Modernization of Uzbekistan Building Code (UBC) System

Development of KS and Construction Field Test·Certification System

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Korea Conformity Laboratories

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Introduction

▪ Definition of Terms

- **Standards** : Regulations approved by a standardization body through a stakeholder consensus process for repeatable and commonly applicable targets
- **Standardization :** Organizational behavior that sets standards and utilizes them
- **Conformity Assessment** : Activities to prove whether the evaluation target, such as products, procedures, systems, personnel, and institutions, conforms to the specified standards and requirements by the authorized body
- **Test** : Identification of characteristics according to specified requirements for a product process or service.
- **Inspection**: Conducting investigations into product design, product, process or installation and confirming compliance with specified requirements
- **Certification** : It guarantees that the prescribed requirements for products, systems, qualifications, services, etc. are met, and is classified into product certification, service certification, system certification, qualification (personal) certification, and is used in various terms such as certification, type approval, verification, designation, permission, etc.

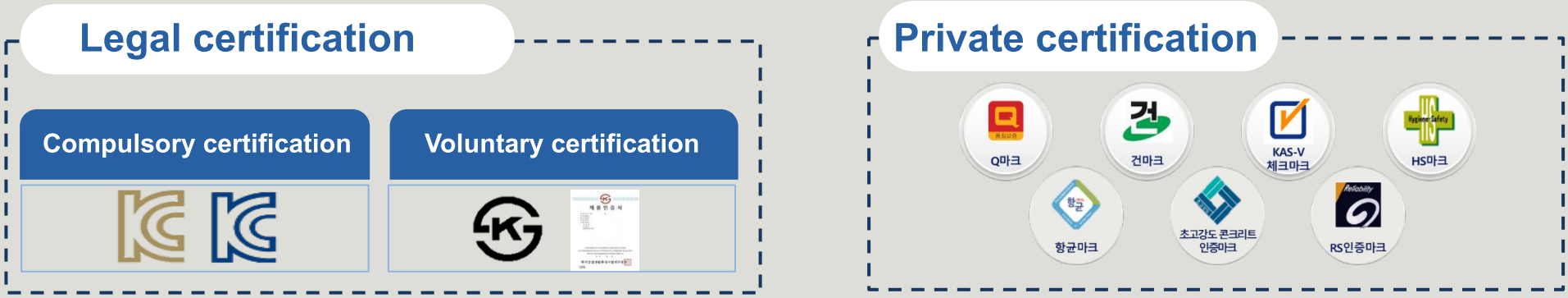
(National Standard Certification Integrated Information System, 2022)

Introduction

▪ Definition of Terms

- **Certification system** : The certification system refers to the act of directly performing an evaluation by a qualified person or proving it based on the evaluation results of a third party to determine whether the evaluation target meets the evaluation criteria applied thereto. (ISO/IEC 17000, KS A ISO/IEC Guide 2)

  - It is divided into a legal certification system and a private certification system, and the legal certification system is again divided into compulsory certification and voluntary certification depending on the presence or absence of coercion. In addition, the certification system implemented by each department is operated under various names according to the characteristics of the certification target, such as certification, type approval, verification, type verification and type registration



- **Technical Regulation** : Technical standards define "standard adopted by government or organization or legally binding" (KS A 0014), or "including applicable administrative regulations, the characteristics of the product or related processes and production methods, and compliance may include or deal with terms, symbols, packaging, marks, or product attachment requirements. (WTO/TBT)

(National Standard Certification Integrated Information System, 2022)

Introduction

▪ Law and Standards

Constitution

Paragraph 2, Article 127 of the Constitution of the Republic of Korea

"The State shall establish a system of national standards!"

Framework Act on National Standards

Define national standards, establish a framework act, align national standards with international standards, and prescribe obligations for utilizing national standards

Laws in regard to Standards, Certifications

- **Introduce a pan-governmental national standard operating system to relieve the burden (Duplicate certifications) on companies**
  - ➔ Harmonize the government ministries' technical(certification)standards with national standards(KS), and integrate some similar legal certification systems into KS certification
- Operate a safety certification system to secure product safety for consumers

National Standards

Measurement standards	A physical scale, measuring instrument, reference material, measuring method and measuring system used as the standards for defining, expressing, preserving and practically realizing a unit of measurement of a quantity in the shape of an object or the value of a specific quantity in the industrial, scientific and technical fields
Reference standards	Things that have been officially approved through scientific analysis and evaluation of the accuracy and reliability of measured data and information
Codified standards	Written scientific and technical criteria, specifications and guidelines which are applied voluntarily in order to raise the overall comprehensibility, efficiency, economic feasibility, etc. in every area of the nation's communities
Technical regulations	Standards that are compulsorily applied to products and services to protect human health, safety and environment, and prevent deceptive acts against consumers

(Electrics, Electronics and Information Standard, KATS, bae, 2021)

Introduction

▪ Classification of standards according to scope

International standards	ISO(International Organization for Standardization) IEC(INTERNATIONAL ELECTROTECHNICAL COMMISSION)
Local standards	CEN((Eurozpean Committee for Standardization) PASC (Pacific Area Standards Congress) CENELEC(European Committee for Electrotechnical Standardization)
National standards	KS(Korea/ATS), ANSI(USA/ANSI), BS(UK/BSI), CAN(Canada/SCC), DIN(Germany/DIN), GOST(Russia/GOST-R), GB(China/CSBTS), JIS(Japan/JIST), AS(Australia/SAI),
Group standards	ASTM(American Society for Testing and Materials), ACI(American Concrete Institute), UL(Underwriters Laboratories Inc), VDE(Verband Deutscher Elektrotrchniker e.v)
In-house standards	Ford Motor Company standards, Hyundai standards, Samsung standards

(Korean Standards Association., 2022)

Introduction

▪ Role of standards

➢ **The role of standards:** Strengthen industrial competitiveness by enhancing quality, increasing compatibility, simplifying unification, and delivering information

Traditional role of standards

Enhance quality	Increase compatibility	Simplify unification	Deliver information
			
Fluorescent lamp(>8,000hr)	Transportation card	Part unification	Public information illustration

➢ **Expanded role as social norm:**

* Finance, disaster management, protection of the socially alienated, etc.

* Social responsibility(ISO 26000), quality management system(ISO 9000), environment management system(ISO 14000), security(ISO 27000), etc.

