



Availability of potential Repowering sites
in Germany – selection criteria and
current situation

Peter Spengemann,
wpc windmanager GmbH & Co. KG
(Bremen, Germany)

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Repowering – some definitions

Political framework – Germany:

Repowering is part of the wind energy development forecast and therefore foreseen as instrument in the German policy

Limited space:

There is not enough space for new wind farm projects. Under consideration of new distance criteria many old projects could not be repowered.



Dismantling of old WTG, erection of new WTG at the same or a neighbouring site. Different scenarios possible



New permission, complete new planning procedure even for repowering projects (new EIA, consideration of larger distance criteria, new area development, new land lease contracts etc.)



Consideration of wind farm ownership (private owners, public fund structures etc.)



Hard requirements for the new WTG, according to the EEG 2017/21 (large hub heights, new WTG types)



WTG Technology

500 kW – 1.5 MW, hub height between 60-74 m, WF size between 3 – 15 WTG



Start of operation

Between 1996-2001, end of numeration acc. German EEG end of 2020



Ownership

Private investment funds (until 2004), private ownership, some local utilities
Since 2004/05 institutional investors



Service and technical status

Most WF until 1.5 MW class are in basic service contracts
Most WTG types fulfil the technical requirements for longer operation



Current operational scenario

EEG until 2020
Market conditions for 2021 are limited for older WF in operation.



WEA Technologie

Aktuell: 500 kW – 1.5 MW, Nabenhöhe ca. 60-85 m, WP Größe: 3 -15 WEA
Planung: 1-5 – 2MW, Nabenhöhe bis ca. 108 m, WP Größe 3- 15 WEA



Inbetriebnahme

Zwischen 1996-2001, Weiterbetrieb / Repowering, aktuelle Planungen umfassen Projekte mit Inbetriebnahme bis 2006



Eigentum

Publikumsfonds (bis 2004), Private Betreiber, Stadtwerke
Seit 2004/05 institutionelle Anleger



Service und Betriebsführung

Ältere Projekte meist mit Standardservicevertrag, neuere mit Vollwartung.
Meiste WEA-Typen und Standorte ermöglichen Betrieb über 20 Jahre hinaus.



