

ABSTRACT

Energy Efficient Building Design
in Tropical Countries

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There is concern that the world's non-renewable energy resources will not last beyond the next three decades. In addition, steadily rising energy costs have made it imperative to look for alternative, renewable energy sources. Housing is one of the four major energy-consuming sectors. Research has shown that a 50% reduction of the energy usage in housing would result in an increase of ten years in the estimated life of the world's non-renewable energy resources which is quite significant.

The factors affecting comfort in tropical climates and how comfort conditions can be achieved through the use of passive cooling techniques and the choice of appropriate materials and construction systems are analysed. The various active systems are also discussed together with the viability of renewable energy sources such as solar energy

and biogas. Case studies have been reported including field studies of four buildings in Trinidad.

This report concludes that, in tropical climates, a significant extension in the estimated life of extractable fossil fuel reserves can be achieved by the use in buildings of proper design techniques such as orientation, window placement, solar shading and construction materials. The viability of renewable energy sources such as biogas and solar energy is demonstrated.

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