➢ **The role of standards is emphasized in the Fourth Industrial Revolution Era:**

* Secure interoperability between systems

* Driving force for technological innovation

* Accelerate convergence between products; between product and service

(Electrics, Electronics and Information Standard, KATS, bae, 2021)

Introduction

▪ Standards within World Trade

Standards became a yardstick for judgement on trade barriers after the conclusion of WTO TBT Agreement('95)

"If an international standard exists, enacting an additional technical standard is prohibited"

80% of world trade is transacted under the influence of standards(OECD, 1999)

Response to Technical Barriers to Trade

Phase 1 Information gathering

WTO TBT notice

WORLD TRADE ORGANIZATION

FTA TBT notice

Diplomatic missions, cooperative groups (unnotice)

kotra KEA KOMI KSCIA

Companies(overseas branches, unnotice)

SAMSUNG 삼성 LG

Phase 2 Research analysis

General analysis

Translate WTO TBT notice; summarize regulations; categorize by relevant industry

TBT portal posting and dissemination to industry

In-depth analysis

Comparative analysis with domestic/foreign regulations
Anticipate the victim industries; analyze the economic effect from overcoming regulations and the possibility of utilizing regulations

Come up with counterstrategy after selecting important regulations

Phase 3 Strategy setup

Establish counterstrategy

Counterstrategy by regulated country
Counterstrategy by business type,
Counterstrategy by regulation type

Collect industry feedback

Scale of damage by regulation, industry requirements on the response, etc.

Phase 4 Response

Diplomatic response

WTO TBT committee activities,
FTA TBT committee,
bilateral/multilateral consultations

Build cooperation system

Knowledge transfer of technology, system to developing countries through MRA, MOU, etc.

Consulting, forum, PR

Customized consulting TBT forums by industry, briefing sessions

Feedback

(Electrics, Electronics and Information Standard, KATS, bae, 2021)

Korean Standards

▪ About KS

KS (Korean Standards) are Korean National Standards developed, reviewed and notified under the Korean Industrial Standardization Act.

KS may be divided into 21 sectors ranging from the Basic standards (A) to the Information (X), as well as it may be classified into 3 types of standards as follows:

- Standards for unifying and simplifying the kinds, appearance, quality, producing methods, methods of testing, inspection and measurement of mining and industrial products; and supply methods and procedures of services related to industrial activities
- The Industrial Standards Act (Industrial Standardization Act) has been operated since 1962 after its enactment in 1961.
- **Conduct technical review and deliberation for enactment and amendment of KS by running an Industrial Standard Council comprised of experts from each field**

(Korean Standards Association., 2022)

Korean Standards

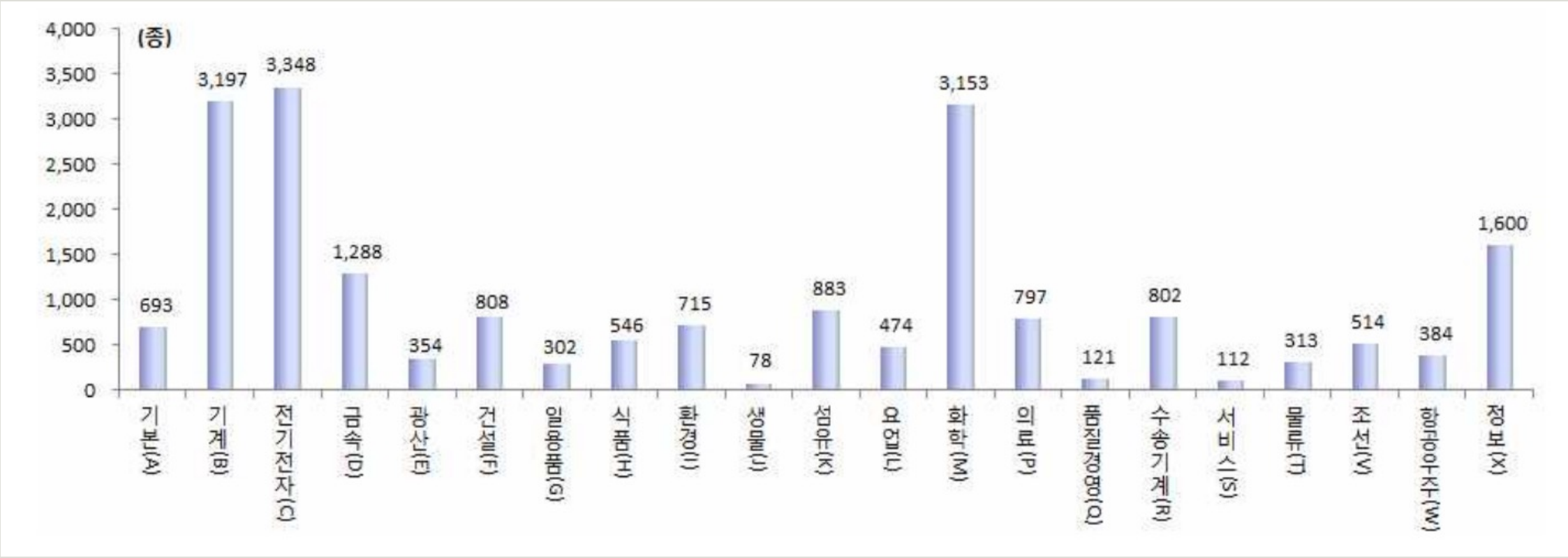
▪ Classification of KS

Basic Standards(A)	Food(H)	Quality Management (Q)
Mechanical Engineering (B)	Environment (I)	Transportation (R)
Electrical & Electronic Engineering (C)	Organism (J)	Service (S)
Metals (D)	Fiber (K)	Logistics (T)
Mine (E)	Ceramics (L)	Shipbuilding (V)
Construction (F)	Chemistry (M)	Aerospace (W)
Necessities (G)	Medical(P)	Information Technology (X)

(Korean Standards Association., 2022)

