KICT KOREA INSTITUTE of CIVIL ENGINEERING and BUILDING TECHNOLOGY

Adoption of Green Buildings in Pakistan
to achieve Pakistan's Nationally Determined Contribution

Introduction of KICT & G-SEED

KICT
Sungmo Seo

KICT KOREA INSTITUTE of CIVIL ENGINEERING and BUILDING TECHNOLOGY

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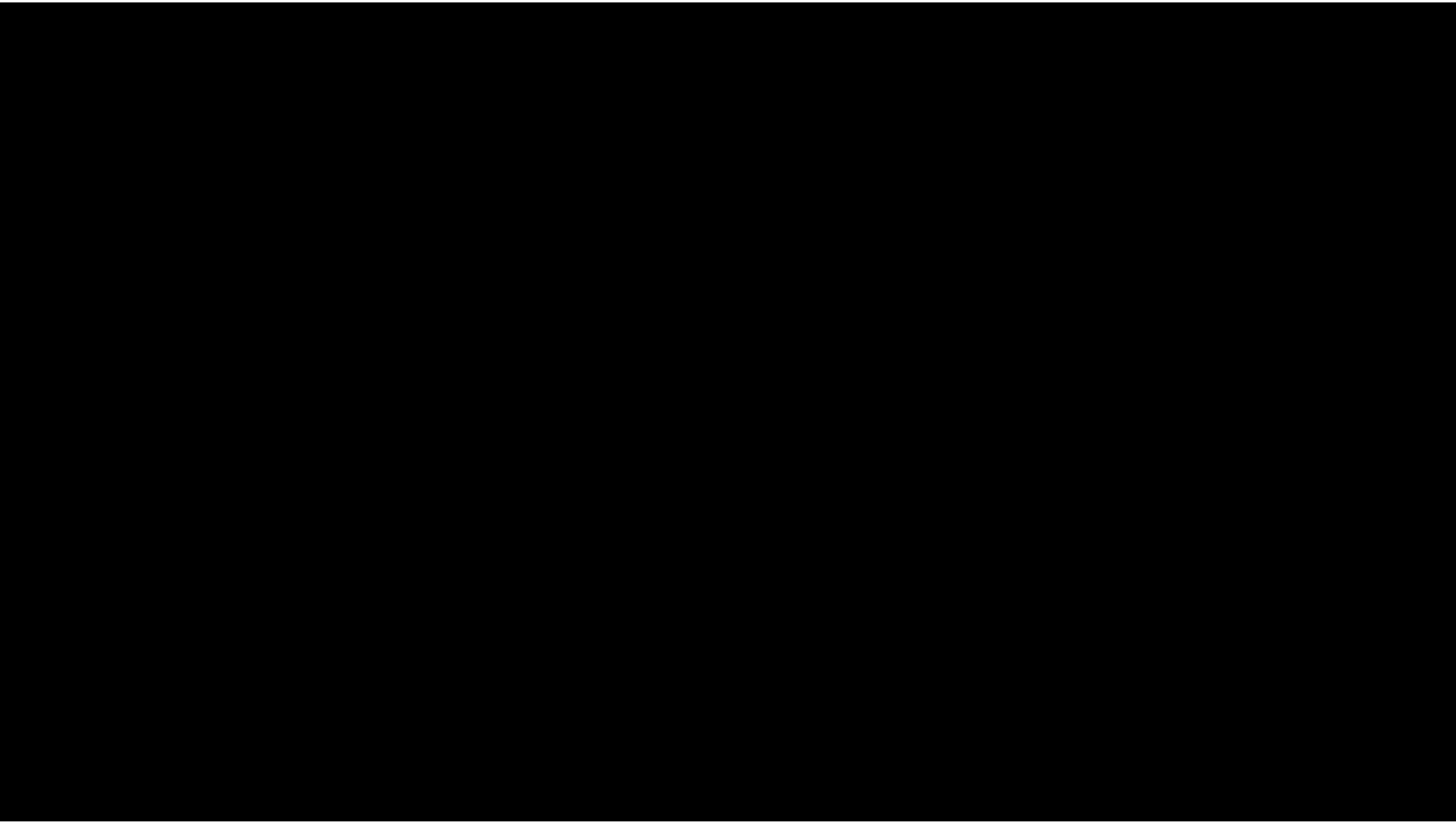
KICT KOREA INSTITUTE of CIVIL ENGINEERING and BUILDING TECHNOLOGY

I Introduction

01 Introduction Video



01 Introduction of KICT

KICT KOREA INSTITUTE of CIVIL ENGINEERING and BUILDING TECHNOLOGY

Korea Institute of Civil Engineering and Building Technology

01 Introduction of KICT

Since 1948

1948. 8.
The Civil Engineering Laboratory Institute of the Construction Bureau of the Ministry of Home Affairs was established

1956. 1.
The Civil Engineering Laboratory Institute was reorganized as the National Civil Engineering Laboratory Institute.

1961. 10.
The National Civil Engineering Laboratory Institute was reorganized as the National Construction Research Institute after integration with the Geographic Research Center of the Ministry of National Defense.

1962. 6.
The National Construction Research Institute was reorganized as the National Construction Research Institute of the Ministry of Construction.

1983. 6.
KICT was established as a private foundation.

1983. 9.
The National Construction Research Institute was renamed the National Construction Laboratory Institute of the Ministry of Construction (excluding the research function).

1988. 1.
KICT was established and designated as a government-funded research institute under the Ministry of Construction.

1997. 11.
Construction of the KICT headquarters was completed and transferred (Ilsanseo-gu, Goyang-si, Gyeonggi-do).

1997. 12.
The National Construction Laboratory Institute headquarters was moved (Ilsanseo-gu, Goyang-si, Gyeonggi-do).

1999. 1.
KICT was merged with the National Construction Laboratory Institute.

2006. 4.
Construction of the Fire Research Center of KICT was completed (Hwaseong, Gyeonggi-do).

2009. 11.
Construction of the River Experiment Center of KICT was completed (Andong, Gyeongsangbuk-do).

2013. 9.
The Korea Construction Standards Center of KICT was established.

2016. 12.
Phase 1 of the SOC Evaluation Research Center of KICT was completed (Yeoncheon, Gyeonggi-do).

2017. 7.
KICT succeeded the government-funded research institute under the National Research Council of Science & Technology of the Ministry of Science and ICT.

2018. 9.
The Smart Construction Promotion Center of KICT was established.

2019. 5.
The Post-Construction Evaluation and Management Center of KICT was established.

Mission

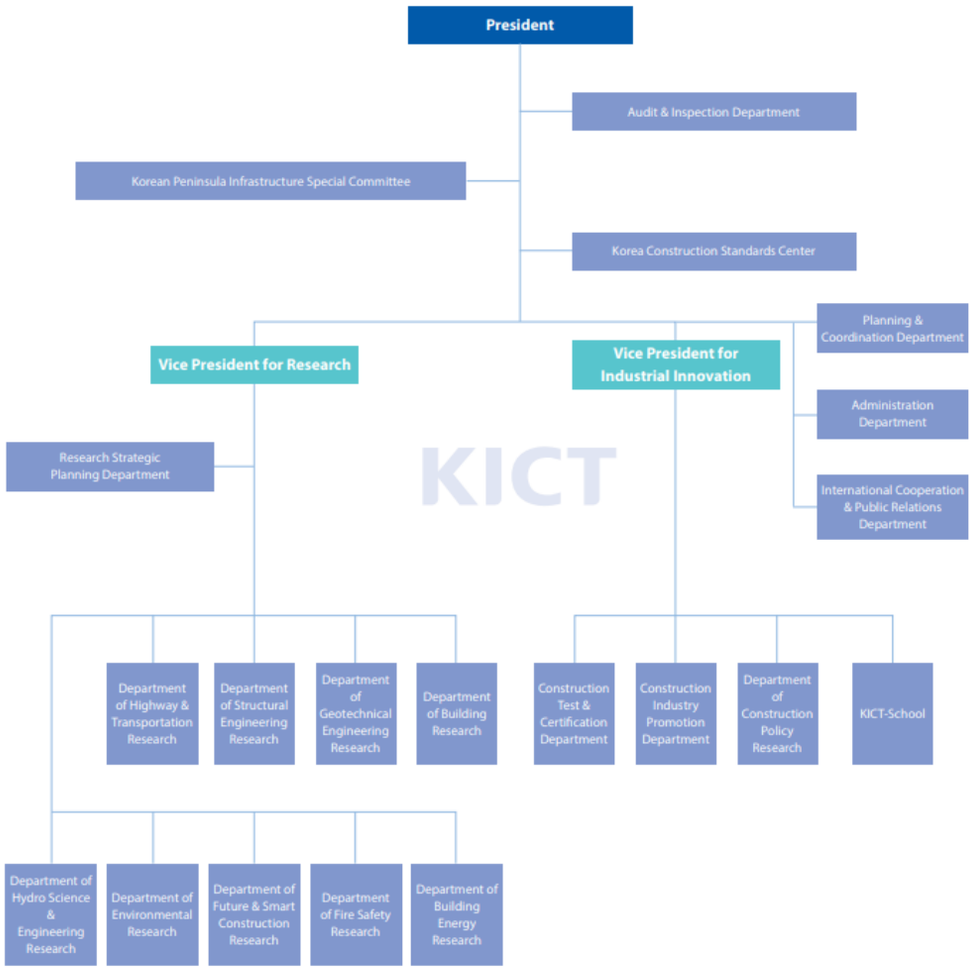
Contributing to the development
of the construction industry,
enhancing people's quality of life,
and developing the economic and social conditions
of the nation by advancing original technologies
and increasing achievements
in the fields of construction and land management

Functions

Research and Development
Policy-Making and Technology Support
Quality Certification and Testing Services

