

## IMPACT OF PRECAUTIONARY CONSTRUCTION MANAGEMENT FOR SUSTAINABILITY IN NEPAL AND ITS CHALLENGES: A STUDY

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### *Abstract*

The aim of this study is to apply a model for enabling a client or a construction project manager to deal with significant aspects of sustainability during construction works and to validate this model by input from real cases, with a well-defined context of sustainability in construction works in Nepal. The research is conducted by literature studies, construction of a management model focusing on sustainability in construction works suited to clients and project managers, validated by case studies with a well-defined sustainability context and generalized to be used in projects covering construction works entire life-cycle. The purpose of the present research is to explain a Precautionary Construction Management for Sustainability in Nepal. The researcher will identify its influences to predict Precautionary Construction Management for Sustainability. Hence the purpose of this research is illuminating the concept of Precautionary Construction Management for Sustainability in Nepal with challenges.

### 1. OVERVIEW

The concept of sustainable development started in the mid-1980s and set direction measures for the amendment of market failures, guaranteeing regenerative limit of renewable resources, evasion of combined contaminations, guiding item forms towards more noteworthy eco-proficiency including the substitution of renewable resources and a precautionary way to deal with development. The term sustainable development itself has numerous interpretations[1]. "Humankind can make development sustainable to guarantee that it addresses the issues of the present without trading off the capacity of future age's to address their own issues". "So as to secure the environment, the precautionary methodology will be generally connected by states as indicated by their abilities.

Where there are dangers of genuine or irreversible damages, absence of full logical sureness will not be utilized as an explanation behind delaying financially savvy measures to avoid environmental debasement. "This rule is an imperative piece of how to deal with maintainability practically speaking when logical evidence is deciphered distinctively or does not cover the real issue. In Nepal the rule was cherished in the Nepal Environmental Code (2000).Sustainable construction could be deciphered from various perspectives. The term covers an expansive and

complex communication between included partners, tasteful, and usefulness and material connections.

Construction itself could infer everything between site-explicit exercises to the making of human settlement. Manageability, then again, ought to infer an all-encompassing perspective, "the entire is more than the total of its parts" with connections and communications between people, society, the biosphere, economy and the condition of innovation. CIB (International Council for Research and Innovation in Building and Construction) characterized manageability in construction through the Agenda 21 for Sustainable Construction as about achieving sustainable development through environmental, financial and social viewpoints. It is separated into three sections:

1. Management and organization
2. Product and building issues, and
3. Resources consumption.

Traditional practices of construction process and management are discovered helpless to control remarkable challenges including the carbon discharge issue. These challenges emphasize the requirement for specialists to reexamine and improve the construction process and innovation. This demonstrates the construction business has a noteworthy potential in the progression of sustainable development by tending to issues identified with the financial, social, and environment.

## 2. SUSTAINABILITY AND PRECAUTIONARY PRINCIPLE CONCEPT

The most known definition of sustainable development is "development that meets the needs of the present without compromising that ability of future generations to meet their own needs." In this research, several definitions for sustainability concept and sustainable development in Nepal. These definitions can be considered as a complementary in order to get a better understanding of the sustainability objectives:

- "Improving the quality of human life while living within the carrying capacity of supporting ecosystems"
- "Development that delivers basic environmental, social and economic services to all residences of a community without threatening the viability of natural, built and social systems upon which the delivery of those systems depends"

- “Determined to promote economic and social progress for their peoples, taking into account the principle of sustainable development and within the context of the accomplishment of the international market and of reinforced cohesion and environmental protection, and to implement policies ensuring that advances in economic integration are accompanied by parallel progress in other fields”
- “It is about ensuring a better quality of life for everyone, now and for generations to come”
- **The Precautionary Principle**

Prevention is a fundamental principle of providing quality health care and protecting public health. Indeed, preventing disease is vastly preferable and more effective than treating disease after it has occurred. In the face of uncertainty, precautionary action is appropriate to prevent harm. This public health approach makes sense both in the clinical setting and in response to environmental and public health Risks. Similarly, a precautionary and preventive approach is an appropriate basis for decisions regarding material selection, design features, mechanical systems, infrastructure, and operations and maintenance practices.

### **3. SUSTAINABLE DEVELOPMENT AND CONSTRUCTION INDUSTRY**

To accomplish the sustainable development, the construction business is unquestionably a critical sector that ought to adopt the maintainability concept, since it has vital immediate and roundabout connections with the distinctive parts of the sustainable development: financial, social and environmental. A few reasons bolster this case. One reason is the construction business devours high measure of resources, so improving its quality significantly affects the maintainability of the entire society. For instance, green buildings utilize 36% less vitality than customary buildings that additionally caused a decrease in CO<sub>2</sub> discharges (Holowka, 2007)[2]. A few literary works recommend another reason which thinks about the manufactured environment, the finished result of the construction business.