Korean Standards

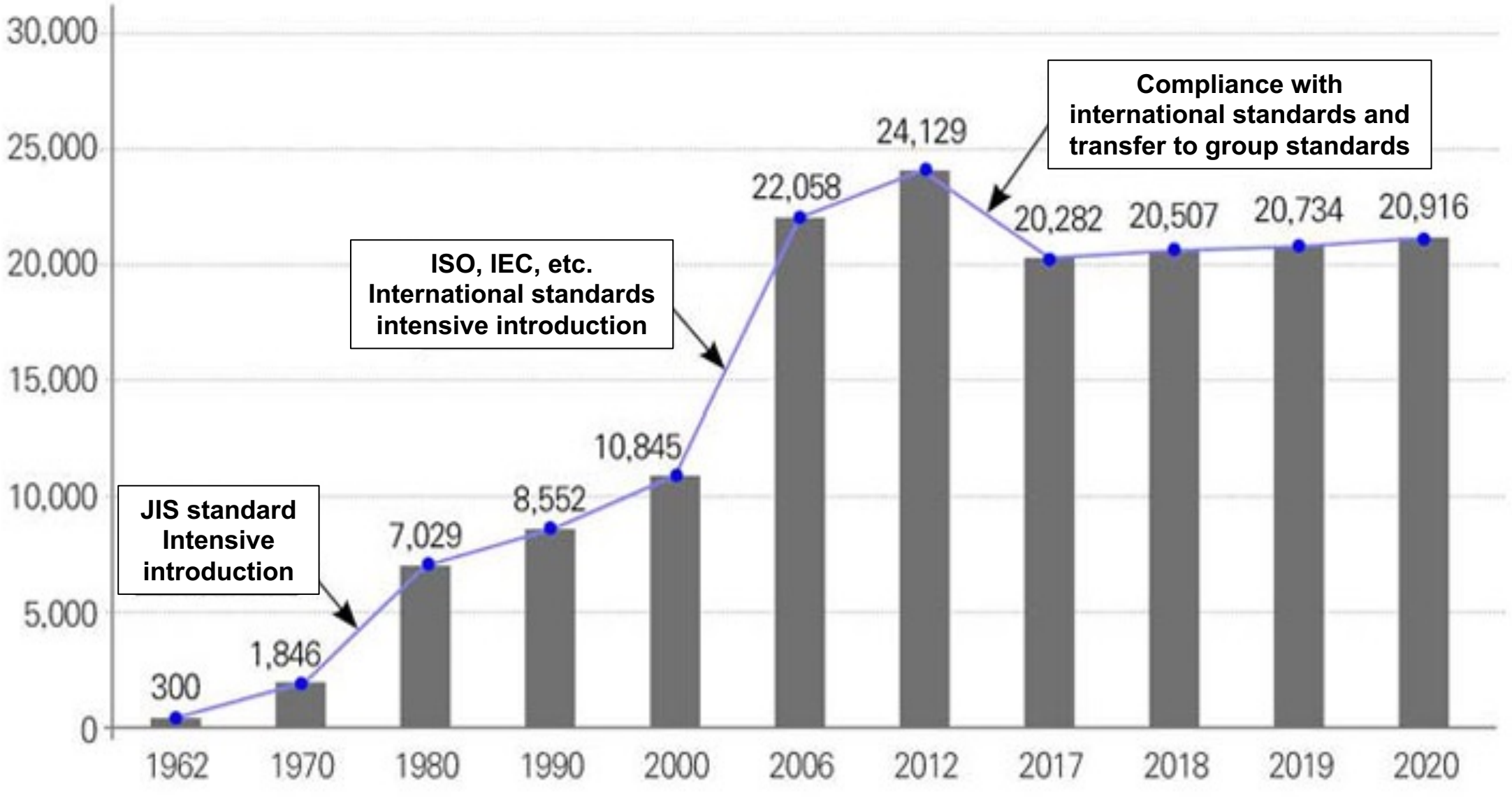
- **Organization by field(분야별 구성)**



(KATS, Technical standard statistics, 2014)

Korean Standards

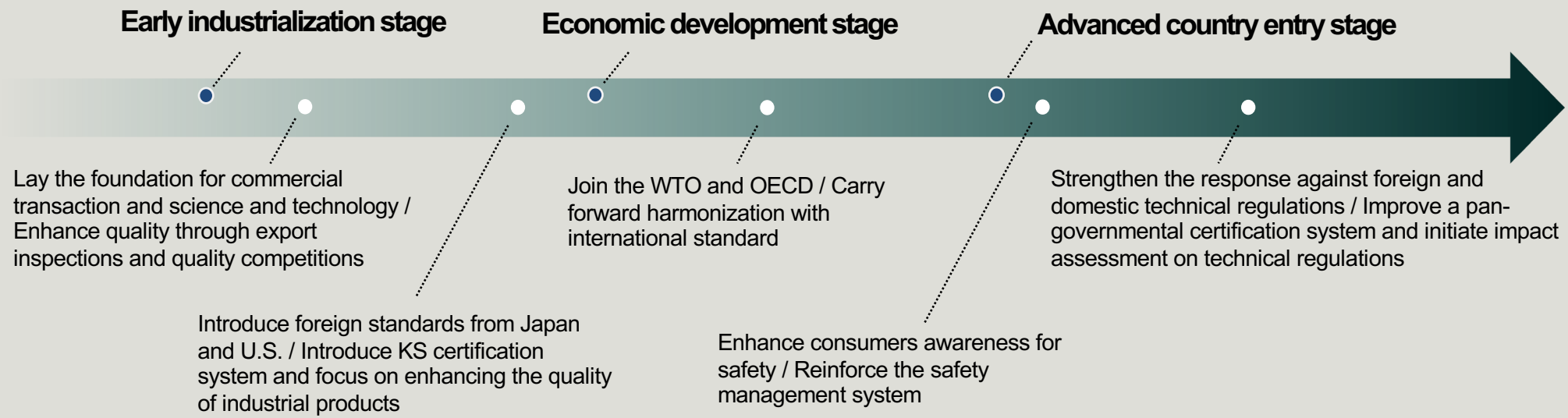
- **KS Status by year**



(National Technical Standard White paper, 2020)

Korean Standards

▪ History of KS and Korea Agency for Technology Standards



60s~70s

Establish a legal metrology system / KS certification system

- **Manage a legal meter**
  Measuring Act, 1961
- **Guarantee minimal quality**
  Industrial Standards Act, 1961
  Quality Control of industrial Products Act, 1967
- **Manage a legal meter**
  Measuring Act, 1961

80s~90s

Establish a conformity assessment policy / Test analysis and technical support

- **Enhance product quality**
- **Introduce foreign standard**
  Industrial Standardization Act, 1998
- **Support small and medium-sized technical support**
- **Test certification**

After 2000s

Establish a safety certification system / Strengthen international standardization activities

- **Guarantee consumer safety**
  Quality Management and
  Industrial Products Safety Management Act, 2000
- **Introduce harmonization with international standard**
  Harmonization between national standard and international standard
- **International Conformity Assessment System**

