

Importance of sustainable construction engineering essay



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Definition for sustainable construction stated by Kibert: “ the creation and responsible management of a healthy built environment based on resource efficient and ecological principles’ as a starting point.” These days when construction industry is one of the major contributors to the damage of the environment is an emergence to act.

The scale of energy efficient refurbishment is one of the most vital basics that need to be measure to contribute with the reduction of energy consumption in the building sector. In addition, the implementation of new building refurbishment techniques provides an excellent way to decrease energy utilization. At the same time, it involves technical, economic and social problem. According to Sunnika the real potential for sustainable building and CO2 carbon reduction lies in a management of the existing stock of residential building.

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The construction industry plays a very important role in the human existence, which is important to quality of life in terms of housing, workspace, utilities and transport infrastructure; therefore, it has a high economic significance and has serious environmental and social consequences (Burgan and Sansom, 2006). When people spent most of the time of the life in buildings the good practice of the new technologies will provide an affordable housing, which will be reflective in their activities and satisfaction in their lives.

The regulations of sustainable development should focus on the building sector more specifically in the life cycle of the building stated by Sobotka and Wyatt (1998). The inefficiency of buildings during the life cycle, it is a barrier to the appropriate sustainable development due to the changes that has to suffer the building when it is the time to upgrade the housing stock of new technologies. In many places in the world there are large amount of structures that posses and incredibly long lasting condition including bridges, buildings, cathedrals and so on. A standard life time of 80 to approximately 100 years in most of these structures will mean that new designs are going to have high impact on a construction´s environmental performance. Therefore, when considering a new design, it is imperative to include sustainability principles from the beginning of the project which allows the achievement of low environmental-impact. . [17]

At this point is when is possible to analyze the importance that the flexibility of the design has over the environment.

Sustainable construction must rely on three basic principles:

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Resource management

life-cycle design

Design for human

Design for the environment. (Sev, 2009).

2. 4. 1 RESOURCE MANAGEMENT

Around 50% of all global resources are consumed by the construction industry (Edwards and Hyett, 2001). All building activities involve the use, redistribution and concentration of some components of the earth's resources, such as water, energy and materials. During these activities effects occur, changing the ecology of that part of the biosphere (Hudson, 2005). The accurate use of those resources are really important at the moment of the construction, the scheme shows some important points that need to be assessed at the moment to achieve a sustainable construction.

Efficient use of energy

Efficient use of water

Efficient use of materials

Efficient use of land

2. 4. 2. LIFE CYCLE DESIGN

2. 4. 3. DESIGN FOR HUMAN

According with these principles, it has to be taking into the account for the future of the new designs, the integration of the principles in order to

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accomplish the performance of the building. Additionally, flexibility in the design is a great contributor to the environment when its time of change the functions into the building, this characteristic is really useful.

Sustainable design and construction aims to create a healthy built environment, preventing environment degradation and providing human health and good conditions of living. However, long-established designs and current constructions procedures are giving more importance to monetary and quality issues when sustainable construction is one of the most relevant issues in terms of sustainability, especially when is one of the areas that needs to be assessed, nowadays when the environment is tackling against.

There are six ideologies for the sustainable construction stated by Kibert [16]:

Minimisation of resource consumption;

Maximisation of resource reprocess;

Make use of renewable and biodegradable resources;

Look after the natural environment;

build a healthy and non-toxic environment; and

Pursue eminence in creating the built environment.

By following the six ideologies stated by Kibert, that are an example of the possible issues that need to be covered and attended, especially when the climate change is the one of the main problems. And the construction

industry is one of the most important areas that necessitate to be assessed due to the effect that this market has against the environment. In addition, the awareness of all the people that is involve in the construction industry and the people that is not involve how are the consumers it is in actual fact important. In other words both the existing built environment and the process of adding to it have numerous environmental, social and economical impacts. Construction is directly and indirectly conscientious for the emission of greenhouse gases, outstanding to energy used for raw material removal, transporting, constructing, operating, maintaining, demolition etc. (Sorrell, 2003; Rwelamila et al., 2000). All the communities are involved in different ways and through the global regimentations that allow communities to adopt new programs and new technologies with accessible prices and understand of the use of them.

BARRIERS IN THE SUSTAINABLE CONSTRUCTION.

