



JULIA SIMMONS

blade runner

The darker side of green energy

they are cleaner than coal mines, they are not without consequence.

One of the most pressing concerns is their impact on birdlife. As nations expand wind energy, an increase in the number of bird fatalities is being recorded. At a wind facility in India's Thar Desert, an estimated 13 400 birds, including nearly 1000 raptors, are killed annually by 900 turbines. This is an outlier. In South Africa and the United States, fatalities average four to five birds per turbine per year. Across South Africa's 34 operational wind farms, this amounts to roughly 6000 bird deaths annually.

While significant, this figure must be placed in context: power lines kill tens of thousands of birds each year in South Africa, and domestic cats an estimated nine million. The critical issue with wind turbines is not the total number of deaths, but which species are affected. About 570 of the 6000 birds killed annually belong to threatened species, many of them raptors that share the same windy, remote habitats favoured by wind developers.

Jackal Buzzards are currently the most frequent victims, numbering roughly 150 deaths in total since 2014, a barely sustainable level. But for species with smaller populations, the outlook is far more serious. The Black Harrier, with fewer than 1000 individuals remaining, cannot sustain the death toll. Analysis by statistician Pachi Cervantes suggests that if just three to five additional Black Harriers are killed annually, the species could go extinct within 75 to 100 years. A review of fatality reports by BirdLife South Africa indicates this threshold has already been exceeded, with an average of 3.8 harriers killed each year, compounding pressure from habitat loss and climate change.

Addressing this 'green-green' dilemma, where climate solutions harm biodiversity, has become a research priority.

Mitigation strategies include modelling bird behaviour to avoid high-risk turbine placement and installing detection systems that identify incoming birds and temporarily halt turbine blades. In parts of Africa, trained human observers also shut down turbines when large birds such as eagles, pelicans and vultures approach. However, smaller, fast-flying species like Black Harriers and Honey Buzzards are often detected too late.

Blade patterning has emerged as a promising solution. Early laboratory experiments in the United States showed that visual contrast could improve birds' ability to detect moving blades. A field trial in Norway found that painting one blade black reduced bird fatalities by about 72 per cent, although a later Dutch study showed no effect. Building on this work, a recent South African trial at the Umoya wind farm near Hopefield, completed in 2026, tested red stripes on turbine blades. The results were striking: an 83 per cent reduction in bird fatalities, many of them raptors. Crucially, even though Black Harriers breed at the wind farm, no further deaths were recorded at the patterned turbines.

As blade patterning is expanded across South African wind farms, there is cautious optimism that raptor mortality can be significantly reduced. If successful, it offers a pathway to reconciling renewable energy development with conservation, ensuring that efforts to combat climate change do not come at the expense of the very species they aim to protect.

ROB SIMMONS & ODETTE CURTIS

With global temperatures rising, 98 per cent of glaciers in retreat and storms, droughts and wildfires intensifying, the urgency to curb climate change is unmistakable. Most responses centre on abandoning fossil fuels in favour of renewable energy, electrifying transport and decarbonising industry. Solar photovoltaic panels are often viewed as the least harmful option, but wind power produces more electricity and has driven the spread of turbines across landscapes worldwide. In South Africa, wind farms supply about 15 per cent of the country's electricity, and while

ABOVE & BELOW Black Harrier populations are significantly impacted by collisions with wind turbines, making mitigation at new and existing wind energy facilities crucial.



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