KEY DEVELOPMENTS IN CLEAN ENERGY: PART 1: REPOWERING RENEWABLE POWER PROJECTS

The repowering of existing renewable energy projects, by replacing, refurbishing or updating existing generation technology with fresh investment to extend project life and increase project capacity and efficiency, is becoming a reality rather than a distant future prospect.

The combination of significant advances in turbine and PV panel technologies, competition for access to good sites and the aging of existing solar and wind projects means that repowering is already an important feature of jurisdictions like Italy and Spain. It will inevitably become an increasingly important feature of other markets too.

This briefing explains what factors are likely to drive the benefits of repowering and some of the key issues that it gives rise to.

THE ADVANTAGES OF REPOWERING

Economic

In the last few years, we have seen growing interest in repowering aging first generation solar and wind energy projects across Europe and the United States. The increase in turbine size in the past decade makes this a particularly exciting prospect for aging wind farms, where it is easy to imagine an old project's generation output significantly increasing by installing the latest wind turbines. For PV solar, massive cost decreases since the original development and improved technology can provide a compelling business case for repowering.

At the same time, there is increasing competition for good sites for new projects, and older project sites were frequently chosen in the first place because they were the sites with the best wind or solar resource, or other locational advantages, such as easy grid connections. They are often the ideal location for new renewables investment and repowering also helps postpone eventual decommissioning expenses.

3 TYPES OF REPOWERING

Full repowering: dismantling the existing infrastructure and installing entirely new wind turbine generators (**WTGs**) or photovoltaic panels. Typically, for wind projects, a smaller number of more powerful WTGs will be installed (increasing the output) and new foundations may be required to support larger turbines.

Refurbishment: renewal or replacement of the generation equipment and electrical infrastructure without changing the physical layout and output of the generation plant.

Life extension: no replacement of the generation equipment, but allows the existing generating station to continue beyond its original planned economic life, for example, through maintenance works and minor repairs.

Regulatory and consenting

The revenue advantages of repowering are not difficult to envisage, but there are other advantages too which should not be overlooked.

Although it is inevitably jurisdiction-specific, in some cases we find that the original planning permission or other consents have a term that extends beyond the original operating life of a first generation project. For example, a project's planning permission may already provide for an operational life of over 25 years. Where this is the case, either those consents may not need to be replaced – particularly if generating capacity has not changed – or they may only need amending. If the operational life of the plant is time-limited, it may be possible to extend its life through an amendment rather than having to submit a full application for a new permission.

In the UK, for example, it may be possible simply to request a variation to the existing planning permission under section 73 of the Town and Country Planning Act 1990, which deals with "minor material amendments"**.** This will likely be applicable in situations where only a life extension is being sought. The recent Kirkby Moor Wind Farm appeal demonstrates that it is possible to obtain an asset life extension through a variation of the existing planning permission.

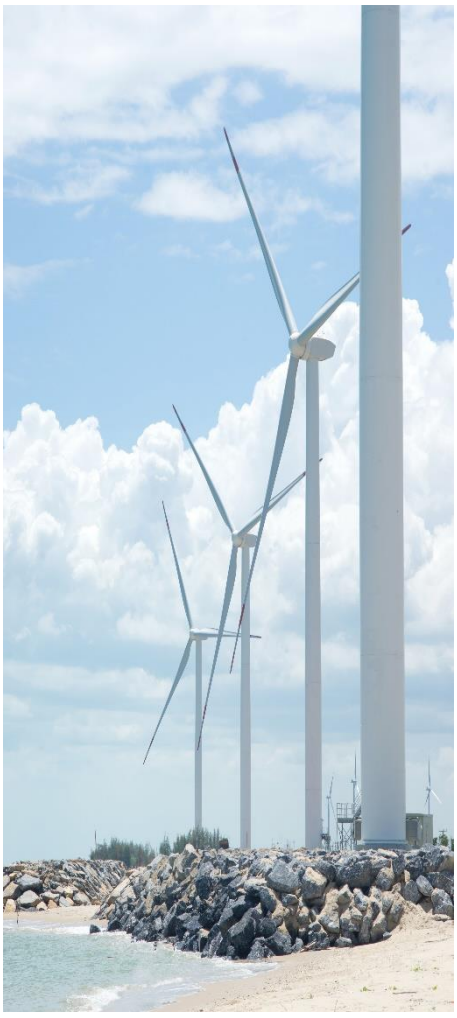
In England, the National Planning Policy Framework (**NPPF**) is unfavourable to *new* onshore windfarms, but takes a more flexible and favourable approach to repowered projects, meaning that planning permission is more likely to be granted. There are likely to be significant time and cost savings for the consenting process compared to developing and consenting a new project from scratch.

