

Rethinking wind energy

The bald tops of the Western Ghats are a pristine ecosystem replete with innumerable animal species and, apparently, an abundance of wind and windmills.

As the country tries to achieve an ambitious renewable energy target of 175 GW, windmills have popped up in at least 65 sq km of forested area, with permissions for another 30 or so sq km still pending. This isn't surprising given that India's potential wind power map envelops the Western Ghats (from Kerala to Gujarat) and even large parts of the Eastern Ghats.

While this has often led to expressions of concern over the environmental impact — as often in localised protests or civil action suits — these must be articulated in policy to prevent irrecoverable changes in the local ecosystem. Global scientific research has also highlighted the impact of windmills on wildlife. For example, in the first few months of 2018 alone, published papers have shown that in the Pacific islands, bat activity is as much as 20 times lower in areas with windmills. In Poland, higher stress levels have been observed among rodents in the windmill areas of Poland while in Portugal, windmills close to wolf breeding sites are leading to lower breeding rates. And in Texas, there has been a staggering 77% decrease in redhead ducks in coastal ponds within windfarms.

The situation may not be different in India. In fact, it may be worse considering the high levels of biodiversity in every square kilometre of forest. In Rajasthan, for instance, transmission lines and spinning blades have reportedly led to increasing mortalities of the critically-endangered Great Indian Bustard. In studies of wind farms from Kutch to Andhra Pradesh, direct collisions have been reported. In Karnataka, where over 6,000 acres of forest land have been diverted for windmills, anecdotal evidence suggests that not only birds, but also amphibians and mammals such as wolves could be affected.

What global research has indicated, and which Indian research is yet to do, is the high indirect impact on the ecosystem.

At the Indian Institute of Science, Bengaluru, Maria Thaker and her team have been studying the fan-throated lizard around windmills. They have observed that apart from birds, even smaller rodents and mammals avoid these patches due to the constantly whirring turbines. In this predator-less micro-environment, the lizard population has increased, leading to an increase in competition and decrease in consumable resources. "The whole aspect of the ecosystem is changed. The food web is inter-connected, and it is out of whack in these areas," she says. Only long-term research can reveal if these changes have led to cascading effects on insects, vegetation and the soil. Further, construction denudes forests, fragments them through access roads and transmission lines, and even raises the risk of forest fires.

Currently, the guidelines for wind energy skirt wildlife impact, while the process for forest land diversion focusses primarily on compensatory afforestation. In some cases, only studies on the direct impact on bird and bat species are called for. However, any mitigation based solely on direct collisions cannot prevent the indirect impacts and the jolts to the local ecosystem.

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