GREEN BUILDING

Student's Name
Professor's Name

Course Name
Date of Submission

Introduction

The need for environmental conservation has been a major concern to all the parts of the world today. The world has united in fighting global warming with various scientists coming together to innovate and invent new approaches to bring it under control. One of such innovative ways aimed at addressing the effects of global warming through embracing the concept of green building. According to Yudelson (13), a green building can be defined as that which has been designed to minimize the use of water, energy, and natural resources. It also seeks to reduce the amount of waste being generated and that of green-house gases being emitted as well as providing those who dwell in it with a healthy and conducive. The overall result is an environmentally sustainable and user-friendly environment.

This concept had been necessitated by the findings that buildings alone contributed 48% of all the green house gases being emitted in the atmosphere today (Clarkes and Callahan (12). At the same time it is established that a third part of the total amount of the global energy being used is consumed in buildings including both the offices and the individual houses. Various governments, civil groups, and such bodies as the United Nations have therefore been providing the force behind this technology with the need for the incorporation of green features while designing new buildings as the major aim. Older architectural buildings had, for example, been designed with concrete and glass boxes which normally utilize large amount of non-renewable energy for their running. On the other hand, the green buildings are specifically designed to enhance the harvesting of rainwater, the use of bicycle in commuting, use of solar in heating, natural ventilation and other practices which are environmental friendly.

The Design/Characteristics of a Green Building

Spiegel and Meadows (14) note that the green buildings are generally designed and constructed in such a way as to allow the efficient utilization of such resources as water and energy, protect the health of those who are residing in the house, and finally ensure the reduction of waste including that which can pollute the environment. In looking at the components of a green building, this write up will consider the various factors that are taken into consideration during the eval-

uation by LEED organization. These include: the sustainability of the site, the efficiency of the water use and storage, the energy efficiency and the general atmosphere, the sources of the materials used in the building, and finally the quality of the indoor environment.

Energy Use

With the escalating energy prices coupled with the current climate change that has since become a major concern to the world, it is necessary for nations to think about measures required to reduce the use of fossil fuels in buildings. Bauer and Peter (10) note that this debate has led to such concepts like a zero energy home which is a home that produces as much energy as it consumes. They observe that key to green building concept is the measures aiming at reducing the amount of energy being utilized. It takes into account the amount of energy consumed during extraction, transportation, processing, installation and finally operation of services in the resulting building. To increase energy efficiency, special installations and use of renewable energy such as solar is preferable.

Every green building must therefore be designed in a way that allows for the collecting of the natural light especially in the intermediate floors. It minimizes the amount of the electricity being used. Bauer and Peter (10) note that in such a design, there is restriction of sunlight by the trees that are always planted just outside the lower floors of such buildings. This ensures the reception of light fixtures that are highly efficient which besides its ability to minimize the amount of energy being used, also produces a pleasant light. Trees are specifically meant to provide shades to the windows and roofs during the hot seasons. Additionally, the windows should also be highly efficient so that together with insulation provided for in the walls, ceilings, and the floors they can enable the best control of temperatures.

Moreover, green buildings are also designed to make maximum use of the natural light by placing windows in such a way that they can allow the maximum use of the natural light from the sun during the day (Bauer and Peter 58). This helps to minimize the need to use electricity. Additionally, the solar installations to be used for such purposes as water heating have also greatly helped in reducing the cost of energy in green buildings. Bauer and Peter (58) note that buildings also use renewable energy sources which are also always generated on site through the use of power from such natural sources as solar and wind.

Efficiency in Water Consumption

According to Johnson and Gibson (144), green buildings are also designed and constructed in such a way as to reduce the water consumption at the same time ensuring that the water remains of high quality. The call for conservation of water has been necessitated by the fact that the water demand in most areas exceeds the amount of the same that can be obtained from the underground sources. Johnson and Gibson (144) also note that from the design stage, green buildings normally avoid any possibility of disrupting the way in which water flows naturally. They emphasize that any green building must be designed in such a way as to ensure collection of all the rainwater falling over the area covered by the building. The water collected is then used within the building or is directed in a way that allows it to replenish the ground water table both in the building and in areas surrounding the building.