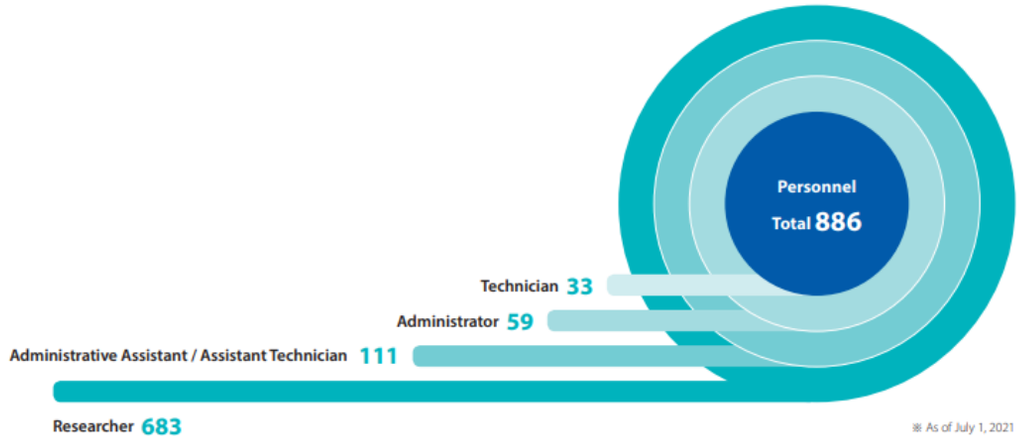
01 Introduction of KICT

Organization



Personnel

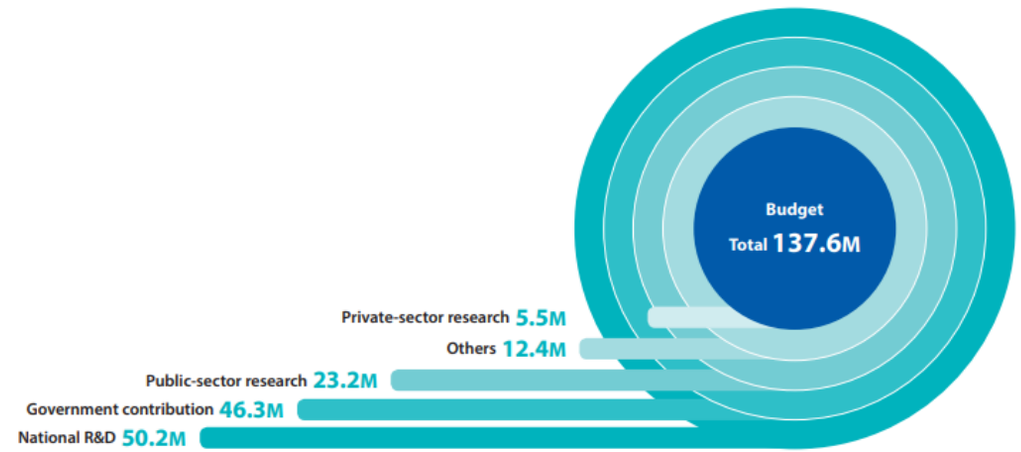
(Unit : Persons)



※ As of July 1, 2021

Budget

(Exchange rate : 1 USD = 1,196 / Unit : 1M = 1 million USD)



01 Introduction of KICT

KICT's Roles and Responsibilities

Solve national issues and social problems through safe and reliable land and transportation technology

Improve the quality of life of people
by solving national and social problems
in the field of land and transportation
by ensuring safe and reliable nation,
pleasant and healthy life,
and human-centered smart city

Contribute to the innovative growth of the construction industry by leading a new construction paradigm

Discover growth engines for the future construction industry
in the advent of the fourth Industrial Revolution
and contribute to the innovative growth of the construction industry
by forming an innovation ecosystem,
e.g., construction process improvement
based on Data, Network, and AI (DNA)

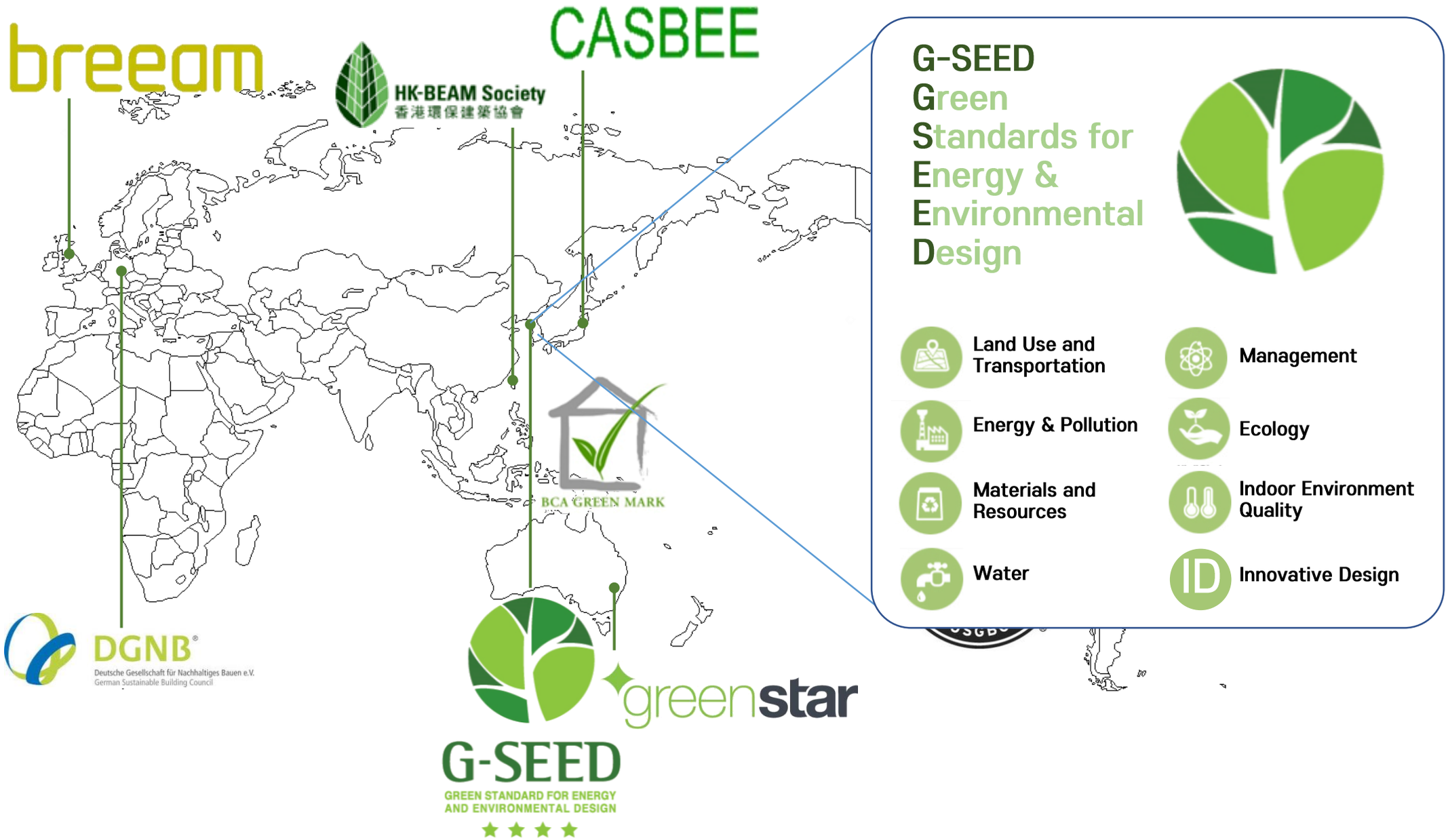
Promote mutual prosperity in the Korean Peninsula through balanced land development

Create national land value that is sustainable and inclusive
and help achieve mutual prosperity
in the Korean Peninsula by strengthening
inter-Korean cooperation for the development
of social overhead capital

Solve global problems through cooperative global infrastructure development projects

Initiate international joint research projects
to solve global issues and develop customized construction technologies
to meet the demand for national lands and transportation
in developing countries