After 2010s

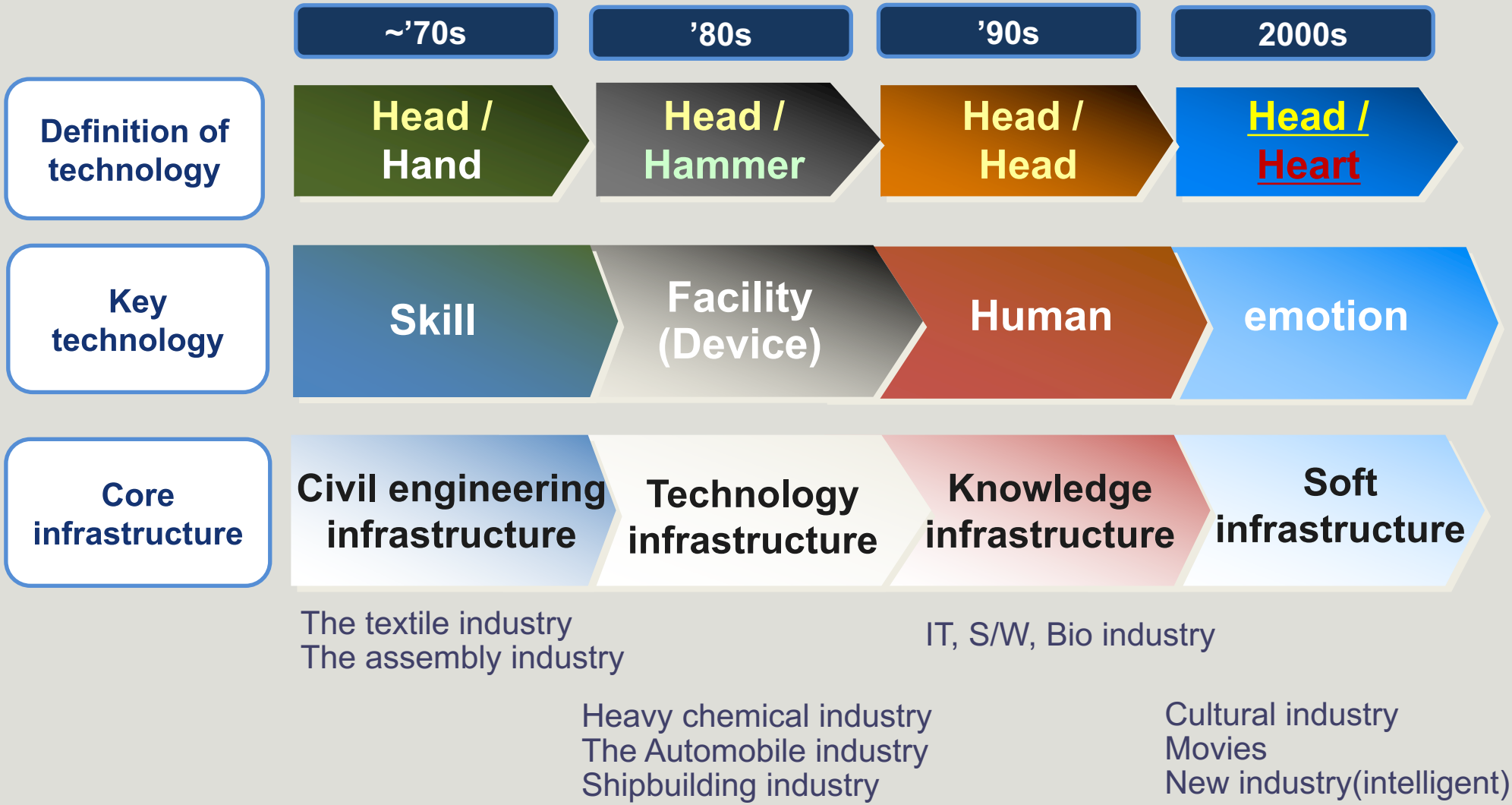
Improve technical regulation / Operate a pan-governmental KS system

- **Introduce a technical regulation impact assessment**
  Linkage between technical regulation and KS
- **Introduce a pan-government KS system**
- **Special Act on the Safety of Children's Products**

(Electrics, Electronics and Information Standard, KATS, bae, 2021)

Korea Standards

- **Changes in the definition of technology.**



(Korean Standards Association., 2010)

Korean Standards

▪ Construction field in KS

- Development process in the field of Construction Safety Standards

Timing	Main contents	Remarks
1960s (Introduction)	- Standardization of Civil engineering and architecture Drawing rules - Standardization of basic construction materials such as bricks, boundary blocks, and ready-mix concrete	1965 year, 89 type
1970s (Development)	- Standardization of test methods and terms, such as the wear test method of building materials, etc. - Standardization of basic interior and exterior materials such as roof tiles and windows.	1970 year, 184 type
1980s (Growth)	Standardization to improve the quality of construction materials such as various residential units and tissue hangers through the Asian Games and the Seoul Olympics.	1980 year, 475 type
The 1990s (Maturity)	With the construction of 2 million houses, it focuses on standardizing dimensions for the dimensional compatibility of various construction materials and the efficiency of construction.	1990 year, 588 type
2000s (Transition)	In preparation for the opening of the construction market, it focuses on meeting ISO standards and expanding standardization of fire/structural safety and construction environment sectors.	2000 year, 604 type

(50 years of industrial standardization, 2011)

Korea Standards

▪ Construction field in KS

- Status of KS standard retention by category(12,007 type, December 2001)

category	Count	category	Count	category	Count	category	Count
Basic(A)	592	Mine (E)	278	Fiber (K)	580	Transportation (R)	644
Mechanic (B)	1,943	Construction (F)	635	Ceramics (L)	365	Shipbuilding (V)	534
Electric (C)	1,342	Necessities (G)	251	Chemistry (M)	2,248	Aerospace (W)	256
Metals (D)	965	Food(H)	220	Medical(P)	341	Information Technology (X)	813

- Construction standards
  - KS B : valves, boilers, etc.
  - KS C : wires, luminaires, etc.
  - KS D : reinforcement, steel, steel pipe, etc.
  - KS F : terms, design, materials, construction, etc.
  - KS L : cement, tiles, sanitary appliances, etc.
  - KS M : PVC flooring, paint, etc.

