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Strategies for Enhancing the Implementation Capacity of Construction Site Supervisors in South Korea

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Abstract

Purpose: Despite the enactment of the Risk Assessment System (2013) and the Serious Accidents Punishment Act (2022), the occupational fatality rate in South Korea's construction industry has remained persistently stagnant, a problem further compounded by the structural vulnerability arising from the rapid increase in elderly and foreign workers. This study aims to identify insufficient implementation capacity among construction site supervisors as a central structural cause of this stagnation, and to derive evidence-based improvement strategies through comparative institutional analysis with advanced economies. **Research Design/Methods:** As a policy-oriented comparative study grounded in Comparative Institutional Analysis, this research examines the supervisory frameworks of South Korea, the United Kingdom, the United States, Germany, and Singapore across three analytical dimensions: (1) qualification and training systems, (2) legal penalty levels, and (3) the practical exercise of the right to stop work. The core concept of implementation capacity is operationalized through five sub-dimensions: knowledge, technical skills, authority, organizational support, and communication competency**. Results:** Countries with comparatively lower occupational fatality rates consistently exhibit competency-based qualification systems, effective legal sanctions, and a substantively exercised right to stop work. Under Singapore's bizSAFE and BCSS frameworks, a fatality rate of 0.12‰ per 10,000 workers is observed — approximately one-third of South Korea's rate of 0.39‰. By contrast, South Korea demonstrates clear structural limitations: a mandatory training requirement of only 16 hours per year that is predominantly theoretical, administrative fines capped at KRW 5 million, and a right to stop work that is largely nominal in practice. **Conclusions:** Five core policies are proposed to address the three identified institutional gaps: (1) introduction of a national qualification certification system for construction supervisors, benchmarked against Singapore's BCSS model; (2) reform of training toward field-based practice, with a minimum of 32 hours, at least 50% hands-on components, and tailored programs for elderly and foreign workers; (3) mandatory exercise of the right to stop work with strengthened legal protection for supervisors, drawing on Singapore's Safety Time-Out (STO) model; (4) modernization of legal penalty levels and institutionalization of adequate construction schedules; and (5) expansion of mutual safety incentive programs between prime contractors and subcontractors. This study seeks to contribute a policy foundation for South Korea's pursuit of OECD average fatality rate levels by 2030.

Keywords: Construction industry; construction site supervisor; implementation capacity; comparative institutional analysis; qualification certification; right to stop work

JEL Classification Code: L74, M12, M54, P51, K32, L14

1. Introduction

In contemporary industrial societies, occupational safety and health have emerged as defining indicators of a nation's level of development. Among member states of the Organisation for Economic Co-operation and Development (OECD), efforts to prevent workplace accidents and reduce fatal injuries are now recognized not merely as regulatory obligations but as determinants of long-term sustainability and national

competitiveness. While South Korea has achieved remarkable economic growth over a compressed period, the persistently high rate of industrial accidents remains a critical unresolved challenge — earning the country the disquieting label of being "economically advanced but occupationally backward."

Against this backdrop, the present study first analyzes the current state of industrial accident rates in South Korea, quantitatively examining why the introduction of both the Risk Assessment System and the Serious Accidents Punishment Act has produced ambiguous outcomes. The study further investigates the growing presence of elderly and foreign workers as a structural factor contributing to the stagnation of accident reduction, and proposes the enhancement of supervisory implementation capacity as one key countermeasure. Drawing on comparative data from major OECD countries and Singapore — recognized globally as a safety-advanced nation — the study examines fatality trends and the role of supervisory systems, and thereby aims to derive strategies for strengthening the implementation capacity of construction site supervisors in South Korea.

Through this analysis, the study seeks to sound a critical alarm regarding South Korea's current occupational safety framework — one that imposes legal responsibility on supervisors without equipping them with commensurate authority, relies on formalistic and document-centric safety training, and allows safety to be treated as optional when it conflicts with schedule, cost, and quality priorities. By breaking through long-entrenched systemic problems and proposing new policies, the study aspires to contribute to a construction industry in which human life is no longer treated as expendable.

1.1. Research Questions

Guided by the foregoing problem statement, this study addresses three principal research questions:

RQ1: What institutional and structural factors underlie the insufficient implementation capacity of construction site supervisors in South Korea?

RQ2: In what respects do the supervisory systems of major OECD countries and Singapore differ from South Korea's, and how are these differences associated with their respective occupational safety outcomes?

RQ3: Based on the comparative analysis, what actionable policy alternatives can strengthen the implementation capacity of construction site supervisors in South Korea?

