Journal of Economics, Finance and Management Studies

ISSN (print): 2644-0490, ISSN (online): 2644-0504

Volume 09 Issue 03 March 2026

Article DOI: 10.47191/jefms/v9-i3-27, Impact Factor: 8.735

Page No: 1428-1434

Analysis of the Integration of the International FIDIC Methodology into National Construction Project Management Standards: A Comparative Study

Aliaksandr Razgonau

First Deputy Chairman, NGO "Belarussian Association of Consulting Engineers", Minsk, Belarus

ABSTRACT: This article examines the process of integrating the international contractual methodology FIDIC into national construction project management standards. The study analyzes the degree to which FIDIC's process logic aligns with the requirements of the United States, European Union countries, and CIS states. It is emphasized that the effectiveness of FIDIC application is determined less by the formal compatibility of contract conditions than by institutional readiness to adopt a procedure-oriented management approach. Particular attention is given to the role of the Engineer, change management mechanisms, and pre-litigation dispute resolution systems. Based on the analysis of data from six implemented projects reflecting FIDIC application under different institutional conditions, the study concludes that a context-oriented approach is critical for the effective integration of international methodologies into national construction management systems.

KEYWORDS: FIDIC, Construction, Project Management, International Standards, Integration, Institutional Environment

I. INTRODUCTION

Contemporary construction projects exhibit increasing organizational complexity and heightened requirements for effective control over risks, time, and costs, which has amplified the role of formalized project management methodologies. Although FIDIC contract standards are widely used in infrastructure projects due to their life-cycle orientation and embedded dispute prevention mechanisms, existing research remains predominantly descriptive and jurisdiction-focused, offering limited comparative insight into how institutional factors influence the integration of FIDIC into established project management models and related managerial and economic outcomes.

The aim of this study is to conduct a comparative analysis of the integration of the international FIDIC methodology into national construction project management frameworks. The research objectives include examining the conceptual foundations of FIDIC as a project management system, comparing its principles with those embedded in existing management approaches, and performing an empirical assessment of adaptation practices based on implemented project cases. The scientific novelty of the study lies in the development of a structured set of criteria for evaluating the integration of FIDIC and in identifying systemic constraints that limit the effectiveness of its application in construction project management practice.

II. METHODS

The study employs a comparative institutional approach and qualitative analysis. The analysis focuses on the provisions of the international FIDIC methodology and on regulatory and methodological documents governing construction project management practices in the United States, European Union countries, and the Commonwealth of Independent States. The empirical component is based on a comparative examination of six implemented project cases (n = 6), selected to ensure comparability in terms of organizational models and project scale. The comparison is conducted with reference to key aspects of contractual risk allocation, the role of the engineer, change management procedures, schedule control, and dispute resolution mechanisms. The findings are synthesized through cross-case comparison, allowing the identification of typical patterns and institutional constraints affecting the adaptation of the FIDIC methodology in construction project management practice.

III. RESULTS

The results of the study reflect the multidimensional nature of integrating the international FIDIC methodology into construction project management practice and demonstrate that the adaptation process affects both contractual mechanisms and managerial procedures across different stages of the project life cycle.

A. Conceptual Foundations of the FIDIC Methodology as a Project Management System

The FIDIC methodology was developed by the International Federation of Consulting Engineers in the second half of the twentieth century as a unified system of contractual and managerial principles for the delivery of construction and infrastructure projects and was subsequently refined in the 1987, 1999, and 2017 editions [1]. Within this framework, the contract is regarded not only as a legal instrument but also as an integral component of the project management system, embedding procedures for the allocation of responsibilities, risk management, performance control, change administration, and dispute resolution throughout the entire project life cycle.

Overall, the methodology consists of standard contract forms identified by a color-based classification, including the Red, Yellow, Silver, Green, and Gold Books, applied according to the project delivery model and the allocation of responsibilities between the parties [2]. Applicable law and jurisdiction are determined by the parties in the Particular Conditions, ensuring the adaptability of FIDIC to different legal and institutional contexts while preserving its core managerial logic, which is summarized in a generalized structural scheme (fig. 1).

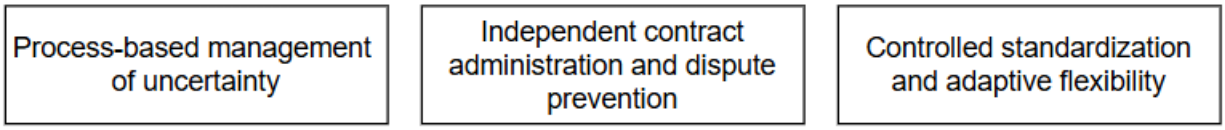


Figure 1. Key Conceptual Principles of the FIDIC Methodology as a Construction Project Management System

The conceptual core of FIDIC is based on **balancing the responsibilities of the parties through structured processes** that translate key project events – such as variations, delays, additional costs, and quality deviations – into a regulated procedural framework. This process-oriented logic aligns with management accounting research showing that the use of analytical and forecasting tools improves cost transparency and predictability in complex project environments [3]. Its practical relevance is further supported by evidence that major construction disputes involve substantial financial and time costs; in North America in 2023, the average dispute value was approximately $43 million with an average resolution period of about 14.4 months, underscoring the importance of early change management and robust evidentiary practices [4].

The second core principle of FIDIC is the **institutionalization of independent contract administration and conflict prevention**, reflected in the role of the engineer and mandatory procedures aimed at preventing dispute escalation [5]. The effectiveness of these mechanisms is supported by evidence from large infrastructure projects: according to the Florida Department of Transportation (2023), 85–98 % of issues reviewed by dispute boards are resolved at an early stage without arbitration or litigation, with operating costs typically not exceeding 0.2 % of the total project budget, highlighting the value of independent administration and early-response procedures for conflict prevention [6].

The third key feature of FIDIC is that its **managerial effectiveness depends on preserving process logic and limiting modifications to standard conditions**, as excessive changes undermine predictability and disrupt risk allocation [7]. This is supported by industry evidence showing extensive amendments in FIDIC-based contracts: an analysis of 454 contracts across 74 countries identified 5,778 amendments in 90 FIDIC 1999 Red Book contracts, indicating that large-scale reworking of standard provisions – particularly those related to time, variations, and risk allocation – can erode FIDIC's process logic and reduce effectiveness in change and claims management [8].

Taken together, the findings indicate that FIDIC functions as an institutionally structured construction project management system in which contractual provisions act as managerial instruments rather than merely legal norms [9, 10]. The effectiveness of its application depends on preserving process logic and limiting excessive modification of standard conditions, enabling a controlled project delivery environment that reduces conflict potential and improves transparency and predictability in construction project management practice.

B. Comparative Analysis of National Construction Project Management Standards

To assess the institutional conditions for integrating international contractual methodologies into construction project management, quantitative indicators reflecting the formalization and diffusion of managerial mechanisms are applied. In this study, the dynamics of the number of FIDIC Certified Adjudicators serves as such an indicator, representing the development of

dispute resolution infrastructure within the FIDIC framework, while the slight decline observed in 2026 is explained by certification renewal procedures rather than reduced practical use of FIDIC (fig. 2).

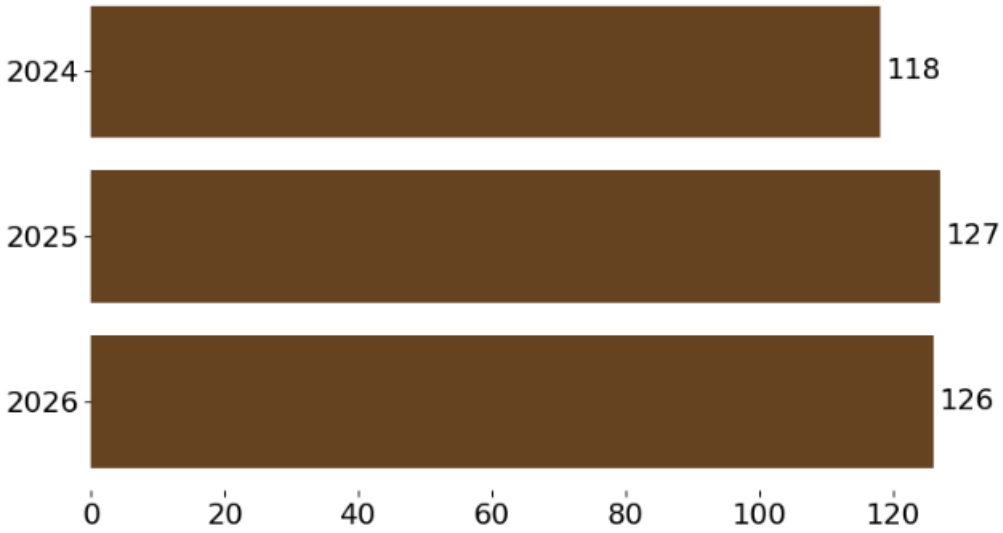


Figure 2. Dynamics of the Number of FIDIC Certified Adjudicators [11]

A comparative analysis of national construction project management standards must account for the institutional context shaping contract administration and risk allocation. While jurisdictions share similar objectives regarding time, cost, and quality predictability, they differ in how managerial norms are formalized, which affects the integration and practical use of international methodologies such as FIDIC.

In the **U.S. model**, FIDIC is integrated into construction project management primarily by aligning its contract administration procedures with established national mechanisms for change management, claims handling, and dispute resolution, particularly in areas such as notice requirements, the engineer's role, and early dispute resolution practices [12]. This approach is reinforced by the increasing use of intelligent automation tools in contract administration and audit functions, as studies of B2B SaaS platforms show that machine-learning-based systems improve documentation consistency and support near real-time monitoring of contractual and financial compliance, conceptually aligning with FIDIC's procedural discipline [13]. As a result, FIDIC is typically applied as a contractually compatible management framework requiring targeted adaptation to existing procedures rather than as a substitutive regulatory system (table 1).

TABLE 1. FEATURES OF FIDIC INTEGRATION INTO THE U.S. CONSTRUCTION PROJECT MANAGEMENT MODEL

FIDIC management element	Mode of integration within U.S. practice	Key integration risk	Recommended adaptation approach
Notice requirements and time limits	Aligned with established procedures for changes and equitable adjustment.	Loss of contractual entitlements due to non-compliance with formal notice rules.	Establish unified notification registers and clearly defined procedural triggers.
Role of the engineer	Requires coordination among the employer, owner's representatives, and external consultants.	Potential conflicts of interest in contract administration.	Ensure functional independence of the engineer and transparent allocation of decision-making powers.
Management of variations	Conceptually compatible, but differs in documentation and approval procedures.	Increased dispute risk arising from informal or undocumented changes.	Standardize change order formats and approval protocols for cost and time adjustments.
Claims management and evidentiary framework	Closely aligned with U.S. practices emphasizing	Escalation of disputes due to incomplete or	Implement standardized evidentiary

	documentation and justification.	inconsistent records.	requirements, including logs, records, and cause–effect analyses.
Early dispute resolution mechanisms (dispute boards)	Comparable to ADR practices but requires formal contractual embedding.	Ineffectiveness of mechanisms if applied on a discretionary basis.	Establish mandatory pre-arbitration dispute resolution procedures with defined timelines.

While the U.S. model generally treats FIDIC as a contractually compatible management framework, European practice places primary emphasis on aligning FIDIC procedures with public procurement regulation and the formal requirements of public-sector processes.

In **EU countries**, the integration of FIDIC into construction project management standards is largely mediated by public procurement procedures, which shape the framework for contract administration and project governance [14]. In this context, FIDIC functions primarily as a post-contract management tool, and its effectiveness depends on how well its procedural mechanisms can be aligned with administrative approval processes, budgetary controls, and formal documentation requirements (table 2).

TABLE 2. FEATURES OF FIDIC INTEGRATION INTO THE EU CONSTRUCTION PROJECT MANAGEMENT MODEL

FIDIC management element	**Mode of integration within EU practice**	**Key integration risk**	**Recommended adaptation approach**
Variations and scope changes	Subject to public procurement rules and budgetary approval procedures.	Delays due to multi-stage administrative approvals.	Define thresholds and fast-track approval routes in the Particular Conditions.
Notice procedures and documentation	Embedded in formal public-sector reporting and audit frameworks.	Loss of flexibility and procedural rigidity.	Establish standardized notification formats and fixed response timelines.
Role of the engineer	Must be coordinated with the contracting authority and supervisory bodies.	Duplication of control and blurred accountability.	Clearly separate technical supervision from contractual administration.
Claims management	Highly sensitive to audit and compliance requirements.	Over-formalization and reduced responsiveness.	Standardize evidentiary packages aligned with public audit expectations.
Early dispute resolution mechanisms	Depends on acceptance within national procurement and legal frameworks.	Limited practical use of dispute boards.	Contractually mandate pre-litigation procedures with defined time limits.

European integration of FIDIC is largely shaped by procurement-procedural frameworks, whereas in CIS countries the primary constraint is regulatory and technical standardization, including strict requirements for project documentation and its modification, which necessitates a different logic for aligning FIDIC's process mechanisms.

In **CIS countries**, particularly Belarus, the integration of FIDIC into construction project management standards is primarily constrained by dense regulatory and technical requirements governing project documentation and its modification [15]. As a result, FIDIC is typically applied as an external management layer that must be aligned with mandatory approval, budgeting, and control procedures through tailored contract conditions and administrative regulations (table 3).

TABLE 3. FEATURES OF FIDIC INTEGRATION INTO CONSTRUCTION PROJECT MANAGEMENT PRACTICE IN CIS COUNTRIES

FIDIC management element	Mode of integration within CIS practice	Key integration risk	Recommended adaptation approach
Variations and scope changes	Strongly dependent on formal procedures for amending project documentation.	Inconsistency between contractual changes and regulatory approvals.	Define a clear matrix distinguishing contractual and regulatory change procedures.
Notice requirements and time limits	Must be aligned with administrative approval and review cycles.	Loss of timeliness due to extended coordination processes.	Adjust response periods to reflect mandatory administrative stages.
Role of the engineer	Requires coordination with regulatory oversight and technical supervision bodies.	Overlapping functions and diluted accountability.	Specify the engineer's role as contractual administrator rather than regulator.
Claims management and evidentiary requirements	Subject to dual standards: contractual and regulatory documentation.	High evidentiary burden and reduced claim enforceability.	Establish unified documentation standards acceptable in both frameworks.
Early dispute resolution mechanisms	Limited by national legal and procedural constraints.	Restricted practical applicability of dispute boards.	Define admissible pre-litigation mechanisms compatible with national law.

In the Republic of Belarus, FIDIC integration is constrained by a highly formalized regulatory framework governing project documentation and its modification [16]. Key project decisions, including material design changes, are subject to prescribed approval procedures and, where applicable, mandatory state construction expertise under national legislation, with amendments introduced in 2025 further tightening alignment requirements for FIDIC notifications, variations, and claims. Binding construction standards (including SN 1.02.02-2023) therefore require that the Particular Conditions of FIDIC ensure consistency between contractual changes and mandatory documentation and re-approval procedures.

The integration of the FIDIC methodology into national construction project management systems is driven primarily by institutional context rather than formal contractual compatibility. In the U.S., FIDIC aligns with established contract management practices, in the EU it is shaped by procurement and budgetary frameworks, and in CIS countries it is constrained by regulatory and technical standardization, which determines how FIDIC mechanisms function in practice.

C. Empirical Analysis of FIDIC Adaptation: Cases and Identified Challenges

The empirical analysis is based on six comparative cases (n = 6) illustrating the adaptation of FIDIC procedures across different institutional environments, including EU practice, large-scale U.S. infrastructure projects, and IFI-supported projects in Belarus. The U.S. cases comprise offshore wind projects – Vineyard Wind 1 (Massachusetts, ~800 MW) and Sunrise Wind (New York, ~900 MW, pre-FID, expected COD 2025) – demonstrating selective integration of FIDIC within the U.S. regulatory context. The sample covers diverse sectors, from energy facilities to water and wastewater infrastructure and road construction, with Belarusian project budgets of approximately EUR 15.8 million and EUR 168 million, allowing assessment of FIDIC adaptation under conditions of high capital intensity and multi-layered institutional governance.

U.S.-based offshore wind projects illustrate the selective adaptation of FIDIC contractual frameworks to national legal and regulatory requirements rather than their direct application. In the Vineyard Wind 1 project in Massachusetts (~800 MW, 62 turbines), FIDIC-based contracts were used for specific work packages and modified to comply with federal and state permitting, environmental obligations, and project-specific risk allocation [17]. A similar approach is observed in the Sunrise Wind project in New York (~900 MW, expected COD 2025), where contracts are typically based on the FIDIC Yellow Book and supplemented by national requirements for maritime construction, milestone schedules, defects, testing, and liability allocation [18].

In the **EU cases**, the emphasis is placed on embedding FIDIC procedures into established models of contract administration and dispute resolution. For the combined-cycle CHP project in Berlin's Lichterfelde district, the use of a Dispute Adjudication

Board under a FIDIC-based contract is documented; the plant's scale (approximately 230 MW thermal and 300 MW electrical) illustrates the high cost of schedule and change-management errors in large energy assets. A similar pattern is observed in Romania: for the Lugoj–Deva Motorway, Lot 3, the application of a DAB under FIDIC conditions is explicitly recorded, confirming the institutional "embeddedness" of early dispute-resolution mechanisms in major infrastructure delivery [19].

Belarus-related cases illustrate FIDIC adaptation under dense regulation and reliance on IFI-financed procurement. In the Vitebsk Region Clean Water Project (total investment EUR 15.8 million), the project documentation reports preparation of tender documents under FIDIC conditions and EBRD procurement rules for a programme serving about 700,000 people (plan: ~530 iron-removal units; pilot: ~80 facilities) and notes suspension due to EU sanctions on project financing [20]. In the Minsk Vodokanal Project, EBRD notices describe construction supervision as the Engineer for a Design–Build works contract under the FIDIC Yellow Book, with an estimated total project value of EUR 168 million [21]. Additionally, the World Bank Transit Corridor Improvement Project procurement plan includes "Consultant services (FIDIC)" estimated at $0.960 million, indicating institutionalized use of FIDIC-based contract administration support in road projects.

Overall, the empirical findings indicate that FIDIC adaptation is highly context-dependent and shaped by institutional, regulatory, and financial conditions. Across the analyzed cases, FIDIC operates as a flexible management framework rather than a uniform model, with its effectiveness influenced by how mechanisms for change management, the Engineer's role, and early dispute resolution are aligned with local governance structures.

IV. DISCUSSION

The integration of the FIDIC methodology into construction project management practice is heterogeneous and strongly shaped by the institutional context of project implementation. Comparative case analysis shows that the highest functional alignment with FIDIC principles is achieved where its process logic is preserved and key managerial roles – particularly that of the Engineer – remain independent. Under such conditions, notification procedures, change management, and early dispute resolution operate as effective tools for reducing uncertainty and transaction costs rather than as purely formal contractual provisions, whereas extensive modification of FIDIC conditions tends to weaken managerial effectiveness and increase conflict potential.

A critical factor influencing practical application is the impact of external regulatory and financial frameworks. In projects supported by international financial institutions and donor programs, FIDIC is frequently supplemented by procurement rules, compliance requirements, and rigid time constraints, which enhance formal discipline and transparency but limit the managerial flexibility embedded in the methodology. More broadly, the findings confirm that effective FIDIC integration depends less on the formal adoption of contract terms than on institutional readiness to accommodate a process-oriented management model, with differences across EU, U.S., and Belarusian practices highlighting the functional limits of FIDIC's universality and the need for context-sensitive adaptation.

CONCLUSIONS

The study shows that FIDIC integration into construction project management is most effective when its core process logic is preserved and extensive ad hoc modifications of standard conditions are avoided. Comparative and empirical analysis indicates that clearer management structures emerge when the engineer's role remains functionally independent, notification and change-management procedures are applied consistently, and early dispute resolution mechanisms are embedded in routine project administration, leading to improved time and cost predictability and fewer contractual conflicts.

From a practical standpoint, FIDIC adaptation is more sustainable when deviations from standard conditions are limited, transparent, and assessed in terms of their effects on risk allocation and project governance. In projects involving public authorities or international financial institutions, aligning contractual procedures with regulatory requirements and formally embedding early dispute resolution mechanisms enhances procedural stability, supporting a balanced, context-sensitive application of FIDIC in construction project delivery.

REFERENCES

1) Cho H, Jung W, Park CY. Knowledge-driven claim governance: a checklist of entitlements and procedures in FIDIC and national standard contracts. *Buildings*. 2025;15(21):3955. https://doi.org/10.3390/buildings15213955
2) Nwogu PC, Emedosi A. FIDIC form of contract: a study review. *British Journal of Environmental Sciences*. 2024;12(2):43-48. https://doi.org/10.37745/bjes.2013/vol12n24348

3) Bordusenko D. Integration of machine learning into management accounting systems: forecasting operating costs and profitability in manufacturing. *Cold Science*. 2025;(22):70-81.
4) Construction Disputes Report 2023. *Arcadis* [Internet]. Available from: https://www.arcadis.com/en-us/insights/perspectives/north-america/united-states/2023/construction-disputes-report-2023 (Accessed: 10 February 2026)
5) Alheilat OM, Alomran NM. Contemporary methods of resolving disputes arising from FIDIC construction contracts between the employer and contractor. *Krytyka Prawa*. 2024:258.
6) Florida Department of Transportation, Construction Academy Materials, 2023. *Dispute Resolution Board Foundation* [Internet]. Available from: https://appn-racop.org/upidrots/2023/11/231024-Introduction-to-DBs_APPN_Final_R2-1.pdf (Accessed: 10 February 2026)
7) Okudan O, Çevikbaş M. Alternative dispute resolution selection framework to settle disputes in public–private partnership projects. *Journal of Construction Engineering and Management*. 2022;148(9):04022086. https://doi.org/10.1061/(asce)co.1943-7862.0002351
8) The global use of FIDIC by Chinese architecture, engineering, and construction (AEC) firms. *LSBU* [Internet]. Available from: https://www.mcms.co.uk/images/uploads/other/The_Global_Use_of_FIDIC_by…_Construction_%28AEC%29_Firms.pdf (Accessed: 12 February 2026)
9) Hansen S. Construction disputes in FIDIC-based contracts: a case study of court decisions. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*. 2026;18(2):05026002.
10) Riaz A, Hussain A, Ud Din Z. Strategy for effective claim management based on a FIDIC derivative contract. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*. 2023;15(4):05023002. https://doi.org/10.1061/jladah.ladr-937
11) List of FIDIC certified adjudicators. *FIDIC* [Internet]. Available from: https://fcl.fidic.org/wp-content/uploads/2026/01/FCA-listing-11-Jan.-2026.pdf (Accessed: 14 February 2026)
12) Erinjogunola FL. Navigating multi-national construction projects: overcoming challenges. *International Journal of Multidisciplinary Research and Growth Evaluation*. 2025;6(2):52-67. https://doi.org/10.54660/ijsser.2025.4.2.52-67
13) Miloserdov A. Intelligent automation of supply audit using machine learning in B2B SaaS platforms. *Journal of Economics, Finance and Management Studies*. 2025;8(12):7965-7970. https://doi.org/10.47191/jefms/v8-i12-40
14) Valkova AM. FIDIC and digital technologies in construction project management: building information modelling. *Vanguard Scientific Instruments in Management*. 2022;18(1):129-140.
15) Osifo EO, Omumu ES, Alozie M. Evolving contractual obligations in construction law: implications of regulatory changes on project delivery. *World Journal of Advanced Research and Reviews*. 2025;25:1315-1333. https://doi.org/10.30574/wjarr.2025.25.3.0896
16) Ustymenko V, Teremetskyi V, Bida K, Denysyuk P, Novytska N. Experience of conclusion and performance of engineering, procurement and construction contracts in post-Soviet countries. *Cuestiones Politicas*. 2022;40(74).
17) Prysmian successfully completes cabling operations for Vineyard Wind 1, the first utility-scale offshore wind farm in the US. *Prysmian Group* [Internet]. Available from: https://www.prysmian.com/sites/www.prysmian.com/files/media/documents/pr-prysmian-group-vineyard-wind-successfully-completion-23-10-2023-eng.pdf (Accessed: 16 February 2026)
18) How to tap into the offshore wind supply chain. *NYSERDA* [Internet]. Available from: http://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/NY-Offshore-Wind-Projects (Accessed: 16 February 2026)
19) FIDIC adjudicator details. *FIDIC* [Internet]. Available from: https://fidic.org/fidic-president-details/64081 (Accessed: 19 February 2026)
20) Vitebsk Region clean water project – project description. *CECT* [Internet]. Available from: https://cect.eu/en/project_descr?id=140 (Accessed: 20 February 2026)
21) Belarus: construction supervision. *ECEPP* [Internet]. Available from: https://ecepp.ebrd.com/delta/viewNotice.html?accessCode=RWYNJ433VP (Accessed: 21 February 2026)

There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (https://creativecommons.org/licenses/by-nc/4.0/), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.