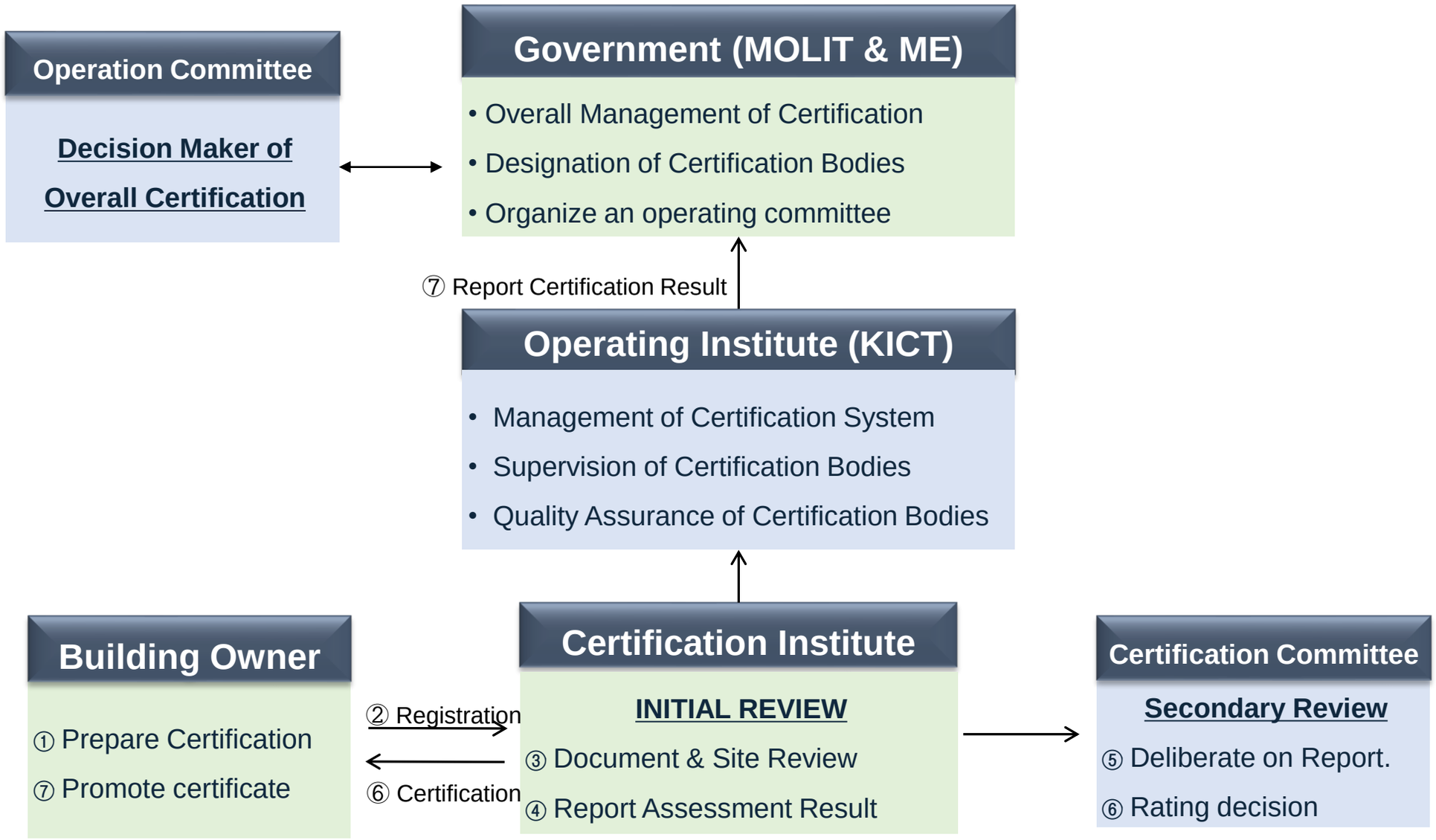
01 Introduction of KICT



KICT KOREA INSTITUTE of CIVIL ENGINEERING and BUILDING TECHNOLOGY

Ⅱ Status of G-SEED

01 Operation Structure of G-SEED



01 Operation Structure of G-SEED

Certification Application
- Submit a **certificate-application**
- Submit **self-assessment**
- Submit evaluation basis data

Data Review
- Certification Authority data review → Accept after review
- **Pay certification fee**

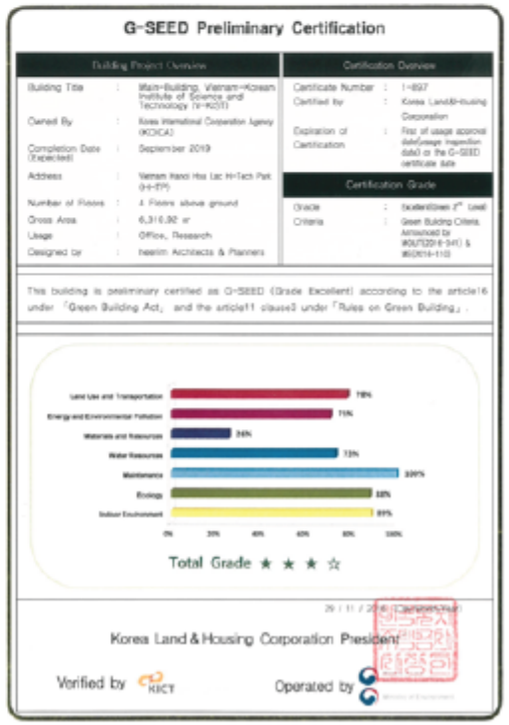
Certification Evaluation
- Review self-assessment
- Verify certification document , **Field inspection (when qualified)** (within40days)

Data Supplement
- Data supplement (within 30 days)
- Require multiple data supplements including 1st /2nd /3rd , etc.

Certification Deliberation
- **Certification Committee** conducts certification deliberation

Certification Granted
- **Grant a certificate, and name plaque** including certification grade according to certification level

Certification stage	Preliminary Certification (Design stage), Certification (Usage stage)
Certification Applicants	Owner/Building Owner , Participants or Constructors
Self-Assessment	Submit evaluation score and evidence by certification item
Certification Fee	Depends on Floor Area and Building Use
Field Inspection	After the construction of the building is completed, field inspection is carried out
Committee	Select from the expert pool managed by the operating authority


G-SEED Preliminary Certification

Total Grade ★ ★ ★ ☆

Korea Land & Housing Corporation President

Verified by KICT

Operated by

02 Development of G-SEED

- Related researches on G-SEED conducted at KICT

2023년
- 2023년 녹색건축 인증지원을 위한 기술연구사업
- 안전·쾌적·지속가능한 정주환경을 위한 건축·도시 구축 기술 연구
- 녹색건축인증 현장실사 수행방법 표준화 방안 마련
- 캄보디아 녹색건축인증체계 수립 사업
- 파키스탄 NDC 달성을 위한 녹색건축제도 채택 지원
- 다중 분산발전 기반의 옥상온실형 스마트 그린빌딩 융복합 시스템 개발 및 실증

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- 재외공관 녹색건축인증 기준 및 적정 기술 검토 용역
- 캄보디아 녹색건축인증체계 수립 사업
- 노후 소규모 건축물 품질 및 성능 향상을 위한 리모델링 기술 개발
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2020년
- 2020년 녹색건축 인증지원을 위한 기술연구사업
- POST-2020 대응 건물부문 온실가스 배출 전망 및 감축 잠재량 분석 기술 개발
- IoT 기반 스마트 제로에너지건물 액티브 융합기술 개발
- 주택 품질 향상을 위한 공동주택 공사비 분석 및 관련 인증제도 통합 방안 연구
- 녹색건축자재 적용 건축물 환경영향 기여도 검증 및 녹색건축인증제도 개선방안 마련
- 캄보디아 녹색건축인증체계 수립 사업
- 도시 재생을 위한 노후 건축물 스마트 평가 및 관리 플랫폼 기획연구
- 노후 소규모 건축물 품질 및 성능 향상을 위한 리모델링 기술 개발
- 저탄소에너지효율화 기술패키지

2019년
- 2019년 녹색건축 인증지원을 위한 기술연구사업
- 소규모 건축물의 소비에너지 최적화 설계·시공 기술 개발
- 우즈베키스탄 빌딩코드 현대화를 위한 로드맵 수립 타당성 조사
- 지속가능한 사회를 위한 녹색건축연구센터 전략연구
- POST-2020 대응 건물부문 온실가스 배출 전망 및 감축 잠재량 분석 기술 개발
- IoT 기반 스마트 제로에너지건물 액티브 융합기술 개발
- 녹색건축 인증전문분야 및 인증평가체계 개선방안 연구
- 친환경자재 적용에 따른 녹색건축 인증 건축물의 온실가스 저감효과 분석
- 주택성능등급 평가방법 개선 및 활성화 방안 연구

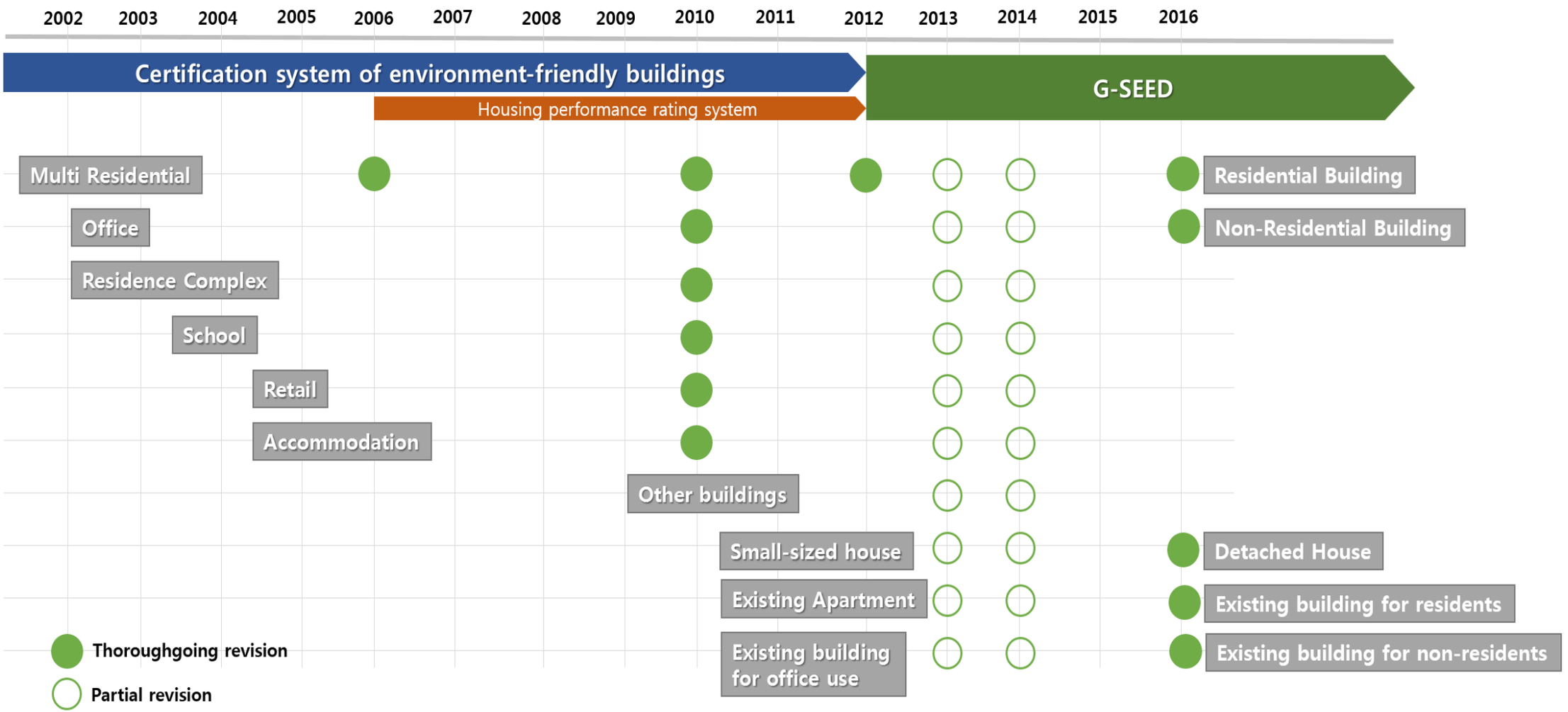
2018년
- 2018년 녹색건축 인증지원을 위한 기술연구사업
- 국가 온실가스 감축 대응을 위한 그린리모델링 핵심기술 및 지원 정책 개발
- IoT 기반 스마트 제로에너지건물 액티브 융합기술 개발
- 소규모주택 품질확보를 위한 기술기준개발
- Sustainable Urban Infrastructure in Kazakhstan: Green Building Performance
- 스마트서비스 인증제도 도입 및 관리용역
- 주택성능등급 평가방법 개선 및 활성화 방안 연구