2. Research Design and Methodology

2.1. Research Methodology: Comparative Institutional Analysis

This study adopts Comparative Institutional Analysis as its core methodological framework. Comparative Institutional Analysis enables the systematic examination of the structure, operational mechanisms, and outcomes of policies and institutions that perform analogous functions across different national or institutional contexts, thereby identifying the strengths and limitations of specific institutional arrangements and deriving policy implications (Ragin, 2014; Hantrais, 2009). Cross-national institutional comparison in the field of occupational safety and health has long been employed by international organizations such as the ILO and the OECD as a primary instrument for policy improvement. This study builds on that scholarly tradition to diagnose the structural deficiencies of South Korea's construction supervisor system and to identify directions for reform.

In parallel, this study conducts a focused literature review of domestic prior research to synthesize the problems and proposed improvements regarding supervisory training that Korean scholars have identified. The findings from this review serve as a contextually grounded basis for interpreting the results of the comparative analysis and for formulating actionable policy recommendations.

2.2. Case Selection and Rationale

The core comparator countries in this study are South Korea, the United Kingdom, the United States, Germany, and Singapore, which collectively serve as the primary cases for institutional comparison and policy derivation. Supplementary reference data — including the OECD Top 10 economy average, France, and Japan — are used to contextualize South Korea's relative standing but are not included in the core institutional comparative analysis. The OECD countries were selected because they record markedly lower occupational fatality rates than South Korea and are internationally recognized for their institutional maturity in supervisory training and qualification systems.

Singapore was selected as the principal benchmark case for the following reasons. First, Singapore experienced high industrial accident rates in the past but successfully reduced its occupational fatality rate to approximately one-third of South Korea's level over two decades through systematic policy innovation — making it an exemplary model. Second, Singapore's

industrial structure closely resembles South Korea's in terms of its high proportion of construction activity and heavy reliance on foreign workers. Third, Singapore operates nationally coordinated occupational safety programs (bizSAFE, BCSS, etc.) that offer substantial policy lessons for South Korea, which also manages safety through a government-led framework. Fourth, the high level of transparency in official statistics and policy documents published by Singapore's Ministry of Manpower (MOM) ensures the data accessibility required for rigorous comparative analysis.

2.3. Analytical Dimensions and Variables

This study identifies three core institutional dimensions that influence supervisory implementation capacity, and derives specific comparative variables for each:

Table 1. Analytical Dimensions and Comparative Variables

Analytical Dimension	Comparative Variables
① Qualification & Training System	Training hours; training modality (theory/practice ratio); existence of qualification certification; assessment methods; training delivery entity
② Legal Penalty Level	Level of administrative fines/criminal penalties for violations; existence of criminal prosecution; scope of employer liability
③ Exercise of the Right to Stop Work	Legal basis for work stoppage; actual exercise in practice; anti-retaliation protections; cultural acceptance

2.4. Data Collection and Analytical Procedure

Domestic data sources include the Ministry of Employment and Labor's Industrial Accident Analysis (2020–2024), the Korea Occupational Safety and Health Agency's (KOSHA) risk assessment implementation reports, and relevant legislation and guidance on construction supervisors. International data sources include OECD occupational safety statistics, comparative reports by the Korea Research Institute for Construction Policy (CERIK), KOSHA's compendium of overseas safety systems, and MOM's Workplace Safety and Health Report and Training Framework documents.

The literature review was conducted using the domestic academic databases RISS and KCI, with search terms including "construction supervisor," "occupational safety and health training," and "construction industry accidents," covering the period from 2015 to 2025. Inclusion criteria required that studies be published in peer-reviewed Korean journals and directly address supervisory training, roles, or institutional frameworks in the construction or occupational safety field; studies with low relevance or published outside academic journals were excluded. Six key prior studies meeting these criteria were selected for analysis. It should be noted that this literature review is not a full PRISMA-based systematic review, but rather a focused literature review conducted within the context of a policy-oriented comparative study grounded in comparative institutional analysis.

The analytical procedure follows three sequential stages: (1) current-state analysis — examining the state of industrial accidents and the operational reality of the supervisory system in South Korea; (2) comparative analysis — contrasting South Korea's arrangements with those of the comparator countries across the three analytical dimensions; and (3) policy formulation — deriving policy proposals applicable to South Korea based on the institutional gaps identified in the comparative analysis.

3. Theoretical Background

The government-introduced Risk Assessment System and the Serious Accidents Punishment Act have yet to translate into a discernible reduction in accident rates. Compounding this, the rise in per-capita income and the aversion of younger workers to the so-called "3D industries" (dirty, dangerous, and demanding) have driven an influx of elderly and foreign workers across all sectors, causing accident rates to trend upward. South Korea's industrial accident rate is, in effect, trapped in a narrow band with little prospect of escape. Against this backdrop, research attention has turned to construction site supervisors — the individuals positioned at the front line, with direct oversight of the day-to-day activities of workers who bear the immediate brunt of accidents.

