



C3S CLIMATE & ENERGY EDUCATION DEMONSTRATOR VARIABLE FACT SHEET

ELECTRICITY DEMAND

Historical & Projected 1971-2065

WHAT IS ELECTRICITY DEMAND?

Electricity demand is the rate at which electricity is consumed. The more things you switch on at home, the higher your demand. Electricity demand changes throughout the year. Usually in wintertime, we consume more as we keep our houses warm and lit for longer.



HOW IS IT MEASURED?



Electricity demand is measured in watts (W), but since a watt is only a small amount of electricity then kilowatts (kW) is more common. A kilowatt is one-thousand (1000) watts. You may also come across kilowatt hours (kWh). This is the amount of electricity used over a period of time. If you turn on a 100W lightbulb for 10 hours, then it has used, or consumed, 1000Wh or 1kWh. Ask an adult to show you your household's electricity meter (an example pictured left).

DID YOU KNOW?



It is estimated that an incredible 15 trillion watts (15 000 000 000 000 or 15 terawatts) of electricity is being used around the planet at any one time. It is estimated around 15% is used on lighting. NASA's "Earth at Night" image (left) shows not only a pattern of electricity use for lighting, but also the distribution of the world's population which have access to it.



GLOSSARY

ELECTRICITY DEMAND How much electricity is being consumed at a specific time. The electrical items you use at home will have a 'wattage' rating, stating how much electricity it will demand. For example, a laptop may demand around 20-65 watts (W), but an oven may demand around 2000W. This is important for energy companies to know so they can plan to ensure everyone receives enough electricity.

ELECTRICITY CONSUMPTION How much electricity has been consumed over a period of time. If you used your 50W laptop for two hours, it will consume 100 watt hours (50x2) of electricity. It is this measure that energy companies use to work out your household energy bill.

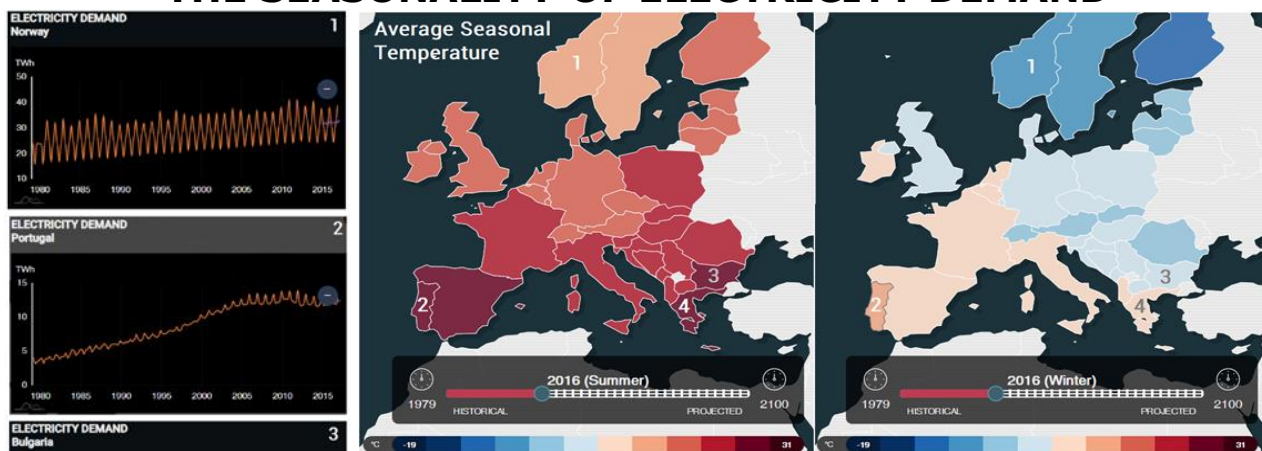
PEAK DEMAND The period of time where the highest amount of electricity is demanded from the energy grid. In most European countries, for homes, this is in the afternoon when everyone gets home from work and starts cooking dinner and turning on things like the TV!

KEY MESSAGES FROM THE DATA

- Most countries in **Northern, Western** and **Southern Europe** have seen a **stabilisation or decrease** in electricity demand since mid-2000s, but in some countries in **Eastern Europe** it has **continued to increase**.
- Future projections of energy demand **varies much between different countries**.



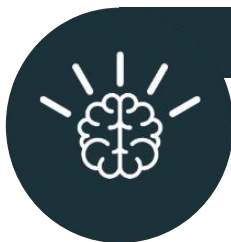
THE SEASONALITY OF ELECTRICITY DEMAND



While a yearly trend may show an increase, decrease or steady electricity demand, seasonal patterns particularly across Europe are often predictable and come in cycles. Usually, a country's electricity demand is higher in winter, as more is used to light up darker days and to stay warm. Countries further north and closer to the Arctic (e.g. Norway) and those further east that have a continental climate (e.g. Bulgaria) increase their electricity demand a lot during the winter. Countries with a maritime climate (e.g. Portugal) have sea breezes to help them stay cooler in the summer and warmer in the winter, so their demand does not vary as much throughout the year. Greece is an example where electricity demand peaks twice, once in winter and again in summer where the high usage of air conditioning increases demand.

i FOR MORE DETAILS AND ACTIVITIES, AND FOR OTHER CASE STUDIES, SEE THE "RESOURCES" SECTION VIA THE MENU.

BE DATA SMART



You know that a centimetre (cm) is smaller than a metre (m) and so 100 cm is a lot shorter than 100 m. Both the same measure of length, but different *order of magnitudes*. While 'watt hours' (Wh) are mostly used to measure energy, when looking at entire countries a huge amount of energy is made and used, so you may come across 'megawatt hours' (MWh) or 'terawatt hours' (TWh). 1 MWh is 1 million (1000000) watt hours and 1 TWh is 1 trillion (1000000000000) watt hours, a huge difference!

The [Copernicus Climate Change Service \(C3S\)](#) is one of the European Union's Copernicus Earth Observation Programme services and is operated by the European Centre for Medium-Range Weather Forecast (ECMWF) on behalf of the European Commission.

SEE THE 'REFERENCES & SOURCES' SHEET FOR SOURCES OF INFORMATION. FOR TECHNICAL INFORMATION, LICENSE CONDITIONS, LINEAGE STATEMENT ETC SEE THE EUROPEAN CLIMATIC ENERGY MIXES (ECM) VARIABLE FACT SHEET E01:

http://ecem.wemcouncil.org/pdf/ECM_VFS_E01_DEM_20180309.pdf

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