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THE ROLE OF THE CONSTRUCTION INDUSTRY IN ECONOMIC GROWTH AND SUSTAINABLE DEVELOPMENT

Stela Cucos*, ORCID: 0009-0002-6353-2904,
Rina Turcan, ORCID: 0000-0002-6001-2025

Technical University of Moldova, 168, Ștefan cel Mare Blvd., Chisinau, Republic of Moldova

* Corresponding author: Stela Cucos, stela.cucos@emc.utm.md

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Abstract. The construction industry is one of the determining driver of economic growth and sustainable development, particularly in developing economies, where it contributes significantly to GDP and employment creation. This study investigates the dual role of the sector as an economic engine and a sustainability agent, focusing on Moldova and the European Union. The research hypothesizes that integrating innovative technologies and circular economy principles can enhance the sector's economic and environmental performance while addressing regional disparities. The study aims to analyse the sector's contributions to GDP, employment, and sustainability, identifying challenges and opportunities for improvement. Using a quantitative framework, the research assesses the contributions of construction activities to GDP formation in dynamics, including by country, sector-specific sustainable practices and activity structure. In this article such tools as linear regression, comparative analysis and cause-effect analysis are used in order to achieve the research aim. The findings reveal significant regional disparities, with stable growth in developed economies and higher volatility in developing countries, highlighting the impact of the construction sector on economic development. The findings emphasize the importance of specific policies geared towards increasing skills, keeping the workforce at home and mainstreaming sustainable practices. This research provides a clear vision of the construction industry's role in stimulating economic growth and promoting sustainable development through innovation and specific sustainable practices.

Keywords: *employment generation, innovation, regional disparities, sustainability practices, sustainable infrastructure, workforce retention.*

Rezumat. Industria construcțiilor este unul dintre motoarele determinante ale creșterii economice și dezvoltării durabile, în special în economiile în curs de dezvoltare, unde contribuie semnificativ la PIB și la crearea de locuri de muncă. Acest studiu investighează rolul dublu al sectorului ca motor economic și agent de durabilitate, concentrându-se pe Moldova și Uniunea Europeană. Cercetarea emite ipoteza că integrarea tehnologiilor inovatoare și a principiilor economiei circulare poate spori performanța economică și de mediu a sectorului, abordând în același timp disparitățile regionale. Studiul urmărește să

analizeze contribuțiile sectorului la PIB, ocuparea forței de muncă și durabilitate, identificând provocările și oportunitățile de îmbunătățire. Folosind un cadru cantitativ, cercetarea evaluează contribuțiile activităților de construcții în formarea PIB-ului în dinamică, inclusiv pe țări, practicile sustenabile specifice sectorului și structura activităților. În acest articol în vederea atingerii scopului cercetării sunt utilizate astfel de instrumente precum regresia liniară, analiza comparativă și analiza cauză-efect. Constatările relevă disparități regionale semnificative, cu o creștere stabilă în economiile dezvoltate și volatilitate mai înaltă în țările în curs de dezvoltare, subliniind impactul sectorul construcțiilor asupra dezvoltării economice. Concluziile evidențiază importanța politicilor specifice orientate spre creșterea competențelor, menținerea forței de muncă în țară și integrarea practicilor sustenabile. Această cercetare oferă o viziune clară a rolul industriei construcțiilor orientat spre stimularea creșterii economice și spre promovarea dezvoltării durabile prin inovare și practicile sustenabile specifice.

Cuvinte-cheie: *crearea de locuri de muncă, inovare, disparități regionale, practici durabile, infrastructură durabilă, menținerea forței de muncă.*

1. Introduction

The construction industry is a determining driver of economic development and a cornerstone for national infrastructure, playing an essential role in gross domestic product (GDP) growth, employment creation, and social progress. This sector is particularly significant in developing economies, where it contributes up to 14% of GDP, serving as a catalyst for economic resilience and wealth creation through infrastructure investments [1-5]. By facilitating the development of essential systems such as transportation, energy, and public utilities, construction underpins broader economic activities and addresses national economic and social objectives [3,6]. These contributions underscore the sector's importance in fostering inclusive economic growth and achieving sustainable development goals (SDGs).

The relevance of studying the construction industry lies in its dual role as an economic driver and an agent of sustainable development. Sustainable development involves economic diversification, access to services, environmental protection, adherence to ecological principles, and ensuring adequate living conditions for all regions [7]. In the European Union (EU-27), residential construction contributed consistently to GDP, fluctuating between 4.7% and 5.8% from 2014 to 2023, reflecting its steady importance in developed economies. In contrast, Moldova demonstrated higher but more volatile contributions, peaking at 10% in 2020, which highlights the country's reliance on construction as a key economic pillar [8,9]. These regional differences illustrate the need for tailored approaches to maximize the sector's economic potential while addressing its vulnerabilities, particularly in emerging economies.

