

Climate change

Global surge in air-conditioning set to stoke electricity demand

IEA urges governments to use regulations to improve the efficiency of cooling units



Demand for air conditioning units is increasing as the middle-class grows in countries such as India © Getty Ed Crooks in New York 15 MINUTES AGO

The spread of air-conditioning in hot countries is set to create a huge increase in demand for electricity, threatening efforts to curb greenhouse gas emissions, according to the International Energy Agency, the watchdog backed by consuming countries.

Over the next 30 years, air-conditioning could increase global demand for electricity by the entire capacity of the US, the EU and Japan combined, unless there are significant improvements in the efficiency of the equipment, the IEA warned.

In a [report released on Tuesday](#), the agency urged governments to use regulations and incentives to improve the efficiency of air-conditioning units, to avoid a surge in demand that could put strains on energy supplies and increase greenhouse gas emissions.

Fatih Birol, the IEA's executive director, said: "This is one of the most critical blind spots in international energy policy."

Air-conditioning has had an enormous effect on the quality of life in hot regions, but its use is unevenly distributed around the world. About 90 per cent of homes in the US and Japan have air-conditioning, compared with about 7 per cent in Indonesia and 5 per cent in India.

8bn

Electricity used for cooling in the US is almost as great as the entire demand for power in Africa.

Worldwide number of cooling units expected to be in use by 2050, up from 3.4bn in 2016

But hotter countries are in general growing faster than cooler ones, with higher incomes leading to rising demand for air-conditioning. Populations that are increasingly urban and older are likely to want

more cooling systems, and if the climate continues to warm as expected, that will add additional demand.

Under the IEA's baseline scenario the worldwide number of cooling units, including air-conditioners, fans and dehumidifiers, is expected to rise from 3.4bn in 2016 to 8bn by 2050. About 2bn new air-conditioning units are expected to be installed in China and India alone, with significant growth also in Africa where usage today is low.

The result in that scenario would be a tripling in global demand for electricity for cooling, from 2,020 terawatt hours in 2016, to 6,200 TWh in 2050, with half the global increase coming from just three countries: China, India and Indonesia.

CO2 emissions from cooling systems are set to almost double from 1.1bn tonnes of CO2 in 2016 to 2.1bn tonnes in 2050

Air-conditioning also imposes particular strains on the electricity grid, beyond the additional demand for power, Mr Birol said. It tends to increase load on the system at peak times, because hot weather means households all want to run their units at the same time. It also creates particular problems for solar power, when temperatures stay warm and there is a demand for air-conditioning even after the sun has set.

Those additional challenges for the grid make it more difficult to cut greenhouse gas emissions from power generation. Under the IEA's baseline scenario, carbon dioxide emissions solely from cooling systems would almost double from 1.1bn tonnes of carbon dioxide in 2016 to 2.1bn tonnes in 2050, an increase equivalent to the entire emissions of Africa today.

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There is a wide difference between the energy efficiency of different types of air-conditioning systems, however, creating opportunities to curb the growth of electricity use by using superior technology. The efficiency of air-conditioners used in Australia and Singapore at peak times is significantly higher than in the US, Europe, Mexico and South Africa.

Using more efficient equipment could have a dramatic effect on energy demand, limiting electricity use from cooling systems to just 3,400 TWh in 2050, the IEA states. That would still be up 68 per

cent from 2016 levels, but only 55 per cent of the “business as usual” forecast. The saving would be equivalent to the entire electricity consumption of the EU.

The IEA concludes that “a concerted policy push to rein in cooling energy demand is needed urgently”. It recommends that governments adopt minimum standards, labelling and other measure to encourage consumers to use more efficient equipment.

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