

## Commercial solar north korea

In this installment of our series on North Korea's energy sector, we move away ...

In this installment of our series on North Korea's energy sector, we move away from official and commercial uses of solar and seek to understand the growing use of solar power for personal energy consumption in a country where its people still suffer from an unreliable power supply nationwide.

Data from recent interviews of North Korean defectors corroborate an astounding lack of state-provided electricity.[1] This shortage affects both urban and rural areas across the country, adversely impacting state-owned facilities, homes and even mobile phone connectivity, which has become ubiquitous in everyday life and the North's private economy. While alternative forms of energy--such as diesel power and illegal power grid hook-ups--exist, for many, the answer is a solar panel.

Defector interviews, along with DPRK state media and satellite imagery, point to an uptick in personal solar installations over the last decade as many citizens have seemingly given up expecting the government to provide adequate and consistent electricity and are adopting a "do-it-yourself" attitude in order to live their lives.

A typical installation of solar panels is simple: a solar panel on a roof or balcony is connected via regulator to a large battery. During the day, electricity from the solar panel trickle charges the battery. At night, the power from the battery can be harnessed to either directly power low-voltage devices or is fed through an inverter to provide a 100-volt supply for household appliances.

Estimations on the size of the panels varied in our interviews, but most were around 60 square centimeters. According to interviewees, that was enough to provide at least 100 watts and run a small appliance each evening.

It has been more than a decade since the first personal solar panels entered the country from China. Availability and prices began improving following the 2012 Pyongyang International Trade Fair and got better in the last five years as domestic panels came on the market. A small solar panel can reportedly be bought for around \$15-\$50, making it an attractive alternative to costly generators and batteries.

The rise in domestic production of solar panels has likely played a role in bringing the price down. In 2017, a state media article indicated personal solar was being actively encouraged by the North Korean government, and TV coverage in 2018 showed domestic solar panel manufacturing at Kim Il Sung University.

Recent defector interviews offer a range of scenarios for how solar is currently being used. Some from more urban areas reported installing small panels to supplement state-provided electricity and power personal



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devices, while others from more rural regions discussed the necessity of personal solar panels due to extremely limited access to and inconsistent electricity supply.

## Urban and Rural Citizen Solar Installations

Generally, access to electricity gets worse the farther someone is from Pyongyang and other major cities. In the more remote areas, solar panels are a must for government offices and facilities that require power to run throughout the day.

These communities utilize their close proximity to the border to initiate trade and private economic activity and have access to more hard currency to purchase and transport panels from China. Two defectors from Hyesan who left North Korea in 2019 suggested most of the solar panels in the city were from China, consistent with reports from around the same time.

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