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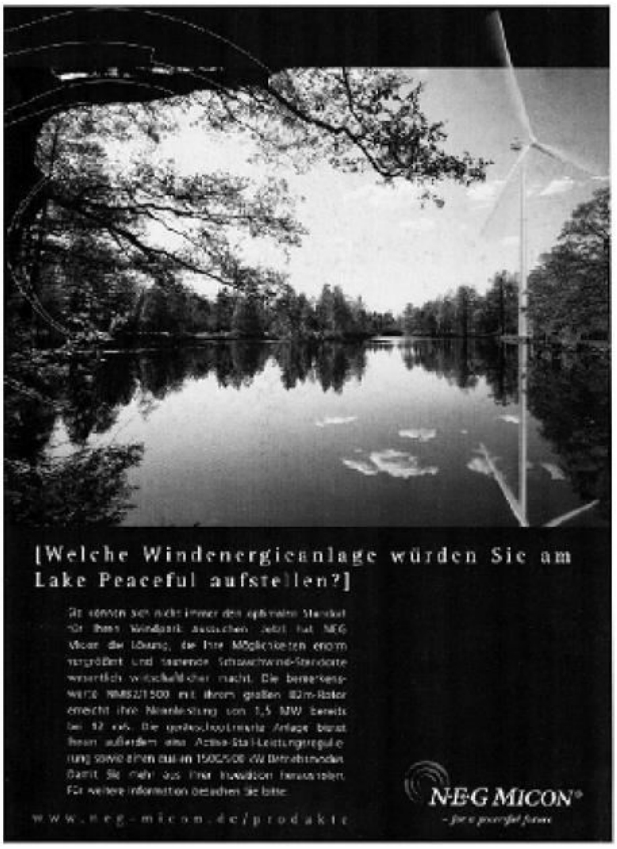
CONFLICTS BETWEEN SPECIFIC "LOW WIND SITE RUNNERS" AND THE INVESTMENT OF LANDSCAPE

Summary

One essential criteria to be weighed up for planning wind energy plants is, that wind energy yield is maximized by keeping the input of the public property "landscape" at a minimum level. The market offers wind energy plants to be built particularly at low wind sites. Their specific relatively striking size leads to a serious deviation from the "high yield by low landscape input" premise. The consequence are partly unmastered political and legal conflicts. A limit between burdening and over-burdening of landscape is missing. The result is a loss of ecological and recreation effecting landscape value and political credibility. The problem and the - particularly legal - dubiousness of Low Wind Site Runners is discussed by mathematical and legal analysis as well as by practical examples.

THE EXAMPLE

An advertisment from MICON includes the text „Welche Windenergieanlage wuerden Sie am Lake Peaceful aufstellen? Sie können sich nicht immer den optimalen Standort für Ihren Windpark aussuchen. Jetzt hat NEG Micon die Loesung, die Ihre Moeglichkeiten enorm vergrössert und tausende Schwachwind-Standorte wesentlich wirtschaftlicher macht. (. . . .) Damit Sie mehr aus Ihrer Innovation herausholen (. . . .)." (Which wind turbine would you install at Lake Peacaful? You will not be in a situation, that you can select an optimum location for your wind energy plant. Now NEG Micon offers a solution, which will expand your chances by increasing the economic value of thousands of low wind sites (. . . .) So your investment will become more profitable (. . ..).