As documented in Section 3.4 on prior research, domestic studies have consistently identified the same core problems: inadequate practical training for supervisors who are the first point of contact for frontline workers and the first line of defence against

hazards; insufficient institutional definition of their role; and the effectively unusable right to stop work. In short, the existing supervisory training system — dominated by regulatory compliance content, paper-based delivery, under-qualified instructors, and weak government will to reform — is identified in the literature as a contributing factor in the stagnation of accident rates [1]. This study therefore analyses South Korea's accident statistics and conducts a comparative institutional analysis of the supervisory systems of major OECD countries and Singapore, with a view to proposing concrete measures to strengthen supervisory implementation capacity.

The core analytical concept of this study — "implementation capacity" — refers to the composite set of competencies that enable a construction site supervisor to actually carry out occupational safety and health duties in the field. This study conceptualizes implementation capacity through five sub-dimensions: ① Knowledge — theoretical understanding of regulations, risk assessment, and safety technology; ② Skills — practical abilities including hazard identification, work instruction, and accident investigation; ③ Authority — the practical exercisability of legal and organizational powers, including the right to stop work; ④ Organizational Support — management commitment to safety, availability of human and material resources, and cooperative arrangements in the prime contractor–subcontractor structure; and ⑤ Communication Competency — the ability to communicate effectively with a diverse workforce, including elderly and foreign workers. These five dimensions serve as the interpretive framework for the comparative analysis in Chapters 4 and 5, and are systematically connected to the institutional gap analysis in Chapter 6 and the policy proposals in Chapter 7.

3.1. Status and Limitations of the Risk Assessment System

More than a decade has passed since the Occupational Safety and Health Act was amended in 2013 to formally introduce the Risk Assessment System, establishing the institutional foundations for a "self-regulatory prevention framework" in which enterprises proactively identify and manage workplace hazards. While the system has yielded modest gains — providing a rudimentary self-regulatory architecture and achieving limited reductions in accidents at small workplaces and partner companies, as well as raising safety awareness among frontline workers — significant challenges remain. In practice, the training process has become submerged in paperwork: rather than driving substantive preventive activity, it has degenerated into "documentation manufacturing" aimed at avoiding legal penalties. Small and medium-sized enterprises suffer from implementation fatigue due to capacity constraints; and a focus on high-risk activities during normal operations has left risk assessment coverage of maintenance and repair work, occupational diseases, and health hazards such as extreme heat comparatively underdeveloped relative to physical safety risks [2].

Table 2. Industrial Accident Statistics (2020–2024)

Indicator	2020	2021	2022	2023	2024
Incidence rate (‰)	11.73	12.59	12.53	14.49	16.49
Frequency rate	7.09	7.68	7.74	9.34	10.72
Severity rate	3.81	4.07	4.08	5.24	7.06

Source: Ministry of Employment and Labor (2025), Industrial Accident Analysis.

As shown in Table 2, all principal industrial accident indicators have trended upward over the past five years — a pattern that renders the introduction of the risk assessment system almost inconsequential. If the risk assessment's primary purpose — the pre-task sharing and elimination of hazards — is to be meaningfully realized, the supervisors who are responsible for implementing it must have their role redefined and empowered.

3.2. The Serious Accidents Punishment Act: Changes and Remaining Challenges

The Serious Accidents Punishment Act was enacted and promulgated in January 2021 and first applied, in January 2022, to workplaces with fifty or more full-time employees (or, in the construction sector, contracts valued at KRW 5 billion or more). Its legislative purpose is to protect workers' lives and bodies by requiring top corporate management to establish and implement an occupational safety and health management system. Departing from the prior Occupational Safety and Health Act — which had focused accountability primarily on line managers and site managers — the new Act explicitly designates the

chief executive or highest-level decision-maker as the target of criminal liability [3].

Table 3. Construction Industry Fatalities Before and After the Serious Accidents Punishment Act

Category	2021	2022	2023	2024
Total occupational fatalities (persons)	828	874	812	827
Construction fatalities (persons)	551	539	486	496
Construction share (%)	66.50	61.60	59.80	59.90
Construction fatality rate (‰)	1.75	1.61	1.59	1.57

Source: Ministry of Employment and Labor (2025).

As Table 3 illustrates, despite the considerable legislative pressure exerted by the Act, no meaningful reduction in construction fatalities is evident. The modest decrease in the fatality rate observed after 2021 appears to be an artifact of reduced building permit activity attributable to the COVID-19 pandemic and global economic contraction, rather than a genuine reflection of improved safety conditions. The construction sector's share of total industrial fatalities has also plateaued. In the third quarter of 2025, fatalities rose to 210 — an increase of seven persons (3.4%) over the same period in the prior year — signaling a return to an upward trend. (Source: Ministry of Employment and Labor. November 25, 2025. Supplementary Statistics on Industrial Accidents in Q3 2025)

3.3. The Role and Operational Reality of Construction Site Supervisors

3.3.1. Legal Definition of the Construction Site Supervisor

Pursuant to Article 16 of the Occupational Safety and Health Act (Supervisors), a "supervisor" is defined as an individual occupying a managerial position within an organization who directly directs and supervises employees engaged in production-related activities. The term encompasses various line management roles, including team leaders, deputy managers, section chiefs, department managers, and equivalent positions. In short, the supervisor — which in English corresponds to "supervisor" or "foreman" — is the primary person responsible for safety at the worksite, the central leader for both production and safety management, and the first individual to make contact with workers. It is the supervisor who educates workers, and who anticipates, identifies, eliminates, and reduces hazards in the work environment [4].

