

Ecologically sustainable design essay sample

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Ecologically sustainable design provides environmental, social, economic benefits. Because built environments are the largest contributor to the world's greenhouse gas emissions, ESD features are utilized in the built environment which is known as green building that significantly reduces the impacts of our built environment in areas such as energy efficiency, water conservation, waste reduction, and use of environmentally friendly materials which is beneficial for the environment. It is also economic in ways that green buildings can be cost efficient in the long run. In addition, it also improves indoor environmental quality that can create a healthier environment for the occupants of a building which may help increase their productivity.

Integrating ESD elements in built form has a number of benefits for the broader community such as reduced greenhouse gas emissions, reduced water use, reduction in the impact of flooding events, protection of water quality, more sustainable resource use and reduced waste and support of sustainable products and materials industries. Other potential benefits of green building can include: Environmental implications

The whole purpose behind sustainable building is to preserve our environment and avoid the depletion of the earth's natural resources. When sustainable substitutions are made throughout each phase of the project's development it allows us to: * Enhance and protect biodiversity and ecosystems

* Minimise energy use

* Waste reduction

- * Reduce emissions
- * Conserve water
- * Improve air and water quality
- * Reduce waste streams
- * Conserve and restore natural resources
- * Temperature control

Economic implications

Not only does sustainable building improve the quality of our environment but it also has many economic benefits as well. By using sustainable materials, reducing energy consumption, and improving water efficiency it will enable us to:

- * Reduce operating costs
- * Helps aid in the expansion of the green market
- * Optimizes the life cycle of the building
- * Improve occupants attendance and productivity
- * Increases property values
- * Reduce operating costs
- * Create, expand, and shape markets for green product and services
- * Optimize life-cycle economic performance

Social implications

Although the environmental and economic benefits of green buildings are well known, the social benefits of green buildings are often ignored. By improving indoor environmental quality we can:

- * Enhance occupant comfort and health and therefore reduce absenteeism
- * Improves worker productivity

- * Create an aesthetically pleasing environment
- * Increases occupant overall morale
- * Heighten aesthetic qualities
- * Minimize strain on local infrastructure
- * Improve overall quality of life

If the building designers and owners embrace the green building approach, it is believed that it will result in a better building at no significant cost premium. The green building idea is the most rational approach to long term impacts, uses and costs. Sustainability provides an organizing principle that must be used to plan for a stable future and a durable building. Using resources wisely to establish a continuous cycle of use and renewal is at the centre of this principle. To a building sector that has thrived on the exploitation of both natural resources and natural waste disposal sites, sustainability means living within the carrying capacity of regional and global environment. To the occupants of sustainability designed buildings, it means better health, a more pleasant living environment, lower costs, increased environmental responsibility, and a supportive community.

Other Implications for the future of green building include:

- * Save energy
- * Create a healthy indoor environment
- * Create community (make it happen financially as well as socially)
- * Minimize pollution generation
- * Recycle materials
- * Reduce life cycle cost of housing
- * Promote comfort (thermal, auditory, visual, odors etc.)

- * Reduce material use
- * Minimize construction waste
- * Maximize longevity/durability
- * Monitor and improve performance (to ensure efficiency and improve systems)
- * Protect and enhance the site (eg. Create gardening opportunities)
- * Save water (reduce use, recycle, reuse)
- * Educational function (for co-housing and sustainable building)

An example of a green building and its ESD features...

This green building symbolises an environmental awareness in the world's second most populous country. India Tower will be 74 storeys tall with 882,000 square foot of multi-use space when completed in 2010. Each rotated block in the tower will have a completely different use such as residential, office, retail, recreation etc. The design incorporates the use of solar shading, natural ventilation, day-lighting, rainwater harvesting, and green interior finishes and materials to make this one of the greenest buildings in India. The India Tower has already achieved the US LEED Gold rating.

Other Implications for the future of ESD

Ecological Benefits:

Correspondingly, ecologically sustainable design provides ecological enhancements, strategies which are designed to improve wildlife habitat for plants and animals. Ecological enhancements restore a site to a more natural, ecological healthy state, which increases the value of the affected

ecosystem as well as the neighbouring built environment. The benefits of ecological enhancements are: Environmental benefits:

Ecological controls can benefit the environment in numerous ways, such as serving as a filtration system in stormwater runoff or biodegrading environmental contaminants.

Economic:

Remediation projects with ecological enhancements are resulting in significant cost-savings.

Social:

Sustainable development using ecological enhancement serves communities by preserving green space and creating opportunities for environmental education. Economically sustainable design also does a good job in optimising indoor environment quality which is a measure of the indoor environment that considers air quality, noise, thermal comfort, visual amenity and control. Since people spend 90% of their time indoors, this reduces and minimises the toxicity of their indoor environment because it was declared that indoor pollution is estimated to cause thousands of cancer deaths and hundreds of thousands of respiratory health problems each year. This achieves occupant satisfaction in the long run.

Waste Prevention Strategies:

Waste prevention strategies are needed for preventing generation of solid waste. A good garbage prevention strategy would require that everything brought into a facility be recycled for reuse or recycled back into the

environment through biodegradation. This would mean a greater reliance on natural materials or products that are compatible with the environment.

Renewable Energy - Renewable energy is clean, affordable, domestic, and effectively infinite. It produces no emissions and results in cleaner air and water for all. Renewable power creates jobs and generates revenue for local communities. Revenue from solar and wind farms helps stimulate local economies that need new roads, schools, libraries, and hospitals.

Wind Energy:

Wind turbines do not release emissions that pollute the air and they do not require water for cooling. Not only does wind power provide a clean source of electricity, it helps keep electric rates low and protects consumers against fossil fuel price volatility.

Solar Energy:

Using solar energy produces no air or water pollution and no greenhouse gases. Solar energy is predictable and is most efficient when utility rates are the highest.

References:

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<http://www.hickoryconsortium.org/what-the-hickory-consortium-does/28-benefits-of-sustainable-design-for-buildings.html>

15 of The Greenest Buildings in The World

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