



GLOBAL SOLAR
COUNCIL

Distributed Solar In China

Short overview of status and
permitting procedures, based on a
survey results.

May 2024

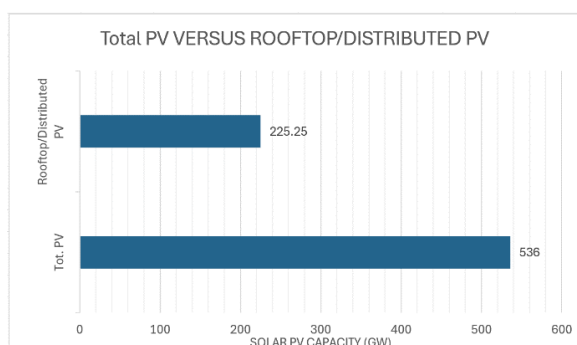
In cooperation with:

CREIA

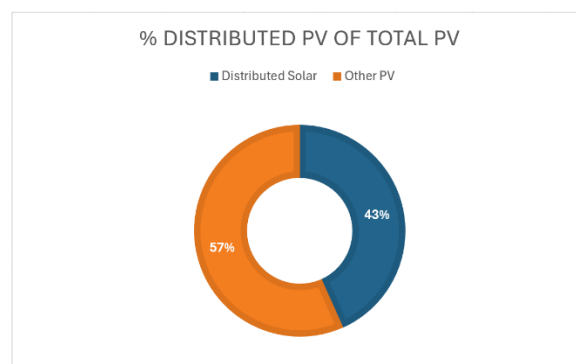


Commonly known to be the largest solar market in the world, China began its solar project as we see it today in the early 2000s, investing in lithium batteries, electric vehicles and solar cells ([Time](#).) Today, China supplies over 80% of the world's solar panels, supplying large quantities at lower rates, making it the world's leader in solar exports. Internally is more of the same, consistently China has found itself to be the country with the largest installed capacity, with last year being no exception.

The country produced 489.8 billion kWh between January and October of 2023. In this period, 142 GW of capacity and been installed in China taking it to a total operational capacity of 536 GW.



Of the 142 GW installed between January and October, 52.1% (67.14 GW) came in the form of distributed photovoltaics, bringing the total amount of distributed photovoltaic capacity to 225.25 GW, 43.3% of the total solar PV capacity.



According to some estimates, the country has rural rooftop fit for the installation of rooftop PV with a size of 27.3 billion m² equal to around 80 million households, 5 million of which already have solar arrays installed. The country continues to set ambitious targets with a target of installing 200 GW of wind and solar in 2024 alone, with the Electricity council predicting an installation of 170 GW of solar alone. Meanwhile, Mordor Intelligence predicts that China will experience a CAGR of 26.09% over the next 5 years ([Mordor Intelligence](#)) reaching a cumulative capacity of 1.98 Thousand Gigawatts.

PERMITTING AND GRID CONNECTION

Whilst regulations are defined at a country level, permitting procedures are handled at a local level with provincial and municipal governments issuing regulations and guidance for local permitting procedures. As a result of this, the difficulty of installing and connecting a small-scale project is dependent on several factors:

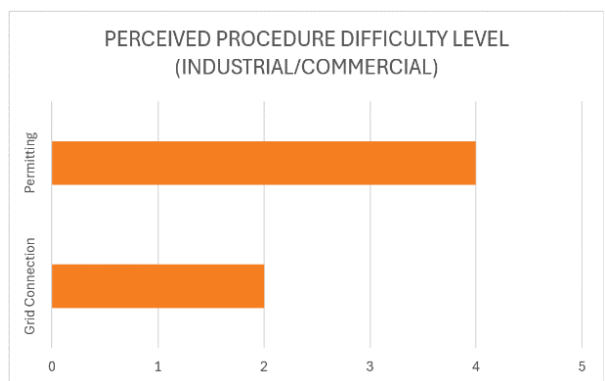
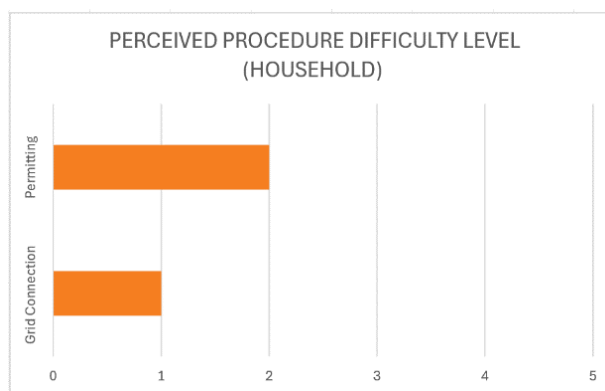
- 1) The materials required for permitting, residents must apply to the local grid

company which processes and records the application according to local regulations.

2) The capacity of the local grid. As of 2021, provinces began to publish the local capacity of the grid, CREIA has noted that in some areas such as Shandong, the rollout of solar projects is being limited by the capacity of the local grids which cannot accommodate the added stress.

To categorize these grids, there is a color scale from red to green with red suggesting that there is no room for added capacity, yellow signifying a need for attention and green indicating that there is the possibility of adding more capacity. However, as the processes are clear and have consistent helpful guidance mechanisms CREIA has assigned a difficulty value of 2/5 for household projects to connect to the grid.

For commercial and industrial projects, it is somewhat more difficult, with processes lasting from 15 days to several months depending on the region and its regulation, for this reason, it was assigned a difficulty value of 2-5/5. Changing a trend, China provides a value of 1/5 and 2/5 for household commercial and industrial projects for their respective difficulty of grid connection. This is because the process is integrated into the permitting procedure with fast quality inspections upon completion.



POLICY AND INCENTIVES

CREIA identifies 3 policy instruments that may serve to harm the growth of the industry:

1) Some provinces with a high rate of solar PV growth are issuing regulations to ensure daily observation of power generation and peak generation limiting to not overstress the grid, this is likely to decentivize the growth of solar with potential installers considering that the profitability of their project may be reduced.

2) As grid limitations arise in some areas, local governments are issuing regulations that lead to costs at the generation end of the supply chain with producers required to install energy storage on site.

3) Some provinces have allocated high output hours of Solar PV into 'valley prices,' which is said to reduce solar PV income significantly.

Incentive mechanisms are in place to stimulate the growth of the solar market even as it enters maturity. Subsidies exist, which are offered by different municipalities, but not all of them. Renewable energy targets are also in place at local levels to provide specific targets for each area. The government also invests heavily in solar projects itself, which is seriously driving the transition in the country. CREIA indicates that the key to the continued growth of solar in China is the upgrading and expansion of the grids, which has been a point of contention throughout the analysis. This would prevent issues such as the limiting of new installations and ensure that the people can benefit the most from the energy produced.