The supervisory framework was reinforced through an amendment to the Occupational Safety and Health Act on 13 January 1990, and further revised on 24 March 2006 — at which point the separate procedure for designating a "safety officer" for high-risk tasks was abolished, with the supervisor assuming those duties directly, thereby positioning the supervisor as the central safety management responsibility-holder. However, in practice, the supervisor's role has been reduced to regulatory compliance training, documentation, and inspection preparation.

3.3.2. Operational Reality: Structural Deficiencies

The operational reality of the supervisory system reveals a complex of overlapping structural problems. First, institutional deficiency: while the legal threshold for supervisory appointment exists, the systematic training and evaluation standards necessary to ensure professional competency are lacking. Second, an imbalance between authority and responsibility: substantive powers — including the right to demand safety measures and to stop work — are not genuinely conferred, meaning that supervisors' directions and advice frequently go unheeded and rarely translate into meaningful improvements. Third, definitional ambiguity: employment type, job title, and deployment criteria are insufficiently clear, resulting in ad hoc application in practice. Fourth, structural organizational problems: within prime contractor–subcontractor arrangements, a culture that prioritizes schedule, quality, and cost over safety prevails; communication systems between supervisors and workers are inadequate; and safety management organizations lack genuine decision-making authority — all of these factors interact to compound the dysfunction [2].

3.4. Review of Prior Research

Choi and Oh (2023) proposed the establishment of a substantive training system by conducting specialized occupational safety training through dedicated public institutions and introducing formal assessment processes, including examinations and certification of completion [5].

Lee, Jeong, and Kim (2022) found that internet-based supervisory training is ineffective, whereas training delegated to specialized institutions produces meaningful results; in-house training was similarly

assessed as inadequate. They explicitly identified "communication competency" as an indispensable attribute for supervisors who direct frontline workers, and advocated for the introduction of formal assessment mechanisms. They further argued that the type and scale of the workplace must be taken into account in determining appropriate training modalities [6].

Kim (2020) noted the absence of training relevant to supervisors' actual job tasks, and specifically identified a lack of training in equipment inspection and defect verification [1].

Yoon, Park, and Lee (2017) called for the strengthening of supervisors' safety and health training competency, finding that audio-visual instruction and case-based learning deserve greater emphasis in effective training. They similarly stressed the urgent need for the development of training programs tailored to specific worksite conditions [7].

Han, Kang, and Yoon (2017) found that conventional rote instruction yields low satisfaction relative to time invested, and argued that diverse training methods — including discussion-based learning, audio-visual instruction, accident case analysis, and hands-on practice — should be adopted. They also urged that training programs be differentiated by age group, job grade, industry sector, and work type, and emphasized the need for long-term occupational safety education programs [8].

Taken together, the domestic literature consistently identifies four core problems: the formalism of supervisory training, the absence of assessment systems, training content that is disconnected from field conditions, and deficient communication competency. However, most prior studies are limited to describing the shortcomings of the domestic system and have not derived concrete policy alternatives through systematic comparative analysis with advanced countries' supervisory systems. This study seeks to address that research gap by conducting a comparative institutional analysis with major OECD countries and Singapore.

4. Comparative Analysis of Construction Industry Accident Rates and Supervisory Training Systems

4.1. South Korea's Industrial Accident and Construction Fatality Rates: Recent Five-Year Trend

Table 4. All-Industry vs. Construction Fatality Rate (per 10,000 Workers), 2020–2024

Year	All-Industry Fatality Rate (‰)	Construction Fatality Rate (‰)	Ratio (Construction / All)
2020	0.46	2.00	4.35
2021	0.43	1.75	4.07
2022	0.43	1.61	3.74
2023	0.39	1.59	4.08
2024	0.39	1.57	4.03

Source: Ministry of Employment and Labor (2025), Industrial Accident Analysis.

As shown in Table 4, the construction sector consistently exhibits a fatality rate approximately four times higher than the all-industry average. This confirms the structurally elevated risk profile of the construction industry and underscores the urgency of institutionally reinforcing the role and position of construction site supervisors to drive down fatalities.