2017년
- 2017년 녹색건축 인증지원을 위한 기술연구사업
- 친환경자재적용 확대 및 녹색건축 인증제도의 글로벌화를 위한 인증기준 개선연구
- 모로코 및 캄보디아 녹색건축기술 기반조성 기술 개발
- 기존 건물의 그린리모델링 기술 및 정책 개발
- 우즈베키스탄 농촌주택의 에너지효율화를 위한 저가보급형 외피단열기술 실증사업
- 패시브하우스/제로에너지주택 구현을 위한 IoT기반 스마트환기 제어시스템 개발
- 스마트 제로에너지주택 구현을 위한 액티브 융합기술 개발 기획 연구
- 주택성능등급 평가방법 개선 및 활성화 방안 연구

2016년
- 2016년도 녹색건축센터 운영사업
- 2016년 녹색건축 인증지원을 위한 기술연구사업
- 건물외피시스템의 그린리모델링 최적화 기술개발
- 그린리모델링을 위한 녹색건축 인증기준 및 지원체계 개발
- 국내 녹색건축 인증의 해외시장 수출을 위한 글로벌 녹색건축 인증기준 및 운영체계개발
- 녹색건축 인증 건축물의 사후평가 및 제도개선 방안

2015년
- 2015년도 녹색건축센터 운영사업
- 녹색건축인증 지원을 위한 기술연구 사업
- UK-Korea: Facilitating the Development of a Green Retrofit Standard
- UK-Korea Development of a Green Remodeling Criteria for G-SEED
- 녹색건축물 활성화를 위한 온실가스 배출량 평가 및 통합인증시스템 구축(3차년도)
- 건물외피시스템의 그린리모델링 최적화 기술 개발
- 그린리모델링을 위한 녹색건축 인증기준 및 지원체계 개발
- 녹색건축 인증 건축물의 사후평가 및 활성화방안 연구

02 Development of G-SEED



02 Development of G-SEED

1 Initial Development

1999 ~ 2001

`00 Assess a pilot certification building

- Residential
- Office

2 Development

2002 ~ 2006

`02 Launching Residential Building Standards
`03 Office
`05 School
`06 Retail and Hotel

3 Make Foundation

2008 ~ 2011

Reflected in the Building Code

`11 Designation of mandatory public buildings with total floor area of 10,000 m2 or more

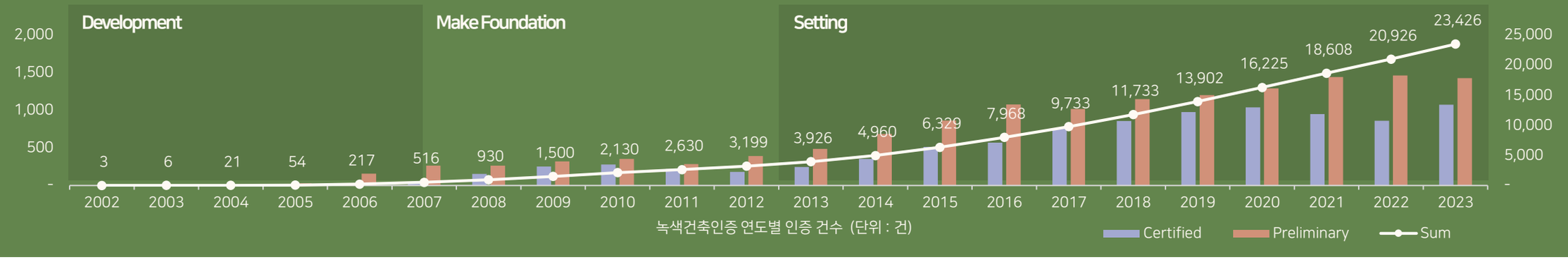
4 Setting

2012 ~ now

Enactment the Green Building Support Code

`12 Designation of operation body (KICT) and expansion of Mandatory Regulation

Continuous revision of the year cycle certification system



03 Effect of G-SEED for Carbon Neutral

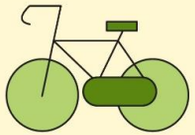
Categories	Evaluation items		Points
1. Land use and transportation	1.1	Ecological value of the existing site	2
	1.2	Discouraged to develop underground excessively	3
	1.3	Minimization of earthwork cutting and banking	2
	1.4	Proximity to public transportation	2
	1.5	Installation of bicycle parking lot	2
2. Energy and environmental pollution	2.1	Energy performance	12
	2.2	Testing, Adjusting and Balancing (TAB) and commissioning	4
	2.3	Energy monitoring and management support system	4
	2.4	Lighting energy saving	4
	2.5	Use of new and renewable energy	3
	2.6	Prohibition of use of particular materials to protect the ozone layer	3
	2.7	Establishment of the plan for solar radiation control to reduce cooling energy	2
3. Materials and resources	3.1	Use of products with Environmental Product Declaration (EPD)	4
	3.2	Use of low-carbon materials	2
	3.3	Use of eco-label materials	4
	3.4	Ratio of applied green building materials	4
	3.5	Installation of storage facility for recyclable resources	1

Categories	Evaluation items		Points
4. Water management	4.1	Rainwater management	5
	4.2	Use of rainwater and groundwater runoff	4
	4.3	Use of water-saving equipment	3
	4.4	Water usage monitoring	2
5. Maintenance	5.1	Environmental management plan in construction site	2
	5.2	Provision of documents and manuals for operation and maintenance	2
	5.3	Provision of information on G-SEED certification	3
6. Ecological environment	6.1	Green area ratio of natural ground	4
	6.2	Ecological area rate	6
	6.3	Heat island reduction	2
7. Indoor environment	7.1	Application of products that emit less indoor air pollutants	3
	7.2	Ensuring natural ventilation performance	2
	7.3	Installation of air vents	2
	7.4	Installation of automatic temperature control device	2
	7.5	Creation of exclusive rest space	1

03 Effect of G-SEED for Carbon Neutral

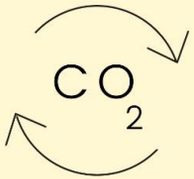
Transportation

Public Transporation



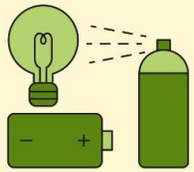
Bicycle and Parking lot

Energy



Energy Performance & Zero Energy

Renewable Energy



Lighting Energy (LED)

Ecological

Ecological Area

Water

Rainwater Reuse

Water Reduction

Material

ODP & GWP management

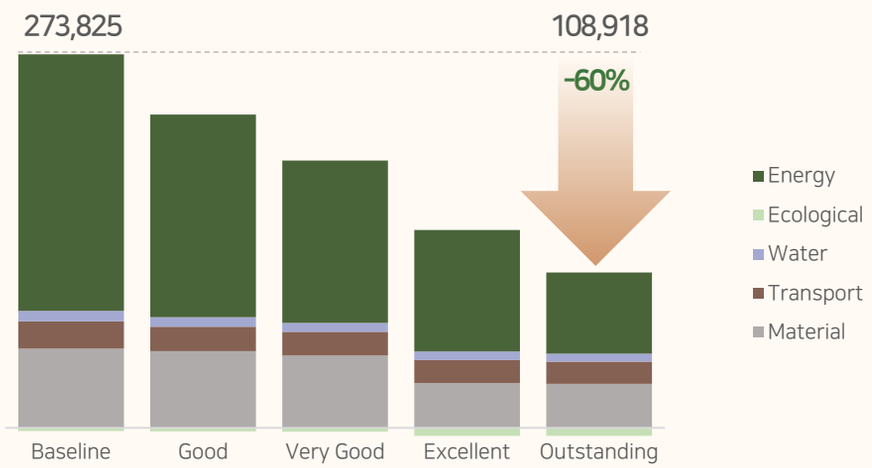
Low Emission Material

03 Effect of G-SEED for Carbon Neutral

The calculation of carbon emissions in buildings has been reviewed by the LCA process

