

Thermal energy storage diagram

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This will only take a second!

The Basics & The Gaps is the Future Cleantech Architects flagship series of factsheets and animations which aims to summarise the key facts and figures on some of the most challenging issues and technological innovations needed to reach net-zero.

The heat sector plays a crucial role in the global economy and the energy transition: it accounts for 50% of global final energy use and over 25% of global greenhouse gas emissions. How can we decarbonize the heat sector? What role can Thermal Energy Storage play in reaching our net-zero goals? Read our Factsheet below!

[1] Heat consumption is responsible for over 25% of global emissions

Total global GHG emissions, around 55 Gt CO<sub>2</sub>eq: Our World in Data (2023), "Greenhouse gas emissions" and UN environment program (2022), "Emissions Gap Report 2022" (page 6, table 2.1).

Share of global GHG emissions from heat as final energy use: 14 Gt CO<sub>2</sub>: IEA (2022), "Renewables 2022" (chapter 3, "Renewable heat", page 108).

Heat-related CO<sub>2</sub> emissions split between industry and buildings: IEA (2021), "Renewables 2021" (chapter 3, "Renewable heat", page 114).

[2] Heat accounts for 50% of global final energy use, but only 25% of the heat is currently renewable

Global annual energy use is on the order of 420 EJ ? 120,000 TWh: IEA (2021), "Key World Energy Statistics".

Heat accounts for roughly 50% of global final energy consumption, while electricity and transport account for approximately (20%) and (30%). Furthermore, about 25% of heat comes from renewable sources (combining modern renewable heat and traditional biomass use: IEA (2021), "Renewables 2021" (chapter 3, "Renewable heat", page 114).

[3] Heat is needed over a wide range of temperatures, but most of it is used at low and medium temperatures

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