4.2. The Growing Presence of Elderly and Foreign Workers

A further trend of significant concern in South Korea's industrial accident statistics is the rising fatality rate among elderly workers. As shown in Table 5, in 2024 fully 47.35% of all occupational fatalities involved workers aged 60 or older; when the threshold is lowered to 50, that figure rises to 75.24%. This reflects the rapid aging of South Korean society in the industrial workplace and signals the urgent need to redesign construction working environments to accommodate the physical characteristics of older workers. It also highlights the increasingly critical role of supervisors, who must monitor and direct elderly workers from the moment of their initial engagement.

Table 5. Fatalities by Age Group, 2023–2024

Age Group	2024 (persons)	2023 (persons)	Change	Share (%)
Under 30	32	**35**	**−3**	4.08
30–39	65	53	+12	7.20
40–49	112	109	+3	13.48
50–59	214	243	−29	27.89
60 and over	404	372	+32	47.35
Total	827	812	+15	—

Source: Ministry of Employment and Labor (2025), Industrial Accident Analysis.

The number of industrial accidents involving foreign workers is likewise on the rise. According to Yonhap News Agency (2 February 2025), foreign workers' industrial accident applications and approvals reached their highest level in ten years in 2024, with applications exceeding 10,000 cases. Language barriers resulting in communication breakdown, combined with the inadequate effectiveness of safety training, are pushing these workers into safety blind spots — a problem that demands multi-pronged countermeasures. This further underscores why the role of supervisors, who must educate both elderly and foreign workers at the frontline and eliminate hazards, is of ever-growing importance [10].

Table 6. Industrial Accident Statistics for Foreign Workers

Year	Injuries and Occupational Diseases (persons)	Fatalities (persons)
2019	7,401	129
2020	7,457	118
2021	7,892	129
2022	8,171	108
2023	8,677	112

Source: Ministry of Employment and Labor (2023), Research on the Status of Industrial Accidents among Foreign Workers and Institutional Improvement [10].

4.3. International Comparison of Occupational Fatality Rates

Despite substantial progress relative to historical levels, South Korea's occupational safety indicators remain elevated compared to the OECD average, as illustrated in Table 7. This reflects the complex interaction of factors including the characteristics of South Korea's industrial structure, the maturity of its safety culture, and the practical effectiveness of its regulatory framework.

Table 7. Construction Industry Fatality Rates in Major OECD Countries

Country	All-Industry Fatality Rate (‰)	Construction Fatality Rate (‰)	Reference Year
South Korea	0.39	1.59	2023
OECD Top 10 Average	0.24	0.78	2023
United States	0.37	0.96	2023
France	0.35	0.97	2023
Japan	0.13	0.68	2023
Germany	0.07	0.29	2023
United Kingdom	0.08	0.24	2023

Source: Korea Research Institute for Construction Policy (CERIK) (2025), Comparison of Construction Industry Fatality Rates among OECD Top 10 Economies in 2023 [11].

The average fatality rate among the OECD's top ten economies stands at approximately 0.24‰. South Korea's rate of 0.39‰ is roughly 1.6 times that average, while safety-advanced nations — the UK (0.08‰), Germany (0.07‰), and Japan (0.13‰) — record rates substantially lower. The South Korean government has set a target of reducing this rate to the OECD average level of 0.24‰ by 2030; among the many factors

required to achieve that goal, strengthening supervisory implementation capacity through more effective training has never been more important.

4.4. International Comparison of Supervisory Training Systems

As shown in Table 8, the approaches to supervisory training in major OECD countries differ markedly from South Korea's. The following analysis maps these differences onto the study's three analytical dimensions.

Table 8. Comparison of Occupational Safety Supervisory Systems in Major Countries

Item	South Korea	United Kingdom	United States	Germany
Training entity	Government-led	Private/market-led	Private/market-led	Private/market-led
Training modality	Theory-focused, didactic	Discussion, seminar, practice	Discussion, seminar, practice	Discussion, seminar, practice
Instructor qualification	Low entry barrier	Rigorous certification	Certification system	Certification system
Training programs	Online/classroom (~70 courses)	Field-adapted, OJT-centered	External specialists (~300 courses)	158 differentiated courses
Legal penalties	Admin. fine ≤ KRW 5 million	Fine proportional to turnover	Unlimited fines	Imprisonment ≤ 1 year + fine

Source: Korea Occupational Safety and Health Agency (KOSHA) (2022), Compendium of Overseas Occupational Safety and Health Systems [12].

First, with regard to the qualification and training dimension, advanced countries have moved beyond the South Korean model of simply accumulating hours to meet a mandated annual threshold. Their curricula are grounded in practice — requiring supervisors to directly identify hazards at their own worksites and design control measures. Notably, the UK model incorporates soft skills such as leadership, communication, and conflict management as mandatory components of safety training. Given that supervisors must manage elderly and foreign workers while navigating constant conflicts of interest with various stakeholders, such competencies are particularly critical.