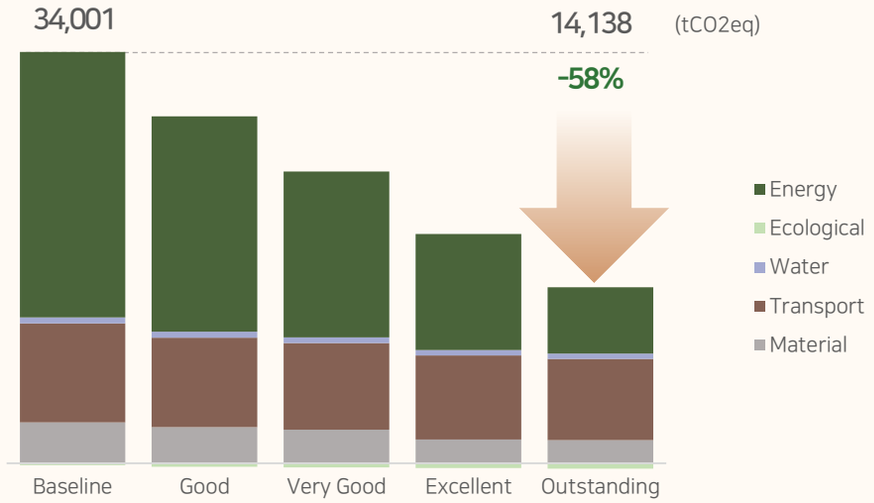
500 units Residential

Reduce 60% compared with baseline



3,000㎡ Office

Reduce 58% compared with baseline

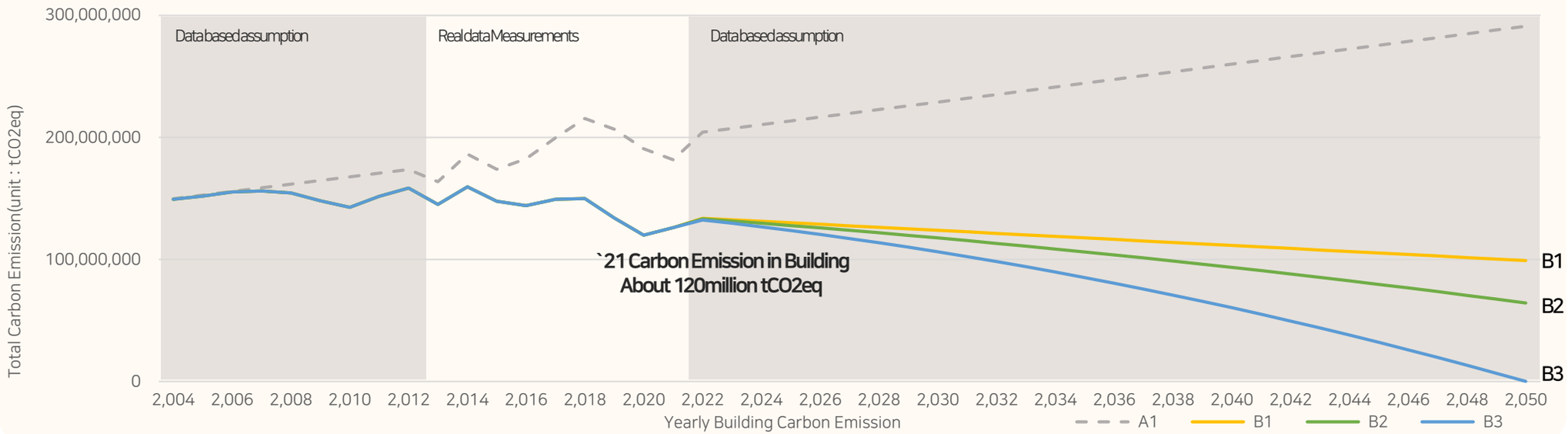


03 Effect of G-SEED for Carbon Neutral

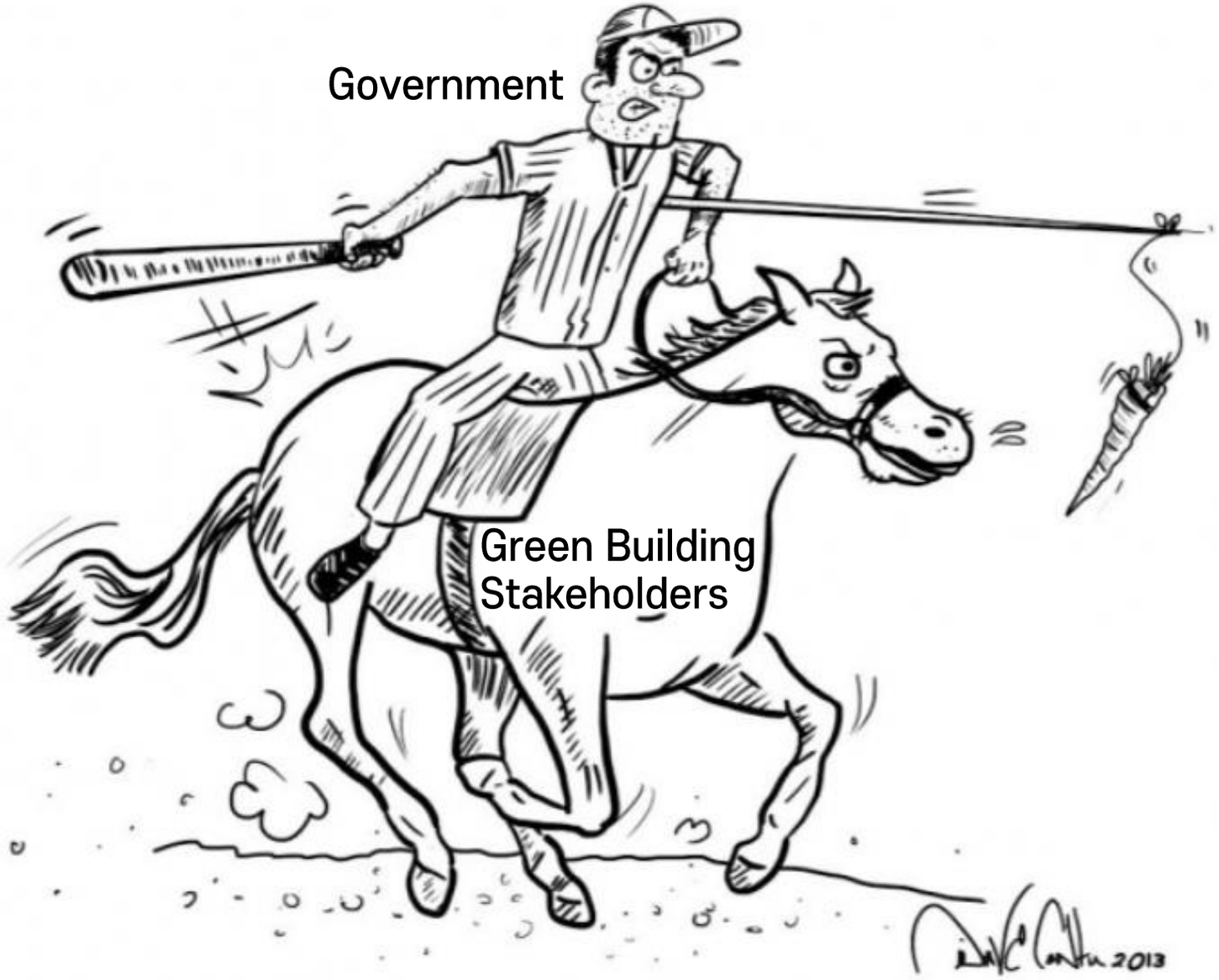
Impact of G-SEED on achieving NDC in Korea

65% reduction in carbon emission by 2050, if current revision trend is maintained

A : Baseline, No G-SEED	`50 Carbon emission in Building sector 290 mil. tCO2eq (increase 60% than `21)
B1 : Maintenance G-SEED	`50 Carbon emission in Building sector 99mil. tCo2eq (reduce 45% than `21)
B2 : Revision G-SEED	`50 Carbon emission in Building sector 64 mil. tCO2eq (reduce 65% than `21)
B3 : Revision Strongly for Carbon Neutral	`50 Carbon emission in Building sector 80 thousand tCO2eq (reduce 99% than `21)



04 Carrot and Stick



Number of Certification Building

04 Carrot – Incentive for G-SEED

For Building Owner

- Recorded in the Building Ledger
  Provide a Certification Plaque
- Acquisition Tax Abatement
  10% saving
- Property Tax Abatement
  Repealed in 2018

For Construction Company

- Relaxation of Building Restrictions (Hight, Floor area ratio)
  6% Relaxation
- Adding an apartment's sales price
  4% adding
- Extra Points at Contractor selection
  1 point

04 Stick – Mandatory Regulation – By Code in National Level

1. New Construction, Rebuilt, Separate Expansion Building
2. Owned or Operated by Government(Public) and Educational Institutes
3. Total Floor Area is 3,000m^2 or More
4. Heating and Cooling Area is 500m^2 or More

- **Government Office Building is must take Grade 2(Excellent) or Over**

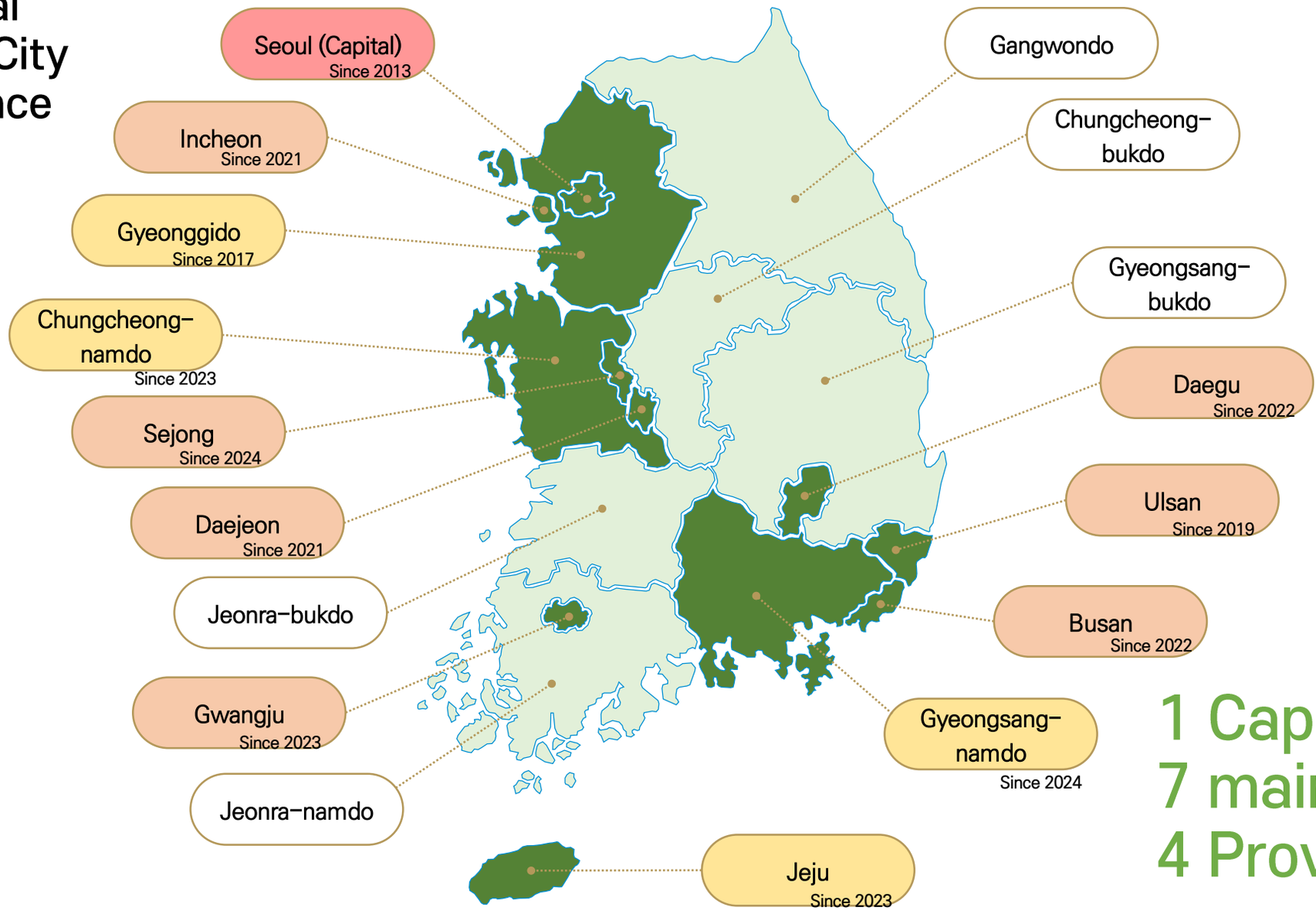
- **500 unit or more Residential Building must take G-SEED**