### **4. MANAGEMENT OF SUSTAINABILITY ISSUES IN CONSTRUCTION WORKS PROCESSES**

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In any case, supportability is adjusted and characterized by construction works in the worldwide standard of maintainability in building construction, ISO 15392. There are different apparatuses, many customized for a specific locale, for evaluating the aftereffect of a construction ventures dimension of maintainability [4]. In any case, there are fewer instruments or techniques to deal with the procedure towards a customer wanted dimension of supportability. In any case, are these devices or dimensions of manageability comparing to the definitions and standards of ISO15392? It is the part which plays out an action that is in charge of the environmental effect results.

## **5. THE PRECAUTIONARY PRINCIPLE IN SUSTAINABLE ENVIRONMENTAL MANAGEMENT**

The huge development of novel technologies following World War II flagged the beginnings of another modern period, one of extraordinary flourishing, improved health, and new comforts for society. Be that as it may, the unstable development in new technologies, modern generation, and globalization has likewise brought about a large-scale probe biological community and human health, the full effects of which are as yet obscure and may never surely know. The precautionary guideline was created during the 1970s as a reaction to the restrictions of early open arrangements that endeavored to address the effects of modern generation utilizing the idea of assimilative limit (for example that people and the environment can endure a specific measure of defilement or unsettling influence, and that this sum can be determined and controlled)[5]. Current regard for the precautionary rule emerges from a developing comprehension of the points of confinement of science to anticipate complex environmental and health Risks or give obvious answers, and a comprehension of the obligation of government to shield its citizenry from mischief. From one perspective, its underlying foundations can be followed to recognizable exercises from our grandmas, for example, "look before you jump," just as several years of medicinal and general health practice[6].

## **6. THE CHALLENGES IS SUSTAINABLE CONSTRUCTION**

**Technology:** Technologies that minimize resource consumption and the environmental impact of the built environment need to be developed.

**Policy:** As a general matter of policy, building need to be created based on lifecycle costs as well as first costs.

**Incentives:** Government needs to develop financial incentives for high-performance construction, such as priority review by building departments, accelerated approval for projects of this type, and reduction in impact fees and/or property taxes for a specific period.

**Education:** All the professionals in the industry need to be educated and trained in the need, process and approaches for creating high-performance green buildings – owners, architects,

engineers, landscape architects, interior designers, construction managers, subcontractors, materials and product manufacturers and suppliers, insurance and bonding companies, real estate agents, building commissioning consultants and other professionals engaged in the process.

Performance-based design fees: Contracts for design and construction services need to be revised to offer incentives to the building team to meet and exceed project goals with respect to resource consumption and environmental impacts.

Construction Process: The physical process of construction needs to be changed to ensure that the activities involved in erecting the building have the lowest possible impact.

- **Challenges in Sustainable Building Process and Project Managers' Role**

According to Griffith (2002)[7], developing and implementing new innovative ways to procure, design, construct, use and maintain development are recognized as a challenge for construction industry especially for sustainable construction. These innovative ways should meet an even more demanding range of expectations from clients, industry and society that focused on time, cost, quality, safety and environmental impact. Griffith states that the interaction between the traditionally separate processes and management functions is the much-needed change that can enhance the performance of the construction process. Thus, sustainable construction as a driver for these changes should be responsive to some key challenges:

- Improving the effectiveness and efficiency of the construction process by greater interaction between key phases.
- Producing good quality products in a working environment that is healthy and safe and minimizing the improper effect to the project surroundings and inhabitants.
- Making holistic and long-term improvements to the built environment in order to meet the changing demand of clients, industry and the public.

These key challenges show the troubles of the sustainable building process which are not a result of an absence of existing data, technologies and appraisal techniques. Indeed, the sustainable building process faces the challenges of receiving new processes and working technique for applying new technologies. New technologies require a few changes in processes and thinking about the dangers and eccentric expenses. It is proposes finding out about decision-making stages, new assignments, performing artists, jobs and methods for required networking to defeat the real challenges. One of the performing artists that can have a successful job in creating sustainable building process is venture managers.

## 7. CONCLUSION

Perspectives on sustainability are very extraordinary with moving the focal point of content from a regional/national dimension to the individual dimension and from various nations/regions to various societies and social orders. The terms sustainable building, sustainable construction, green building, etc. are translated diversely by included stakeholders depending on education, age, social foundation and so on..A few creators have indicated the incalculable interpretations of sustainability. Sustainability is commonly characterized as development that "addresses the issues of the present without compromising the capacity of future generations to address their very own issues," a concept that is acknowledged in numerous fields of concentrate that incorporates a sustainable methodology. They likewise contend that sustainability ought to coordinate economic, social and environmental perspectives, in a short and long term. The vast majority of the definitions of sustainability incorporate economic and environmental elements. The potential for decreasing long-term risks related to asset depletion, fluctuations in energy costs, item liabilities, and pollution and waste management.

The construction industry, that includes areas such as design, construction, operations, renovation, and disposal of buildings, should change considerably to meet the future challenges of building. Over time, professionals in the built environment, backed up by experience, research, and the development of better systems and products, will be able to design buildings that are more resource-efficient than today's green buildings and that will have far lower impacts in their construction and operations. The most important characteristics of the ideal green building, in terms of high performance, are based on making improvements in areas such as: energy, water, materials, natural systems interface, design, human health; this with technologies that are already available or developing new ones.

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