(Understanding and Utilization of KS, KATS, Kim, 2002)

Korea Standards

▪ Construction field in KS

- Classification in detail

Total : 1,639 type

Reagent standard : 57 types

Reagent 57 type

Reagent/Test equipment 57

Construction standard : 23 types

Construction 23 type

Construction standard/ Construction machine 23

Delivery method standard : 698 types

Method standard 591 type

Test/Inspection/ Measurement 591

Delivery standard 107 type

General/Structure/ Design 107

Product standard : 861 types

Electric equipment material 105type

Wire, track supplies 40
luminaires 16
Wiring, electrical equipment 49

Waterproof thermal insulation materials 47 type

Waterproofing material etc.

Other materials 134 type

Bonding and glue etc.

Window materials 46 type

glass etc.

Interior and Exterior materials 66 type

flooring etc.

Hytgiene management 158 type

boiler etc.

Paint 43 type

Base paint etc.

Steel non-ferrous materials 107 type

Volt nuts etc.

Structural materials 107 type

cement etc.

(Understanding and Utilization of KS, KATS, Kim, 2002)

Korea Standards

▪ KS Enactment Procedure

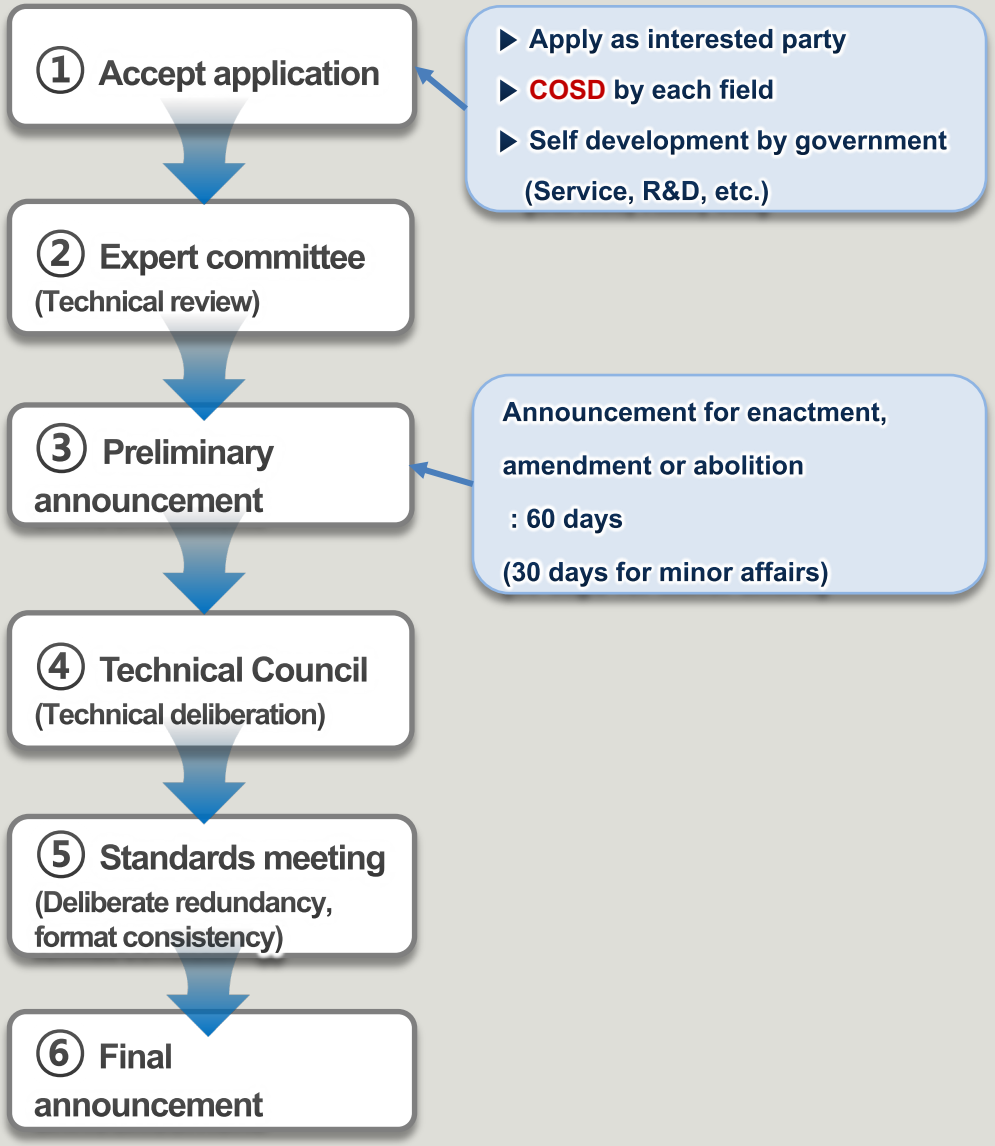
Korean Industrial Standards (KS)

●Standards for unifying and simplifying the kinds, appearance, quality, producing methods, methods of testing, inspection and measurement of mining and industrial products; and supply methods and procedures of services related to industrial activities

●The Industrial Standards Act (Industrial Standardization Act) has been operated since 1962 after its enactment in 1961.

●Comprised of major classifications schemes from basic category(A) to information category(X)

●Conduct technical review and deliberation for enactment and amendment of KS by running an Industrial Standard Council comprised of experts from each field



※ COSD(Co-operating Organization for Standards Development)

(Electrics, Electronics and Information Standard, KATS, bae, 2021)

Technical Regulation

- **Use of KS For technical regulation**
  - Using 2529 technical regulations from 28ministries

Law	Department
Building Act. Construction Technology Management Act. Facilities Safety Management Act. etc.	Ministry of Land, Infrastructure and Transport
Framework ACT on firefighting services	Ministry of Interior and Safety
Enforcement Decree of the Noise and Vibration Control Act.	Ministry of Environment
Occupational Safe and Health Act.	Ministry of Employment and Labor

KS itselft	KS for legal citations
Voluntary standards	Compulsory standards

Technical Regulation

- **Status of technical regulation by ministries(2022. 2.)**

Department	Count
1. Ministry of Land, Infrastructure and Transport	223
2. Ministry of Trade, Industry and Energy	1,343
3. Ministry of Interior and Safety	27
4. Ministry of Environment	154
5. Ministry of Employment and Labor	42
⋮	
28. Ministry of Oceans and Fisheries	123
SUM	2,520

(National Standard Certification Integrated Information System, 2022)

Technical Regulation

▪ Examples of standardization in the field of design/construction/material

.

