

# Calculating the coming aluminum demand for solar panels and how to mitigate its greenhouse impact

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A team of researchers at the University of New South Wales has found that due to increased demands for solar panels in the coming years there

will be a corresponding increase in the need for aluminum to support them. In their paper published in the journal *Nature Sustainability*, the group describes how they arrived at estimates of demand for aluminum related to solar panels and ways to mitigate the impact the production of the aluminum will have on global warming. Timothy Laing, with the University of Brighton, has published a News & Views piece in the same journal issue outlining the work done by the team in Australia.

As the researchers note, a lot of attention has been paid to the materials that are used to make [solar panels](#), such as silicon, and how demand for them might be met as the demand for solar energy solutions increases. In this new effort, they note that one part of solar panel installations that is often overlooked is the rails that are used to fix them in place. Most such rails, they note, are made out of aluminum because of its light weight. They explain that other parts of solar panel systems, such as casings for inverters, are also made out of aluminum for the same reason. They further note that as the demand for solar power increases in the coming years, the demand for aluminum will increase as well. Unlike other materials used to create solar panel systems, there is little chance there will be a shortage—the materials used to make it, such as bauxite, are quite plentiful. Instead, there is the issue of greenhouse gas emissions that occur when aluminum is made.

The researchers report that reliable sources such as the International Energy Agency, have suggested that it would take approximately 60 terawatts of solar power for the world to reach net zero emissions (along with other renewable resources). And currently, there is just 800 gigawatts being produced. They also calculate that to meet that demand would mean unleashing 3,500 megatons of carbon dioxide—for just the production of aluminum—into the atmosphere by 2050. But they also caution that there are ways to prevent such a negative impact. The first is by recycling [aluminum](#), a relatively easy and clean process. Another is to use renewable resources to power smelting plants, the main source of

carbon emission in smelting plants today.

**More information:** Alison Lennon et al, The aluminium demand risk of terawatt photovoltaics for net zero emissions by 2050, *Nature Sustainability* (2022). [DOI: 10.1038/s41893-021-00838-9](https://doi.org/10.1038/s41893-021-00838-9)

Timothy Laing, Solar power challenges, *Nature Sustainability* (2022). [DOI: 10.1038/s41893-021-00845-w](https://doi.org/10.1038/s41893-021-00845-w)

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