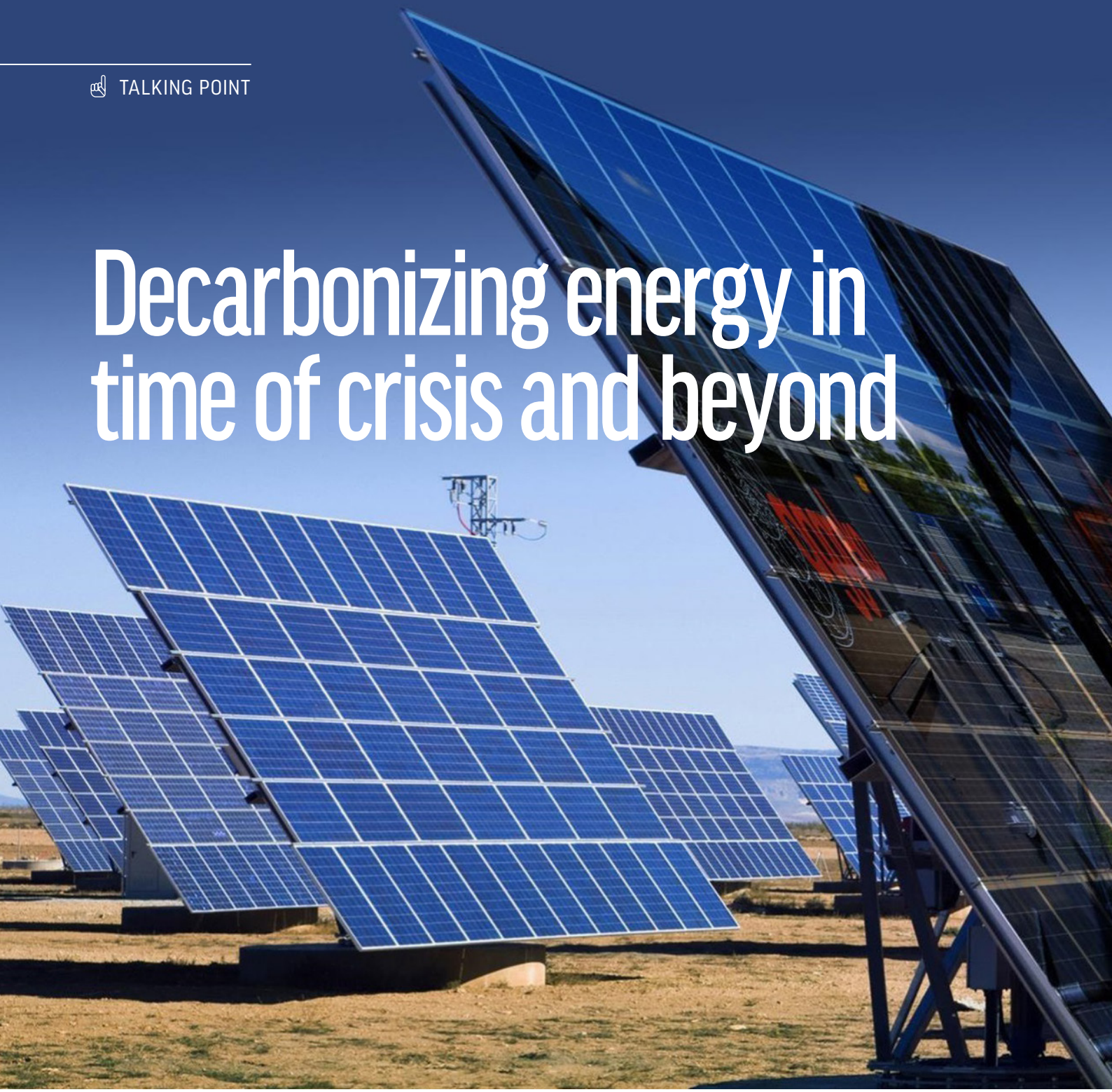
Decarbonizing energy in time of crisis and beyond



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Reliability and speed of response are essential to effectively managing or preventing a crisis - especially when it comes to power supply and temperature control.

This has been clearly demonstrated by the outbreak of COVID-19 with countries across the world needing to rapidly put in place the necessary infrastructure to combat the virus and subsequently dealing with the wider economic consequences of the health crisis.

While some industries, such as aviation and retail, have limited operations to reduce the spread of COVID-19, other sectors have joined forces to support relief efforts. Temporary field hospitals and testing facilities are being built in a matter of days,

manufacturers are changing production lines to increase the volume of respirators, antibacterial products and PPE available, while data centres are under strain to support the greater demand caused by at-home working. This results in drastically

changed load profiles and a high demand of flexible power solutions.

Keeping decarbonisation on the agenda

For the time being, how power, particularly emergency power, is generated is less of a concern, with focus on just ensuring that there is reliable supply to keep people safe and the economy functioning. Decarbonisation is therefore in danger of falling down the priority list but, we must not allow the pandemic to stall the momentum we've seen in recent years. It is encouraging that COP26 plans to urge countries to put decarbonisation at the front of global economic recovery.