Design standards

- Criteria for writing a design book for a house
  - Module (1m=1000mm) applied
  - Design of eye size, 1m increment of floor height, 3m increment of size of living room

Construction standards

- Standard specification , Professional specification book, Construction specification.
  - General information, martials, construction
  - (Application of KS test / Inspection method , Use of KS standard product)

Material standards

- Plaster cement plate, rock sound absorption ceiling plate.
  - Breaking away from the scale of the 尺 (The old unit)
  - (303×606 mm (1 尺×2 尺) ▶ 300×600 mm)

Technical Regulation

▪ Use of KS in the specification

Ministry of Land, Infrastructure and Transport

Construction technology promotion Act.

Construction Standard specification

Architecture, Civil engineering, Road, Port, Tunnel River, Water supply, Concrete, Architectural electrical equipment, Road bridge, Landscape, Architectural machinery and equipment, Urban railway, industrial facilities, etc.

Voluntary standards for citing 1,100 kind of KS

Construction specification

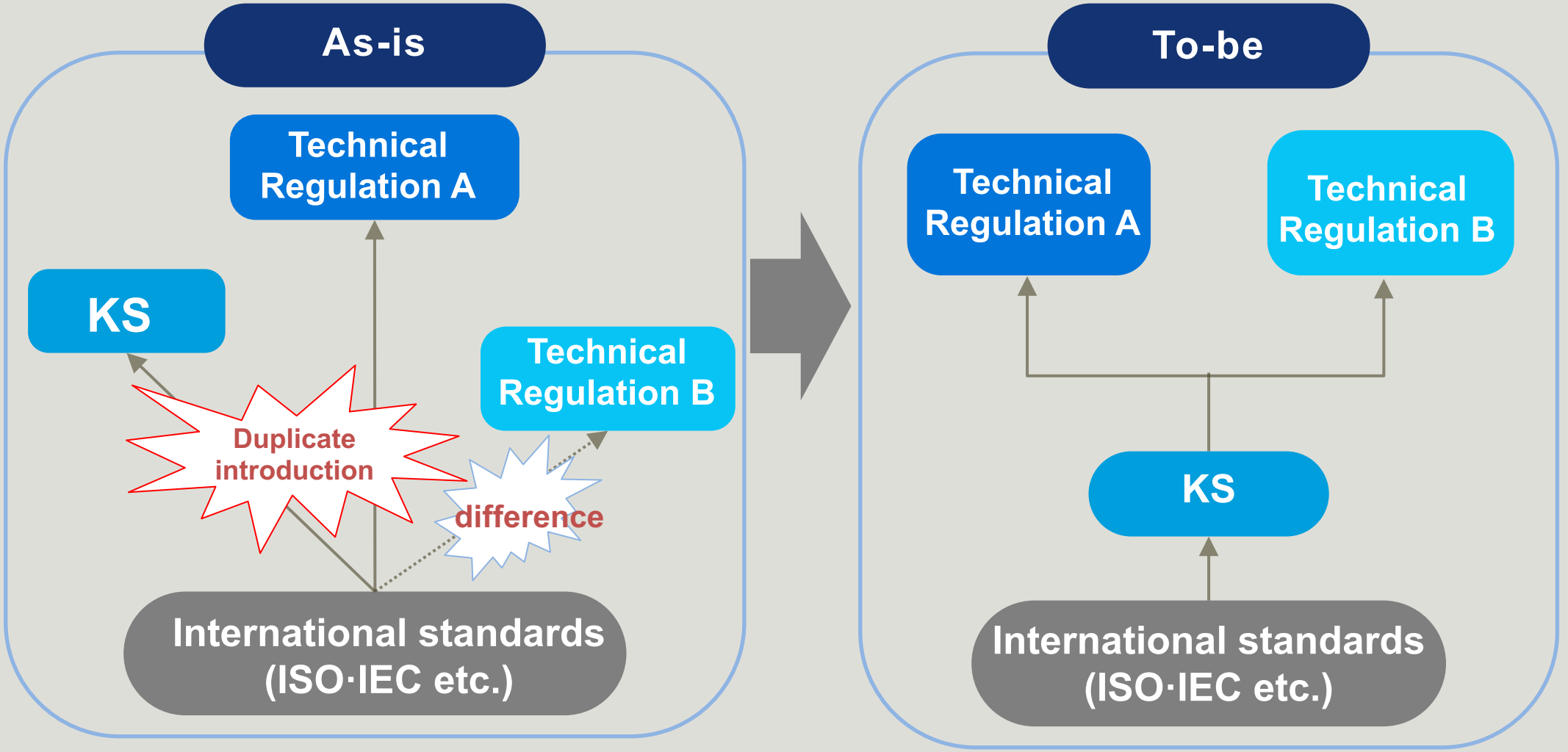
Material specification
Test method
Inspection method
Construction method
Using of KS products