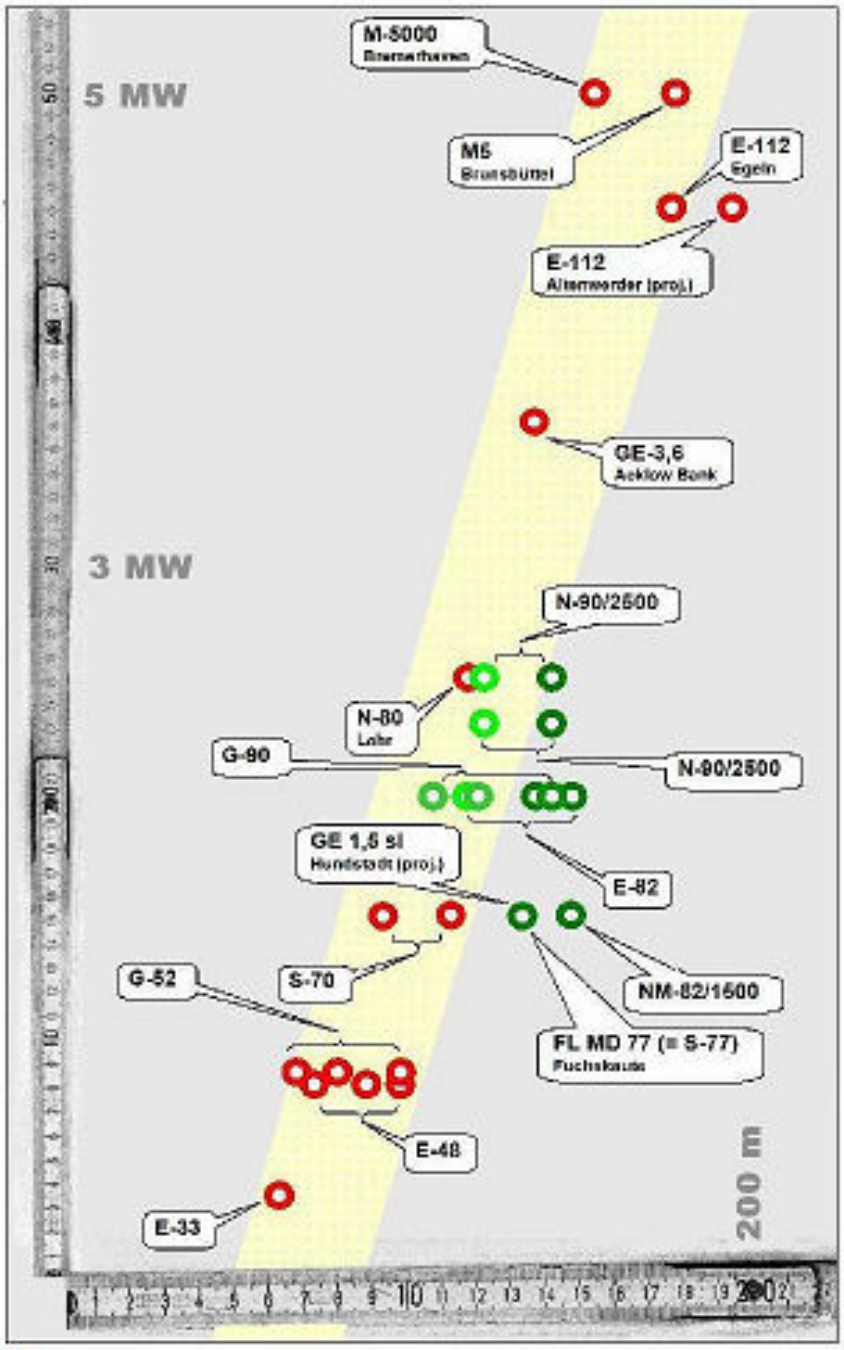
Read this pr-attack on nature as a completely dubious but really published attempt of the manufacturer! There is no

doubt about the fact, that the borders of “peaceful lakes“ are most sensible areas used by breeding animals [10]

A GOAL, A QUESTION

Over the past decade, researchers (e.g. Department of Energy´s National Renewable Energy Laboratory, Sandia National Laboratories) have helped the industry, to develop low wind runners (Low Wind Speed Turbines - LWST) as the Enron Wind (now GE Wind) 750 kW and 1.5 MW machines.