Green houses also seek to provide such facilities that allow the larger proportions of water being used to be purified and re-used. Johnson and Gibson (158) observe that this has become possible through such measures as the use of a dual plumbing design that allows the recycling of water especially used in the laundry, washrooms and the kitchen. Such recycled water can then be used in the toilets, gardening, or cooling of the towers used in air conditioning. Additionally, Green buildings make use of such technologies as the fixtures like lowly flowing shower heads to ensure the conservation of water that greatly minimizes the wastage of water. It also emphasizes the need to minimize the use of the materials that negatively affect the flow of water in the sewer system like the tissue papers which are increasingly being replaced by such materials as bidets.

Materials Used

In the concept of green building, experts have come up with a category of certain materials that have been considered green. Johnson and Gibson (120) note that the green materials include such materials as green wood, green cement, and plants like bamboo which are considered renewable because of their faster growth. Green wood normally entails the wood alternates which are made from such materials as hemp fibers and plastics which are biodegradable. They observe that such materials are pressed together put under high temperature to produce layers which are normally just as strong as the wood itself. This wood is easily produced by the microbes which in turn also produce methane gas usually

absorbed by yet another bacteria. This process leads to the production of another plastic used in making additional wooden plank. Johnson and Gibson (123) note that this forms a cycle which ensures that the wood is continuously reproduced.

Equally, Bauer and Peter (60) note that scientists have also developed a way of producing green cement and aggregate. The method uses CO2 from various power plants which is mixed with the water from the sea. This results into the production of the minerals that are finally used as the raw materials in the production of concrete. The two scholars observe that apart from the two technologies there are a number of other green materials including bamboo plants, straw, and those stones and metals that can be recycled. According to Bauer and Peter (60), bamboo and straw are considered renewable because of their faster growth which enables the quick replacement of those which have been used. There has also been emphasis on the need to use the industrial goods that can be recycled like foundry sand. Additionally, the emphasis has been on the need to use the locally manufactured raw materials that helps to reduce the distance for which the materials will have to be transported. This directly reduces the amount of energy involved in the building process.

Indoor Environment

Bauer and Peter (26) also note that green buildings are designed in such a way as to allow their inhabitants to feel like they were right under the natural light. This is possible by designing both the interior and the exterior parts in such a way as to enable them to tap both the artificial light and the natural one that results in enduring the transparent view. Equally, the air in the green buildings is normally conditioned to provide a better environment for those staying in them. The air conditioning particularly ensures an improved air quality which is healthy for a living. The air quality in the green buildings is maintained by reduction of impurities such as volatile organic compounds. This prevents such feelings that would be produced by materials like paints and furnishings that can adversely affect the health of the people in the building (Bauer and Peter, 42).

Johnson and Gibson (144) identified another important aspect of ensuring an improved air quality in the green buildings as the fact that the accumulation of the moisture can also be controlled. This means that the growth of certain bacteria and viruses that may cause diseases and discomfort to humans are also

locked out. They note that green buildings are also fit with technologies which allow controlling the temperature around and the rate at which the air can flow in the room. This results in an improved overall thermal quality.

Waste

The reduction of wastage of such resources as water and energy together with the construction materials is also a basic consideration in coming up with any green house building plan. According to Spiegel and Meadows (30), the plan is also broadened to ensure that amount of materials going to waste is greatly minimized. Moreover, the point is that the need to reduce the amount of waste generated by the people staying in the green houses is also closely considered. They note that even the old buildings that are normally considered as wastes are collected and reclaimed to some other materials that can be used for other purposes. Green building concept also emphasizes the need to minimize human impact which has been possible through such initiatives as having the used water like that from the laundry or kitchen being channeled to other uses such as irrigation of crops or toilets.

Additionally, both the waste and the wastewater can also be used in the production of organic fertilizers. According to Johnson and Gibson (159), it helps to provide the nutrients that can be used to improve the productivity of the soil. Moreover, it also results into the formation of the carbon sinks that helps to reduce the amount of CO2 present in the atmosphere which is in turn a great boost to the fight against the global warming as it reduces the amount of greenhouse gasesn present in the atmosphere.