04 Stick – Mandatory Regulation – By Guideline in Private Level

Local		Target		G-SEED	Energy Efficiency Rating	Renewable	
		Residential	Non-Residential			Resi-	Non-Resi-
Seoul	㉮	Over 1,000 units	Total Floor Area over 100,000m2	Excellent	1++ grade	9%	13%
	㉯	300 units ~ 1,000 units	10,000 ~ 100,000m2	Very Good	1+ grade		
	㉰	30 units ~ 300 units	3,000~10,000m2	Good			
	㉱	8 units ~ 29 units	500~3,000m2	–	1 grade		
	㉲	Under 8 units	Under 500m2	–	2 grade		
Deajun	①	Over 1,000 units	Total Floor Area over 100,000m2	Excellent	1+ grade	6%	8%
	②	500 units ~ 1,000 units	10,000 ~ 100,000m2	Very Good	1 grade		
	③	30 units ~ 500 units	3,000~10,000m2	Good	2 grade	-	-
	④	–	500~3,000m2	–	–	-	-
Deagu	㉮	Over 1,000 units	Total Floor Area over 100,000m2	Excellent	1+ grade	7%	11%
	㉯	300 units ~ 1,000 units	10,000 ~ 100,000m2	Very Good			
	㉰	30 units ~ 300 units	3,000~10,000m2	Good		-	-
	㉱	Under 30 units	500~3,000m2	–	–	-	-
Busan	㉮	Over 1,000 units	Total Floor Area over 100,000m2	Excellent	1+ grade	7%	9%
	㉯	300 units ~ 1,000 units	10,000 ~ 100,000m2	Very Good	1 grade		
	㉰	30 units ~ 300 units	3,000~10,000m2	Good		5%	7%
	㉱	Under 30 units	500~3,000m2	–	–	–	–
Ulsan	㉮	Over 1,000 units	Total Floor Area over 100,000m2	Excellent	1 grade	–	–
	㉯	500 units ~ 1,000 units	10,000 ~ 100,000m2	Very Good	2 grade		
	㉰	30 units ~ 500 units	3,000~10,000m2	Good	3 grade		
	㉱	Under 30 units	500~3,000m2	–	–		
Gwangju	㉮	Over 1,000 units	Total Floor Area over 100,000m2	Excellent	1 grade	6%	8%
	㉯	300 units ~ 1,000 units	10,000 ~ 100,000m2	Very Good	2 grade		
	㉰	30 units ~ 300 units	3,000~10,000m2	Good	3 grade	-	-
	㉱	Under 30 units	500~3,000m2	–	–	-	-

04 Stick – Mandatory Regulation – By Guideline in Private Level

1 Capital
7 main City
9 Province

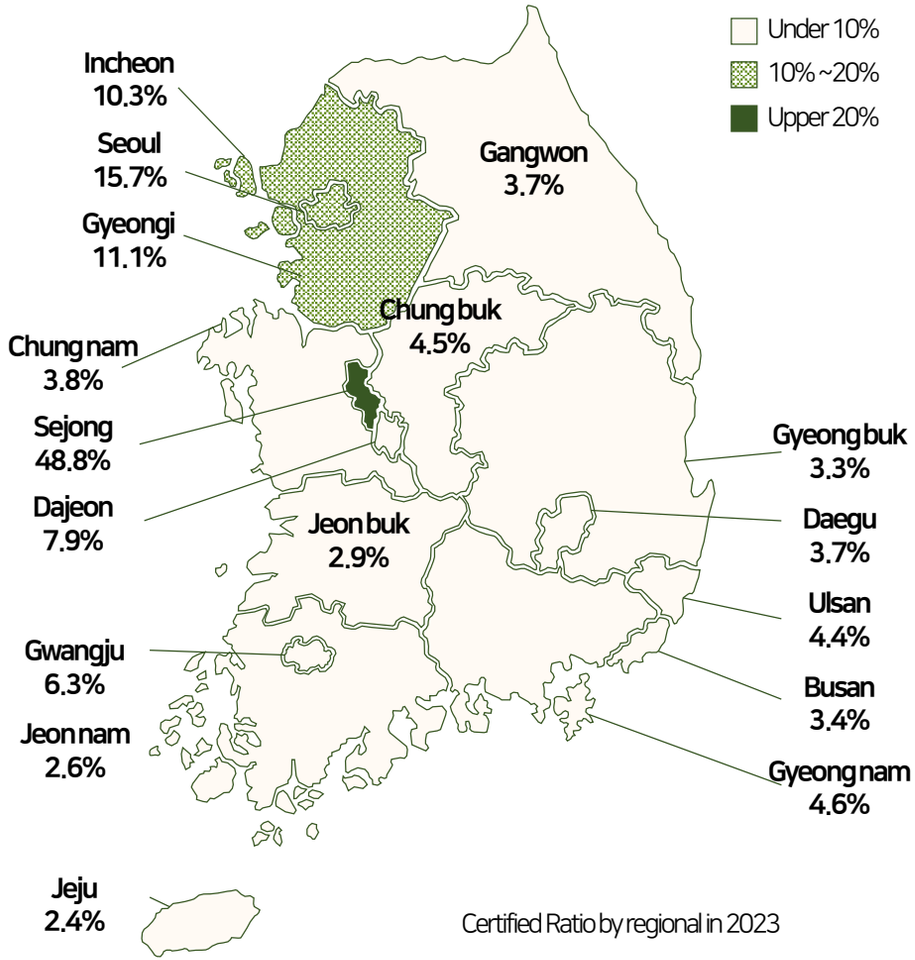


1 Capital
7 main City
4 Province

05 Status of G-SEED – in 2023

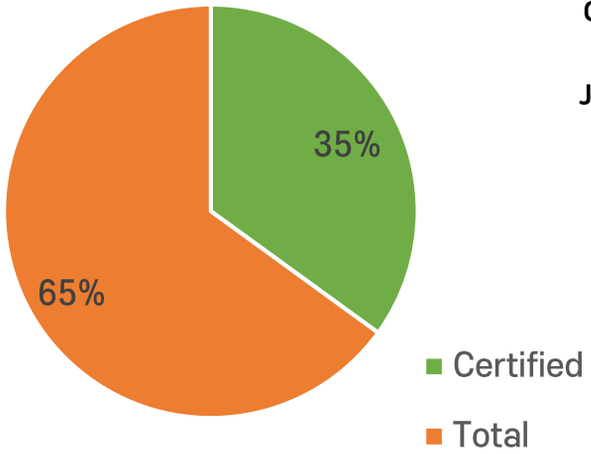
Constructed Buildings
147,394,000m²
(133,548 buildings)

Certified Buildings
51,589,231m²
(1,071 Projects)



Certified Ratio by regional in 2023

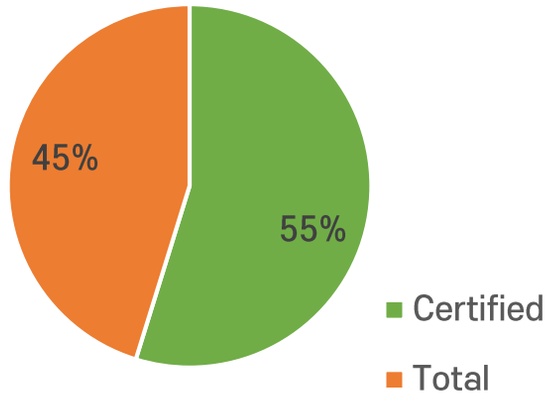
Certified Building Ratio (Gross Area)



Constructed Residential Buildings
54,792,000m²

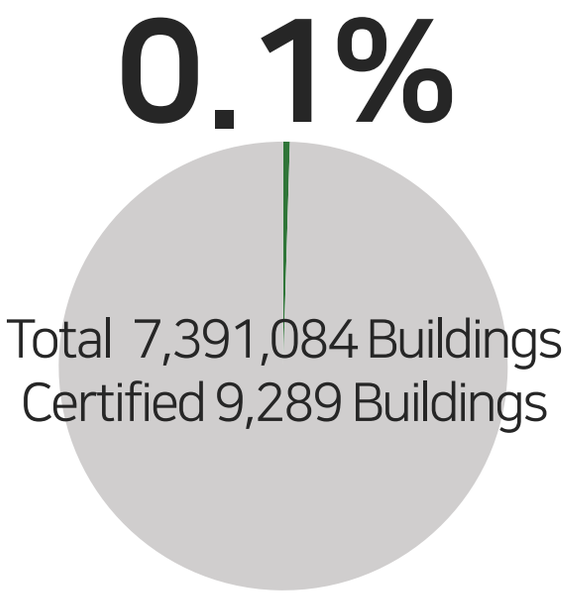
Certified Residential Buildings
30,018,599m²
(357 Projects)

Certified Residential Building Ratio (Gross Area)