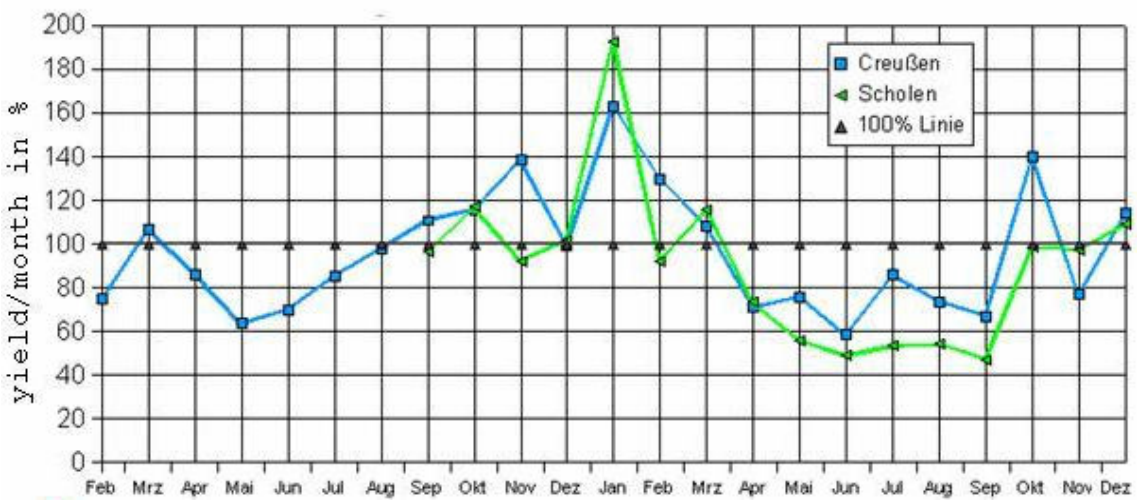
The goal of LWST projects is to reduce cost of energy from large wind use systems particularly in class 6 wind resources and in class 4 wind resources. This may cause more larger machines to be used at low wind sites.



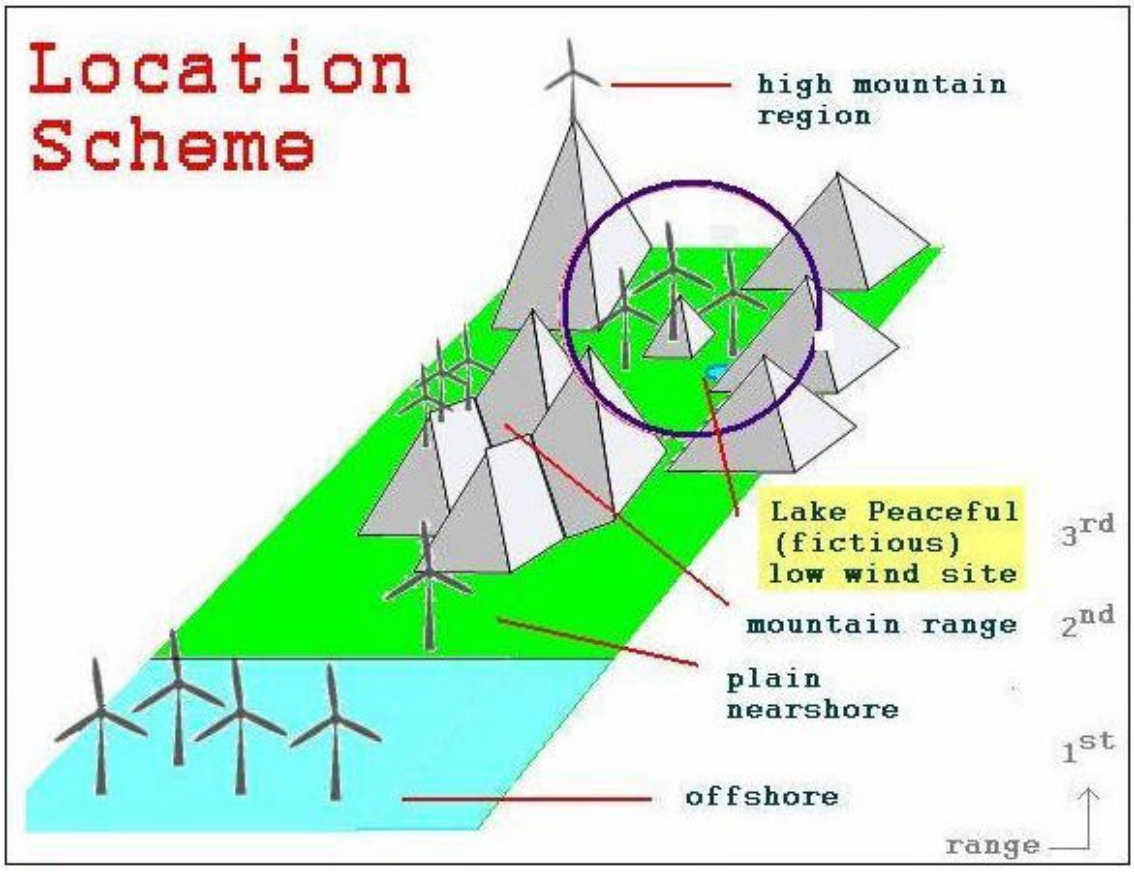
LWST = green, HWST = red

Undoubtedly LWST are able, to earn good energy yields at low wind sites. MELCHNER made a comparison between 2 places in Germany, Creussen (NEG NM 82) in Northern Bayaria and Scholen (E66 18.70-3) in Northern