In addition to its economic significance, the construction industry is integral to advancing sustainability. Sustainable construction practices such as energy-efficient designs, eco-friendly materials, and resource optimization reduce environmental impacts while fostering economic resilience and social inclusivity [10,11]. However, the sector faces challenges including high costs of green technologies, regulatory barriers, and skill shortages. Addressing these challenges is critical in light of global commitments to sustainability, particularly in the context of climate change and the growing demand for resource-efficient urbanization. Innovations like Building Information Modeling (BIM), automation, and IoT

technologies provide transformative solutions by improving efficiency, precision, and waste management in construction processes [12].

The environmental impact of the construction industry further highlights the importance of this research. As one of the largest contributors to environmental degradation, the sector's resource-intensive activities from material extraction to demolition significantly contribute to greenhouse gas emissions, habitat destruction, and waste generation. Through effective waste management, construction companies not only gain economic advantages but also enhance the country's environmental state, given that most construction waste poses environmental hazards [13]. Sustainable construction addresses these issues by adopting methodologies like Life Cycle Assessment and Leadership in Energy and Environmental Design certifications to improve project sustainability [10,14]. Additionally, the circular economy provides a promising framework by promoting material reuse and recycling, thereby reducing waste and extending resource lifecycles. Implementing CE principles in construction relies on supportive policies, incentives, and efficient waste management systems, aligning the industry with long-term sustainability goals [15].

The research gains further relevance by examining the regional dynamics of the construction sector, revealing distinct economic structures and policies. Developed countries such as Germany and France exhibit stable contributions to GDP, supported by robust policies and diversified economies. Conversely, smaller nations like Cyprus and Malta benefit from foreign investments in real estate, while Moldova's higher contributions highlight its dependence on construction. This reliance poses risks, including workforce challenges such as labour migration and skill shortages, which affect project efficiency and quality. Addressing these issues through policy reforms, vocational training, and employment formalization is essential for stabilizing the sector and ensuring sustainable growth [8,9,16].

The present study is particularly timely as the construction industry faces increasing global scrutiny over its environmental impact and its ability to meet sustainability objectives. The integration of advanced technologies, adoption of circular economy principles, and alignment with sustainability frameworks are critical to transforming the sector into a driver of sustainable development. This research not only highlights the construction sector's contributions to GDP and employment but also emphasizes its environmental and social implications. By focusing on Moldova and the EU, it provides actionable insights into regional dynamics, identifying opportunities and challenges for advancing sustainable construction practices. The findings are aimed at informing policymakers, industry stakeholders, and researchers on strategies to maximize the sector's economic potential while addressing its sustainability obligations.

2. Materials and Methods

The study analyses the economic and sustainability impacts of the construction sector, focusing on GDP formation and sustainable development in Moldova and EU countries. It collects data from reputable sources such as the National Bureau of Statistics of Moldova [8], Eurostat [9], and reports from the World Bank and the European Union. Primary datasets cover construction sector trends and residential construction contributions across EU countries, while secondary data provide additional context.

It uses a quantitative framework to assess the construction sector's contributions to GDP and sustainability practices. Statistical analysis categorizes countries into low, medium, and high GDP contribution groups. Linear regression and trendline analysis evaluate long-

term trends, with R^2 values indicating correlation strength. It also analyses the structural distribution of construction activities in Moldova, focusing on building construction, civil engineering, and specialized works.

The assessment of sustainability includes Life Cycle Assessment (LCA) to evaluate environmental impacts and Leadership in Energy and Environmental Design (LEED) standards to benchmark efforts [14]. Data analysis tools such as Microsoft Excel perform calculations, while R handles regression analysis and validates trends.

The study adopts a comparative approach to highlight differences between Moldova and EU countries, using visual representations of sectoral contributions and sustainability practices. It acknowledges challenges such as inconsistent data standards, limited information on informal activities, and difficulties accessing real-time data on technological adoption. Despite these limitations, it provides actionable insights, emphasizing the construction sector's determining role in economic growth and sustainable development.

3. Results and discussions

The construction industry holds a central role in the economic advancement of developing nations, serving as a major driver of growth and a foundational element of national infrastructure. Its influence, however, is complex and multifaceted and its key economic impacts are following:

- Economic growth and infrastructure development. As a determining capital input, construction propels economic growth and facilitates wealth creation, particularly in low- and middle-income countries. It underpins the development of physical and economic infrastructure, which are vital components of a nation's economic performance [1-3].
- Income distribution and social development. Infrastructure projects contribute to improved income distribution and foster social progress. They generate investment opportunities across related industries and are instrumental in achieving key national economic and social objectives [6,3].
- Employment and GDP contribution. The construction sector significantly impacts GDP while offering extensive employment opportunities. This makes it a cornerstone of economic policy strategies in developing countries, supporting job creation and economic stability [17].

