007, p. 2709) which show a relationship between the industrial character of a location and the local people’s perception of environmental risk as well as their positive attitude towards alternative technologies.

Local Entrepreneurs Interviewed

In every area where tourism is to some extent developed, accommodation facilities make up the most important segment of infrastructure; they are often referred to as the basic infrastructure of tourism. This is also why we consider information from the owners of accommodation and catering facilities to be of great significance. They can be regarded at once as local experts on the tourism issue and local residents with potential NIMBY attitude towards WT in their residence. In interviews we tried to identify and pick out both these points of view. The main findings from our interviews can be summed up (see Table 3) and interpret as follows: First, potential construction of WT can have a certain (may be perceived negative as well as positive) impact on the landscape character as reported by the respondents. Second, approximately a quarter of entrepreneurs (as an average for both study areas) oppose WT presence in their residence’s vicinity. In this respect they assessed WT from the perspective of local residents who currently live in the location with WT and view them permanently (in case of the SA2) or who are proposed to live with them in near future (in case of the SA1). Third, regardless of their personal attitude as local residents, they suppose the presence of WT should have no significant impact on further development nor lead the decline of tourism in the areas concerned. Generally, only one in ten suspected the construction of WT would have a negative impact on future tourism expansion in the area, while on the contrary another one in ten assumed the presence of WT in the locality could have a positive influence on tourism development. Comparing the study areas, the entrepreneurs in the SA2 had more pronounced personal attitudes, while there the neutral or I-do-not-care attitudes were more frequent in the SA1. At the same

Table 3. Attitudes of Local Entrepreneurs to WT

| Study area | Aspect/attitude [%] | Positive | Neither | Negative |
|---------------------|--|----------|---------|----------|
| Slezská Harta (SA1) | Personal attitude to WT | 17 | 71 | 12 |
| | Supposed impact of WT on local tourism | 8 | 87 | 5 |
| Krušné Hory (SA2) | Personal attitude to WT | 11 | 59 | 30 |
| | Supposed impact of WT on local tourism | 4 | 84 | 12 |

(N = 73)

time the respondents in the SA1 were more likely to support the proposed wind energy development in their area.

According to the entrepreneurs' estimation most of the current clientele in the study areas consists of Czechs; however, in the case of SA2 tourists from Germany and the Netherlands also represent a very important source of income for the local economy (being a richer buying power than Czechs). Further, half of all customers who were spending a longer time (around week or more) in the locality were the "current buyers" returning regularly every year in the same season. The entrepreneurs supposed that an absolute majority of tourists do not mind the presence of WT in the localities and there are different decisive factors of local destination choice. The most frequent foreigners (i.e., Germans and Dutchmen) are even more familiar with WT constructions than Czechs as experienced by respondents. In their opinion, the factors which actually affect local tourism development are the quality of services, hospitality, and (for foreign tourists) the currency exchange rate between the Euro and the Czech crown, rather than the WT presence in landscape. As the most serious handicaps on prospective development they see in both areas the insufficient infrastructure network and accompanying services (i.e., a lack of multifunctional facilities for tourists' enjoyment), as well as weak cooperation and partnership among the state administration, regional and local government, business subjects, and commercial agencies that is fundamental for realizing the promotion of rural regions. In this respect, the entrepreneurs as well as the local political authorities expected wind energy development in the SA1 as a possible way how to gain economical profit and to invest in infrastructural development and marketing promotion. Other specific information concerning the local business environment were identified during the interviews, however they are not significant for this study.

DISCUSSION AND CONCLUSION

The principal aim of this study was to empirically assess the relative impact of WT on the landscape image and tourism potential of affected areas, as perceived by tourists and local entrepreneurs. The survey findings indicate that construction of WT in suitably selected locations may have only a minor or negligible negative impact on tourists' perception and experience of landscape, and their destination choice. To the contrary, WT could be used to support development of new forms of tourism with the support of proper marketing promotion. Generally, WT are not perceived to be as disturbing as such other industrial or infrastructural constructions as factories, mines, or telecommunications (*cf.* Park et al., 2008) and electrical pylons—the first hypothesis (H1) was verified. Although for an absolute majority of tourists, the attractiveness of local nature and scenery is the most important aspect in their choice of destination, and accordingly they are sensitive of unfavorable interferences into the landscape, only a minimum number (6%) of tourists offered a strict

opinion against visiting locations with WT. The hypothesis (H2) that most tourists (i.e., more than three quarters) do not regard the presence of WT in landscapes as negative for their experience was also confirmed. According to a majority of tourists (over 90%) the presence of WT in an area does not influence their destination choice. On the contrary, it seems that in many regions, particularly in East-Central Europe, WT are still a relatively new phenomenon which tourists may be quite interested in; almost two thirds of respondents expressed an interest in visiting WT as long as there would be an information centre.