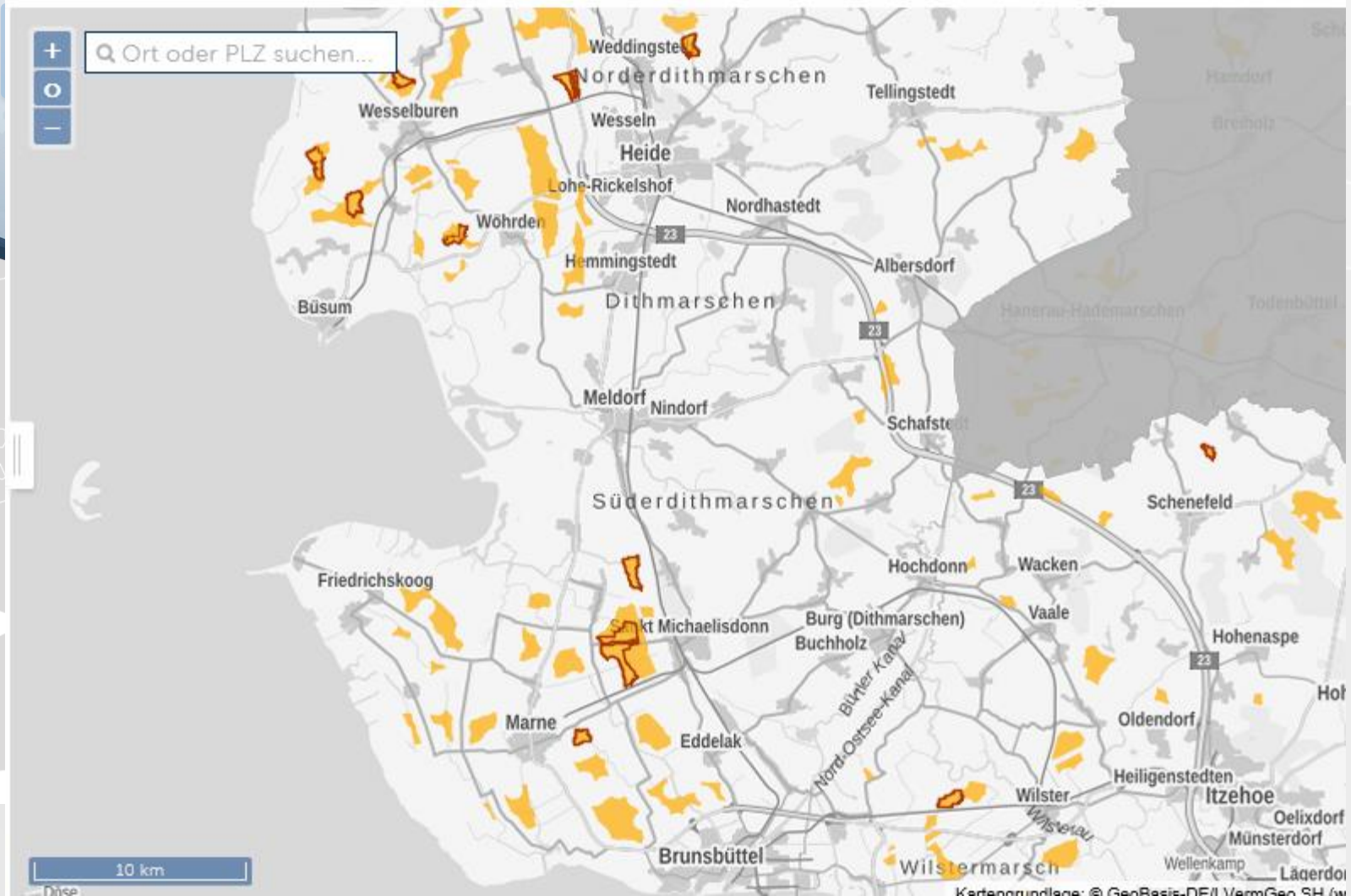
Betriebsszenarien

EEG Vergütung bis 2020, Übergang bis Ende 2021
Marktbedingungen erlauben wirtschaftlichen Weiterbetrieb nur bedingt
Viele ältere Projekte sind nicht „repoweringfähig“

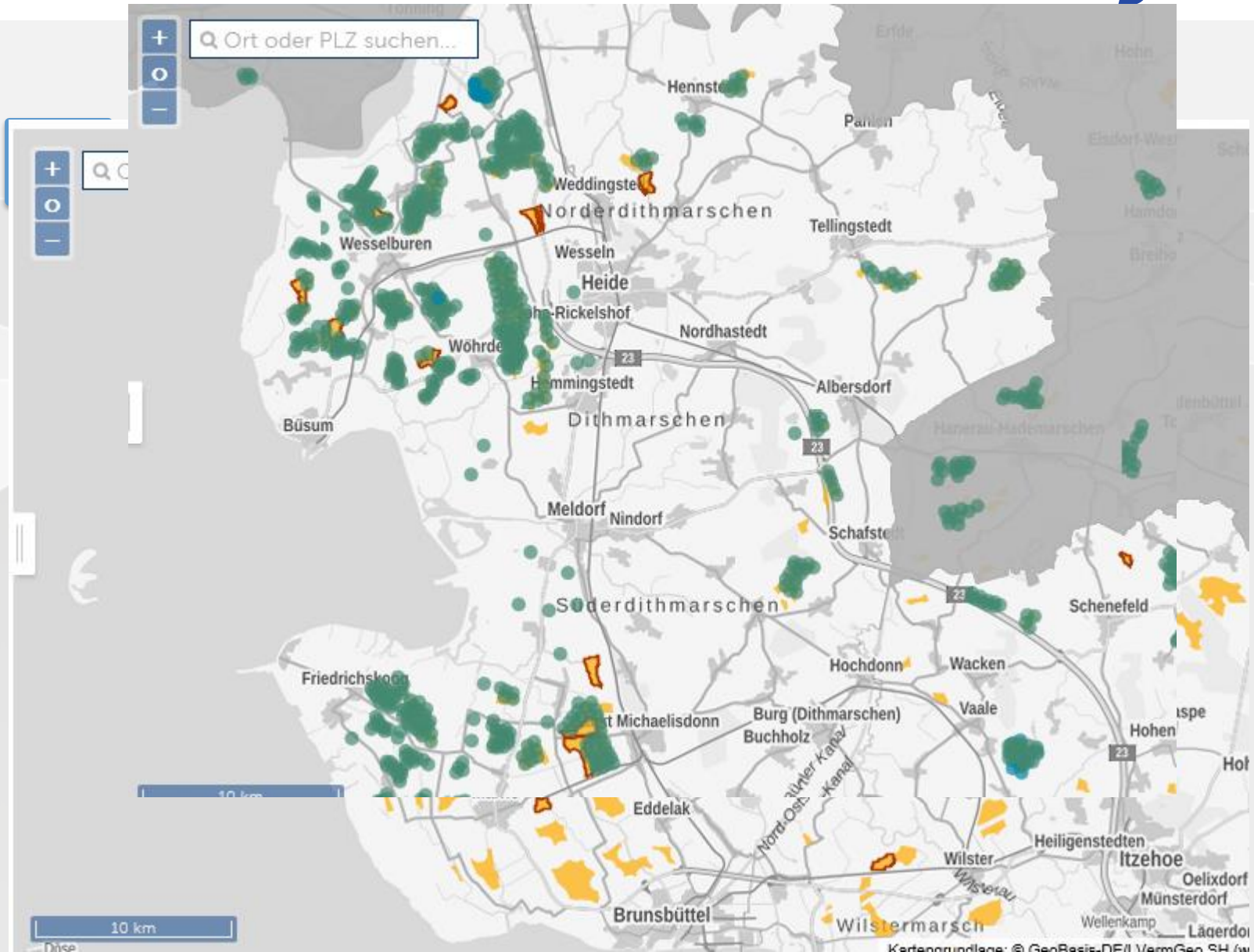
Repowering potential – example North-Germany



