



# China s 5G base station electricity consumption





## Overview

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How much energy does a 5G base station use?

China Mobile's measurement report<sup>9</sup> indicates that the energy consumption of a 5G base station is 4.3 kWh, which is four times that of a 4G base station at 1.1 kWh. One 5G base station is estimated to produce 30 t of carbon emissions in one year of operation<sup>10</sup>.

How much carbon is produced by 5G in China?

which is four times that of a 4G base station at 1.1 kWh. One 5G base station is estimated to produce 30 t of carbon emissions in one year of operation<sup>10</sup>. Thus, 5G networks in China are roughly estimated to produce over 60 Mt of carbon emissions annually at the national level<sup>11</sup>.

How many 5G base stations are built in China?

As 5G serves as the foundation for the construction of new infrastructure, China, as the world leader in 5G base station construction, has already built over 1.4 million 5G base stations in 2021 alone. In the same year, 5G base stations in China produced approximately 49.2 million tons of CO<sub>2</sub> eq.

How can we improve the energy efficiency of 5G networks?

To improve the energy efficiency of 5G networks, it is imperative to develop sophisticated models that accurately reflect the influence of base station (BS) attributes and operational conditions on energy usage.



## China's 5G base station electricity consumption



### 5G Power: Creating a green grid that slashes costs, emissions

In China, for example, total power consumption by telecoms networks exceeds 50 billion kWh. Once 5G networks are deployed, the power consumption of telecoms networks in China will ...



### China Mobile - Renewable energy and green base station upgrades

Through these interventions, China Mobile added 467,000 5G base stations while achieving a 2% reduction in overall base station energy consumption in 2024, demonstrating ...

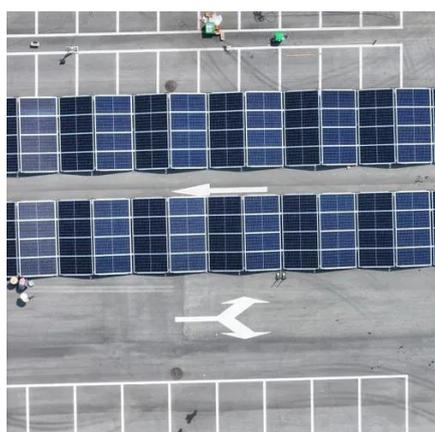
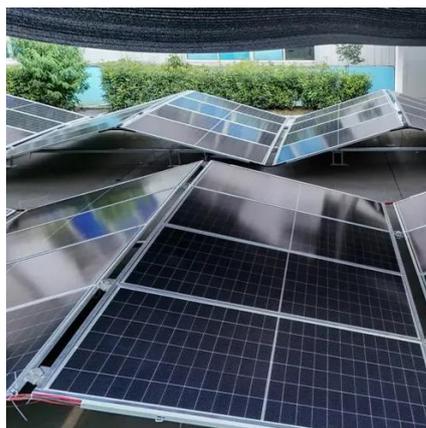


### Sustainable Connections: Exploring Energy Efficiency in 5G ...

China Mobile reports that a 5G base station consumes 4.3 kilowatts (kW), four times that of a 4G base station at 1.1 kW [20]. With nearly 3 million 5G base stations [20], China's daily energy ...

### [Power consumption based on 5G communication](#)

At present, 5G mobile traffic base stations in energy consumption accounted for 60% ~ 80%, compared with 4G energy consumption increased three times. In the future, high-density ...



### [Carbon emissions of 5G mobile networks in China](#)

China Mobile's measurement report<sup>9</sup> indicates that the energy consumption of a 5G base station is 4.3 kWh, which is four times that of a 4G base station at 1.1 kWh.

### [Modelling the 5G Energy Consumption using Real-world ...](#)

To address this, we propose a novel deep learning model for 5G base station energy consumption estimation based on a real-world dataset. Unlike existing methods, our approach integrates ...



### **5G Power: Creating a green grid that slashes costs, emissions & energy use**

In China, for example, total power consumption by telecoms networks exceeds 50 billion kWh. Once 5G networks are deployed, the power consumption of telecoms networks in China will ...

### **The carbon footprint response to projected base stations of ...**



Under the scenario of business-estimated six million base stations in 2030, the share of electricity consumed by China's 5G networks in 2030 could reach 8.4 % of the ...

**5 Years warranty**



### Why does 5g base station consume so much power and how to ...

In addition to other small modules that use electricity, the power consumption of a single 5G base station is generally around 3700 watts, which is about three times that of 4G ...

### Low-Carbon Sustainable Development of 5G Base Stations in China

At present, a single 5G base station's full load power is almost 3600 W, while that of a single 4G base station is nearly 1000 W, considering only the power consumption of the ...



### [China Mobile Henan Cuts Carbon Emissions and Energy](#)

This is especially true of 5G base stations, which use several times more power than 4G stations and account for more than 1.5% of energy use across China, with significant ...

### The carbon footprint response to projected base stations of China's 5G



Under the scenario of business-estimated six million base stations in 2030, the share of electricity consumed by China's 5G networks in 2030 could reach 8.4 % of the ...



**200kWh  
Battery Cluster**

### [Why does 5g base station consume so much ...](#)

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<https://www.asimer.es>

Phone: +34 910 56 87 42

Email: [info@asimer.es](mailto:info@asimer.es)

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