The above mentioned findings are in contrast to statements of political authorities in many regions, arguing about definite impacts of wind energy development on local tourism. It would be interesting to confront these arguments and our survey findings with some objective evidence. A recent study of Frantál and Kunc (2010) analyzed a correlation between the spatial distribution of implemented and rejected WT projects and selected locality variables (these included e.g., the affiliation of project location to district/region, proximity to the nearest protected landscape area or national park, natural attractiveness of the area, and district's tourist function). It was revealed that the administrative affiliation have the strongest influence on the fact whether WT will or will not be built. There is no statistically significant relationship between the implementation of projects and the proximity of a location to national park or protected landscape area. And paradoxically WT were more often constructed in districts of more attractive nature and with higher tourism potential. These findings demonstrate how the decision-making process is rather than being an issue of objective assessment an object of subjective attitudes and political decrees of local/regional authorities. It seems the negative WT impacts on landscape are often used just expediently because the "environmental arguments" are more persuasive in battles with opponents (*cf.* Bosley & Bosley, 1988).

Anyway, WT stand to be the most ambivalent modern industrial objects, they are perceived both negatively and positively by certain population segments. The survey confirmed the hypothesis (H4) that some socio-demographic characteristics, travel behavior and personal preferences of tourists, and the geographical variables (i.e., their place of residence) have an influence on the divergences of perceptions of the phenomenon. This study proved a prevailing trend in the divergence between a broadly high rate of support for a larger-scale utilization of renewable sources (including the expansion of wind energy) as a general idea, and the rate of acceptance of WT as real constructions affecting a specific landscape (be it a "holiday place" or a "homeplace"). Our findings contribute to the NIMBY-theory polemics (Hubbard, 2006; Wolsink, 2006) by adding the significant information that there exists a middle spatial dimension between the global acceptance of WT (as a general idea) and the local acceptance of WT (in the backyard); it is the "tourist acceptance" of WT (in tourist areas). This finding is a verification of our hypothesis (H3) that tourists' perception of landscape image and the sense of attractiveness differ that of local

residents. In addition to quantitative surveys, there is a need for more in-depth qualitative research to better understand the process of the construction of individual attitudes and to explain the divergence between positive general attitudes and actual oppositional behavior.

The study definitely contains certain methodological limitations. As concerns the selection of our sample of tourists, this survey cannot be regarded as representing the general public opinion but as a case-study dealing specifically with the segment of tourists, who (i) prefer the nature-related tourism and active recreation, (ii) visit the rural recreational areas that are typical for the current wind energy development. Nevertheless, the survey findings have a predicative value and we can deduce certain generally true verdicts from them—even in respect to almost unambiguous results that were validated by the information gained from in-depth interviews with local entrepreneurs. They reported two different points of view upon the wind energy development: (i) as local residents they oppose the construction of WT in their vicinity to a certain degree; (ii) as local experts on the tourism issue they confirm that different factors (not WT) actually affect local tourism development.

The wind energy development, no more than other energy sectors, has brought about some negatively perceived impacts on the landscape and the familiar life of local residents (Frantál & Kučera, 2009). The high visibility of WT itself is generally regarded as its most serious misconduct; consequently, an ideal area does not exist, only more or less acceptable areas do. On the other hand, unlike traditional energetic industry, WT do not produce any waste, and are temporary constructions, being relatively easy to remove from the sites and recycle after their operating time has passed. They have pros and cons, and it is difficult, perhaps impossible, for people not to project their own subjective preferences into assessing a balance between the local impacts on the landscape and environment and the profits for local community, and the supply for global climate changes. For developers and planners a relevant consideration should be that people living in areas that are in some way environmentally stricken (e.g., by mining activities, smokestacks, or the chemical industry) are those more likely to support the building up of new and alternative energy facilities such as WT. Generally, WT can be perceived and presented both negatively—which is still often the case in political dictums and in the media, not only in the CR—as constructions which could frighten away all prospective tourists from the given area and positively as (a) a complement to the surrounding landscape, a new architectural element creating new dimension and value; (b) objects extending the selection of activities for tourists who are interested in modern technologies, with WT as technical monuments becoming destinations for educational excursions; (c) constructions bringing to municipalities direct financial profits which can then be used either in the form of investments in infrastructure or to promote tourism in the location (information boards, nature trails, cycling routes, support of cultural or sport activities, media promotion). **A**

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