There is a currently some aspects that constrain to achieve the targets that the government has for the reduction of the greenhouse gas emissions by 2050. In the white paper it was accepted the dependency of this factors: increasing energy supply from renewable resources, the emergence of new technologies such as fuel cells, improving conventional generation e. g. retrofitting clean coal technologies; and increasing energy efficiency. Another barrier to the implementation of energy saving measures and the use of energy efficient technologies has been the past cost of both electricity and gas in the UK. (Kelly, 2005). XXXXX

There has been a lot of attention to energy use in new buildings through regulation and exemplars. But improving new buildings only addresses part <https://assignbuster.com/importance-of-sustainable-construction-engineering-essay/>

of the problem – around 60% of the building stock in 2050 has already been built. And nearly half of these buildings were built before 1985 when the energy efficiency requirements of Part L were introduced.

It can be expensive and inconvenient to modify a building while it is being used. But buildings experience a number of refurbishments throughout their life: from refreshing the brand to a change of use. We have been learning how to make the most of these opportunities to cut carbon.

We have published a range of case studies and a management guide to share our experience in low-carbon refurbishments. We also offer a building is design advice service to help cut carbon in new-build and refurbishments. ([www. carbontrust. gov. uk](http://www.carbontrust.gov.uk)).

BEHAVIOUR BARRIER

Social barriers are related to behavioural barriers, for the reason that, it involves thoughts and values, as a consequence the behave of the individuals is an obstacles to accomplishment the targets. An evidence is that this type of barriers are absence of information or perceptive of the concerns.

“ At the individual level, values, beliefs and social context are also critical antecedents or determinants of behaviour and thus may either facilitate or inhibit climate change responses”(Burch, 2009). This is one of the most difficult barriers to diminish due to attitude of people, government have been working hard in policies and legislations as one of the most effective way the change the mind of the society. Nevertheless this is hard work and it needs time to persuade people with dynamic way to teach.

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Human behaviour is a barrier in terms of renewable technologies and the possible improvements in the carbon pricing, when the Government have a role in providing a policy framework to guide effective adaptation by individuals and companies in the medium and longer term. To educate individuals and change their behaviour is a difficult constraint to beat. However, a new policy that motivates people to contribute and make them conscious about the payment of the humanity has with the environment will help to minimize the environmental problem.

KNOWLEDGE BARRIER

The lack of knowledge of the parties is one of the main barriers that sustainable development was confronting, before people were conscious about the environmental problem, individuals start investigating on this area, however, there is a lot to know about this topic specially for the those that are involve in all the areas that implicate sustainable development such a construction industry.

TECHNICAL BARRIER

The performance of the new technology is a risk in most of the cases due to limitation in the structure of the building during the installation of the new technology.

It became a barrier in existing buildings when it cannot be achieved the integration between the structure of the building and the renewable technologies as it is new element in the structure of the construction. " They are reluctant to adopt policies which require excessive design changes"

(William, K. and Adair, C., 2009). The interventions of new technologies can

show some problems at the moment of the installation of new technologies, this is one constrain that can be show in the currently improvements that have been assessed in the housing stock. It is possible to find ways to enhance the performance in the installation of the ways in the future. However, this barrier make designers think for future constructions and take into the account from the first phase of the design.

This is designed for a development to be technically sustainable the technologies, materials or design features used need to perform effectively and contribute to sustainable in their right as Stated by Williams and Dair. The design of buildings is one of the most common barriers when is time to install new technologies such a ground source heat pump or P. V. Such as installation can be affected due to the conditions in the structure of the building, the stakeholders have to make several changes in the design and it will increment the cost. These drawbacks could be avoided, thus designers, architects and developers are found on its design of the structure of new buildings.

Buildings generally experience a variety of changes and adaptations during their life-cycle, and this process is dramatically important and depending upon the manner in which they are operated and managed, can have varying levels of environmental impact. This is related with “ the inertia of the built environment” where the physic structure of the building does not change quickly. Conversely all of these basics do alter over time and are replaced, repaired, refurbished or renewed. Sustainability is not about the general or fundamental immediate disorder of the built environment, which knowledge has proven to be costly in both social and financial terms.
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Nevertheless sustainable development is disturbed with all the changes that a building can suffer during their life cycle. (Wilkinson, 2007).

DESIGN BARRIER

the initial phase of the building is fundamental and critical for the future sustainable development, to prevent the currently the problems and the difficulty to find a immediate solutions, the labour for the architects, developers and engineers have to be more solid form the first stage of the design, when in the stock is visible, one of the biggest problems at the moment is the improvements that have to done in the for nowadays when sustainable construction became important and is one of the most relevant topics when it is possible to analyse all the factors in the appropriate development. The stock in united kingdom is a big issue to resolve due to the different stage of design that is possible to view as it was mentioned it can be solve trough the strong policies in the marketing and at the same time,