The construction sector holds a special extremely important position in advancing sustainable development, acting as a bridge between economic expansion, social welfare, and environmental stewardship. By harmonizing these three pillars, the construction industry has the potential to drive significant progress toward a more sustainable future. This exploration delves into the industry's ongoing efforts to embrace sustainable practices, examines the technological innovations that facilitate these transitions, and highlights the critical role of integrating a circular economy into construction processes.

Sustainable construction aims not only to reduce the environmental impact of building activities but also to foster social inclusivity and economic resilience. By adopting energy-efficient designs, using eco-friendly materials, and minimizing resource waste, the industry contributes to lowering carbon emissions and conserving natural resources. However, these efforts often encounter challenges such as high costs of green technologies, lack of skilled labour, regulatory hurdles etc. Technology plays a transformative role in overcoming these obstacles. Tools like Building Information Modeling (BIM), automation, and 3D printing

enable more efficient resource utilization, precision in construction processes, and innovative approaches to building design. Moreover, the implementation of smart construction technologies, such as Internet of Things (IoT) sensors and data analytics, allows for real-time monitoring of energy consumption and waste management, driving further efficiencies.

The construction industry, recognized as one of the largest contributors to environmental degradation, faces increasing scrutiny due to its high consumption of resources and substantial ecological footprint. Its resource-intensive processes, ranging from material extraction to construction and demolition, contribute significantly to greenhouse gas emissions, habitat destruction, and waste generation. Sustainable construction represents an innovative and transformative approach to reducing the environmental impact of the construction industry. Sustainable construction seeks to mitigate these environmental impacts by enhancing energy efficiency, optimizing waste management, and encouraging the adoption of environmentally sustainable materials [10,11,14].

The construction industry is a major driver of environmental degradation, primarily due to its high resource consumption and intensive processes. Sustainable construction (SC) addresses these challenges by enhancing energy efficiency, optimizing waste management, and promoting the utilization of environmentally sustainable materials [10,11]. In this context, key methodologies and certifications, including Life Cycle Assessment (LCA) and Leadership in Energy and Environmental Design (LEED), are widely applied to assess and optimize sustainability within construction projects [14].

The Fourth Industrial Revolution (Industry 4.0) offers transformative opportunities for the construction sector to integrate advanced technologies that promote sustainability. In the context of sustainability, development does not imply endless growth. At a certain point, a sustainable community stops expanding and focuses on transformation, efficiently utilizing the resources it already possesses [18]. Innovations such as automation, digitalization, and smart construction practices enable significant reductions in waste generation and enhance the efficiency of resource management [12]. The integration of Industry 4.0 technologies is regarded as an important focus for future research and development within the construction sector [12].

Sustainable construction addresses environmental challenges while simultaneously promoting economic efficiency and social stability. By fostering job creation and facilitating the development of sustainable infrastructure, it plays a vital role in supporting economic growth, particularly in developing countries [10]. From a social perspective, sustainable construction contributes to alleviating urban challenges, such as the heat island effect, while reducing the overall environmental strain on urban ecosystems [19].

A circular economy (CE) in the construction sector emphasizes the prolonged lifecycle of materials through strategies such as recycling and reuse, thereby minimizing the industry's environmental impact. The successful implementation of a CE relies on critical factors, including supportive policy frameworks, organizational incentives, and the establishment of efficient waste management infrastructure [15]. The adoption of circular economy practices is pivotal for ensuring long-term sustainability and enhancing the competitive advantage of the construction industry [15].

Despite significant progress, the full integration of sustainable practices in the construction industry continues to face several challenges. These include the development of robust quantitative methodologies for assessing sustainability, the inherently fragmented

structure of the industry, and the limited adoption of sustainable practices across construction enterprises [19-21].

The construction industry represents a significant driver of economic growth, often contributing a considerable proportion to a country's GDP. In developing economies, the sector can account for up to 14% of GDP, largely due to its multiplier effect, which promotes growth in associated industries such as building materials production and service sectors [4,5].

The following figure shows the contribution of residential construction to GDP shows varying trends across the three regions analysed: the European Union (27 countries), the Euro Area (20 countries), and the Republic of Moldova.

As the data presented in the figure above shows, in the European Union (EU-27), the contribution remained relatively stable, fluctuating slightly between 4.7% (2015) and 5.8% (2023), indicating a moderate and consistent role of residential construction in the region's GDP formation.

