Korea Green Building Design Code and Role of Architect

ACGSA Report

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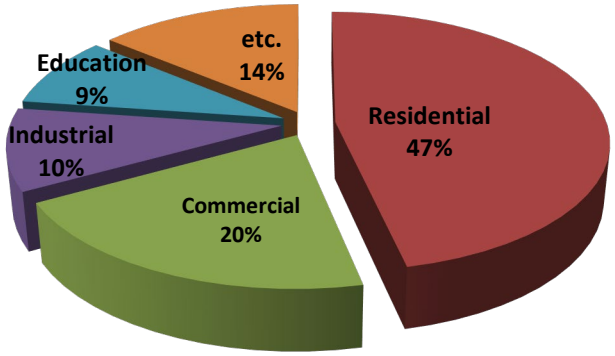
Why Green Building?

Since 1960s, Korea has achieved rapid developments in the cities and buildings, Now the cities have entered into a period of stability. Therefore architects consider that Urban Regeneration and Green Building would be the next goal.

- Existing Building = 7.00million buildings
- Approximately 230,000 buildings are under construction every year(150,000 new buildings, remodeling of 55,000 buildings, others 25,000 buildings)
- Construction Investment Size = 195 billion US dollar
  (15% of GDP) (OECD average 13%)
- Construction Production Size = 59 billion US dollar
  (4.5% of GDP)
- Architectural Design Market = Approx. 2.7 billion US dollar



Current condition of existing buildings in Korea (based on area)

Why Green Building?

Architects in Korea are facing new challenge to reduce 26.9% of CO2 from buildings compared to 2010, by 2020.

- Currently buildings take 25% of CO2 Emission and 21% of energy consumption (OECD average 31%)
- 4% of self-sufficiency in energy
- New Renewable energy ratio of 2%
- In Seoul, buildings use 63% of energy (Consolidation of Design Standard)
- In 2012, 「Green Building Construction Support Law」 is established

Seoul in 2017

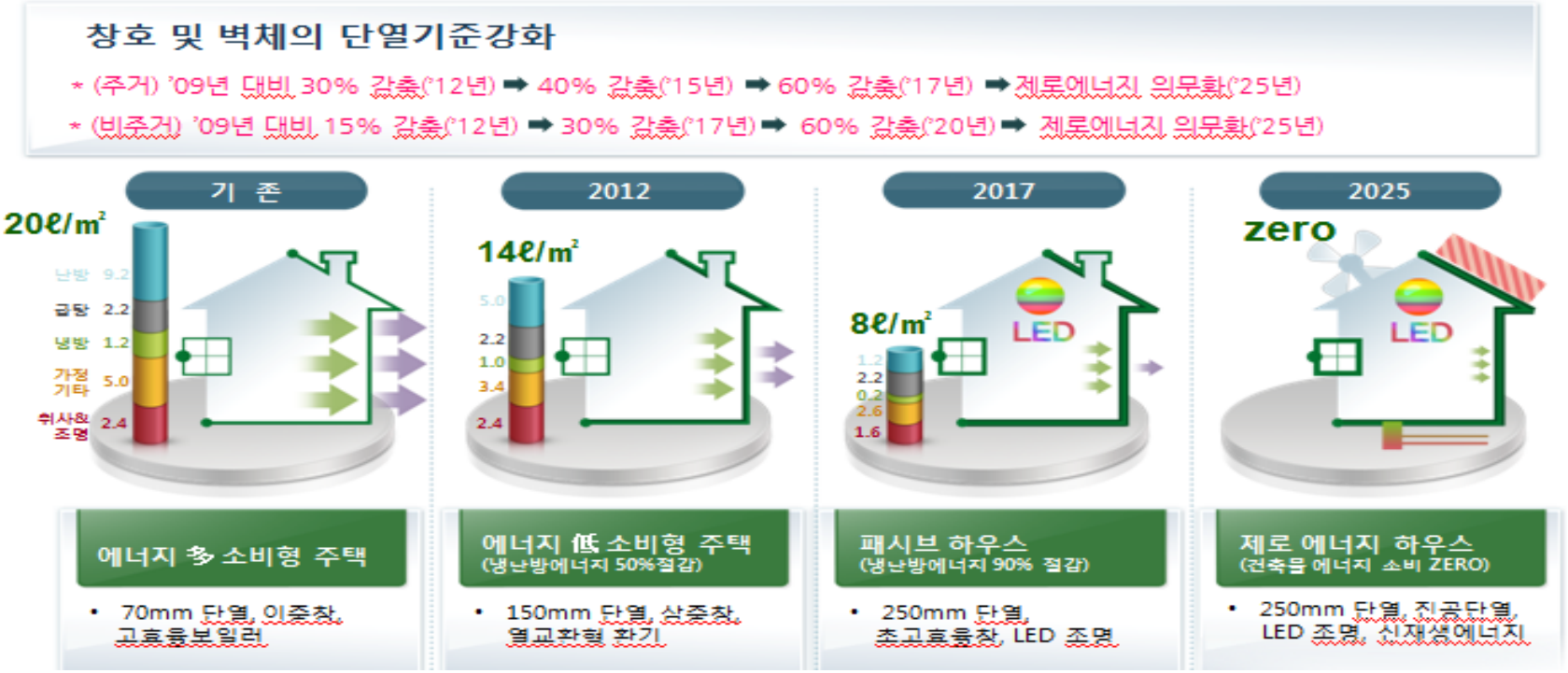
- Green Building becomes a significant issue to Architectural Design Industry

Why Green & ZEB ?

