



Shiny new giants: accredited yield turns repowering into bankable energy

Repowering is reshaping Germany's wind sector: smaller pioneers are giving way to high-capacity giants, but only accredited yield assessments turn those megawatts into bankable energy. From early experiments on the North Sea coast to today's accredited frameworks, Germany shows how credible data, rigorous standards, and a repowering strategy can keep wind a backbone of the energy mix.



On a narrow strip of land between sky and sea, Germany's first wind park went live: the Windenergiepark Westküste at Kaiser-Wilhelm-Koog. In August 1987, thirty small machines began turning in the salt air where the giant GROWIAN test turbine had just bowed out: a modest start that nevertheless set a course for decades. From that windswept edge of Schleswig-Holstein, modern German wind grew up, moved inland and matured.

Today the scale is national. By 1st January 2025, Germany counted 30,243 wind turbines with 69,475 MW installed, onshore and offshore. In 2024 wind generated 136.4 TWh, supplying about 33% of the country's electricity. The North Sea still bites, but wind is now a backbone resource.

Yet the fleet is ageing. Many onshore turbines have moved beyond subsidy support, and repowering has become the practical way to keep output rising on limited land. In the first half of 2025, Germany commissioned 409 onshore turbines adding 2,202 MW; 777 MW of that,

roughly one-third, came from repowering. Decommissioning removed 326 MW, leaving a net 1,876 MW and a mid-year total of 65,344 MW across 28,925 turbines. Momentum is back, but every new megawatt has to work harder.

Repowering as space efficiency

Unlike greenfield expansion, which depends on land-use planning and often triggers new permitting battles, repowering works within established sites. That gives it an advantage: communities are already used to having turbines nearby, infrastructure is in place, and the grid connection is secured. But repowering is not just a matter of swapping one machine for another.

A single modern turbine can deliver the output of several older ones, so each repowered site effectively multiplies yield per hectare. In a country where land is scarce and zoning has long been a bottleneck, spatial efficiency is the hidden lever behind Germany's repowering push.

Germany's wind snapshot (2024)

Wind generation: 136.4 TWh
Share of power mix: ~33%
Turbines in service (total): 30,243
Installed wind capacity (total): 69,475 MW

(source: Fraunhofer ISE)

Repowering at a glance (H1 2025)

Gross onshore additions:

Total: 2,202 MW (409 turbines)
Repowering: 777 MW (138 turbines)
Decommissioning: 326 MW (210 turbines)
Net: 1,876 MW (199 turbines)
Cumulative (30 Jun 2025): 65,344 MW; 28,925 turbines

(source: vdma)

The North Sea lesson for yield: shifting channels, not just strong winds

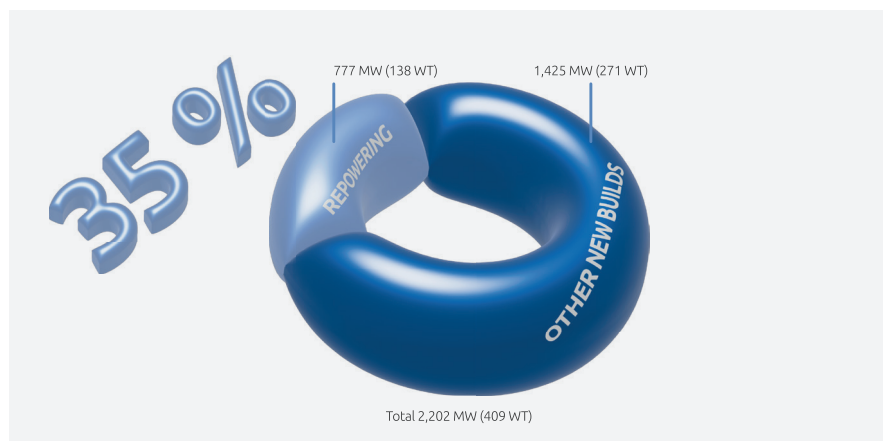
Repowering brings a gift and a complication: years of operational data. That history is gold, but it isn't static gold. Coasts change; so do wind sites. Like channels that shift across the Wadden Sea, long-term yield signals are reshaped by gradual tree growth, new buildings, fresh rows of turbines (wake effects), altered roughness upstream and even decadal climate variability that nudges storm tracks and the wind regime. The result is not a simple 'read-off-the-past.' It's a reconstruction problem. The data are valuable precisely because they capture what happened as the 'shoals' around a site moved.

That is why credible P50/P75/P90 estimates for repowering must couple that operations history with transparent corrections: long-term normalization, wake and turbulence modeling, evolving obstacle maps, and uncertainty accounting you can trace line by line.