The linear trendline equation is $y = 0.1467x + 4.4733$, with an R^2 value of 0.9167, indicating a strong and consistent positive correlation over time. The Euro Area displayed a similar pattern, with percentages ranging between 4.9% (2015) and 6.0% (2022). This reflects the Euro Area's stable and slightly growing reliance on residential construction for economic development. The steady growth underscores the increasing significance of residential construction as a driver of economic activity. Policies focusing on energy efficiency and urban development likely contribute to this upward trend.

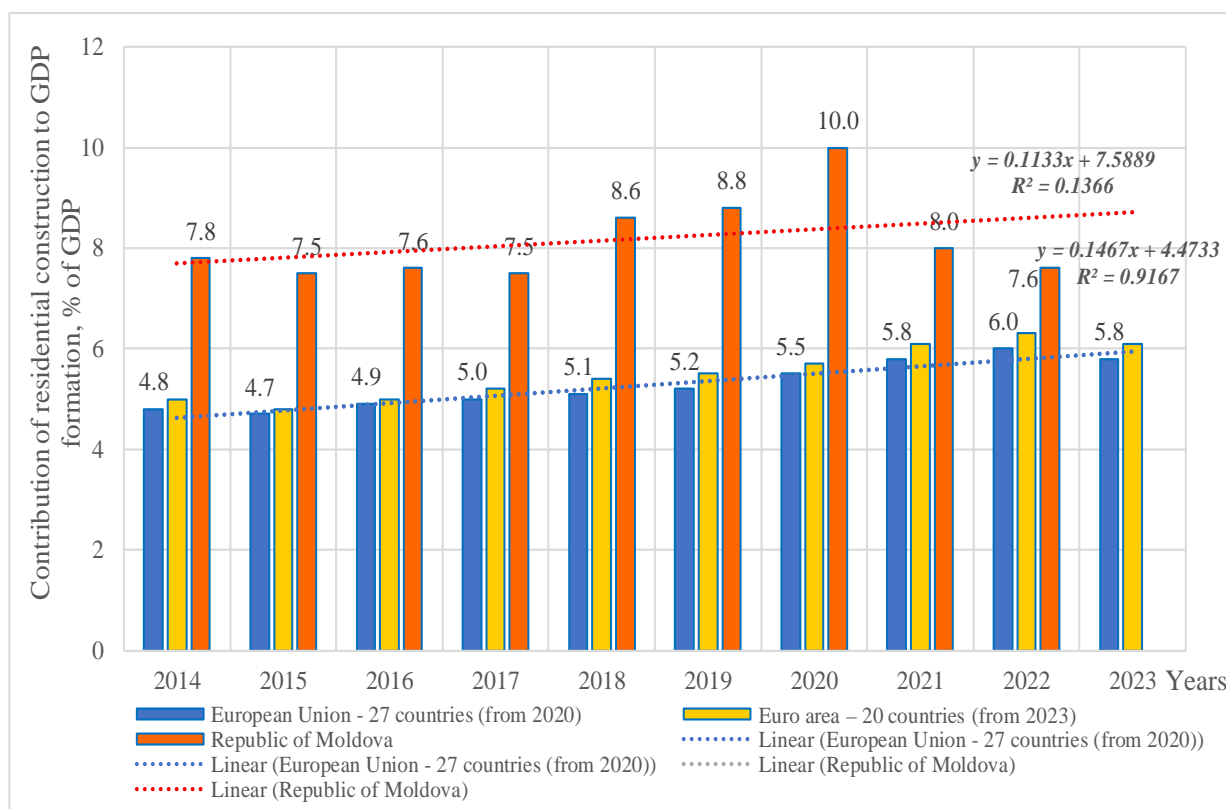


Figure 1. Evolution of the contribution of residential construction to GDP formation between 2014 and 2023 [8,9].

In contrast, the Republic of Moldova exhibited significantly higher contributions, ranging from 7.5% (2015) to a peak of 10.0% (2020), with a gradual decline thereafter. This

indicates a more substantial dependence of Moldova's economy on residential construction, especially during the analysed period. The linear trendline equation is $y=0.1133x+7.5889$, with an R^2 value of 0.1366, indicating weaker consistency in the trend compared to the EU. The higher contribution (compared to EU averages) reflects the sector's critical role in Moldova's economy, potentially driven by urbanization, housing demand, and reliance on construction as a key economic pillar.

The contribution of residential construction to GDP formation shows distinct regional dynamics. While the EU-27 and Euro Area demonstrate stable growth driven by structured policies and diversified economies, Moldova's higher but more volatile contribution reflects its economic reliance on construction. The strong trendline correlations in the EU regions suggest predictable growth, whereas Moldova's lower R^2 value calls for enhanced economic resilience and strategic planning to stabilize the sector's performance over time.

In order to demonstrate how widely the contribution of the construction sector to GDP formation in the EU countries varies, the following table shows statistical data on the contribution of residential construction to GDP formation in the EU countries between 2014 and 2023.