Challenges of Green Building

The challenges of this concept have majorly been connected to its high initial cost. Some scholars have argued that the total cost of constructing of an environmental friendly house is much more than what would be used to combat the influence of global warming in other ways. Spiegel and Meadows (30) note that such scholars have gone ahead to propose the use of such measures as planting of trees. The assumption in this argument is that most of the human activities enhancing the processes leading to global warming result from poverty and

therefore such huge money as is required for the construction of the green houses would be used to empower such poor people. According to them, this would reduce such acts as deforestation and soil erosion thereby greatly reducing the increase of global warming.

However, the proponents of the concept have argued that most of the green buildings are capable of generating more than what was used during their construction and in subsequent maintenance. Bauer and Peter (26), for example, note that those who invest in green buildings normally incur greatly reduced cost of energy as well as the reduced health expenses because greenhouses ensure improved environmental condition both indoor and in the surrounding area. Such buildings are also normally on high demand therefore attracting high rents which ensures very high rate of turnover. Moreover, the owners of certified green buildings enjoy large amount of incentives from the government which boosts their savings (Yudelson, 57).

However, Yudelson (13) notes that any green building must pass through the legal process of rating that is conducted by such bodies as LEED. The organization has set a standard for the certification of any building as green. He points that the process of certification is a tedious process which begins right from how the building has been designed to the time that its construction shall be complete. Even after its completion, LEED still continues assessing and monitoring such buildings to ensure that they are maintained in their green status failure to which the certification may be revoked. The organization has set various certified green level ranging from silver to gold based on the points a building gets by the time of the completion of its construction.

Conclusion

In conclusion, the paper has made it clear that measures should be taken to promote the use of the concept of green building among the architectures. This will ensure that new buildings are designed and constructed in an environmental friendly way. The old buildings should also be refitted to be in line with the new technology. The end result would be a reduction in the cost of countering the increase in climate change while also reducing electricity, health and tax expenditures.

therefore such huge money as is required for the construction of the green houses would be used to empower such poor people. According to them, this would reduce such acts as deforestation and soil erosion thereby greatly reducing the increase of global warming.

However, the proponents of the concept have argued that most of the green buildings are capable of generating more than what was used during their construction and in subsequent maintenance. Bauer and Peter (26), for example, note that those who invest in green buildings normally incur greatly reduced cost of energy as well as the reduced health expenses because greenhouses ensure improved environmental condition both indoor and in the surrounding area. Such buildings are also normally on high demand therefore attracting high rents which ensures very high rate of turnover. Moreover, the owners of certified green buildings enjoy large amount of incentives from the government which boosts their savings (Yudelson, 57).

However, Yudelson (13) notes that any green building must pass through the legal process of rating that is conducted by such bodies as LEED. The organization has set a standard for the certification of any building as green. He points that the process of certification is a tedious process which begins right from how the building has been designed to the time that its construction shall be complete. Even after its completion, LEED still continues assessing and monitoring such buildings to ensure that they are maintained in their green status failure to which the certification may be revoked. The organization has set various certified green level ranging from silver to gold based on the points a building gets by the time of the completion of its construction.

Conclusion

In conclusion, the paper has made it clear that measures should be taken to promote the use of the concept of green building among the architectures. This will ensure that new buildings are designed and constructed in an environmental friendly way. The old buildings should also be refitted to be in line with the new technology. The end result would be a reduction in the cost of countering the increase in climate change while also reducing electricity, health and tax expenditures.

Works Cited

Bauer, Michael and Peter, Mosle. *Green Building: Guidebook for Sustainable architecture.* New York: Library of Congress, 2007. Print.

Clarkes, Snell and Callahan, Tim. *Building Green.* New York: Lark Books, 2009. Print.

Johnston, David and Gibson, Scott. *Green from the ground up: sustainable and healthy construction of home.* Newtown, CT: Taunton Press, 2006. Print.

Spiegel, Rose and Meadows, Dru. *Green building materials: product selection and specification guide.* Hoboken, N. J.: Wiley, 2012. Print.

Yudelson, Jerry. *The green building revolution.* Washington: Island Press, 2008. Print.