

Renewables Global Status Report (GSR) Collection for 2023 Building Module Factsheet

What are the main takeaways of this report?

- Multiple crises – including the climate emergency and the energy crisis, along with associated inflation and higher energy prices – have played a **key role in increasing demand for renewable energy** in four sectors: buildings, industry, transport and agriculture.
 - Interest in **energy efficiency and renewables** increased across these sectors as a way to cut costs and enhance energy supply.
- The crises pushed countries to enact **key policy frameworks for renewable energy**.
 - If adequately backed by policy frameworks and political will, renewables have the potential to respond to crises by providing the **most reliable and cheapest energy option** to supply buildings, industries, transport and agriculture.
- The main barrier to renewable energy uptake in these demand sectors is the **ongoing support for fossil fuels from governments and multilateral development banks**.
 - These institutions provide subsidies and continued investment for new fossil fuel projects despite clear signals from the scientific community that this is incompatible with a pathway to keep global temperature rise within 1.5 degrees Celsius, as pledged in the Paris Agreement.
- In 2022, the United States announced the **Inflation Reduction Act (IRA)**, allocating USD 433 billion in new spending and tax credits, of which USD 370 billion is dedicated to energy security and climate change for the next 10 years.
- The European Commission advanced its **REPowerEU** plan to curtail the effects of the disruption of the energy markets caused by the Russian Federation's invasion of Ukraine.
 - To reduce the European Union's reliance on Russian gas, REPowerEU sets policies and objectives for energy efficiency, as well as specific renewable targets and initiatives such as a solar rooftop initiative requiring the installation of renewables in new buildings.
 - REPowerEU also establishes an EU solar strategy to double solar photovoltaic (PV) capacity by 2025 and install 600 gigawatts of solar by 2030. In addition, it calls for a doubling of heat pump deployment and the integration of solar thermal and geothermal in district heating.
 - A key REPowerEU objective is to reduce fossil fuel use in industry and transport.
- Momentum towards **net zero greenhouse gas emissions** is driving policies.
 - As of 2022, a total of 140 countries, representing 90% of global emissions, had committed to a net zero pathway, up from 130 countries representing 70% of emissions in 2021
- Because sectors have responded differently to crises, renewables **uptake across sectors varies widely**.
 - Policies must bring together the different sectors to avoid a siloed transition to renewables and to improve co-ordination among sectoral and energy policies.

Why is this report focused on demand – that is, the energy-consuming sectors?

- Understanding trends on the demand side is critical because it helps **identify energy needs** across sectors and **advance progress** in the uptake of renewables – thereby speeding the energy transition.

- The energy transition involves different building blocks, **not only energy supply**, which typically dominates the narrative.
- This report provides evidence of the key role that energy-consuming sectors play in advancing the **structural transformations needed** for a full transition to renewables.
- REN21 decided to structure the GSR 2023 collection to bridge both angles – supply and demand – and will soon release a module on energy supply.

How did the sector respond?

- Buildings are the **largest energy-consuming sector**, accounting for 33% of total final energy consumption in 2020. This is therefore a key sector to target.
- Burning fossil fuels directly for **heat in buildings** – including fossil gas in boilers, and oil and coal in furnaces – generated 8% of energy-related carbon dioxide emissions in 2021.
- In 2020, building operations accounted for 27% of **global greenhouse gas emissions**.
- Energy use in buildings is the **largest contributor to air pollution**, with the residential sector releasing more than one-third of all emissions.
- The **top 10 energy-consuming countries and regions** (the United States, China, the EU, India, the Russian Federation, Japan, Canada, the United Kingdom, the Republic of Korea and Indonesia) represent 67% of global energy consumption in buildings.
- Around 75% of the final energy consumed in buildings (and the associated emissions) are related to **space and water heating**.
- High fossil fuel prices, caused in part by the Russian invasion of Ukraine, have made technologies such as **rooftop solar PV and heat pumps** more cost effective.
- The buildings sector has witnessed record growth in **heat pump sales and use**.
 - Global investment in heat pumps grew 9.6% in 2022, mainly in Europe, followed by Japan and the United States.
 - Germany, Ireland and the United Kingdom announced national targets for heat pump installations that are 10 times above the levels installed in 2021.
- The use of **renewable electricity** in buildings is provided mainly through the power grid, but a growing number of buildings are powered using on-site systems, such as **rooftop solar PV**.
 - The use of rooftop solar PV in buildings is growing globally.
 - The REPowerEU plan proposes a solar rooftop obligation for some types of buildings.
 - In 2022, the US state of California introduced a solar-plus-storage mandate that all new buildings that are required to install solar must also have a battery storage system.
 - Nova Scotia, Canada scrapped a plan to charge a monthly fee to building owners who sell solar electricity back to the grid.
- As the demand for cooling in buildings grows, **markets for cooling technologies** are changing quickly.
 - Globally, 1.2 billion people are at risk due to lack of access to cooling, and demand for air conditioning and other cooling services has been the fastest growing energy use in buildings.

- Cooling is a major driver of electricity demand in developing countries, highlighting the need for sustainable cooling solutions to help reduce energy consumption and greenhouse gas emissions.
- Modern renewables provided around **15.5% of the energy used** in the world's buildings in 2021, up from 11.1% in 2010.
 - However, the share of renewables in buildings has grown more slowly than global renewable energy growth across.
 - The countries with the highest renewable shares in buildings in 2021 were Brazil (where bioenergy is used for heating and cooking, and hydropower supplies large shares of electricity) and Canada (which relies heavily on electricity for heating and also has a high share of hydropower).
- High energy costs spurred greater **interest energy efficiency in heating and cooling**.
 - Investment in energy efficiency grew 15% in 2021 to USD 211 billion, suggesting that consumers may be turning their attention towards reducing energy demand.
 - In 2022, China's Building Energy Efficiency and Green Building Development Plan entered into force, targeting more than 50 gigawatts of solar PV on buildings and geothermal heat coverage of 100 million square metres.