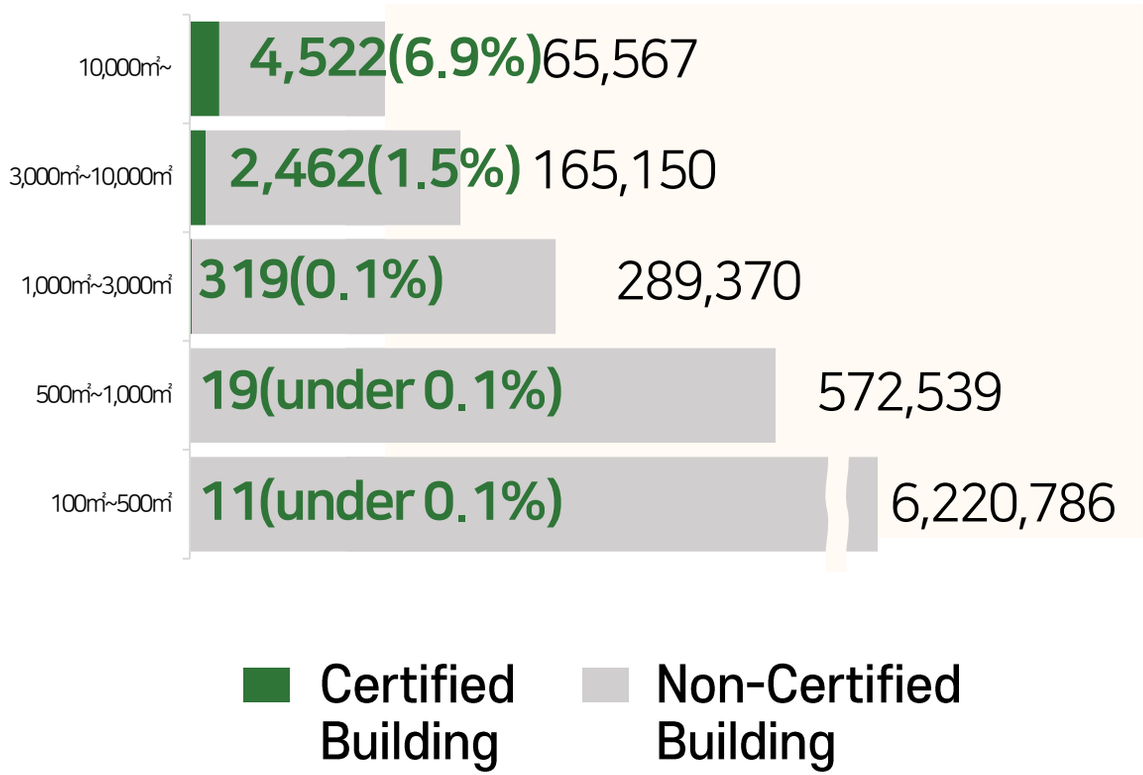


05 Status of G-SEED – Total

Certified Building Ratio In All of Korea Buildings



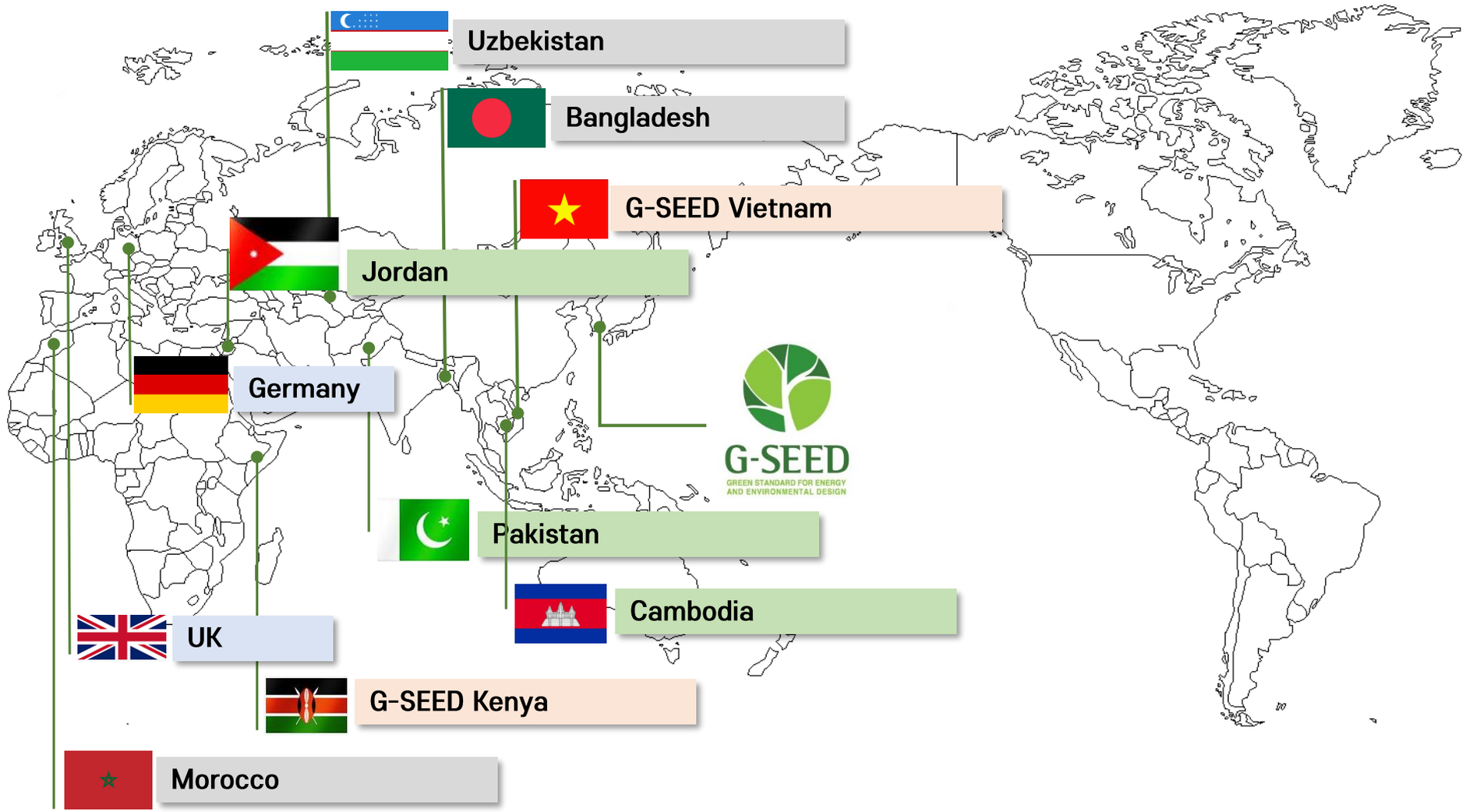
Ratio of Certified Building by Gross Area



KICT KOREA INSTITUTE of CIVIL ENGINEERING and BUILDING TECHNOLOGY

Ⅲ Global Cooperation

01 Status of Global Cooperation



02 G-SEED Vietnam version – V-KIST

- (Mar.`12) at the time of the Korea-Vietnam summit, the Prime Minister of Vietnam request to establish a research institute benchmarking KIST(Korea Institute of Science and Technology)
- Project Period : Dec.`14. ~ Feb.`23.
- Project Management: (Korea) KOICA, KIST, (Vietnam) MOST, Hoa lac Hi-tech Park
- Budget : 70,000,000 USD (biggest among the single project)

[Picture of V-KIST]

Project Name	V-KIST
Area	Land area : 79,512㎡ (Step 1) Gross area : 17,680㎡ (Step 1)
Main Building	3 research center, 1 management
Order/CM	KOICA / POSCO A&C (Korea)
Design/Builder	Heerim / Youngjin (Korea)

[Outline of V-KIST]

02 G-SEED Vietnam version – V-KIST

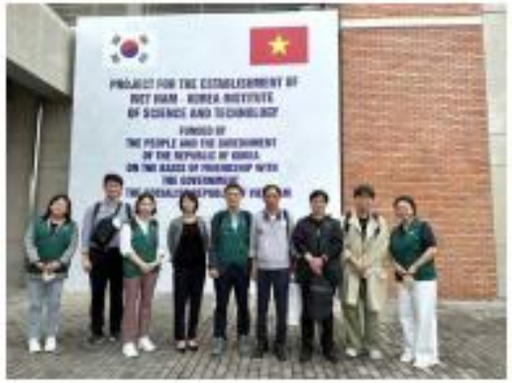













02 G-SEED Vietnam version – V-KIST

03 Support for Development of Cambodia Green Building System

- Establishment of a green building certification agency and certification program system in Cambodia (requested by the Ministry of Foreign Affairs in 2017)
- Requested participation from Cambodia's Ministry of Environment to organize and lead the project upon finalization of the project at the end of 2018
- Conducted a kick-off meeting in June 2019 to discuss project implementation and division of labor
- 2019-2022, Review and prepare standards for green building certification in Cambodia○ 2023 Pilot project in Cambodia is planned

KICT KOREA INSTITUTE of CIVIL ENGINEERING and BUILDING TECHNOLOGY

KINGDOM OF CAMBODIA
Nation Religion King

Memorandum of Understanding

Between

General Secretariat of the National Council for Sustainable Development

and

Korea Institute of Civil Engineering and Building Technology (KICT)

on

Sustainable Development and Green Buildings

November 2019

Contract for
"Guidelines and Certification for Green Building in Cambodia"

Based on the signed Memorandum of Understanding between General Secretariat of the National Council for Sustainable Development (hereafter referred to as "GSSD") and the Korea Institute of Civil Engineering and Building Technology (hereafter referred to as "KICT") on Sustainable Development and Green Buildings, dated on 08 November 2019, the contract is initiated to form a contract under the said MoU.

