

Sustainable Buildings

Sustainable building enhances the environment. It has improved life-cycle costs and benefits the community and human beings. It reduces resource consumption, uses durable, salvaged, recycled, and recyclable materials, and augments the use of local resource supply in construction which reduces the costs and environmental impacts associated with transportation.

Buildings account for nearly 16% and 40% of US water and energy consumption respectively. Reducing energy and water consumption reduces CO2 emissions and supports water conservation.

Water is the most important natural resource and covers about 71% of the earth's surface where 97% of it is found in the oceans which are not drinkable. It is one of the fundamental compounds without which life of plants and animals and human beings would not be possible. Although water is the most abundant element on our planet, only 3% of the world's water reserves are made up of freshwater which is the water that living creatures can use. Sources of freshwater include groundwater, surface water runoff, and snow. More than half of the population in the US gets their water from the groundwater. Industry accounts for about 59% of the water usage followed by agriculture at 39% and domestic at 8%. Shortage and water pollution are major problems that we face globally. To ensure the future of human beings and all living forms on our planet we must protect and use water responsibly.

The Leadership in Energy and Environmental Design (LEED) rating system has been used by the US Green Building Council (USGBC) to evaluate the environmental performance of the "whole building" over its lifecycle. It is applied to high-rise residential, commercial, and institutional buildings. A LEED-certified silver-rated building should not cost more than a similar conventional building but has a return on investment much higher than the conventional building over the life of the building. The Gold or Platinum-rated buildings might cost more than similar conventional buildings but incorporate advanced technologies or have significant energy generation capacities, not present in the standard buildings.

At CEERS our research and training are focused on reducing the energy consumption of buildings, incorporating renewable energy, developing new recycling materials, water conservation and recycling, air distribution optimization and heat management, and maintaining a healthy indoor environment.