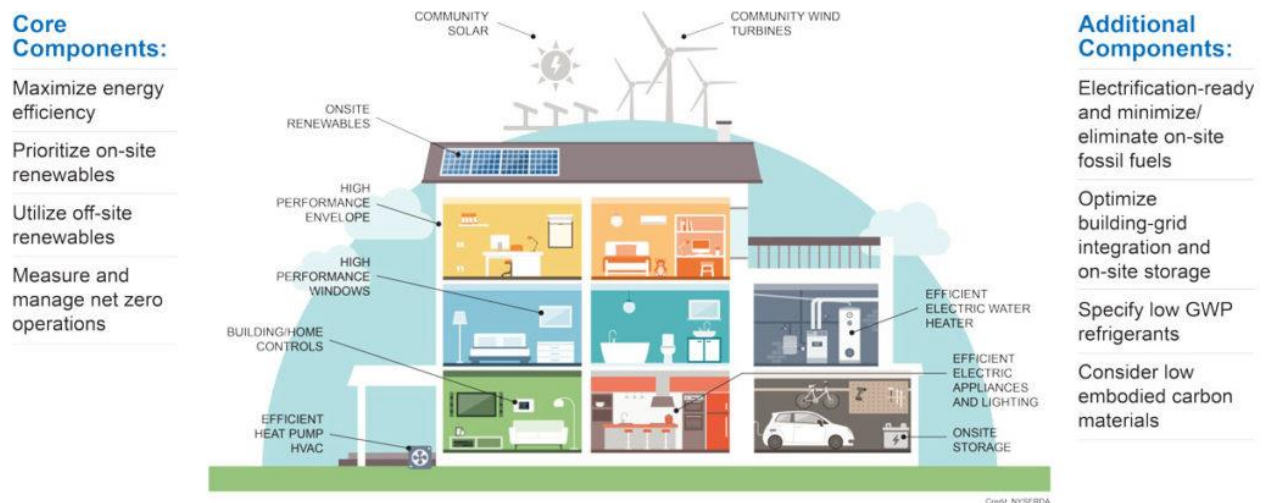


Net-Zero Energy Buildings: A Stepping Stone to Decarbonisation

As global governments shift toward decarbonising their economies, net-zero energy buildings are becoming more popular among developers. Most countries have set [net-zero targets](#) to lower greenhouse gas production and limit climate impacts. An integral part of achieving these net-zero goals is reducing the amount of emissions initially produced. This is done by using more renewable energy instead of fossil fuels, creating carbon offsets through sustainable forestry, and improving energy efficiency – like in buildings.

What does a net-zero energy building mean?

A net-zero building is a structure that [balances its carbon emissions](#) with carbon removal. Typically, an important piece of these projects is installing renewable energy on or adjacent to the building along with power storage. Next is increasing efficiency by using materials that maximise a building's insulation, energy, and temperature control. Paired with smart technology, such as energy meters and heat sensors, net-zero buildings are cutting-edge and generate revenue from excess energy production and storage.



Source: [Urban Land](#)

However, buildings already constructed can also be renovated or retrofit to be as efficient as possible. Installing renewables or sourcing energy from a renewable utility company, as well as changing heating and energy habits within a building using smart technology and appliances, are straightforward steps to reduce carbon emissions.

How do you get a net-zero energy building?