According to the data on the contribution of the construction sector to GDP in the countries of the European Union, all countries can be divided into three categories:

- Countries with Low Contribution (below 3%).
- Countries with Medium Contribution (3%–6%).
- Countries with High Contribution (above 6%).

Countries with Low Contribution (below 3%) include countries such as Greece, Ireland, Bulgaria, and Latvia which consistently demonstrate the lowest contributions, generally ranging below 3% throughout the observed period. Greece shows the lowest contributions, starting at 1.1% in 2014, dropping to a minimum of 0.6% in 2017, and recovering to 2.3% by 2023. For Greece, the low values are primarily attributed to the prolonged effects of the 2008 financial crisis, which deeply affected the construction sector due to reduced investments, stagnant real estate markets, and austerity measures. Ireland and Bulgaria follow a similar low-contribution trajectory, with slow but steady increases over time, reaching 3.3% and 2.8%, respectively, in 2023. For Ireland and Bulgaria, the relatively low contributions stem from less reliance on residential construction within their overall economic structures. However, Ireland's gradual recovery can be linked to increased housing demand and post-crisis stabilization. These countries indicate underutilized potential in residential construction as an economic driver. Future policies could focus on incentivizing housing development and construction investments to boost sectoral contributions to GDP.

Table 1

**Evolution of the contribution of residential construction to GDP formation in EU countries
between 2014 and 2023**

EU countries	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Belgium	5.9	5.7	5.8	5.8	5.8	5.9	6.0	6.1	5.7	5.4
Bulgaria	1.6	1.4	2.7	2.8	2.7	2.8	2.9	2.7	2.8	2.8
Czechia	4.2	4.3	4.4	4.9	5.2	5.2	5.6	6.0	6.3	6.2
Denmark	3.8	4.0	4.2	4.7	4.8	5.1	5.8	6.2	5.8	5.6
Germany	5.8	5.7	5.9	5.9	6.1	6.3	6.9	6.8	7.0	6.9
Estonia	3.8	3.9	4.3	4.5	4.4	4.8	5.3	4.8	5.0	5.7
Ireland	1.7	1.4	1.8	2.0	2.3	2.2	2.0	2.3	2.8	3.3
Greece	1.1	0.8	0.7	0.6	0.7	0.8	1.1	1.3	2.0	2.3
Spain	4.1	3.9	4.2	4.7	5.3	5.6	5.8	5.6	6.1	6.0

Continuation Table 1

France	6.1	6.0	6.1	6.4	6.5	6.6	6.5	7.2	7.0	6.4
Croatia	2.7	2.5	2.6	2.4	2.6	2.8	3.1	3.7	3.6	3.7
Italy	4.2	4.1	4.0	4.0	4.0	3.9	3.9	5.6	6.5	7.0
Cyprus	3.9	3.6	4.4	5.0	6.4	7.5	7.9	8.0	8.5	8.6
Latvia	2.6	2.5	2.1	2.1	2.6	2.6	2.6	2.9	2.6	3.1
Lithuania	2.6	3.2	3.6	3.0	2.8	3.1	3.3	3.2	3.8	3.7
Luxembourg	3.6	3.8	4.1	3.6	3.8	3.9	3.8	4.0	3.7	3.5
Hungary	1.9	2.2	2.4	2.7	3.0	3.2	4.1	3.9	4.7	4.1
Malta	2.9	2.9	2.8	3.1	4.7	5.0	6.4	6.0	4.1	3.9
Netherlands	3.1	3.5	4.2	4.6	5.0	5.2	5.5	5.7	5.5	5.2
Austria	5.0	5.2	5.3	5.5	5.7	5.8	6.0	6.3	6.4	5.8
Poland	3.1	2.6	2.5	2.2	2.0	2.1	2.2	2.3	2.2	2.2
Portugal	2.6	2.6	2.7	3.0	3.3	3.4	3.6	4.1	4.1	3.9
Romania	2.4	2.4	2.6	2.7	2.0	2.2	2.4	3.1	3.2	3.0
Slovenia	2.2	2.2	2.1	2.1	2.1	2.2	2.3	2.4	2.8	2.9
Slovakia	3.1	2.9	3.5	3.2	3.6	3.5	4.1	4.3	4.8	4.1
Finland	6.0	6.0	6.6	6.7	7.1	7.0	7.0	6.9	7.2	5.9
Sweden	4.2	4.8	5.3	5.7	5.2	4.7	5.0	5.3	5.2	3.8

Source: elaborated by authors based on data [9].