This is particularly pertinent given that, despite the drop in oil prices, lower-carbon energy solutions are often the most economic option. They also appeal to those seeking stronger local resilience and a higher degree of energy independence, especially in the face of less reliable global supply chains.

Even where there is a need for a rapid response, it does not mean having to compromise on carbon targets. In recent years, the temporary power sector has made a big impact by embracing new technology to support efforts to decarbonise. Such developments have included a leap in battery technology. Now, adding just one battery unit to ten thermal units can increase the efficiency and reduce carbon emissions of the whole system by 30%.

At Aggreko, we are seeking to reduce the environmental impact of temporary power and temperature control every day. Take our event solutions as an example. At the Solheim Cup last year, we integrated two solar-battery hybrid modules into the generation package that we provided to the three-day event, helping to lower overall emissions while ensuring a reliable supply of power.

Our solar power and battery storage solutions have seen success elsewhere too, with another customer installing solar power

integrated with battery storage and managing it through our remote monitoring systems to ensure maximum efficiency. Over the course of the event, the overall solution led to an 80% reduction in greenhouse gases.

We're ready to support the COVID-19 relief effort in any way we can. In many countries, Aggreko teams are redeploying the equipment which had been earmarked for events that have now been postponed or cancelled due to the outbreak, to power a number of field hospitals and testing facilities. In the UK we have offered the Government the use of up to 1,300 small canopy generator units to support the set-up of testing sites across the country as the cost of just freight and fuel.

Ever-larger appetite for flexible energy solutions

While the only current certainty is that uncertainty will prevail in the months to come, one thing is clear: drawing on locally available renewable energy sources, such as wind and solar, can significantly reduce the quantity of fuel required, relieving supply lines that are already stretched at a time of crisis.

Attention will once again return to the climate crisis. As organisations and governments grapple with the response to the outbreak, those who maintain their commitment to greener operations will be more competitive and better prepared for the future.

Life after lockdown

Overall power demand will continue to be lower until the outbreak passes. Electricity demand in many countries has fallen by as much as 20%. This is leading to a higher proportional share of clean, but fluctuating renewable energy, which is the cheapest, and therefore preferred source of power in most grids but it also needs more balancing.

As a result, many grid operators require additional flexible support, such as the integration of batteries into power solutions and fast reacting generation capability sets to keep grids stable.

As lockdowns are lifted across the world, we are likely to see a sudden and steep surge in demand. In many places, the recovery will be green, supported by large government-backed investments into more digital, decentralised and decarbonised infrastructure. Again, this will drive a demand for much more flexible and short-term solutions.

While the pandemic is currently the global priority, other challenges continue to bubble away under the surface. The world's population will continue to grow during the pandemic and so will demand for energy. With the population expected to reach almost 10 billion by 2050, there's no sign of this slowing down any time soon. And this increase in demand has a direct impact on carbon emissions.

This growing demand will put an additional strain on already stretched national grids meaning temporary and back-up power sources will play a more prominent role in ensuring access to reliable power.

The 2015 Paris Agreement has encouraged governments around the world to commit to net zero targets. The outcome has been greater pressure on industries to adapt and find lower-emission sources of power to support the global fight against climate change.

This has created a growing demand for power providers to integrate renewables into solutions across the board. On top of that, environmental concerns, including both greenhouse gasses and local emissions, are becoming a key issue for energy managers, with a recent survey by Aggreko in the UK finding that energy managers considered environmental implications above cost when making fuel purchasing decisions.

Towards net-zero solutions

Decarbonisation is not going to happen overnight. That's also the case for temporary power. But advances in technology will allow us to become more and more 'circular'. In the future, employing technologies such as decentral electrolysis fed by renewable energy will support net-zero solutions. However, these solutions still need to mature, from a technology and cost, but also from an incentive perspective.

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It is clear that relying solely on fluctuating power sources, such as solar or wind, which could cause disruption to operations, is not a viable option for any business. Hybrid power solutions, which incorporate renewable and thermal power generation with battery storage can provide the answer today. At Aggreko, our tailored hybrid solutions are designed to reduce emissions, while ensuring access to reliable temporary power for our customers, no matter their power requirements.

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Work has already begun on developing the next generation of technologies, including the use of small-scale wind in association with battery storage. Some more unique systems are at the very early stages of development, such as airborne wind generation systems. Through some form of local electrolysis any excess renewable energy could be transformed into clean backup fuel to be used in fuel cells or even conventional engines with or without partial carbon capture, when wind and solar energy are not available.

For now, we are working on implementing existing technologies into our thermal generation assets in a way that delivers reduced emissions, but without compromising the reliability of power. While focusing on what we can implement today, we are also working on future solutions. We are actively pursuing partnerships and technologies to understand potential of the many next generation solutions.

The current COVID-19 pandemic has shown that flexible power solutions are absolutely vital for managing energy supply. But urgency doesn’t need to mean compromising on existing ambitions. Deploying tailored power solutions which take into account unique needs will help achieve just that.

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