Repowering potential – example North-Germany

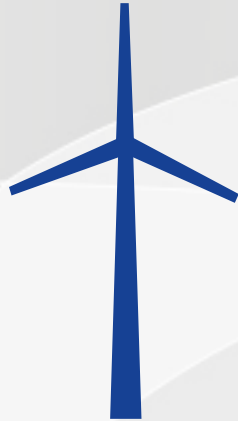


Repowering potential – example North-Germany





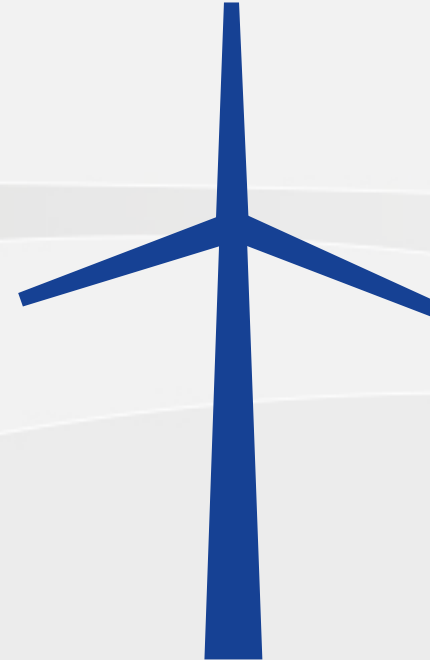
0,5-1,5 MW
Enercon E-40
AN Bonus -1.3MW
NM60/1000
GE 1.5s



1.8 – 2.3 MW
Enercon E-66,
E-70, E-82
Vestas V80 / V90
Senvion MM92 etc.

