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## How can low-cost sustainable architecture and sustainable practices help control pollution and manage waste effectively?

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Environment and architecture have a deep-rooted connection with each other. The aim of this study is to use architectural knowledge to build homes that are environmentally sustainable. In this study, economic, climatic, cultural aspects have been taken into consideration while designing the prototype houses in both the climatic zones i.e. Semi-arid (Tharparkar Desert) and Alpine zones (Gilgit Baltistan). For both zones, a sustainable architectural design was fabricated that included all the aspects of sustainability i.e. structure efficiency, materials, and energy efficiency, water efficiency and reduction of waste. An orientation of the houses has been done such that the house receives minimum solar radiation in semi-arid zones and maximum solar radiation in alpine zones. Sunrooms have been incorporated in the house plan that can help in effective ventilation and maximization of solar energy for Gilgit Baltistan respectively. The materials used for semi-arid and alpine areas are regional, sustainable, and cost-effective which employs less intensive labor and are energy efficient. Techniques of simple rainwater harvesting system and solar water pump have been introduced for domestic purposes using the materials that are readily available in those areas. These techniques were introduced with an aim to help cope with the problems of water scarcity and drought in Tharparkar Desert and for conserving and utilizing rainwater efficiently in Gilgit Baltistan. Furthermore, in this research, the technique of eco-toilets has also been incorporated that aims to eradicate the problem of defecating in the fields and techniques to convert the waste into compost that can fertilize the soil. These prototype houses can ensure a better lifestyle for these people keeping in view their economic conditions and the health and comfort of the occupants in mind.

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