Second, with regard to the legal penalty dimension, South Korea's administrative fine ceiling of KRW 5 million is strikingly weak compared to the UK (fines proportional to turnover), the United States (unlimited fines), and Germany (imprisonment of up to one year plus fines). This disparity in sanction levels creates a fundamental difference in the incentive for employers and supervisors to invest in safety.

Third, with regard to training delivery, advanced countries demonstrate a capacity for flexibility: sector-specific industry associations provide accredited, high-quality training that carries legal recognition — a model that productively leverages private-sector expertise rather than relying on uniform, government-prescribed programs.

5. Singapore's Safety Innovation: A Case Analysis

In accordance with the case selection rationale presented in Chapter 2, this chapter conducts an in-depth analysis of Singapore's occupational safety and health system across the three analytical dimensions: qualification and training systems, legal penalty levels, and the practical exercise of the right to stop work.

Table 9. Occupational Fatality Rate Comparison: South Korea vs. Singapore

Category	South Korea	Singapore	Reference Year
Fatality rate per 10,000 workers (‰)	0.39	0.12	2024
Fatality rate per 100,000 workers	3.9	1.2	2024

Source: Ministry of Manpower, Singapore (MOM) (2025) [13].

As shown in Table 9, South Korea's fatality rate of 0.39‰ is more than three times that of Singapore at 0.12‰. Singapore recorded a rate of 0.99 fatalities per 100,000 workers in 2023 — the first time in its history that the rate fell below 1.0 — and has maintained a five-year average of approximately 1.1 per 100,000. This places Singapore on a par with the world's leading safety nations, including the Netherlands, the UK, Sweden, and Germany.

5.1. The bizSAFE Programme and Supervisory Competency Development

One of the institutional factors credited with Singapore's consistently low accident rate is the systematic and practice-oriented bizSAFE programme. This five-tier certification system is designed to enable enterprises to build occupational safety and health capacity autonomously, with the active participation of both supervisors and senior management required at each level [14].

bizSAFE Level 1 (Awareness): The CEO or board-level executive of an enterprise attends a three-hour programme (Top Executive Workshop on WSH Policies, TEWP) to establish legal accountability and commitment to occupational safety. This level embodies the philosophy that safety remains merely a slogan in the absence of top-level management commitment.

bizSAFE Level 2 (Capability): Designated in-house "Risk Management (RM) Champions" complete a two-day specialist training, equipping them with the competency to independently develop and implement risk management plans.

bizSAFE Level 3 (Implementation): An accredited external auditor assesses how effectively the enterprise's risk management plan is operating in practice, and grants certification accordingly. Level 3 certification is a mandatory pre-qualification condition for many public and private sector tenders in Singapore.

bizSAFE Level 4 (WSH Management System): This stage requires the establishment of a Workplace Safety and Health Management System (WSHMS) and completion of internal capacity-development training.

bizSAFE Level STAR (Sustainability): The highest tier, requiring ISO 45001 certification and demonstration of continuous improvement through external audit, meeting international standards.

This graduated approach has disseminated a broader cultural understanding that "safety is not about preventing individual errors — it is about designing systems that filter out risk."

5.2. The Construction-Specific Qualification System: BCSS

For the construction industry — a high-risk sector — Singapore applies more stringent qualification requirements for supervisors. The Building Construction Supervisors Safety (BCSS) course is a mandatory training programme that must be completed by all site foremen and site engineers.

Duration and Structure: The course runs for 32 hours over four days. The instructor-to-participant ratio is capped at 1:25 to guarantee quality.

Prerequisites: Participants must demonstrate basic literacy and numeracy at WPLN Level 4 or above, verifying that they possess the foundational competency to correctly interpret site drawings and safety regulations.

Assessment Process: Attendance alone does not confer qualification. Candidates must pass a 100-item multiple-choice examination (minimum score: 65%), complete a 15-minute oral interview conducted one week after course completion, and submit a written report.

Practice-Based Curriculum: Content is structured around field-applicable skills: conducting actual risk assessments for high-risk work types (working at height, excavation, etc.), analysing accident causes and preparing investigation reports, and interpreting regulations.

This rigorous multi-layered verification process constitutes a nationally guaranteed system that certifies not merely that a supervisor "knows" the required material, but that they can "actually perform" their duties in the field.

5.3. Safety Time-Out (STO): Proactive Exercise of the Right to Stop Work

Another powerful systemic feature underpinning Singapore's low accident rate is the Safety Time-Out (STO). While superficially analogous to South Korea's "right to stop work," the STO differs fundamentally in its operational character.

Mechanism: An STO is triggered when an accident occurs or hazard indicators are detected, or during periods of elevated national accident frequency. Enterprises voluntarily — or at the recommendation of MOM — suspend all operations to re-examine safety conditions.