Countries with a medium contribution (3%-6%) represent a middle group. This group include the majority of EU countries fall into this group, including Austria, Belgium, Czechia, Denmark, Estonia, Hungary, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovenia, and Sweden. These countries exhibit relatively stable contributions over time, with incremental growth observed in most cases. For example, Austria shows a steady increase from 5.0% in 2014 to 6.3% in 2022, while Czechia grows from 4.2% in 2014 to 6.2% in 2023. There is noticeable consistency in contributions, reflecting balanced reliance on residential construction alongside other economic activities. The medium contribution levels are indicative of well-diversified economies where construction plays an important, but not dominant, role. For instance, in countries like Austria and Belgium, construction activities are closely linked to urban development and sustainability initiatives. The stable growth observed in countries like Czechia and Estonia reflects steady demand for housing driven by urbanization and demographic trends. At the same time, these countries demonstrate resilience and potential for further growth in residential construction. Enhanced focus on sustainable building practices, energy-efficient housing, and urban regeneration could support continued sectoral development.

The highest contributions (above 6%) are observed in countries such as Cyprus, Finland, France, Germany, Italy, Malta, and Spain. Cyprus consistently leads, with contributions increasing from 3.9% in 2014 to a peak of 8.6% in 2022. Similarly, Malta exhibits substantial growth, peaking at 6.4% in 2020. Countries like Cyprus and Malta benefit from strong foreign investment in real estate and housing, including residency programs for property investors ("golden visas"). Finland, France, and Germany maintain stable high contributions, reaching values above 6.5% in recent years. Italy shows a notable increase from 4.2% in 2014 to 7.0% in 2023. Finland, France, and Germany reflect mature economies with a consistent focus on residential construction as part of broader economic growth and urban development strategies. Italy's upward trend highlights recovery efforts and renewed investments in housing post-pandemic, driven by government incentives and population needs. For these countries, residential construction serves as a vital contributor to economic stability and growth. Sustaining these levels will require continuous investment in

modernization, energy-efficient construction, and circular economy principles to ensure long-term sustainability.

The construction industry serves as a fundamental driver of capital formation, with a significant share of total investment allocated to construction activities. This investment facilitates the development of related economic sectors and contributes to sustained economic growth [4,5]. The construction sector plays an important role in the development and maintenance of infrastructure, including roads, schools, hospitals, and housing, which are essential for societal well-being and economic competitiveness [5,22]. Additionally, it contributes to social development by enhancing living conditions and facilitating the modernization of regions, thereby improving quality of life and advancing sustainable development objectives [22].

Construction investment is not just about building physical structures but about fostering economic development, social progress, and sustainability. It serves as a catalyst for growth across multiple sectors and is indispensable for achieving national and global development objectives. The figure no.2 presents the evolution of the number of active enterprises in the construction sector in the Republic of Moldova during the period 2014–2023, illustrating a steady upward trend and providing insights into the sector's growth dynamics and its increasing importance within the national economy.

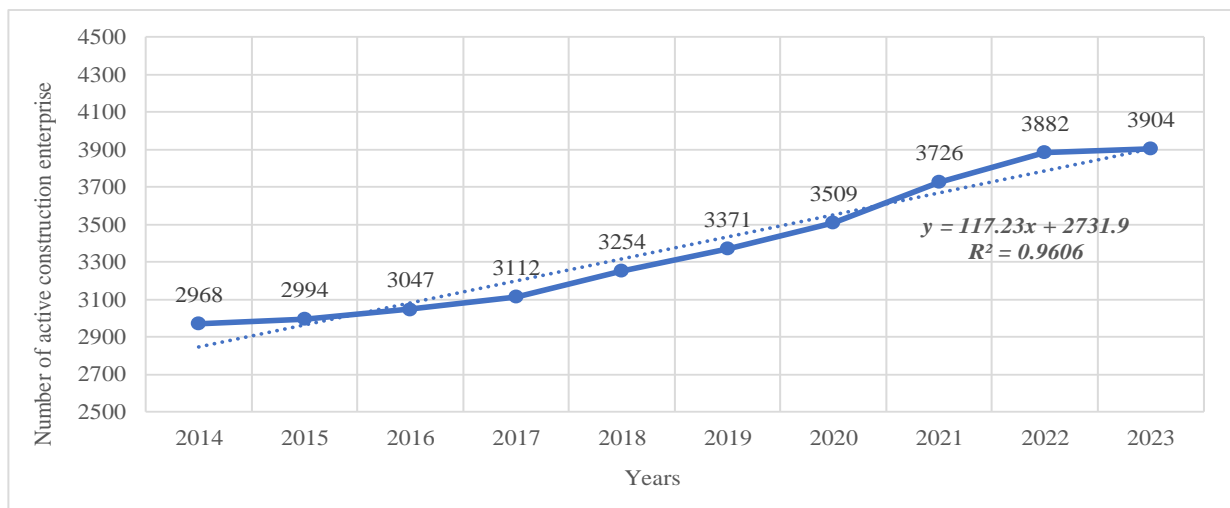


Figure 2. Evolution of the number of active enterprises in construction in the Republic of Moldova in the period 2014-2023.