Using in the Design office
Construction site use

Contract documents
Compulsory standards

Technical Regulation

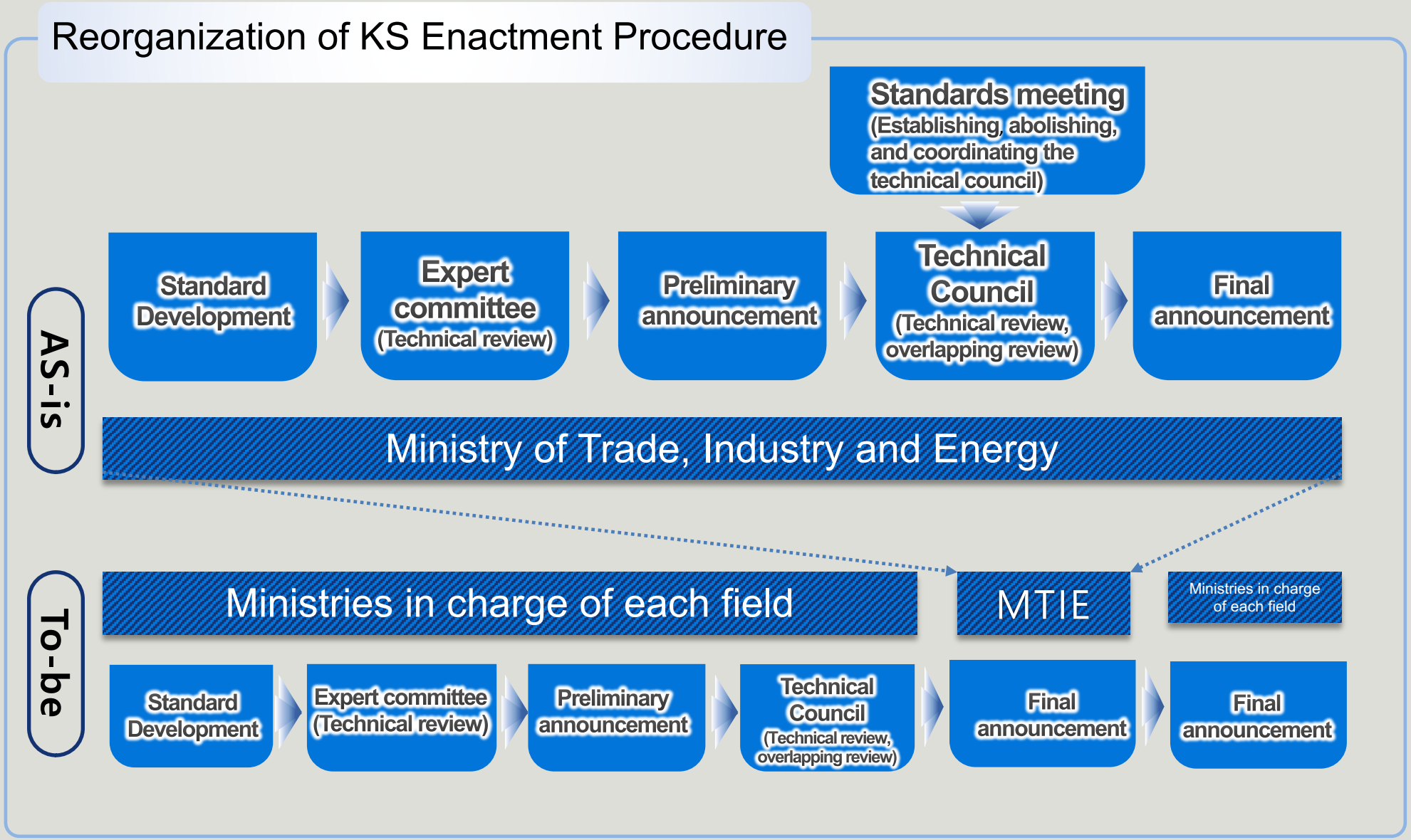
- **KS and Certification advancement plan**



(National Technical Standard White paper, 2010)

Technical Regulation

- **KS and Certification advancement plan**



(National Technical Standard White paper, 2010)

Technical Regulation

- **Status of delegation to related ministries in standard work.**

Department	KS(Count)	TC/SC
Ministry of Science and ICT	1,135	32
Ministry of Agriculture, Food and Rural Affairs	526	17
Ministry of Environment	598	29
Ministry of Employment and Labor	31	1
Ministry of Land, Infrastructure and Transport	218	11
Ministry of Oceans and Fisheries	40	0
Ministry of Food and Drug Safety	888	41
Korea Forest Service	422	13
Korea Meteorological Administration	9	2
SUM	3,867	146

※ TC/SC : Technical Committee / Sub Committee

(National Technical Standard White paper, 2010)

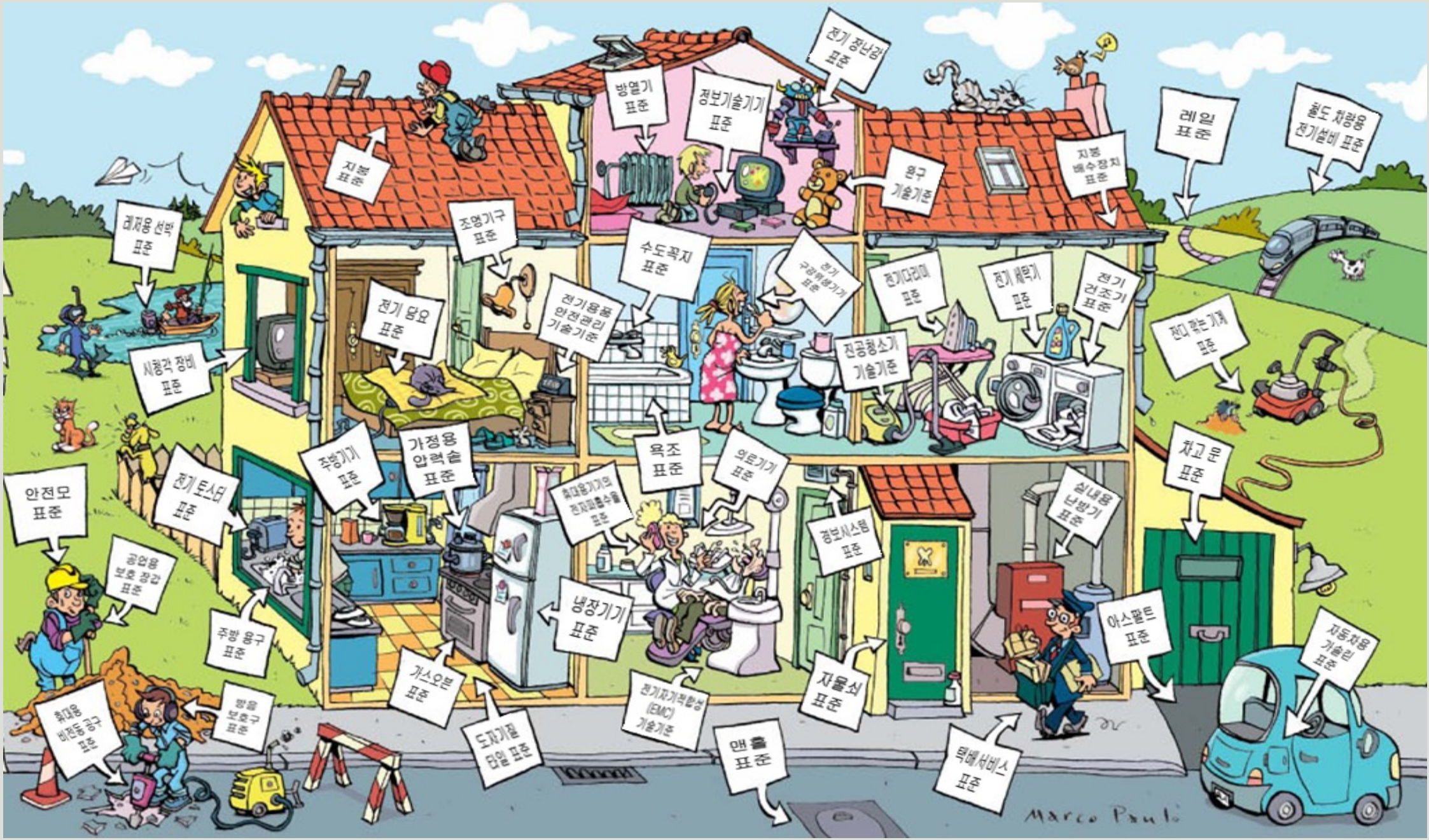
Conclusion

The 20th century Key Words

Capital, Land, Labor

The 21th century Key Words

Knowledge, information, **standards**, technology, globalization



(Korea standard Association, 2008)

1. KCL at a glance

the way to trust KCL

KCL is a leading testing and certification agency in South Korea based on the nation's top technical skills, infrastructure and research manpower.

