**SOURCE**: [Maria Thaker](https://www.nature.com/articles/s41559-018-0707-z#auth-1), [Amod Zambre](https://www.nature.com/articles/s41559-018-0707-z" \l "auth-2) & [Harshal Bhosale](https://www.nature.com/articles/s41559-018-0707-z#auth-3) “Wind farms have cascading impacts on ecosystems across trophic levels” *Nature Ecology & Evolution* Volume 2, pages1854–1858 (2018)

Wind farms are a cleaner alternative to fossil fuels for mitigating the effects of climate change, but they also have complex ecological consequences. In the biodiversity hotspot of the Western Ghats in India, we find that wind farms reduce the abundance and activity of predatory birds (for example, *Buteo*, *Butastur* and *Elanus*species), which consequently increases the density of lizards, *Sarada superba*. The cascading effects of wind turbines on lizards include changes in behaviour, physiology and morphology that reflect a combination of predator release and density-dependent competition. By adding an effective trophic level to the top of food webs, we find that wind farms have emerging impacts that are greatly underestimated. There is thus a strong need for an ecosystem-wide view when aligning green-energy goals with environment protection.

**SOURCE**: Michaël Aklin, Patrick Bayer, S. P. Harish and Johannes Urpelainen “Does basic energy access generate socioeconomic benefits? A field experiment with off-grid solar power in India” *Science Advances* 17 May 2017, Vol. 3, no. 5, e1602153

The lack of access to electricity is a major obstacle to the socioeconomic development of more than a billion people. Off-grid solar technologies hold potential as an affordable and clean solution to satisfy basic electricity needs. We conducted a randomized field experiment in India to estimate the causal effect of off-grid solar power on electricity access and broader socioeconomic development of 1281 rural households. Within a year, electrification rates in the treatment group increased by 29 to 36 percentage points. Daily hours of access to electricity increased only by 0.99 to 1.42 hours, and the confidence intervals are wide. Kerosene expenditure on the black market decreased by 47 to 49 rupees per month. The results should be evaluated in light of (i) the low cost of the intervention and (ii) the minimal level of electricity access provided to the households. Off-grid solar power can offer a cleaner, safer alternative for basic household lighting. On the other hand, the results highlight the limits of off-grid solar power as an intervention for sustainable development.

**SOURCE:** Didem Tali “Negative Effects of Solar Energy” April 23, 2018 https://sciencing.com/negative-effects-solar-energy-6325659.html

Large utility-scale solar panels take up a lot of space, which can result in environmental degradation and habitat loss. Solar farms that cover a large amount of land are likely to have an impact on the local fauna and flora, particularly on birds. Solar farms can also inhibit local vegetation growth and damage agriculture. Unlike wind energy, solar panels aren’t able to share the land they occupy for other uses. Creating energy with solar photovoltaic panels is a water-intensive process. Even though the solar cells themselves don’t use water to generate electricity, the manufacturing process requires some water. In the United States, electricity production accounts for more than 40 percent of all daily freshwater withdrawals. Even though some of this water can be reused, an abundance of solar panels in an area could put a strain on local water resources. The photovoltaic manufacturing process employs toxic chemicals such as hydrochloric acid, sulfuric acid, nitric acid, hydrogen fluoride, 1,1,1-trichloroethane and acetone. If manufacturers don’t strictly follow the laws and regulations, these chemicals can introduce significant health risks, particularly to the manufacturing workers.

**SOURCE:** A. Midilli , I. Dincer & M.A. Rosen (2007) The Role and Future “Benefits of Green Energy”, *International Journal of Green Energy*, 4:1, 65-87