Source: Elaborated by the authors based on data from the National Bureau of Statistics of the Republic of Moldova [8].

The data presented in Figure 2 reveal a steady increase in the number of active enterprises in the construction sector in the Republic of Moldova, growing from 2,968 in 2014 to 3,904 in 2023, which represents a growth of approximately 31.6% over nine years. This upward trajectory is reinforced by the trendline equation $y = 117.23x + 2731.9$, indicating an average annual growth of 117 enterprises, with a strong linear correlation reflected by the R^2 value of 0.9606. Particularly notable is the growth phase between 2020 and 2023, during which the number of enterprises rose significantly from 3,509 to 3,904, likely driven by recovery and expansion following the global COVID-19 pandemic. In comparison, the total number of active enterprises across all sectors in Moldova also grew steadily, from 51,659 in 2014 to 63,778 in 2023, demonstrating a broadly consistent pattern of economic expansion.

While construction enterprises form a small proportion of the total, their relative share has remained stable, underscoring the sector's integral role in the national economy.

The steady growth of the construction sector reflects its importance in Moldova's economic development. However, the sector faces challenges such as labour migration, which leads to skill shortages, limited domestic demand due to Moldova's small population and purchasing power, and regulatory inefficiencies that could hinder its potential. Addressing these issues will be essential for ensuring the sustainable growth of the construction industry, which remains a priority contributor to the country's economic progress.

Practically in all countries construction investment plays a fundamental role in advancing the national economy and developing social infrastructure. They stimulate investment opportunities in related industries and are essential for achieving key national economic objectives [23,24].

The figure no.3 illustrates the structure of active construction enterprises in the Republic of Moldova, highlighting the distribution among building construction, civil engineering works, and specialized construction activities in 2023.

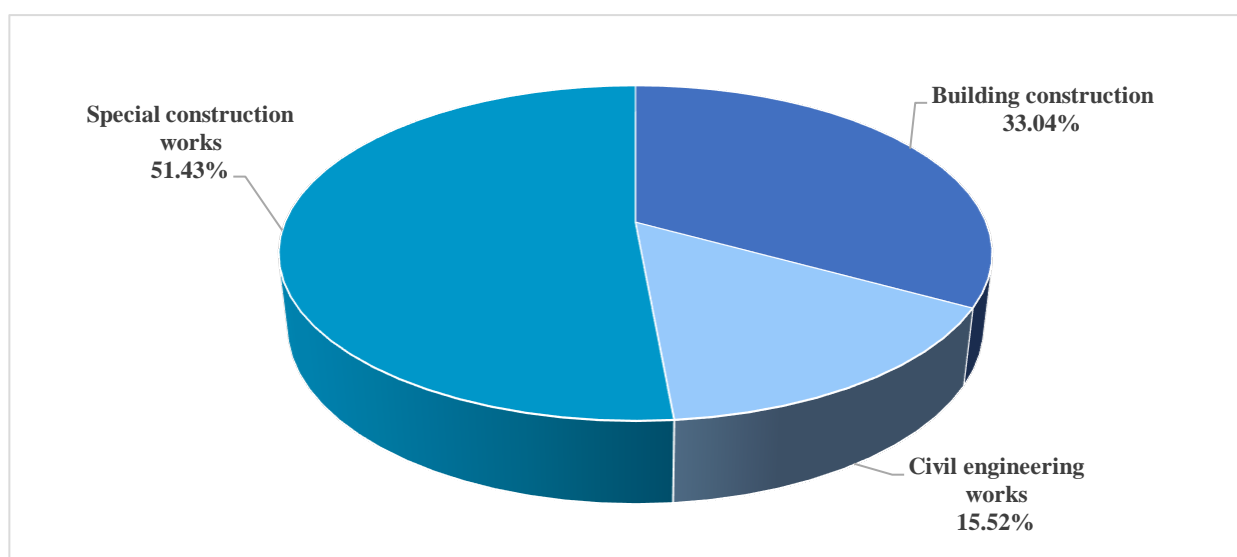


Figure 3. Structure of active construction enterprises by type of activity in the Republic of Moldova in 2023.

Source: Elaborated by the authors based on data from the National Bureau of Statistics of the Republic of Moldova [8].

The data presented in Figure 3 provide a clear distribution of the structure of active construction enterprises in the Republic of Moldova in 2023. The chart indicates that a significant portion of the enterprises in the construction sector are involved in special construction works, accounting for 51.43% of the total. This is followed by building construction, which represents 33.04%, and civil engineering works, which make up 15.52%. This distribution highlights the predominant role of specialized construction works in the Moldovan construction industry. This structure reflects the growing focus on specialized infrastructure projects, alongside consistent demand for building construction and civil engineering works.