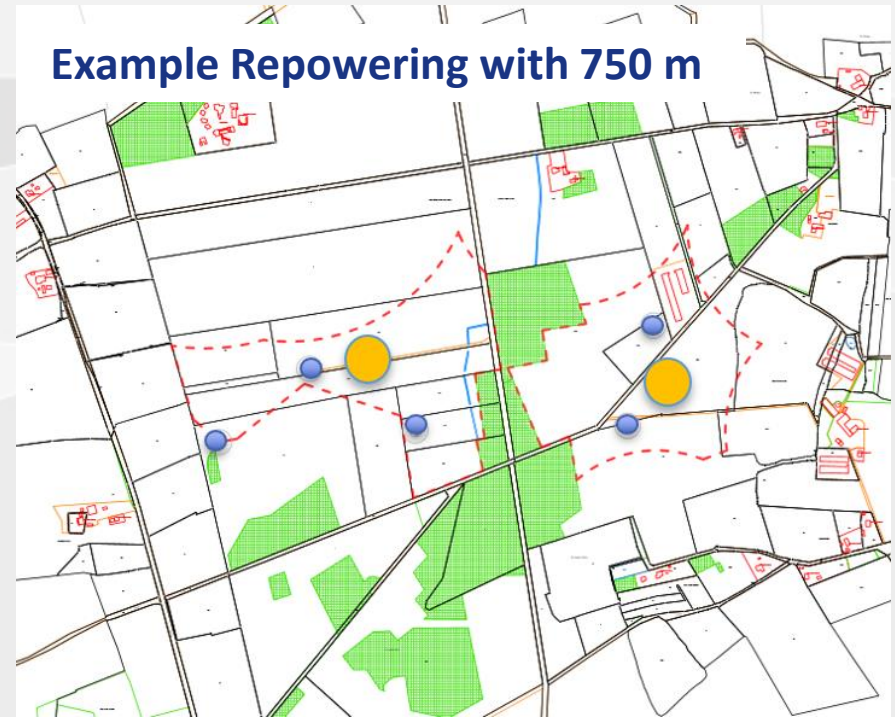
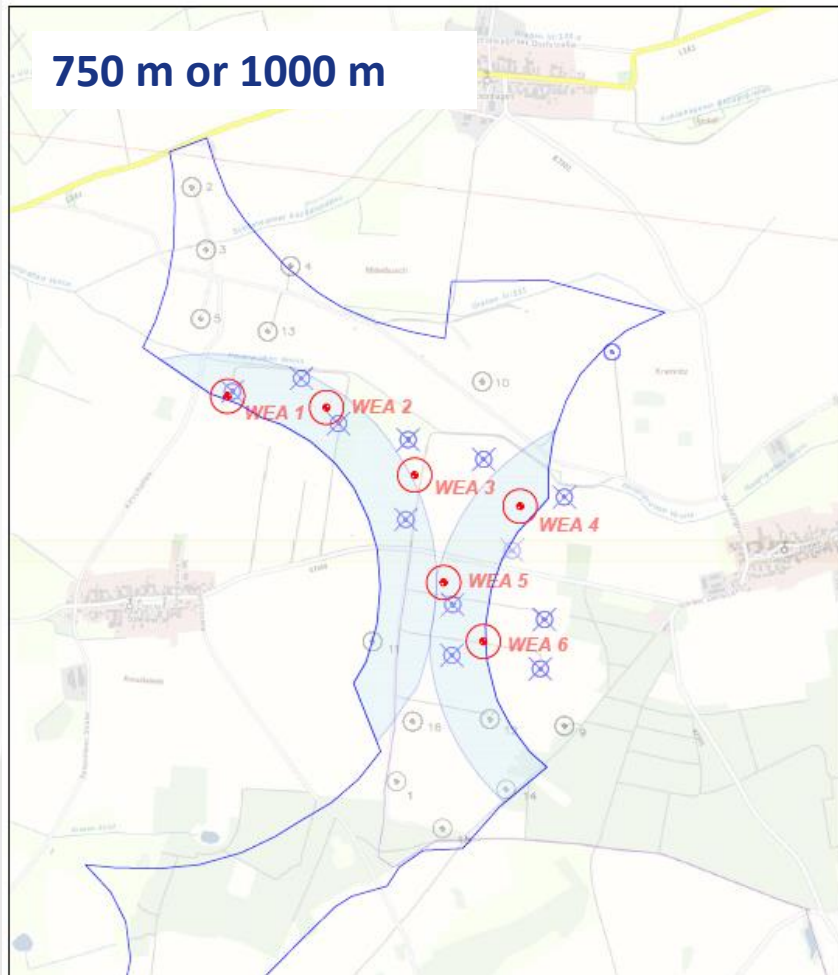


2.4 – 3.4 MW
Vestas V112, V117, V126
Enercon E-101, E-115
Nordex N117 etc.



