How would the world look or function if it were solar powered?

By Alex Nathanson, founder and lead designer of Solar Power for Artists (2022)

The short answer is that it is a healthier and more equitable world, but it's important to remember that all technology, including solar power, is not separate from the society it emerged from. There are no "savior" technologies and there are limits on the transformative power of a single technology. Fossil fuels are inherently damaging for all the obvious reasons (extraction, exploitation, poisoning, etc.) and renewable energy is inherently better because it avoids (or at least dramatically minimizes) those elements. However, the solar power industry is not inherently separate from the capitalist systems and practices that created the climate crisis. It can make the world cleaner, but does not in and of itself address issues like environmental racism.

Technically and aesthetically, there are two general ways to think about solar power infrastructure, which are both important to address the climate crisis. It can be centralized in massive solar farms with large power distribution networks or distributed with smaller on and off grid systems. This isn't a dichotomy, but a range of possibilities that may be more or less feasible or fitting in different contexts.

Energy storage turns an intermittent environmentally dependent power source, like solar, into a dispatchable power supply and is an important aspect of the energy transition. It is also crucial to electrify everything, because simply having more solar power doesn't necessarily help if we still rely on fossil fuels in many sectors, like heating homes, travel, and industrial processes. Many of the technologies we need for the energy transition, like solar power, already exist, but we need political, economic, and social change for them to be deployed at a massive scale.

But how would it look?

The look of a building that is supplied energy from a solar farm far away, or even from an off-grid array directly on the roof, may be indistinguishable from how it looks running off of fossil fuel today. Alternatively, the solar elements could become a focal point of the structure's aesthetics. Most solar modules deployed today use mono or polycrystalline silicon cells, which are basically all variations on rigid dark blue rectangles. This is because of the technological limits and manufacturing efficiencies that have enabled them to be produced cheaply.

In theory, if the solar market was bigger, more aesthetically diverse technologies could hopefully benefit from the economy of scale and also become more accessible. This would give artists and designers more opportunities for aesthetic intervention. These aesthetic interventions could range from wildly experimental new ideas to culturally rooted traditional designs, and everything in between.

It is essential that we work to ensure the energy transition is just, accessible, and equitable. Technology alone won't save us. It takes communities and intentional equitable design.