

Opinion: For solar power to go global, we must consider relaxing intellectual property rights

September 26 2023, by Alejandra Padín Dujon



A solar power project in Thailand. Credit: [Asian Development Bank](#)

The solar energy revolution is well underway. The share of solar power in the global energy mix has [nearly tripled](#) over the past five years, and

solar panel technology is increasingly cheap, with utility-scale costs falling by a [factor of five](#) in the United States over the same period. Solar is increasingly efficient. Public and private investment is [pouring in](#).

However, while solar panels are helping the European Union [beat its own decarbonization goals](#), and while the Biden administration springboards green industrialization through the [Inflation Reduction Act](#), low- and [middle-income countries](#)—those least responsible for historical emissions—are being left behind.

Global disparities in solar energy generation reflect inadequate access to, and institutional unpreparedness for, solar technology. According to the UN Conference on Trade and Development (UNCTAD), few developing countries have the capacity in skills, research and development, industrial capacity or finance needed to take advantage of solar power.

These hurdles stem, in turn, from economic difficulty, insufficient focus on renewable energy at the domestic level, and disadvantageous international trade regimes.

Facing fewer hurdles, the Organization for Economic Co-operation and Development (OECD) [member countries](#), some of the world's most prosperous, account for [over half](#) of the world's solar electricity generation, despite comprising only [17%](#) of the global population. China produces [another third](#). That means other countries (representing most of the global population) produce only about one-sixth of total solar photovoltaic electricity.

How do we globalize the solar revolution in a way that is socially just and economically sound? Among a variety of solutions, UNCTAD has suggested a strategy called "[technology transfer](#)" to level international

solar power inequalities.

Broadly, "tech transfer" refers to transmission of technological capacity from one country to another, whether through public or private means. Tech transfer can include hardware (parts) or software (design); and maintenance-level knowledge ("know-how") or deep and analytical-level knowledge ("know-why"). All are essential for production, but only design and "know-why" set local solar industries up for independent innovation and success.

The 2015 Paris Agreement and 2022's COP27 climate conference [encouraged](#) tech transfer to facilitate broader participation in a global green economic transition. Moreover, an [analysis](#) of 30 years of research affirms that tech transfer initiatives for renewable energy are [increasingly successful](#). Clearly, this strategy can be favored and favorable. But not all levers for tech transfer are created equal. These levers can be divided into "ad hoc" versus "systemic."

Ad hoc tech transfer, or case-by-case introduction of technologies to new environments, is inconsistent and discretionary. It relies on the impulses of outside entities, whether companies or governments. Their willingness to engage depends on a combination of altruistic, geopolitical and economic factors. When times get tough, or developing countries possess little strategic value, these countries are less likely to gain access to important, cutting-edge technologies.

In contrast, systemic reforms, like adjusting intellectual property protections in international trade, can change the rules of the tech transfer game in a critical way to facilitate domestic solar industries in developing countries. This second strategy does not rely on ad hoc goodwill.

Relaxing [intellectual property rights](#) is a hot-button topic. The chief

counterargument is that compromising these rights stifles innovation by reducing the predictability of returns on investment.

Also, some [developed countries](#) have made the argument that intellectual property protections do not inherently make green technologies expensive. They have argued this on the grounds that, if companies set prices according to their costs, then manufacturing and not intellectual property should be the one making tech expensive. Of course, this claim does not consider the role of competition in pricing, and how patents can pave the way for companies to charge more.

The World Trade Organization (WTO), the world's supreme intergovernmental trade rule maker, accepts the counterargument, viewing intellectual property protections as key for promoting climate-solving innovations. Consequently, the organization does not extend much flexibility to developing countries to adopt more lenient rules.

However, the WTO's inflexibility clashes with the spirit of its own regulations. One of the organization's most fundamental agreements is called Trade-Related Aspects of Intellectual Property Rights (TRIPS). This includes provisions to facilitate tech transfer, such as relaxation of intellectual property protections.

Specifically, TRIPS [allows](#) governments to relax patent rights under certain conditions. Developing countries like [Ecuador](#), [Cuba](#), [Brazil](#), [Chile](#), and [El Salvador](#) have as early as 2013–14 attempted to build upon and revise the intellectual property flexibilities baked into TRIPS to broaden access to green technologies. But developed countries like the United States, Canada, Switzerland and members of the European Union have [responded dismissively](#).

In 2023, UNCTAD found it "unlikely" that there would be less stringent [intellectual property protections](#) at the global level, meaning that the

flexibilities in TRIPS are unlikely to amount to much.

Objections by the WTO's developed-country members also buck a historic trend. Copying or emulating existing technologies has historically been how developing countries caught up with developed countries economically. Many now-developed countries initially allowed patenting of foreigners' inventions. Switzerland, among the dissenters, didn't even have a patent law until the early 20th century.

Finally, [empirical evidence](#) shows that tech transfer initiatives often pass over developing countries with high innovative capacity, [suggesting](#) that initiatives avoid countries that threaten competitive business advantages.

In addition, tech transfer overwhelmingly focuses on transferring goods and some skills (hardware and know-how) and less on knowledge and capacity (software and know-why). Tech transfer in this sense is less empowering for developing countries, and more conducive to creating economic dependency.

Innovation is not enough to bring solar power to developing countries. Access and local capacity are important, too. Intellectual property protections enforced by the WTO, touted as pro-innovation, may actually work against capacity-building, thereby compromising development and decarbonization goals.

To build up innovative capacity for solar power in the [developing world](#)—and to help development and spur decarbonization—the WTO must consider relaxing intellectual property rules.

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