The EU has recognised the increasing need and industry appetite to repower existing renewable projects and has implemented policy measures to facilitate repowering. The new rules on fast-tracked consenting of such projects in the recast EU Renewable Energy Directive (**RED II**) are a key example of this.

Under RED II, Member States are required to implement a one-year consenting process for re-powered projects, which is extendable by a further year in "exceptional circumstances". This compares with the current average consenting period in the EU of over two years. The new ambitious timetable does not, however, take into account timeframes under other legal regimes relevant to the consenting process (such as environmental impact assessments).[1] It is unclear whether the new consenting rules will be adopted in the UK post Brexit.

Because of the increased size of latest generation turbines, repowering may well mean a smaller number of bigger turbines and this too may ease the planning process by reducing the overall project footprint. A good example of this is El Cabrito wind farm in Andalusia, Spain, where 90 old wind turbines (dating from 1995) were replaced with 12 modern turbines resulting in the removal of nearly 24,000m^2 of unnecessary land from the project site.[2]

Case Study 1: the Netherlands
The Clifford Chance Amsterdam team is advising the lenders on the financing of the repowering of one of Europe's largest community-owned onshore wind farms (over 300 MW). Following repowering, the wind farm's installed capacity will more than double as existing wind turbines are replaced by fewer, more powerful turbines. The repowering involves the decommissioning of a large number of existing turbines on land owned by a large number of different owners.



[1] See further our briefing on the Clean Energy for all Europeans package: https://www.cliffordchance.com/briefings/2019/06/clean_energy_foralleuropeansneweuruleso.html
[2] See further here: https://www.acciona-energia.com/areas-of-activity/wind-power/major-projects/el-cabrito-wind-farm/

Land and Grid

Existing lease rights may expressly provide for repowering, or have a term (or options to extend the term) which facilitates repowering. In any case, we would typically expect existing landlords to prove less resistant to having an existing project repowered than a potential landlord may be to a new project. Equally, local communities may well welcome the chance to extend the benefits from a current project that they have lived with for many years. By contrast, it is not unusual to face local opposition to new wind farm proposals.

The ability to continue to use existing grid connections, perhaps with some reinforcement, can provide a critical cost and time advantage for repowered projects compared to new projects. In addition, if a repowered project can exploit other synergies, such as continuing with existing supplier relations, or maintaining a trusted workforce and extending existing operation and maintenance arrangements, these can all reduce development costs and drive efficiencies.

Subsidies and merchant projects

If a project is repowered before the end of the original project's subsidy period, it may be possible to have all or part of the repowered project benefit from the rump of the original subsidy. However, under most subsidy schemes, renewable energy projects are accredited based on a specific output and design, and any changes may need the regulator's consent. While in some countries, such as the UK and Spain, renewable subsidies for onshore wind and/or solar have been largely phased out, there are other countries that still offer renewable incentives, so an investor in those jurisdictions will need to consider whether its repowered project would still be eligible under the relevant incentive scheme.

As we look forward, many repowered projects are likely to be operating in a zero-subsidy regime. It is precisely in these circumstances that their combination of the best sites, the latest technological advances, reduced development costs and potential efficiencies derived from available synergies, is likely to give them a cost advantage over new projects.

Case Study 2: Italy

The Clifford Chance Milan team has advised E2i Energie Speciali S.r.l. on the due diligence and financing of the construction of eight wind energy projects with a combined installed capacity of 165MW, including the repowering of three existing plants.

The repowered projects are wind farms that have been active for 15 years in the Italian Basilicata region, where the former 20 WTGs have been replaced with eight more powerful WTGs, increasing the installed capacity from 12MW to 20MW. For the wind farms in the Abruzzo Region, following the repowering, 59 600kW WTGs were replaced with only 16 3.3MW turbines, increasing the overall capacity from 35.4MW to 52.8MW.

ACHIEVING DECARBONISATION TARGETS

If the UK and other European countries wish to meet their ambitious decarbonisation targets, nearly all power generation will need to be low carbon before 2050. To meet this target and to replace retiring thermal and nuclear plant, a massive amount of new clean generation capacity is required. But governments will forget at their peril the importance of repowering, because existing first and second generation renewables projects will also reach the end of their operational life during this period and their capacity will need to be replaced.

Repowering is the optimal way to replace old renewable generation capacity. Policies to encourage repowering – for example, simplifying consenting regimes, allowing increases in overall capacity for repowering projects and ensuring repowering is included in green financing rules – should be implemented as soon as possible. As markets such as Spain and Italy are already showing, repowering is likely to be an increasingly important driver of renewable investment in coming years.

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