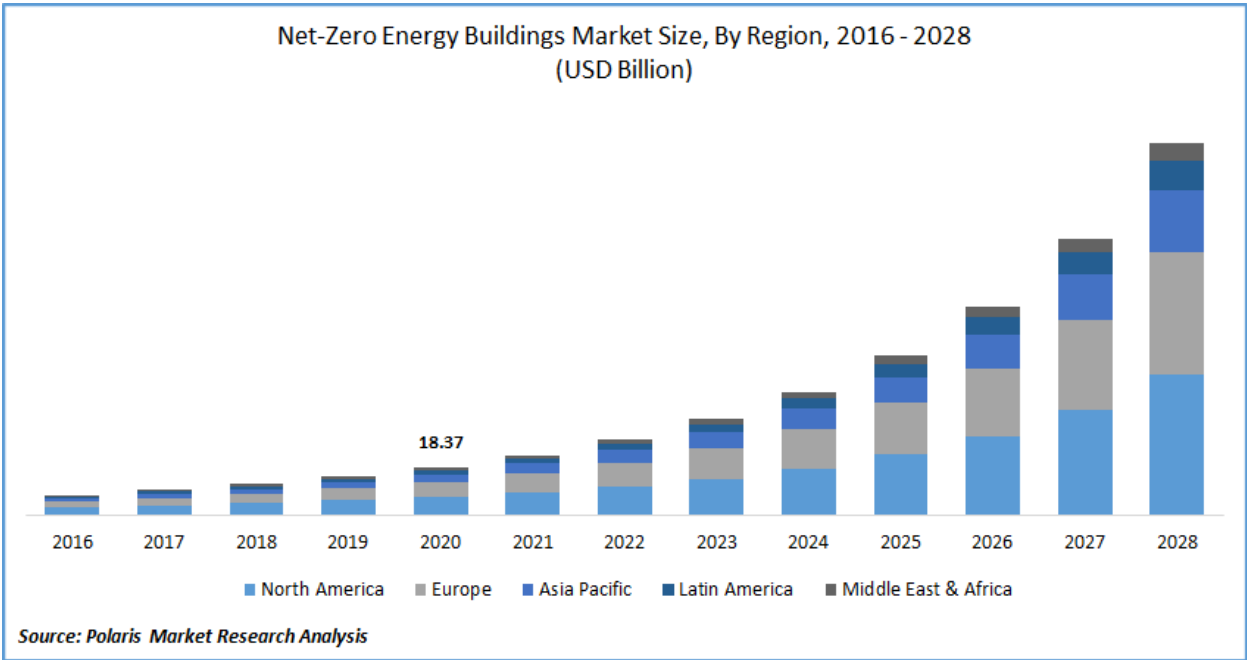
Whether a home, small business or large-scale operation, there are opportunities to create an energy-efficient building that meets net-zero goals. For example, optimising new developments with passive solar heat gain and shading to stabilise temperatures throughout the day can go a long way. This, paired with

energy-efficient heating, cooling, insulation, windows, and appliances, ensures that a home is energy efficient. The exciting part about the concept is that it is [entirely scalable](#) and can be applied to a small family home just as well as a university campus or commercial building.

How many net-zero buildings are there?

A [2017 report](#) by the World Green Building Council (WBG) - before the adoption of net-zero goals by most global governments - showed that there were roughly 500 net-zero commercial buildings and 2,000 net-zero homes around the world. This represented under 1% of all buildings worldwide at the time, and the WGB Council noted a need to ramp up efforts significantly.

However, as part of the report, the Council pointed out that major net-zero development projects were underway. The concept of net-zero buildings is becoming a mainstream ideology. The popularisation of net-zero in everyday life and business has led to a boon in net-zero developments. The net-zero energy building market is expected to reach [\\$47.4 billion](#) by 2026.



