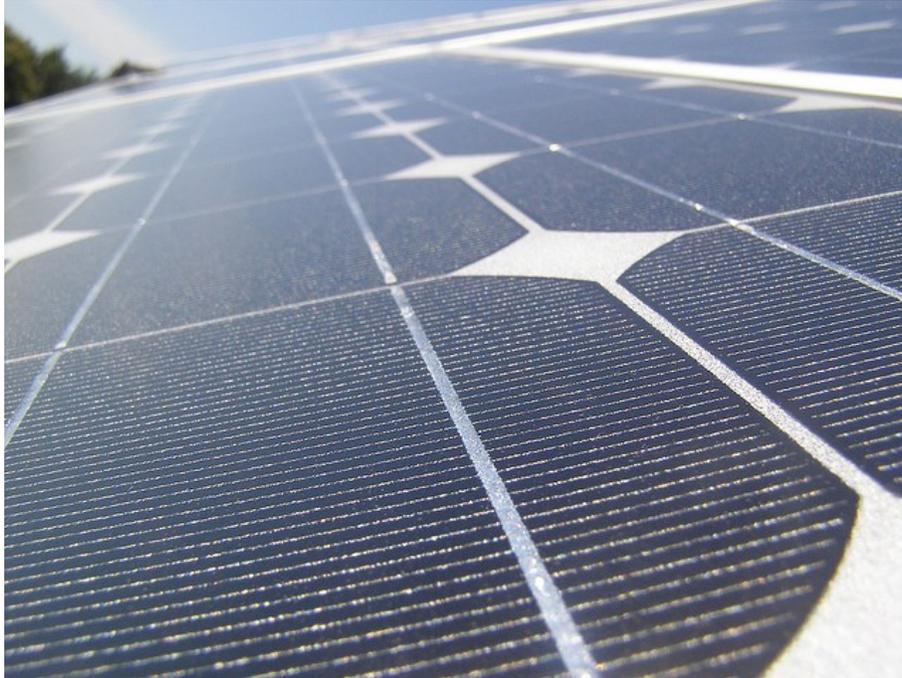


PRODUCING SUSTAINABLE SOLAR PANELS WITHOUT RARE MATERIALS



The energy that comes out of solar panels is renewable, but what about the panels themselves? Not so much. Today's leading solar panels owe their high sunlight-to-electricity conversion rates to the use of rare elements, such as indium, gallium and selenium. But if current production trends continue unchecked, supplies of indium in particular will be depleted in less than a decade. The pressure is on, therefore, to find a way of making solar power even more sustainable. Researchers are exploring other options, and [IBM Research](#) believes it may have found an answer.

Alongside its partners, [Solar Frontier](#), [Tokyo Ohka Kogyo](#) and [DeiSolar](#), the company has announced that it has achieved a 10% increase in efficiency, thanks to an alternative design

using copper, zinc, tin and sulphur [CZTS], all of which are significantly more abundant and more affordable than current solar staples.

This revamped design still relies on selenium, which is rare, but the ultimate goal is to phase that out and use sulphur instead. “Copper, zinc, tin and sulphur are so abundant that terawatt-scale CZTS production is easily achievable”, says Jiang Tang, a researcher who worked on the project but has since left IBM and is now at [Huazhong University of Science and Technology](#) in central China.

This alternative design requires half the heat needed to build today’s solar panels, while the materials require less cutting, thereby reducing levels of waste. The design has an efficiency of 11.1%, which is shy of the nearly 15% that conventionally manufactured cells offer. However, the new type of cell might still represent an attractive alternative, not least as it is less expensive to produce, requiring less energy and fewer steps to make.

“It would be nice if the efficiency could be 15%”, says Dunbar Birnie III, a professor at [Rutgers University](#) in the US who focuses on renewable energy. But ‘competitive’ has to do with cost, and not just efficiency, he points out. According to Tang, the efficiency rates need to hit 12–14% in order for the savings to make the cells an economically attractive alternative. But it’s a goal within striking distance, he says.

Source : <http://thisbigcity.net/producing-sustainable-solar-panels-without-rare-materials/>