Germany. In average the turbines in Bavaria could reach the results of the turbines in Northeim Germany. In average the turbines in Bavaria could reach the results of the turbines in Northern Germany without any problem. Only top wind forces in Jan 2005 could not be converted sufficiently in Creussen. But they cut straight off in wind-weak months even clearly better



Comparison of the monthly percentual yields in 2004/2005 with the average targets (100%-line) of two wind power plants, MELCHNER 2005 [11]



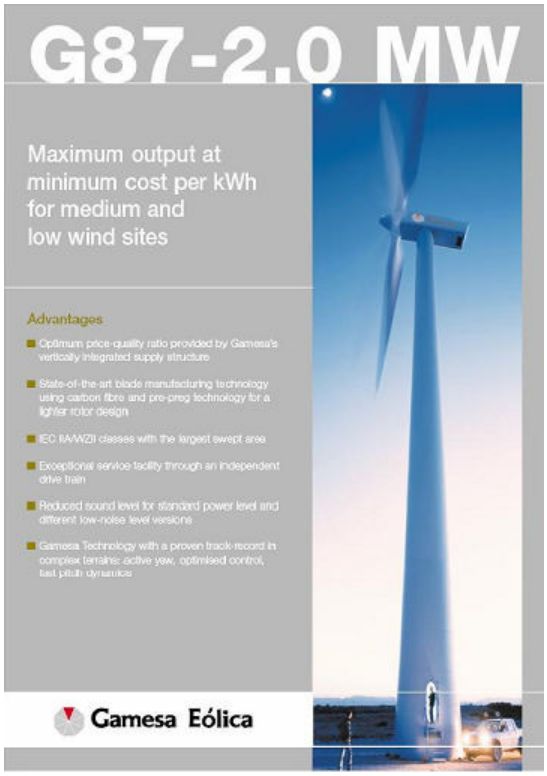
Site map

The human eye might not be able to estimiate heights exactly. The consequence is, that high wind turbines could be estimated hardly more high than small without direct possibilities to compare one height with the other. Also it will mostly be like that, there will be a wind turbine‘s ideal size between “too small“ and “too enormous“ for a location

depending on technical development. Thus a potential investor admitted, that a E-ll2 in the region of Colone never would reach the economic value of several “normal“ turbines at the same location [12] . The same will apply for arrangements of a number of smaller plants to those comparatively. But also in case of repowering an increasing height could exceed the visual limits set by surrounding hills (or similar), which may before have the function as damming background or as optical obstacle.

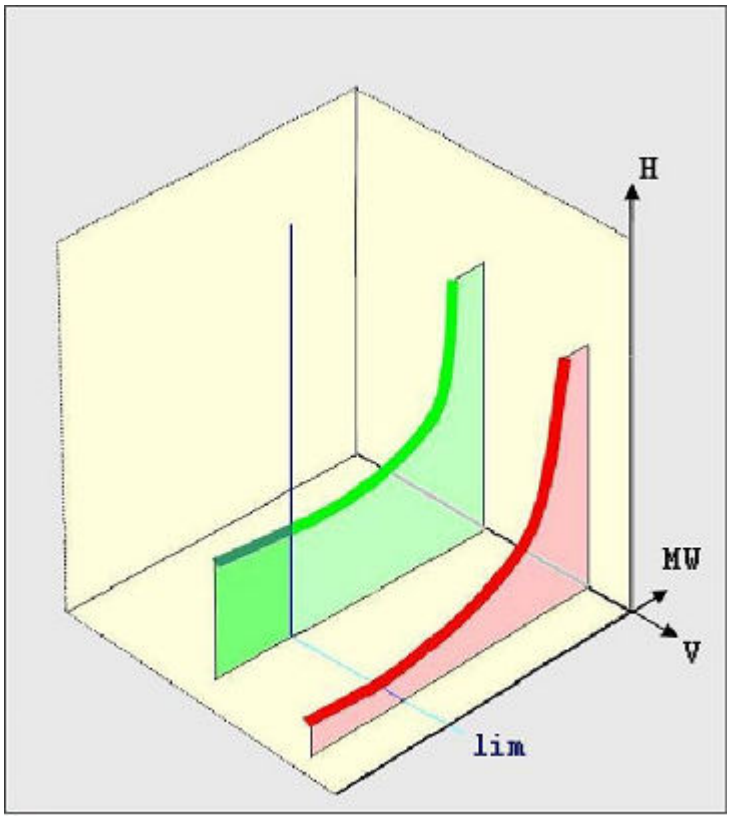
No abuse of the E-112 as a LNST, better use at a nearshore site in Cuxhaven (GER) for offshore tests