- OVER 230,000 Test Reports
- OVER 35,000 Customers
- OVER 196 KRW billion Revenue
- ABOUT 943 Employees
- OVER 500 R&D Projects
- In 2010~2020 27 Proposals ISO Standards
- 24 Countries Global Networks
- 99 National Recognitions

Business Portfolio

- Construction
- Energy
- Parts & Materials
- Electricity/ Electronics
- Chemistry/ Environment
- Medical/ Bio Products
- Consumer Safety
- Mobility
- Fire Safety

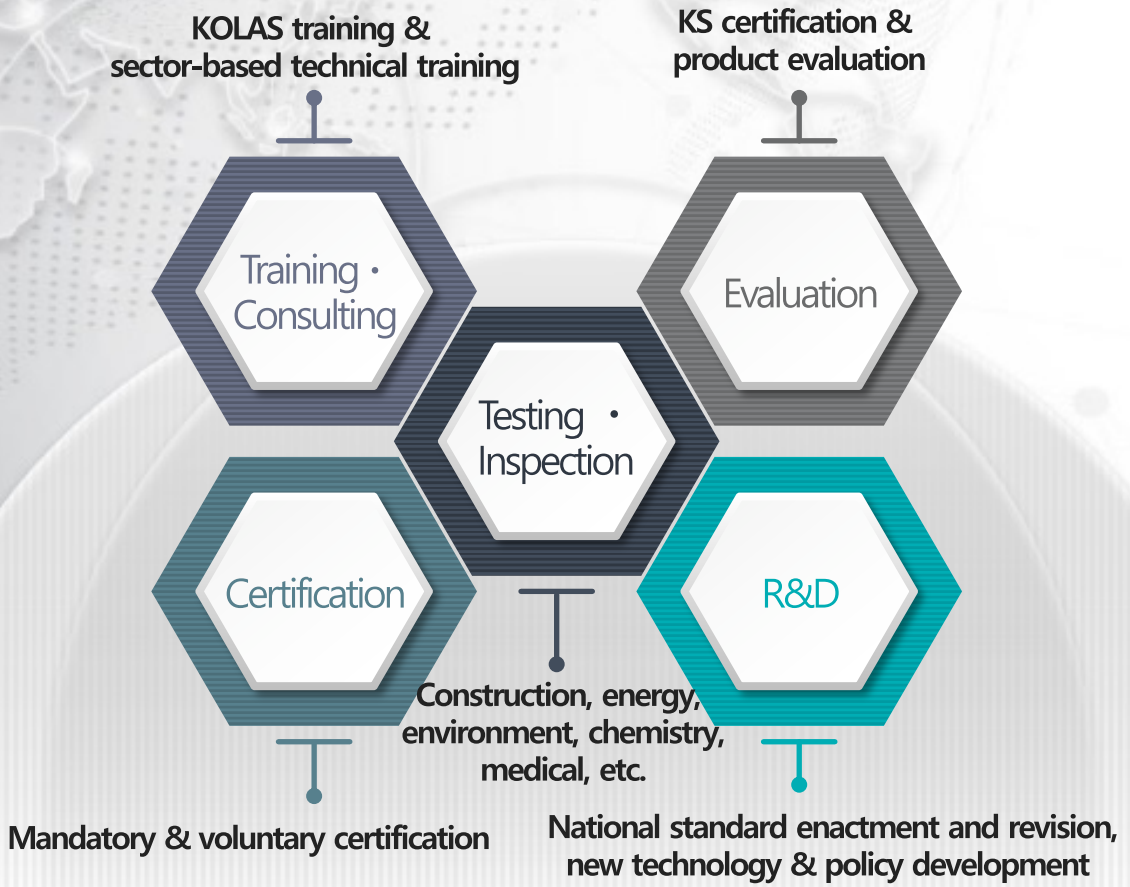
2. History

the way to trust KCL

KCL is a leading testing and certification agency in South Korea based on the nation's top technical skills, infrastructure and research manpower.

Basis of Establishment

- [Law] Article 32 of the Civil Act 『Incorporation of Non-profit-making Juristic Person and Permission thereof』
- [Ministry] Korean Agency for Technology and Standards (KATS) under the Ministry of Trade, Industry and Energy (MOTIE)



Brief History

1971
[Apr. 10] Establishment of Korea Export Goods Testing Laboratory

1994
[Jul.. 15] Establishment of Korea Institute of Construction Materials

2010
[Jul. 08] Launch of Korea Conformity Laboratories [KCL]

2014
[May 15] Infrastructure supply for building energy performance evaluation and consulting service (SASO, Saudi Aribia)

2015
[Apr. 28] Opening of China Branch in Qingdao
[Jul. 01] Launch of incorporated foundation [KCL]
[Oct. 26] Declaration of "KCL Vision 2020"
[Nov. 30] Designation as KS Certification Institution

2016
[Jun. 28] Opening of Samcheok Real-scale Fire Testing & Research Center
[Nov. 11] Opening of Daegu Safety Convergence Technology Center

2017
[May. 23] Opening of Jincheon Climatic Environment Real-scale Test Center
[Oct. 19] Award the presidential citation at the World Standards Day

2018
[Feb. 08] Ground breaking ceremony for Yeosu CO_2 business platform

2019
[May. 08] Opening of Daegu & Gyeongbuk Branch new buildings
[Jun. 25] Transfer of Honam Division head office to Yeosu and completion of Carbon Capture & Utilization(CCU) center

2020
[Apr. 20] Opening of Jincheon Battery Center
[Sep. 21] Opening of Gyeongnam Branch building in Yeongnam Division

Modernization of Uzbekistan Building Code (UBC) System

Thank you

국토교통부
Ministry of Land, Infrastructure and Transport

해외건설협회
International Contractors Association of Korea

KICT
한국건설기술연구원

서울시립대학교
UNIVERSITY OF SEOUL

RICON
KOREA RESEARCH INSTITUTE FOR CONSTRUCTION POLICY