Implementation: During an STO, management and supervisors engage all workers in in-depth discussion: Is the current risk management plan functioning effectively? Is equipment safe? Is refresher training needed?

Cultural Dimension: For Singaporean workers, reporting a hazard and stopping work are perceived not merely as rights but as obligations. The government guarantees that workers who report risks or stop work face no disadvantage of any kind — and actively fosters a culture in which such behaviour is encouraged. When accident rates increased in 2022 and 2024, MOM directed enterprises to conduct mandatory or voluntary STOs to heighten national safety awareness.

6. Comparative Synthesis and Policy Rationale

This chapter synthesizes the results of the comparative analysis conducted in Chapters 4 and 5

across the three analytical dimensions, explicitly articulates the institutional gaps between South Korea and the comparator countries, and presents the logical chain of reasoning through which these gaps give rise to specific policy recommendations. This chapter serves simultaneously as a direct answer to RQ2 and as an analytical bridge leading to RQ3.

6.1. Comparative Summary

Table 10. Comparative Summary of Institutional Analysis

Dimension	South Korea (Current)	OECD Countries / Singapore	Institutional Gap
① Qualification & Training	16 hrs/year; theory-focused, didactic; no qualification cert.; no assessment	32+ hrs; ≥50% practice; national qualification cert.; multi-stage assessment (exam + interview + report)	Shift from time-completion to competency demonstration
② Legal Penalty Level	Admin. fine ≤ KRW 5 million	Fines proportional to turnover; unlimited fines; custodial sentences	Need for effective deterrent penalty
③ Right to Stop Work	Legal basis exists but practically unexercisable; inadequate anti-retaliation protection	Recognized as right AND duty; anti-retaliation legally guaranteed; STO culture embedded	Convert from right to duty; legislate protection mechanisms

6.2. Logical Inference: From Institutional Gaps to Policy Recommendations

Inference 1 — Qualification and Training Gap: In all comparator countries with relatively lower accident rates, supervisory qualification systems are observed to be based on competency demonstration rather than time completion. Singapore's BCSS qualification, in particular, employs a multi-layered verification framework — 32 hours of intensive training, a 100-item examination, an oral interview, and a written report — that certifies not what a supervisor "knows" but what they can "actually perform." South Korea's current system — 16 theory-heavy hours per year, no qualification certification, no assessment — stands in stark contrast. Introduction of a national supervisory qualification system and a shift toward practice-centred training are therefore indicated.

Inference 2 — Legal Penalty Gap: Comparator countries impose penalties for safety violations — fines proportional to turnover (UK), unlimited fines (US), custodial sentences (Germany) — that convey to employers the economic rationality of safety investment. South Korea's administrative fine ceiling of KRW 5 million is manifestly insufficient to motivate safety investment, and reinforces the vicious cycle of lowest-price procurement, schedule pressure, and safety neglect. Penalty level reform must therefore be accompanied by structural measures such as mandated adequate construction schedules and mutual safety incentive mechanisms.

Inference 3 — Right to Stop Work Gap: Singapore's STO designates work stoppage as an "obligation" rather than a "right," guarantees anti-retaliation protection by law, and institutionalizes a culture in which enterprises voluntarily suspend all operations to re-examine safety. In South Korea, the right to stop work has a legal basis but is virtually unexercisable in the field under schedule and cost pressures, and protections against retaliation for those who exercise it are inadequate. Legislative strengthening to mandate the exercise of the right to stop work and to protect supervisors is therefore necessary.

Through the foregoing chain of inference, this study follows the logical path of "institutional gaps identified through comparative analysis → policy directions derived to close those gaps → concrete implementation strategies proposed," with specific strategic recommendations presented in the following chapter.

7. Strategic Proposals for Enhancing Supervisory Implementation Capacity in Construction

The integrated analysis of South Korea, the OECD comparators, and Singapore points to a fundamental need to shift the prevailing regulatory paradigm toward "practice-centred risk management" if South Korea is to advance to the ranks of safety-leading nations. In response to the three institutional gaps identified in Chapter 6, the following strategic proposals are advanced.

7.1. Introduction of a National Qualification Certification System and Training Reform (Addressing Gap ①)

The current annual 16-hour mandatory training

must be comprehensively reformed, moving from a time-completion model to one centred on competency demonstration.

Establishing a National Qualification Certification Framework: A national qualification certification system for construction supervisors, benchmarked against Singapore's BCSS model, should be introduced. Only those who have demonstrated genuine field management ability — through written examination, oral interview, and practical report assessment, and not merely through attendance — should be authorized to serve as supervisors.

Expanding Training Hours and Increasing Practice Weighting: Minimum training hours should be raised to at least 32 hours, and hands-on components — requiring trainees to conduct actual risk assessments based on the processes at their own worksite and to design control measures — should account for at least 50% of training time, displacing didactic classroom instruction.