4 – 5.7 MW
Enercon E-160
Vestas V150/V162
GE-158
Nordex N149 / N163

Hub heights until 166 m

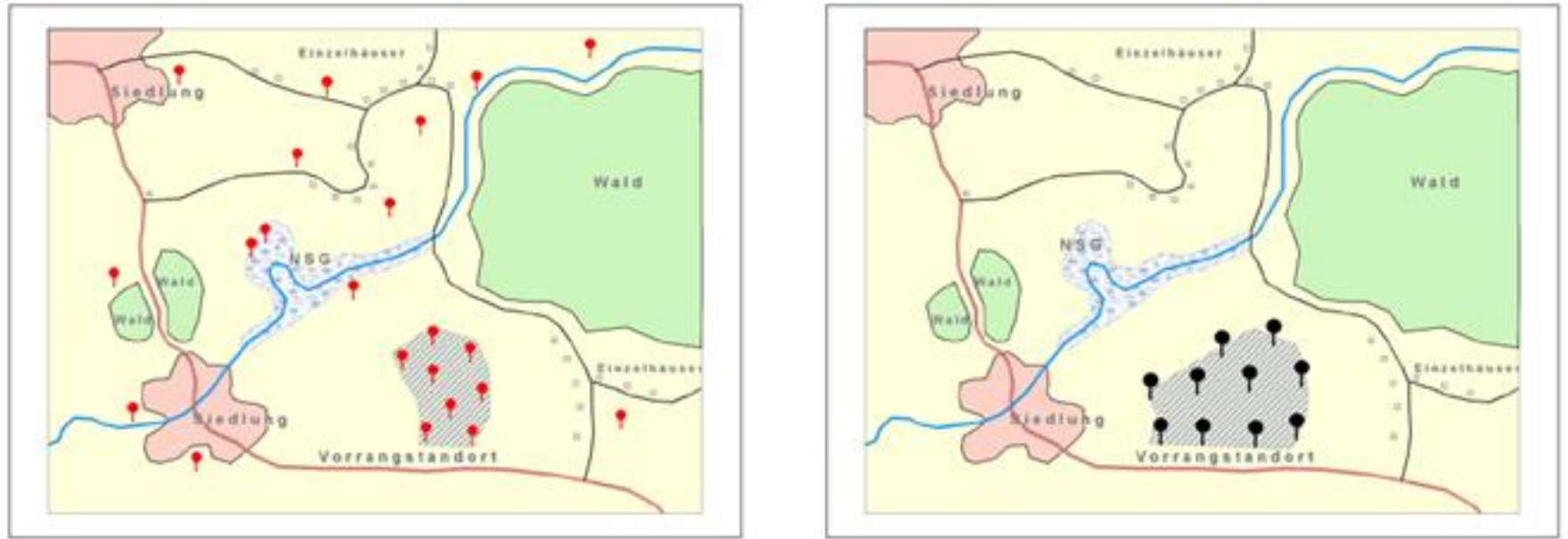


Site under construction: 2x Enercon E-126 EP3 for 5 x AN Bonus 1,3 MW - 62



Planned site: 6x Vestas V150 for 12 x Repower MD 70

The local perspective



Source, DEWI GmbH

How Repowering will be defined on a political perspective?

Definition in:

- a) Standorterhaltendes Repowering / Repowering at the same site
- b) Standortverlagerndes Repowering / Repowering at a different site foressen for turbines which have been dismantled in the neighborhood or in the same administational unit.

Carrently ca. 47% of the operating WTG are not inside designated „wind farm areas“ anymore. With the application of 1000 m ca. 80-65% are outside.

Quelle: Umweltbundesamt: Auswirkungen von Mindestabständen zwischen Windenergieanlagen und Siedlungen (...); 03/2019

The will to speed up and to simplify the Repowering has been adressed.

Quelle: Ministerpräsidentenkonferenz:, Beschluss „Umsetzung der Energiewende“ vom 17. Juni 2020.

Discussions BDEW / BWE

Changes and consideration of the Repowering in

- **Planing acts,**
- **German Immission law (to be fulfilld in the building permission)**
- **Environmental protection law.**

Quelle: BDEW: Positionspapier Windenergiestandorte erhalten, Repowering ermöglichen vom 24. November 2020

Should the same minimum distance criteria for new project be applied on Repowering projects?

Pro: The fact that the size of the WTG has been moved to very large and high wind turbines require also higher distances for the Repowering.

Contra: The distance discussion is obsolete. Due to the defined definitions in respect of noise, other impacts any new Repowering project will automatically fulfill such criteria site specificly.

Should we consider an easier permission process for Repowering projects (comparable „porter-à-connaissance“) to speed up the again the slowed down wind energy development?

Pro: Yes, the site is already known. Especially a full new assessment and environmental impact analysis is not necessary, as the operating wind farm already showed it at the site and previous impacts are higher like in the Repowering case.

Contra: No, there should be a legal and political consistent procedure, considering wind farm specifically the impact of the new WTG and without consideration of the old project.

1. Political level

- Intense discussion on the political level. Policy defined the need to change and to remove existing obstacles for the permission of new projects. IF no change, Germany will have de facto a reduction of the installed wind energy capacity.

2. Development level

- Increased competition, also on Repowering projects
- Due to definitions in the EEG also sites with a lower wind potential might be used for an economical feasible Repowering.

It is clear that in Germany the percentage ratio of Repowering projects will increase the next years. The questions is, if the expectations for the overall increase of wind projects will be covered by this development. Under the current situation and long planning periods probably not.



*Vielen Dank für Ihre
Aufmerksamkeit*
Merci pour votre attention