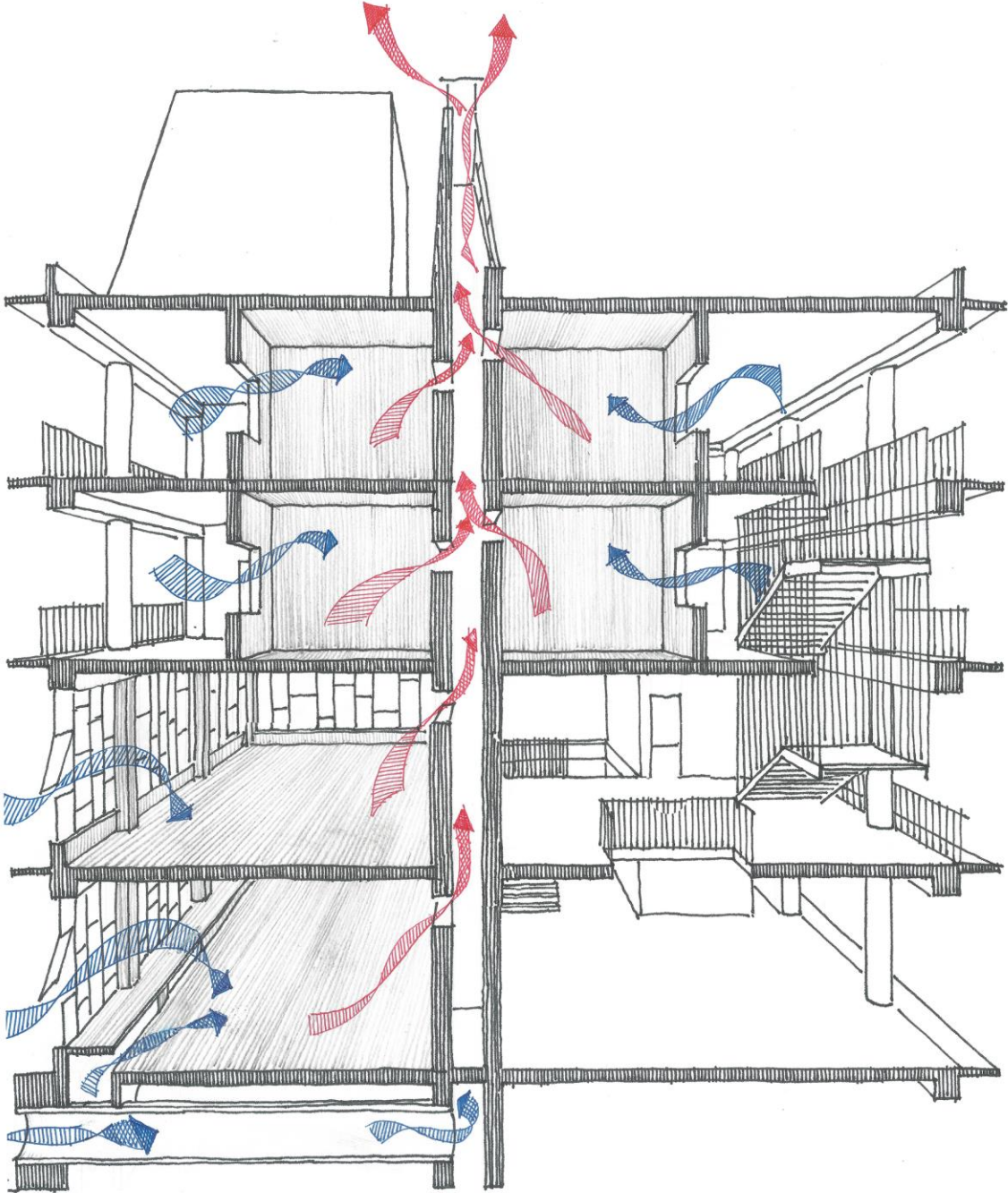
Source: [Polar Market Research](#)

Net-Zero Energy Building Examples

There are several major [net-zero buildings](#) that have caught the eye of developers and companies alike. The Unisphere in Maryland, USA, is a 135,000 sq ft building built in 2017 at the highest standard of sustainable net-zero technology and cutting-edge design. Also, in the United States, the National

Renewable Energy Laboratory (NREL), based in Colorado, has a 362,055 sq ft campus that is LEED-certified and won several awards for its energy efficiency.

In Asia, the Indira Paryavaran Bhawan building that houses India's Ministry of Environment and Forest was built in 2014 and was the country's first major net-zero building. It uses vegetation and open ventilation to improve temperature control in an easily replicable way for Asian environments. This approach was used again for the Avasara Academy in Pune, India, completed in 2020.



Source: [Architect Digest](#)

Disadvantages of Net-Zero Buildings

While energy efficiency and net-zero buildings have a range of benefits, there are some [limitations](#) that may affect their widespread adoption. Building costs are often expensive considering the types of materials and technology needed. Also, the replacement or refurbishment of these systems can prove costly.

Renewable energy does not make up the majority of most electrical grids. Where the installation of sustainable power on-site is not possible, it can seriously hurt the emissions profile of a building. This, in addition to the need for certified building companies capable of carrying out the works, can make the entire process even more expensive.

However, the costs can be offset over long-term energy savings. Regardless, these are all issues that must be considered before starting a net-zero building project.

Net-Zero Buildings Are the Future of Development

Net-zero buildings are the future of construction. The sector is currently responsible for high amounts of carbon emissions and is overall very energy inefficient. The industry is ripe for disruption by adopting more intuitive and environmentally friendly designs, materials, and systems.

Net-zero construction and energy-efficient buildings can significantly lower emissions, mitigate climate impacts, and help achieve net-zero goals when scaled across sectors.