Qualitative Upgrading of Specialist Training Providers: The uniform government-prescribed training model should give way to a competitive market among private specialist institutions, with substantial expansion of experiential training programmes that leverage the latest accident case data and emerging technologies such as virtual reality (VR).

7.2. Leadership and Soft Skills Development Programme

Construction site supervisors require not only technical knowledge but the ability to motivate and direct people. In the current workforce environment — characterized by a high proportion of elderly and foreign workers — communication competency is at the heart of safe operations.

Communication and Conflict Management Training: Soft skills essential for supervisors to establish authority and build trust on site — including leadership, communication techniques, and conflict management with diverse stakeholders — should be incorporated as mandatory elements of safety training.

Tailored Training Resources for Foreign and Elderly Workers: Multi-language safety instruction cards and visual safety procedure manuals should be disseminated to overcome language barriers. Ergonomic work instruction techniques adapted to the physical characteristics of elderly workers should also be transmitted to supervisors.

7.3. Institutional Effectiveness and the Mutual Safety Partnership Model (Addressing Gaps ② and ③)

Mandating the Right to Stop Work and Strengthening Protections: Drawing on the example of Singapore's STO, work stoppage should be legislatively redefined from a worker's "right" to an "obligation." Statutory protections should be strengthened to prohibit employers from imposing any personnel disadvantage on workers who stop work for legitimate safety reasons or on supervisors who authorize such stoppages.

Expanding Mutual Safety Incentives across the Supply Chain: Just as Singapore uses bizSAFE certification as a bid evaluation criterion, South Korea should introduce strong tax incentives and public procurement scoring advantages for prime contractors that support the enhancement of supervisory competency among their subcontractors.

Institutionalizing Adequate Construction Schedules: Institutional reform should be pursued to address the "lowest-price procurement" system and the "schedule pressure" it generates — one of the root causes of construction accidents. Grounded in the recognition that safety is an investment, not a cost, strong enforcement should accompany any schedule violation that contributes to an accident, including the imposition of punitive liability on project owners.

8. Conclusion

This study was undertaken to analyse the institutional and structural roots of insufficient implementation capacity among construction site supervisors in South Korea, to identify the institutional gaps between South Korea and advanced comparator countries through systematic comparative analysis, and to derive actionable policy alternatives on that basis.

The study confirms that the insufficient implementation capacity of South Korean construction supervisors is associated with a formal, theory-dominated training system (16 hours per year, no qualification certification, no assessment), weak legal penalties (administrative fines capped at KRW 5 million), an effectively paralyzed right to stop work, and the structural vicious cycle of lowest-price procurement — schedule pressure — safety neglect. The persistence of accident rate stagnation despite the introduction of the Risk Assessment System and the Serious Accidents Punishment Act is shown to be the result of regulatory intensification without resolution of the underlying institutional and structural constraints.

The comparative institutional analysis reveals that the OECD countries and Singapore that have achieved comparatively lower accident rates share three common institutional features: first, competency-based qualification certification (Singapore's BCSS: 32-hour training, examination, interview, and report verification); second, legal penalties with effective deterrent force (fines proportional to turnover,

unlimited fines, custodial sentences); and third, a substantively exercised right to stop work protected by institutional safeguards (Singapore's STO: obligation ethos, anti-retaliation guarantee). Clear institutional gaps between South Korea and these advanced nations are confirmed across all three dimensions.

To close those gaps, five core policy recommendations are advanced: (1) introduction of a national qualification certification system for construction supervisors (competency-based, benchmarked against the BCSS model); (2) reform of training toward field-based practice and comprehensive competency development (32+ hours, ≥50% hands-on, integrating soft skills and customized training for elderly and foreign workers); (3) mandatory exercise of the right to stop work and strengthened protection for supervisors (STO model); (4) modernization of legal penalty levels and institutionalization of adequate construction schedules; and (5) expansion of mutual safety incentive programs across the prime contractor–subcontractor supply chain.

Occupational safety transcends the technical problem of preventing accidents; it is fundamentally a matter of national philosophy — one that places the value of human life above all else. For the philosophy embodied in the Korean adage Innaecheon (People are Heaven) to be lived out in industrial workplaces, systemic innovation is required: supervisors must be cultivated as genuine safety professionals and simultaneously endowed with both the authority and the accountability befitting that role. It is only when institutional support from government, a forward-looking shift in corporate culture, and the enhancement of supervisory competency are in alignment that South Korea can truly emerge as a safety-advanced nation.

The limitations of this study include the inherent constraints of comparative institutional analysis as a methodology — specifically, the inability to fully control for the institutional contexts (industrial structure, cultural background, and legal system differences) of each country — and the study's reliance on qualitative comparison rather than quantitative empirical analysis. Future research should pursue quantitative studies that empirically test the relationship between changes in supervisory training modalities and accident rates, as well as field-validation research examining the effects of pilot programme implementation.

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