A secure supply of energy resources is generally agreed to be a necessary but not sufficient requirement for development within a society. Sustainable development demands a sustainable supply of energy resources that, in the long term, is readily and sustainably available at reasonable cost and can be utilized for all required tasks without causing negative societal impacts. The promotion of green energy sources and technologies for sustainability and global stability has become one of the primary goals of energy policy makers in many countries. Policy makers increasingly assign a high priority to promoting green energy-based technologies because they can help mitigate climate change and pollution, increase fossil fuel source reserves, decrease dependence on imported energy, increase employment, and support remote and rural communities. Furthermore, green energy-based technologies can increase energy supply diversity, improve the national balance of trade and increase security, since most are less prone to terrorist attacks than, say, nuclear power stations or oil and gas supply infrastructure (except for large hydroelectric dams) (Madlener and Stagl, 2005). Fossil fuel consumption and green energy consumption are expected to reach 13,800 and 2700 Mtoe, respectively, by the year 2050, indicating that we will remain dependent on fossil fuels. Based on projected data for the green energy consumption ratio, it is expected that the green energy utilization ratio will reach 16% and the fossil fuel utilization ratio will decrease to about 84% in 2050. If fossil fuel consumption continues increasing in this manner, the world will likely suffer many fossil fuel-based problems. Increased utilization of fossil fuels will likely reduce world stability and increase local and global environmental problems. The results suggest that fossil fuel utilization should be reduced, and fossil-based technologies systematically converted to green energy-based

technologies.

**SOURCE:** Ulrike Lehr, Christian Lutz and Dietmar Edler “Green jobs? Economic impacts of renewable energy in Germany” [*Energy Policy*](https://www.sciencedirect.com/science/journal/03014215) [Volume 47](https://www.sciencedirect.com/science/journal/03014215/47/supp/C), August 2012, Pages 358-364

The issue of economic impacts of the expansion of RE will be part of the sustainability discussion for the time to come. On the one hand, increasing installation will bring down the specific costs through learning curves and scale effects. On the other hand, parity of electricity generation costs from RES will only be reached within the next 10 to 15 years. The German example shows how a large domestic market leads to the development of a successful industry. Therefore, since exports of conventional power plants are not crowded out in this exercise, net employment from the lower export scenario gives a taste of the overall positive employment effects of a change to a RE based energy system. However, these successes are vulnerable to abrupt policy changes, as experiences with the US industry or the Spanish market show.

**SOURCE:** [Thomas H. Kunz](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Kunz%2C+Thomas+H), [Edward B. Arnett](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Arnett%2C+Edward+B), [Wallace P. Erickson](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Erickson%2C+Wallace+P), [Alexander R. Hoar](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Hoar%2C+Alexander+R), [Gregory D. Johnson](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Johnson%2C+Gregory+D), [Ronald P. Larkin](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Larkin%2C+Ronald+P), [M Dale Strickland](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Strickland%2C+M+Dale), [Robert W. Thresher](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Thresher%2C+Robert+W) and [Merlin D. Tuttle](https://esajournals.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Tuttle%2C+Merlin+D) “ Ecological impacts of wind energy development on bats: questions, research needs, and hypotheses” *Frontiers in Ecology and the Environment*, Volume 5, Issue 6 1 August 2007

 At a time of growing concern over the rising costs and long‐term environmental impacts of the use of fossil fuels and nuclear energy, wind energy has become an increasingly important sector of the electrical power industry, largely because it has been promoted as being emission‐free and is supported by government subsidies and tax credits. However, large numbers of bats are killed at utility‐scale wind energy facilities, especially along forested ridgetops in the eastern United States. These fatalities raise important concerns about cumulative impacts of proposed wind energy development on bat populations. This paper summarizes evidence of bat fatalities at wind energy facilities in the US, makes projections of cumulative fatalities of bats in the Mid‐Atlantic Highlands, identifies research needs, and proposes hypotheses to better inform researchers, developers, decision makers, and other stakeholders, and to help minimize adverse effects of wind energy development.

## SOURCE: S. A. Abbasi,Naseema Abbasi “The likely adverse environmental impacts of renewable energy sources” [*Applied Energy*](https://www.sciencedirect.com/science/journal/03062619)[Volume 65, Issues 1–4](https://www.sciencedirect.com/science/journal/03062619/65/1), April 2000, Pages 121-144

There have been instances in the recent history when major natural resource development activities were taken with only the benefits in view. In the 1960s, India and some other countries were swept by ‘green revolution’ during which high-yielding dwarf varieties of plants and intensive agricultural practices were used on a very large scale to produce massive stocks of food-grains. This enabled food-deficient countries to be in food-surplus in a matter of 3–4 years. At that time, the scientists who worked for the green revolution, were heralded as Messiahs. Then, as years rolled by and the adverse impacts of intensive agriculture began to surface in the form of waterlogging, salinization, depleted soil productivity, pollution — the very same scientists who were lionised earlier were made targets of public ire and ridicule.

<https://www.sciencedirect.com/science/article/pii/S030626199900077X#TBL2>