GSSD is located at Morodok Techo Building (Lot 503), Tonle Bassac, Chamkarmorn, Phnom Penh, Cambodia;
of the one party,

and

KICT is located at 283 Goyangdaero, Ilsanseo-Gu, Goyang-Si, Gyeonggi-Do, 411-712 the Republic of Korea,
of the other party,

HAVE AGREED AS FOLLOWS:

Article 1 - Subject-matter of the Contract

1.1 The Contractor hereby undertakes to carry out, under its own responsibility, the following project, entitled:
"Guidelines and Certification for Green Building in Cambodia"
(hereinafter referred to as "the project")

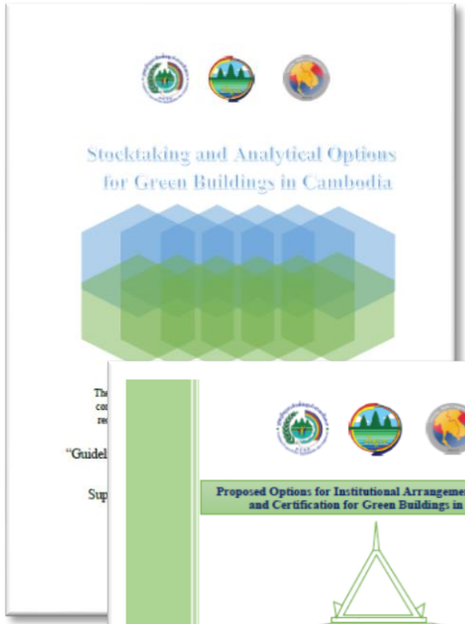
Article 2 - Duration

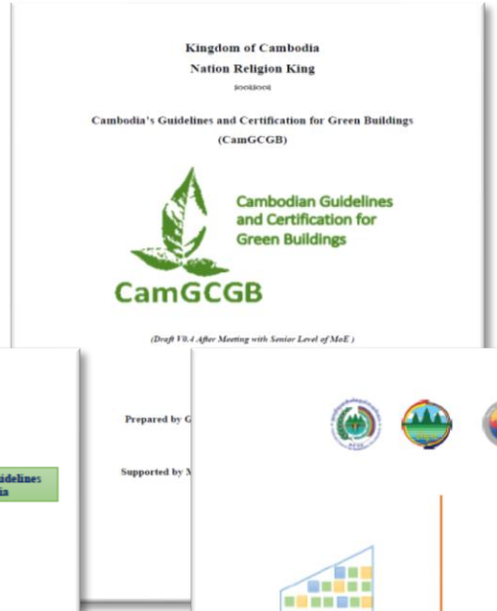
2.1 The duration of the project shall be from 08 November 2019 till 08 November 2022.
2.2 The Contract shall enter into force following its signature by all the contracting parties.
2.3 Any delays in carrying out the project shall be notified immediately to GSSD.

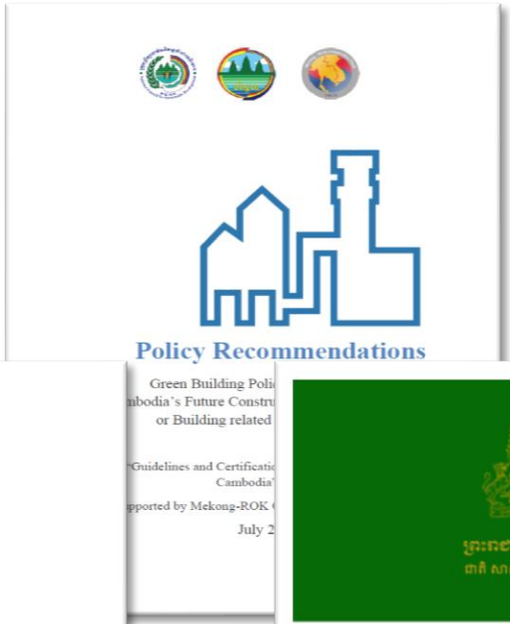
Article 3 - Financing the project

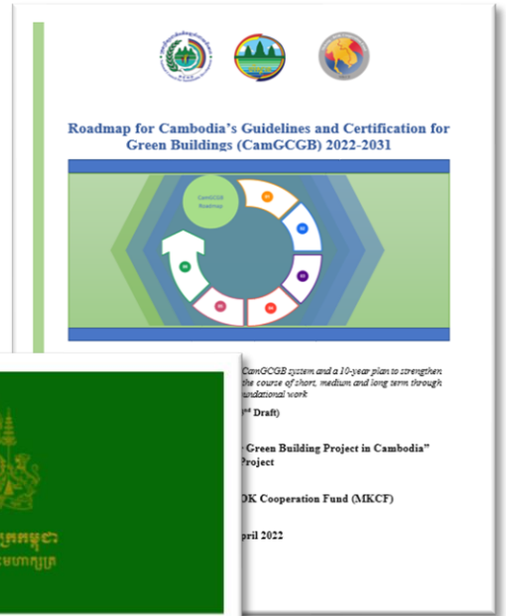
3.1 The total eligible costs of the project are USD 80,000.

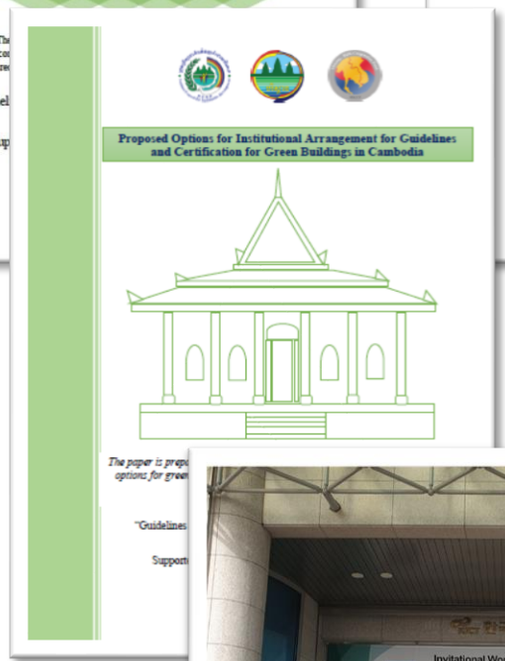
03 Support for Development of Cambodia Green Building System

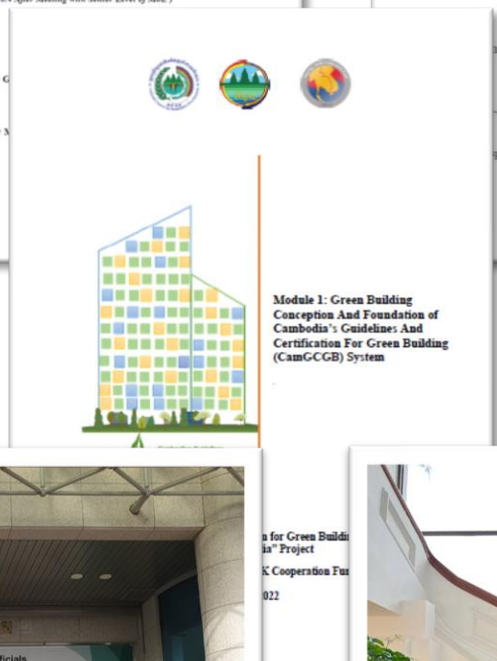












04 Adoption of Green Buildings in Pakistan

보낸 사람: Hoyoung Jo <hoyoung.jo@un.org>
날짜: 수요일, 2022년 7월 20일 오후 2:03
받는 사람: thsong@kict.re.kr <thsong@kict.re.kr>
참조: Rajiv Garg <gargr@un.org>, Jeawon Kim <jeawon.kim@un.org>
주제: Project opportunity with UN CTCN Partnership and Liaison Office (PALO)

Dear Madam, Dear Sir,

Hope you remain strong and healthy during these difficult times.

The Climate Technology Centre and Network (CTCN) is hosted by the UN Environment Programme and is part of the UN Framework Commission on Climate Change Technology Mechanism. The mission of the CTCN is to stimulate technology cooperation and to enhance the development and transfer of climate technologies to developing countries.

With the support of MSIT, the CTCN has established a Partnership and liaison office (PALO) in Songdo, the Republic of Korea, with an objective, to enhance climate technology development and transfer and to strengthen the linkages between the CTCN and the Green Climate Fund and between the CTCN and other entities working on climate technologies that are based in the Republic of Korea. The office also serves as a Centre of excellence for collaborative RD&D on climate technologies.

As a part of our Workplan for the PALO, CTCN would deliver technical assistance to developing countries on their demand. The Government of Pakistan, through their national focal point to the CTCN, has requested CTCN to deliver technical assistance in "Green Buildings".

We are seeking engagement with a Korean government/public sector institution that has a climate technology and research capability and can implement the activities defined under the Technical Assistance request mentioned above. The technical assistance to be provided can be of a value up to 250,000 USD for a period of 12 to 18 months.

Country	**Pakistan**
Request ID#	**2022000025**
Title	Adoption of Green buildings in Pakistan to achieve Pakistan's Nationally Determined Contribution
NDE	Dr. Saima Shafique Director, Ministry of Climate Change 4th Floor, Local Government Complex, G-5/2, Islamabad, 44000, Pakistan Saimashafique76@gmail.com
Proponent	Ministry of Climate Change

Summary of the CTCN technical assistance

Pakistan's energy sector contribution to greenhouse gas emissions has remained historically high where the recent inventory of 2018 estimated the contribution of 44%. Considering global numbers, the construction sector is highly energy and carbon-intensive, currently producing between 25% and 40% of global carbon emissions. Around 8% of the overall global CO2 emissions come from the production of steel and concrete, for example.

Due to a lack of green building standards and regulations, the rapid urbanization across Pakistan has seen an infrastructural development which is not environmentally sustainable and responsible. A major initiative is required to be taken towards implementing green building standards with a clear methodology, monitoring verification and enhancement MV&E and financing. Pakistan has so far been constrained by the lack of awareness among people about the importance and advantages of adopting green building practices, as well as limited access to financing.

Accordingly, this request for technical assistance aims at introducing green building standards in Pakistan. This includes a baseline assessment of current infrastructure (incl. commercial, office and residential buildings), as well as the development of standards for new green building infrastructure and the conversion of existing infrastructure to net zero buildings.

04 Adoption of Green Buildings in Pakistan

1 Prepare business plans and Communication documents

- Total project execution plan
- Business evaluation plan
- Predict Assessment Result / Impact Assessment

2 TC configuration for project execution and review

- Experts configuration and Kick-off meetings
- Interim evaluation by TC

3 Review of Pakistan building regulations and improvements

- Pakistan's Basic Status Report
- Reporting World Class Technology and Policy benchmark
- Assess expected saving

4 Development of Green Building Standards in Pakistan

- Drafting of the Green Building System in Pakistan
- Public Consulting Report
- Final Green Building Standards and Policy Guidelines

5 Development of Mechanisms and Tools

- MV&E(Measurement Verification & Evaluation) Framework
- User Manual
- Proposal of related tools such as material certification

6 Propose economic and financing mechanisms

- Proposal of Funding mechanism for revitalizing of Green Projects

Thank you for Your Attention

KICT
Sungmo Seo
(ssm1216@kict.re.kr)