The last point of view describes a non linear function. The point, where repowering reaches a “visual break“ (because then the turbines will be seen from new and large areas) often is neglected while the argument is in use, that repowering means less turbines and less influence on landscape.



LWST
Flyers by GAMESA 2005

less landcape-input / kW



Relationship between height development and wind peed for LWST (green) and HWST (red)


2 NORDEX 80 near Lahr (GER), height 120m, 2,5 MW

WEIGHTS

Weight 1

No form of energy is without environmental implications and every effort should be made to ameliorate adverse effects [8]. Harnessing wind energy by windmills is well established but modern wind turbines have some distinctive features which must be taken into account in planning and development control. These are also the need to site the machines in open exposed locations often in rural areas which may also be in attractive landscapes [1].

Weight II

Beauty is bought by judgement of the eye. not utter‘d by base sale of chapmen‘s tongues [7]. The conservation of landscape must be set in a fair balance with an optimum use of wind energy[9].

Weight III

Turbine siting will always be a compromise between maximizing energy capture and minimizing visual impact [2]. That means, that impacts [3] shall be permitted, if an impact [3] can not be carried out with less damages [of nature and landscape] at an other location and if this alternative does not require an expenditure, which does not stand in a reasonable relationship to the intended success [4, 8a]

FINAL CONCLUSIONS

Planning aspect

Impacts on nature and landscape by wind energy use

- shall be planned at locations, where the impact is mmimized in relation ship to a maximized energy capture.
- should not be permitted if they could be carried outwith less damages at an other location. “Low Wind Site Runners“ are not compatible with this requirement

Political view

A constantly increasing size of wind turbines at bad sites would jeopardize the people‘ s acceptance of wind enery use. This would at last do the whole branch of wind industry a bad turn [5]

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References

[1] Planning Policy Guidance 22 - PPG22, Annex on wind energy §3, Dept. of Environment, London 1993
[2] PPG22 §10
[3] legal term §5 (1) Natura Conservation Act Hassia — HENatG - (GER) “• Impacts on nature and landacape in sense of the rule are causing changes o of the use or character of areas or o the level of groundwater connected with the biological interpersed stratum of soil, • which may damage seriously the competitiveness of the nature´s activity or the appearance of landscape.“, Wiesbaden 2002
[4] §6a (l) No l HENatG, Permission Key Principles
[5] Trittin, J. , Federal Minister for Environment (1998—2005) opening the HUSUM WIND Fair 2003, “Immer groessere Anlagen an schlechten Standorten wuerden die Akzeptanz der Windenergie in der Bevoelkerung gefaehrden und der Branche insgesamt am Ende einen Baerendienst leisten“, Husum 2002
[6] NEG MICON, UMWELTKONTORmagazin spezial 2/2002:15, Erkelenz 2002
[7] Shakesperare, W. , Love´s Labours Lost, Act II Scene 1
[8] PPG22 §34
[8a[§35 (5) Building Code Germany - BauGB
[9] Kluge, T, Windkraftanlagen in einer Naturpark-Landschaft?, *Jahrbuch Hochtaunuskreis* 14:142-144, Bad Homburg 2005
[15) Wilkenung, B., Windenergieplanung aus “Vogelperspektive“ — Zur Koexistenz von Windraedern und Voegeln, 14. Windenergietage BWE Brandenburg, Magdeburg 2005
[11) Melchner, R., Der Windpark Creussen im Vergleich mit sechs anderen, Parkstein 2005
[12] Schmidt, J., Einzel-Windenergieanlage E-ll2 in Köln — Chancen und Hintergruende, Köln 2004