Korea is pushing for a roadmap of Green Building and Zero Energy Building by 2025.

2017: PASSIVE HOUSE ➡ **2025: ZERO ENERGY BUILDING(ZEB)**

■ (신축) 에너지절약설계기준 단계적 강화



Green Building Code

Korea Green Building Code has been established in 1979 and since 2017 it is upgrading stage. It priorly applies to public buildings and is also promoting application to private buildings.

1979 ~	2003 ~	2013 ~
Initial Stage	Development Stage	Upgrading Stage
• Establishment of code for thermal insulation thickness for each building part • Submission of Energy Saving plan (1992, office with 3,000㎡, or above)	• Energy Efficiency Rating System(2003) • Green Building Certification System(2005) • Environment-friendly Housing Performance Grading Indication System (Green Home, 2012) • Certification for Environment-friendly Building Materials • Certification for New Renewable Energy(2010)	• Development of EPI Code •Development of Energy Saving plan • Total Building Annual Energy Use System • Development of Energy Efficiency Rating System (10 grades) •Green Remodeling(2013) • Energy Consumption Certification System(2013) • Development of Maintenance and • Inspection(2013) **•Development of Green Standard for Energy and Environmental Design (G-SEED 2017)** **• Zero Energy Building (2025)**

Green Building Code

Energy Efficiency Rating System(2013~)

- Comprised of 10 grades(Grade 1 ~ 10)
- Application = Detached housing, Apartment, Office, building with 500㎡ or above
- Central Government Act = Compulsory for public service facility with over 500㎡(Grade 1), public rental housing with over 500 households (Grade 2), private building with over 3,000㎡ or 500 households(Grade 7 or above)
- Local authority (Seoul) = building over 3,000㎡, apartment housing with over 20 households = Above Grade 2 (application to the private)
- Accomplishment('01~'13) = 2,121 buildings certified
- Incentive for the private = Appeasement of Building regulation

  (floor area ratio, height etc.), tax reduction

Green Building Code

G-SEED(Green Standard for Energy and Environmental Design)(2016)

- 4 grades in total(Grade 1 ~ Grade 4)
- Central Government Act = compulsory for public service facility with above 3,000㎡ (Above Grade 2), Apartment housing with over 500 households(Above Grade 2)
- Local authority (Seoul) = compulsory for building with over 3,000㎡, apartment housing with over 20 households (Above Grade 2) (application to the private)

G-SEED Symbol

Green Building Code

Development of Submission of Energy Saving Plan(2013~)

- Application = building with 500㎡ or above with above 65points from EPI(Energy Performance Index)
- Central Government Act = public(74points or above), private(65points or above)
- Seoul(Application to the private) = building over 10,000㎡, apartment housing with 200 households or above(74points or above)
- Applied since September, 2013(Approximately 15,000 buildings per annum)

Total Building Annual Energy Use System(2013~)

- Application = apartment housing with over 100 households (below 190kmh/㎡y), office building(below 280kmh/㎡y)
- Planned to be applied to every building by 2020

Energy Consumption Certification System(2013~)

- Application = trade of apartment housing with over 500 households, trade of office building with over 3,000㎡
- In 2015, it is applied to Seoul and capital area
- In 2016, it is planned to expand its application to other region

Role of Architect

Upgradihg of Green Building Code provides new opportunities and challenge to Architectural Design Market.

Opportunity

- New Design Market(Green Building, Green Remodeling)
- Creation of demand of Energy Consulting
- 2017 New certificates(G SEED Integrared Designer: G-SEED ID)
- Opportunity to contribute for sustainable society

Challenge

- Adaptation and Retraining
- Integration of design and energy technology
- Balance of policy and market(due to 5~20% increase in construction cost)
- Expanding Basics of Green Building

Role of Architect

Korea Institute of Registered Architects(KIRA) is an organization established according to「Certified Architects Act」and as a leading group of registered architects in Korea, it makes an effort at Green Building education.

KIRA's Education Center

- Target of Education = 13,000 people (registered architects)
- Education Period(compulsory) = 60hours (for 5 years)
  Expert Education : 45hours,
  General Education : 20hours
- Education Method = online / offline
- Education course = comprised of 125 courses in total with 25 courses about Green Building (20% of total courses)

Building of KIRA

Role of Architect

Academy of Environmental-friendly Architectural Design

Environmental-friendly Architectural Design Academy operated by KIRA. This program functions as a core in Korea Green Building Architectural Education for registered architects and is an only education program in Korea.

- 2009 ~ Present = 1,113people have accomplished education
- Comprised of 59 instructors(professors, experts etc.)
- Education Program
  - Expert course = 130 hours training (24 days)
  - **G SEED ID** course (2017)= 50 hours training (7days)
- Education Subject(6 subjects)

  Environmental knowledge / Landscape design / Passive design / Energy Integration design / Materials and Environment Regeneration / Practice of Green Building Certification System

Training System

Primary Level
- Understanding the government's policies
- Concept of Green Building
- Understanding of Certification System

Intermediate Level
- Passive / Active
- Energy Simulation
- BIM Integration Design

High Level
- Materials
- Long-life Design
- Building Renovation

Thanks!!

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