Why accreditation decides bankability in Germany

In practice, German lenders and authorities expect it that way. Non-accredited wind yield reports are generally not accepted, often not even as a second opinion. The rationale is simple: without accreditation there's no shared yardstick, and without a yardstick there's no comparability, no reproducibility, and no dependable risk pricing. Germany's technical rules point to the same conclusion: FGW's guidance under the EEG presumes 'rules of the art' when the report follows FGW TR 6 and is issued by an institution accredited for that guideline.

DAkkS, Germany's national accreditation body, enforces those rules against international standards, e.g., ISO/IEC 17025. Its accreditations sit within Europe's and the world's recognition systems, EA, ILAC, and IAF, so a DAkkS-accredited report carries



Repowering's share of the 2025 Build (H1)

weight beyond German borders ('accredited once, accepted everywhere'). For project finance, that translates to faster due diligence, tighter uncertainty bands, and lower risk premiums.

Accreditation as a trust shortcut

For lenders and insurers, yield studies are not just numbers; they are the foundation of financial models that run into hundreds of millions of euros. If every consultancy applied its own methods, project risk would be impossible to compare.

Accreditation removes that barrier by enforcing a common framework: results can be checked, repeated, and benchmarked. That transparency shortens negotiations and reduces the 'uncertainty tax' on financing. In practice, the cost of an accredited study is tiny compared with the gains in bankability. For developers, it means more competitive financing and ultimately a smoother path from permit to power.

Standards make the difference: from 'some yield' to 'bankable yield'

Think of two reports for the same site. Both land on P50 = 100. One leaves a wide, poorly

explained uncertainty range; the other quantifies losses, inflow changes, wake interactions, reference-wind adjustments, and validation steps under a documented quality system. Only the latter lets a bank price risk confidently.

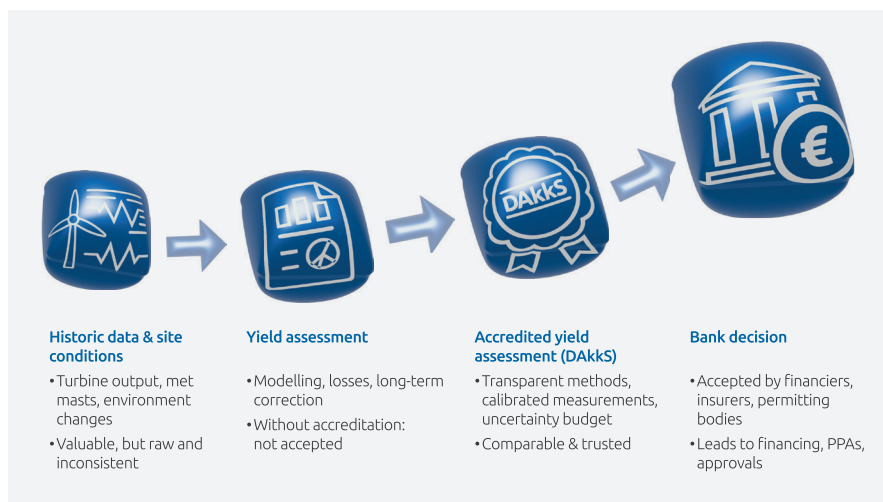
A practical path for developers: tide tables before the crossing

Repowering an onshore site is a bit like planning a Wadden Sea mudflat walk: you don't begin by charging into the surf. First, you check the tide tables and test the ground. Is the route promising? Where are the channels today? Does the window look safe? That first-pass screen is where a fast, automated analysis shines. Then, when the window is right, you set out with a certified guide on a marked path, that's the full DAkkS-accredited wind assessment that banks will rely on.

In that sequence, an early-stage tool such as 4cast Horizon works as the tide table and the quick probe, rapidly surfacing constraints, long-term signals, and repowering options, so that time and money spent on the accredited yield assessment are focused where they matter most. 'And crucially for comparability and acceptance, Germany has a tight expert pool: at present only about 27 accredited wind assessment bodies are listed, and 4cast is one of them,' explains Andreas Speck, Director Marketing & Sales, 4cast.

Germany's policy frame points the same way. The country is steering toward 115 GW of onshore wind by 2030 while working to expand designated land toward the 2-percent target, a long-running bottleneck being addressed through recent reforms. Repowering that is documented to accredited standards is the quickest, surest way to turn limited space into reliable megawatt-hours.

From Kaiser-Wilhelm-Koog's salt-stung pioneers to today's high-capacity turbines, the message is consistent: Germany's wind sector is storm-tested. With accredited yield assessments, it is also future-proof and a model for others to follow.



From data to finance: The bank's perspective