Introduction

Given Korea's current status of limited energy and resources in a small country with dense population, green building is a viable solution for sustainable growth. To promote the sustainable construction industry in Korea, the Korean government has been trying to develop and encourage green building certification. This will not only assess the entire building construction process and is also expected to promote technological development and quality competition in green building materials.

Benefits of Green Building

Green building—also known as “sustainable environmentally-friendly building,” “environmentally responsible building,” “ecological building” and “high performance building”—is a whole systems approach to the design, construction and operation of buildings. The key economic benefits include:

- Public relations value for corporations
- Productive increase in office buildings
- Long-term energy and operating cost reduction
- Higher rental value and faster sales for residential buildings

Why Do We Need Green Building?

Traditional buildings consume large amounts of energy and other natural resources and generate harmful byproducts for the environment around them. In Korea, buildings account for 30% of total energy consumption. Globally, buildings consume 40-50% of total energy consumption, 40% of raw materials and 20% of harvested timber. Buildings generate 50% of greenhouse gas emissions that harm air quality and contribute to global warming.

Korean Green Building Certification Criteria

Korean Green Building Certificate Criteria (KBCC)

1997-2001: Developed green building systems for office building and residential building were developed.

2001: systems were integrated into Green Building Certification Criteria (GBCC) by Korea Institute of Energy Research (KIER). This system is based on GB Tool.

2005: in Korea the Green Building Certification System extended to include the semi-residential buildings, office buildings (public and private), commercial buildings and non-residential buildings.

Trends in GBCC Construction in Korea

Korean GBCC construction market is still small but is growing dramatically. In 2006, it is expected that green building projects will more than quadruple from 2005. Initially, most GBCC projects were office buildings. However, after 20 mixed-use green residential building projects, residential projects now account for 77% of total green building projects.

The energy intensity index measures how much energy a country consumes in order to earn one dollar. Korea has high energy intensity ratings compared to other OECD countries. In other words, the energy efficiency of the Korean economy is low compared to other countries.

Green Building Certification Criteria and Grades of Certification

Korean GBCC currently has 4 issues and 44 categories. Criteria has been developed for various types of buildings such as mixed use residential buildings, office buildings, and mixed use dwellings (residential and non-residential, school, residential accommodation). Indoor environmental quality and material and resources are the most important factors. The grades of certification are divided into two grades, 'best' and 'excellent'.

Conclusions

Interest in green building is growing as consumers and builders look for ways to reduce environmental footprints. In the US, LEED certification has created new markets in the institutional and government sectors, with green buildings now accounting 10% or more market share. In Korea, it is also expected that GBCC can help to reshape the construction industry over the next three to five years, with more green, energy-efficient and sustainable buildings.

Future needs to encourage green buildings

Our developing evaluation software tools

Developing evaluation software tools for the certification of green buildings is not only crucial for the growth of the green building industry but also for the development of sustainable building practices.