

As the world increasingly shifts towards renewable energy sources to combat climate change, solar energy has emerged as a key player in reducing reliance on fossil fuels. As governments and energy companies rapidly expand solar infrastructure, there is growing concern that these developments may disrupt delicate ecosystems, especially in regions with high biodiversity or endangered species. These installations, consisting of vast arrays of photovoltaic (PV) panels, are often located in open spaces such as deserts, grasslands, or agricultural fields. While solar energy offers considerable environmental benefits by reducing carbon emissions and dependency on nonrenewable resources, its large-scale deployment raises important questions regarding its ecological impact. Specifically, the development of solar farms may lead to unintended consequences for local biodiversity. The installation of solar farms alters landscapes and habitats, potentially disrupting local ecosystems and the species that rely on them. While the overall environmental benefits of renewable energy are undeniable, the localized impacts on biodiversity must be carefully considered to ensure that the shift towards cleaner energy does not come at the cost of ecosystem health. Large-scale solar farms, designed to generate significant amounts of electricity by converting sunlight into energy, have proliferated globally. This research investigates the environmental impact of large-scale solar farms on biodiversity, focusing on how these installations affect local wildlife, vegetation, and ecological balance. These changes may include habitat fragmentation, alteration of water flow, introduction of invasive species, and increased human activity. The central problem addressed in this research is the potential negative impact of large-scale solar farms on biodiversity and local ecosystems. The key research questions guiding this study are: