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CONSTRUCTION DEVELOPMENT AND PROSPECTS IN LITHUANIA: A REVIEW

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Abstract. The paper examines the development and current state of the Lithuanian construction sector, focusing on the impact of legal, economic, and technological factors. The aim of the research is to evaluate the dynamics of sectoral growth and to identify possible future changes in line with national priorities and European Union regulations. The applied methods include legal analysis, statistical data review, and comparative analysis. The results revealed key challenges such as workforce shortages, rising costs, and uneven levels of digitalization. The paper presents proposals to promote sustainability, competitiveness, and innovation in the construction sector in the near future and summarizes the Lithuanian construction sector challenge.

Keywords: BIM, innovation, Lithuanian economy, construction sector, legal framework, sustainability.

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1. Introduction

The construction sector is a key part of Lithuania's economy, influencing not only Gross Domestic Product (GDP) growth, but also quality of life, urban infrastructure, social welfare, and environmental transformation. It is a multi-disciplinary field involving engineering, architecture, law, economics, management, environmental protection, and IT. Therefore, its development is closely tied to national progress and political direction (European Commission, 2022). Consequently, there is a need to investigate, describe, systematize and understand the construction development and prospects in Lithuania.

In this context, between 2020 and 2024, the Lithuanian sector of the construction development experienced significant dynamism, shaped by both domestic and global factors. Major challenges included the COVID-19 pandemic, supply chain disruptions for construction materials, inflation, labor shortages, and geopolitical risks, especially due to the war in Ukraine (Organization for Economic Co-operation and Development [OECD], 2024).

At the same time, the sector underwent transformations, such as, rapid digitalization (Arifin et al., 2022; Osorio-Gómez et al., 2024; Wijayarathne et al., 2024), implementation of sustainability principles (Bui et al., 2025; Heydari & Abbasianjahromi, 2024; Kaklauskas et al., 2021; Tupenaite et al., 2024), adaptation to stricter EU environmental regulations (Ojija et al., 2025; Xue et al., 2021). A major theme during this period was the integration

of sustainability and innovation, such as, new A++ energy efficiency standards, EU Green Deal goals, financial tools for renovation, and growth of the circular economy. These changes affected both design and construction processes, emphasizing an environmental impact over a building's life cycle, material origin, energy use, and waste management.

Technologies like BIM, 3D modeling, digital permitting, automation, and AI are being rapidly adopted, requiring not just new skills but a holistic, responsible, and long-term approach. For example, in Agrawal and Malviya (2025), authors highlight the potential of geopolymer concrete reinforced with coconut fiber as a sustainable alternative to traditional materials, and demonstrate how machine learning can optimize material performance and reduce testing needs. However, these innovations also brought challenges, such as, the legal changes in November 2024 regarding permits and design requirements revealed that many institutions and businesses were unprepared. Project timelines increased, technical issues arose in municipal systems, and some investors delayed projects (BNT attorneys in CEE, 2024).

Summing up, the main aim of this paper is to review the construction development and prospects in Lithuania.

The rest of the paper is organized as follows. Section 2 presents the review of the historical development of Lithuanian's construction sector. Section 3 concludes the study with a discussion of potential future research and recommendations.

2. Historical development of Lithuania's construction sector

The development of the Lithuanian construction sector after the restoration of independence in 1990 marks one of the most significant turning points in the country's economic history. Following Lithuania's independence in 1990, the construction sector transitioned from a centralized Soviet model to a market-based economy. Initially, the sector was bureaucratic and quantity-driven, with state-run enterprises (construction trusts). The early 1990s saw the dissolution of the State Construction Committee and the emergence of the Ministry of Construction and Urban Development, later integrated into the Ministry of Environment. Privatization, enabled by the 1991 State Property Privatization Law, restructured the sector, and professional associations like the Lithuanian Association of Civil Engineers (1989) and the Lithuanian Builders Association (1993) were established.

From 1996 to 2003, legal reforms such as the 1996 Construction Law introduced structured building processes and aligned national regulations with EU directives. Foreign investment and Western project management practices entered the market, and CE marking for construction materials was adopted. EU accession in 2004 catalyzed infrastructure development through structural funds, boosting residential construction and mortgage markets. Energy efficiency standards began to tighten, fostering technological advancement (Banaitienė et al., 2015; OECD, 2024; Pheng & Hou, 2019).

The 2008–2009 global financial crisis caused a sharp contraction, halting many private projects and reducing employment by 30%. Recovery began post-2010 with renewed public investment and export activity, especially in Scandinavian markets. From 2015 onward, the sector embraced digitalization (e.g., BIM, Infostatyba), sustainability (i.e., A++ energy standards), and circular economy principles. Despite challenges like labor migration, permit system reforms, and material cost volatility, the sector has become more innovative and internationally competitive.

Those main stages of development of the Lithuanian construction sector are summarized in Table 1.

2.1. The first construction law of the Republic of Lithuania and its development

The 1996 Construction Law of the Republic of Lithuania (Seimas of the Republic of Lithuania, 1996) marked

a pivotal shift from Soviet-era centralized planning to a Western-style regulatory framework (XX). Prior to independence, Lithuania's construction sector operated under a rigid, state-controlled system focused on quantity over quality. The absence of clear legal structures created confusion and hindered investment.

The adoption of the Construction Law on March 19, 1996 (Law on Construction, 1996), addressed this vacuum by establishing a comprehensive legal framework. It defined the roles and responsibilities of all construction participants – developers, designers, contractors, and inspectors – and introduced structured phases: design, permitting, execution, inspection, and commissioning. It also mandated compliance with technical and environmental standards and delegated permitting authority to municipalities.

This law laid the foundation for Lithuania's integration into the EU legal system. It enabled the development of technical regulations, CE marking, and transparent public procurement. Over time, the law was revised (notably in 2001, 2008, 2016, and 2023) to align with EU directives and modernize the sector through digitalization and sustainability.

The law's historical significance lies in its role in professionalizing the sector, promoting transparency, and ensuring safety and quality. It remains a cornerstone of Lithuania's construction governance, adapting to evolving economic, technological, and environmental demands.

Between 2001 and 2024, Lithuania's Construction Law underwent several major revisions reflecting evolving EU integration, economic growth, and sustainability goals. The 2001 amendment introduced CE marking, product conformity documentation, and energy efficiency assessment methods, aligning national regulations with EU standards. In 2008, reforms simplified project approval, introduced expert review, and initiated digital permitting systems to reduce bureaucracy and improve transparency.

The 2016 revision marked a structural overhaul, emphasizing building lifecycle management, digital documentation (e.g., Infostatyba), and safety regulations. It also introduced new zoning requirements and stricter permit issuance rules. The 2023–2024 updates institutionalized the EU Green Deal, expanded digitalization, and reformed permitting procedures. However, implementation challenges, such as system failures and inconsistent guidance, highlighted the need for better preparation. These revisions collectively demonstrate the law's dynamic role in modernizing Lithuania's construction sector.

Table 1. Main stages of development of the Lithuanian construction sector

Period (years)	Main characteristics	Significant events
1990–1995	Transition to market economy, privatization	Company restructuring, formation of professional organizations
1996–2003	Legal system development, EU law harmonization	Adoption of Construction Law, introduction of CE marking
2004–2008	EU membership, growth	Structural fund projects, real estate boom
2009–2014	Crisis and recovery	Financial crisis, start of renovation programs
2015–2024	Digitalization, sustainability, innovation	BIM adoption, A++ energy class, reform of permit systems

Table 2. Main changes of Lithuanian construction sector related to EU regulations

Year	Main change	Relation to EU regulation	Influence
2001	Introduction of CE marking, conformity documentation, and certification procedures for construction products	Alignment with EU product standards and market surveillance mechanisms	Improved product quality control and manufacturer accountability
2008	Simplification of project approval processes and introduction of electronic permit system (initial phase)	Compliance with EU Structural Funds' efficiency and transparency requirements	Reduced administrative burden and promoted digitalization
2016	Overhaul of construction process regulation, digital documentation, and lifecycle management	Support for EU sustainability and digital transformation goals	Enhanced safety, efficiency, and environmental performance in construction
2023	Implementation of Green Deal principles and digital permit coordination	Direct response to EU Green Deal and digital governance initiatives	Promoted environmental responsibility and streamlined permitting
2024	Permit system reform and full digital transition of coordination processes	Institutionalization of EU digitalization and transparency standards	Facilitated automation but caused transitional disruptions in municipalities

The summary of the key changes to the Lithuanian Construction Law from 2001 to 2024, including their relation to EU regulations and their influence are summarized in Table 2.

2.2. Comparative analysis of Lithuania's construction sector in an international context: Lithuania, Poland, Germany and Scandinavian countries

To better assess Lithuania's construction sector within a broader international framework, a comparative analysis was conducted with Poland, Germany, and the Scandina-

vian countries. These countries were selected due to their geographical proximity, economic relevance, technological advancement, and leadership in construction innovation.

The comparison focused on key criteria such as legal regulation, technological adoption, sustainability, energy efficiency, circular economy practices, and state support for sectoral development (see Table 3).

The analysis revealed that while Lithuania has made notable progress, particularly in digitalization and energy efficiency, there remains a gap compared to more advanced countries. Areas such as building design standards, the extent of BIM (Building Information Model)

Table 3. Comparison of construction aspects in Lithuania, Poland, Germany and Scandinavian countries

Aspect	Lithuania	Poland	Germany	Scandinavian countries
Building Permit Process	"Infostatyba" system created; simplification efforts since 2023	"e-Budownictwo" system, shorter timelines, electronic documentation	Varies by region, often longer but clearly structured	Simplified; permits not required for small-scale constructions in some cases
BIM Usage	Not mandatory, applied sporadically	Encouraged, especially in public projects	Mandatory for public infrastructure projects since 2021	Widely used, often mandatory in public projects
Energy Efficiency Classes	A++ class mandatory since 2021	Class A mandatory for new buildings since 2021	Nearly zero-energy buildings required since 2016	Energy-neutral or positive buildings in public projects
Sustainability Standards	Encouraged, but certification not widely applied	Sustainability principles integrated; certification not mandatory	DGNB certification widely used in commercial buildings	Miljöbyggnad (Sweden), BREEAM, LEED; strict sustainability standards
Construction Waste Recycling	Growing attention, but circular economy principles limited	Increasing recycling rates	Regulated, but unevenly implemented	>80% of waste recycled; strong promotion of reuse
Construction Duration	Traditional methods, uneven technological progress	Rapid development of modular construction	Efficient processes, especially with BIM and digital platforms	Use of 3D printing, modular construction, and robotics in pilot projects
Public Sector Support	EU and national support programs, but often bureaucratic	Active state support for infrastructure, use of EU funds	High volume of public investment, especially in infrastructure	Broad support for sustainability, innovation, and smart city concepts

implementation, construction waste recycling, integration of sustainable solutions into legislation, and final construction approval procedures still lag behind.

Poland (Polski Związek Pracodawców Budownictwa, 2023) and Germany (Destatis, 2025) stand out for their well-structured legal frameworks and progress in digitalization, while Scandinavian countries (Skanska, 2025) lead in sustainability integration and construction innovation. These international practices offer valuable insights for Lithuania as it seeks to accelerate modernization, improve efficiency, and align more closely with the European Union's Green Deal (European Commission, 2020) objectives.

2.3. Economic analysis of Lithuania's construction sector (2020–2023)

The construction sector is a cornerstone of Lithuania's economy, encompassing residential, non-residential, and infrastructure development (Official Statistics Portal [OSP], 2023). It significantly contributes to GDP and influences related industries such as materials manufacturing, transport, energy, and employment.

According to Statistics Lithuania (OSP, 2023), the sector accounted for 6.3% of GDP in 2020, rising to 6.9% in 2021 due to a recovering housing market, public infrastructure investments, and EU-funded projects. In 2023, construction output reached €5.5 billion, a 13.1% increase over 2022. Unlike other sectors, construction-maintained continuity during the COVID-19 pandemic, especially in regional infrastructure projects. Lithuania's construction sector share in GDP exceeds the EU average of 5.6% (Eurostat, 2024), highlighting its structural importance. Public investments in roads, schools, and utilities also act as economic stabilizers. Future growth is expected through EU Green Deal initiatives and the 2021–2027 EU structural funds, which support modernization, renovation, and sustainability.

Construction volumes reflect sectoral activity. In 2023, residential buildings accounted for 42% of total construction value, driven by urban housing demand. Non-residential buildings (commercial, industrial) made up 28%, while infrastructure (roads, bridges, utilities) comprised 30%. Engineering construction saw the highest growth at 17.5%, followed by 9% in residential and 6% in non-residential segments. Vilnius and Kaunas counties generated nearly 50% of national construction value, while EU-funded infrastructure projects sustained activity in smaller regions.

Rising volumes indicate strong sectoral capacity but also pose challenges such as labor shortages, supply chain stability, and cost inflation.

In summary, Lithuania's construction sector remains a key economic driver with stable and growing GDP contribution. Its expansion is supported by domestic demand and EU funding, with future prospects tied to sustainability and innovation.

2.4. Construction cost trends in Lithuania (2020–2024)

Between 2020 and 2024, Lithuanian construction sector experienced significant cost increases due to inflation, global supply chain disruptions, rising raw material and energy prices, and growing labor costs. These factors led to project delays and budget revisions across both public and private sectors.

According to (Eurostat, 2024), the Construction Cost Index (SKI) rose from 5.0% in 2020 to a peak of 17.5% in 2023, before slowing to 1.7% in 2024. Material costs surged particularly between 2021 and 2023, with steel, wood, concrete, and insulation materials seeing the highest increases. Labor costs also rose sharply, driven by workforce shortages, international competition, and rising minimum wages.

Energy price volatility, especially after the 2022 geopolitical crisis, further strained the sector by increasing both direct and indirect costs. These pressures led to contract renegotiations and the introduction of price indexation mechanisms in public procurement.

Private builders also faced challenges, with many postponing or scaling down projects. However, 2024 showed signs of stabilization, with slowed cost growth and renewed market activity.

Looking ahead, the sector is expected to maintain relative price stability in 2025, though high labor costs and material price sensitivity to global events remain. Strategic planning, local material sourcing, and sustainable construction practices are essential for long-term resilience.

Table 4 summarizes the main changes in construction costs and related factors in Lithuania for the period 2020–2024. It shows the annual percentage changes in the SKI (Construction Cost Price Index), materials and labor costs, as well as an assessment of the significance of the energy impact, the need for contract review and the overall trend in construction activity each year. This table helps

Table 4. The main changes in construction costs and related factors in Lithuania for the period 2020–2024

Year	Construction Cost Index (SKI), %	Material Cost Change, %	Labour Cost Change, %	Energy Price Impact	Construction Activity Trend
2020	5	4.5	6	Low	Stable
2021	7	10	5.5	Medium	Increasing
2022	10	15	8	High	Slowing
2023	17.5	20.1	12.3	Very	High Decreasing
2024	1.7	0.4	3	Medium	Recovering

to assess how macroeconomic and sector-specific factors have shaped the construction market over the past five years.

2.5. Main causes of differences in Lithuania's construction sector (2020–2024)

Between 2020 and 2024, Lithuania's construction sector experienced significant fluctuations due to a combination of global and domestic factors. The COVID-19 pandemic (2020–2021) disrupted supply chains and delayed project starts, although the sector maintained continuity better than others. The economic recovery in 2021–2022, supported by EU funding and increased housing demand, led to a surge in construction volumes and permits. However, 2022–2023 saw a sharp rise in inflation and construction costs due to the war in Ukraine, energy price spikes, and material shortages, resulting in project delays and contract renegotiations.

Consumer behavior also shifted: rising credit costs and inflation in 2023 led to postponed investments and reduced housing construction in some regions. Administrative inefficiencies and legal changes, especially the 2024 permit reform, caused delays and confusion, particularly in smaller municipalities. The introduction of stricter documentation and sustainability requirements increased project preparation time and costs. Despite these challenges, 2024 showed signs of stabilization, with slower cost growth and improved planning practices.

The sector demonstrated resilience by adopting digital tools, adjusting to new regulations, and maintaining activity. The transition to a digital permit system ("Infostatyba") faced initial technical issues but is expected to improve transparency and efficiency. Overall, the differences observed across 2020–2024 reflect the sector's adaptation to external shocks and evolving regulatory and economic conditions.

3. Conclusions and recommendations

The analysis revealed that Lithuania's construction sector faces significant challenges related to frequent legal changes, slow digitalization, and the integration of sustainability principles. Although the sector contributes substantially to the national GDP and provides thousands of jobs, its development is hindered by both external and internal constraints that require systemic solutions.

The most critical issue identified is the uncertainty caused by frequent legal changes. Amendments to the Construction Law in 2023 and 2024 have led to practical ambiguities in both design and permitting processes. Survey results show that frequent changes and lack of information directly impact the efficiency of sector participants. Also, poor communication between regulatory bodies and construction professionals is a major reason for the sector's stagnation.

Only a part of construction companies actively implements digital tools, like BIM or document management systems. Barriers include high initial investment costs, lack

of employee skills, and insufficient government incentives. International studies confirm that successful digitalization requires leadership support, clear standards, and long-term strategies.

Sustainable construction remains a key but slowly adopted goal. Most construction companies apply sustainability principles only partially, citing lack of information, additional costs, and client indifference as main obstacles. Experts stress that the public sector should lead innovation by launching pilot projects and promoting green construction.

Author contributions

DK and DM conceived the study and were responsible for the design and development of the data analysis. DK and DM were responsible for data collection and analysis. DK and DM were responsible for data interpretation. DK wrote the first draft of the article.

Disclosure statement

The authors declare that they have not any competing financial, professional, or personal interests from other parties.

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STATYBOS PLĖTRA IR PERSPEKTYVOS LIETUVOJE: APŽVALGA

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Santrauka

Straipsnyje nagrinėjama Lietuvos statybos sektoriaus raida ir dabartinė būklė, daugiausia dėmesio skiriant teisinių, ekonominių ir technologinių veiksnių poveikiui. Tyrimo tikslas – pagilinti statybos sektoriaus raidos suvokimą, įvertinant jo augimo dinamiką ir nustatant galimus būsimus pokyčius, atsižvelgiant į nacionalinius prioritetus ir Europos Sąjungos reglamentus. Tyrimo taikyti metodai apima teisinę analizę, statistinių duomenų apžvalgą ir lyginamąją analizę. Rezultatai atskleidė pagrindinius sektoriaus iššūkius: darbo jėgos trūkumas, didėjančios išlaidos ir netolygus skaitmeninimo lygis. Straipsnyje pateikiamos rekomendacijos, kaip artimiausiu metu skatinti statybų sektoriaus tvarumą, konkurencingumą ir inovacijas, taip pat apibendrinami pagrindiniai Lietuvos statybų sektoriaus iššūkiai.

Reikšminiai žodžiai: BIM, inovacijos, Lietuvos ekonomika, statybos sektorius, teisinė sistema, tvarumas.