The large share of special construction works is likely due to the increasing demand for infrastructure and specialized services, such as the construction of roads, utilities, and

energy-efficient buildings, which are becoming a priority in the country. These works often involve more technical expertise and are influenced by investments in public infrastructure, particularly by international organizations like the World Bank and the European Union, which fund projects related to energy, transport, and urban development.

Building construction, with its 33.04% share, reflects the steady demand for residential, commercial, and industrial buildings. This demand is driven by urbanization, population growth, and migration patterns, as well as by domestic and foreign investments. The construction of residential properties, in particular, is supported by remittances from Moldovan workers abroad, which often fund home construction and renovation projects.

Several factors have driven this growth in the construction sector. Moldova's gradual economic development, particularly in urban centres like Chisinau and Balti, has supported demand for residential, commercial, and infrastructural projects, with urbanization trends increasing the need for housing, industrial facilities, and public infrastructure.

In addition to all its significance and advantages, the construction sector also faces challenges, such as ensuring equitable access to employment opportunities across various skill levels, from unskilled to highly skilled labour, while continuing to play a vital role in reducing unemployment and improving income distribution [16].

In the Republic of Moldova and other developing countries, this dynamic is particularly pronounced. The construction sector serves as a critical employment generator, absorbing a large portion of the workforce, including both skilled and unskilled labour, which is essential in countries with high unemployment rates or limited industrial diversification. However, in Moldova, the sector faces the additional challenge of labour migration, with many skilled workers leaving for better opportunities abroad, leading to labour shortages and a reliance on less qualified workers domestically. This impacts the quality and efficiency of construction projects and highlights the need for targeted policies to retain and upskill the workforce.

In other developing countries, similar patterns emerge, where the construction sector is both a key economic driver and a source of social inequality. For example, the informal employment prevalent in construction often lacks job security and benefits, leaving workers vulnerable to economic fluctuations. To address these challenges, governments and stakeholders must implement strategies to formalize employment, enhance vocational training programs, and create incentives for retaining skilled labour locally. Thus, while the construction sector has immense potential to reduce unemployment and improve income distribution, its success depends on overcoming structural challenges and fostering an inclusive approach to workforce development, particularly in Moldova and comparable developing nations.

Although this study provides insights into the economic, social and environmental impacts of the construction sector, there are some limitations to be taken into account that prevent an objective analysis of the situation. First of all, inconsistent reporting standards between data sources, especially in developing regions, make comparative analysis difficult. Moreover, the study focuses mainly on residential construction, which may not fully capture the sector's contributions in other sub-domains such as commercial or industrial construction.

For future research it is proposed to broaden the scope to include a wider range of construction activities and regions. In this context we believe that comparative studies on the adoption of Industry 4.0 technologies and circular economy practices in different economic contexts would provide valuable insights. In addition, exploring the socio-economic impact of construction employment, assessing retention and upskilling policies

under the impact of social and management methods would facilitate the further development of this sector.

The research highlights the dual role of the construction industry as an economic driver and an agent of sustainability. The findings reveal significant regional disparities, emphasizing the need for tailored approaches to maximize the sector's potential while addressing its challenges. By adopting innovative technologies, integrating circular economy principles, and aligning with sustainability frameworks, the construction sector can play a transformative role in advancing sustainable development goals.

5. Conclusions

This study reaffirms the construction industry's central role as both an economic engine and a driver of sustainable development. The sector's ability to contribute significantly to GDP, employment creation, and infrastructure development highlights its economic importance, particularly in developing countries where its contributions can reach up to 14% of GDP. The evolution of residential construction's contribution to GDP formation in EU countries underscores significant regional differences driven by economic structure, policy frameworks, and demographic trends. High-contribution countries demonstrate the sector's role as a robust economic driver, while medium and low-contribution groups reflect opportunities for targeted improvements. Policymakers should focus on promoting sustainability, fostering innovation, and addressing regional challenges to ensure the sector's balanced and sustained growth across the EU. The findings underscore the sector's dual impact: fostering economic growth and addressing social challenges through job creation and improved living standards. However, the study also reveals stark regional disparities, with developed countries demonstrating stability in sectoral contributions, while developing nations like Moldova exhibit volatility, reflecting both opportunity and vulnerability.

The study highlights the urgency of integrating circular economy principles within the construction sector. Recycling, material reuse, and life-cycle assessments are identified as critical strategies to mitigate environmental degradation. However, the successful implementation of these practices relies on supportive policies, adequate infrastructure, and organizational incentives, which are underdeveloped in many regions, particularly in emerging economies.

From a social perspective, the construction industry's role as a significant employment generator is evident. However, issues such as labour migration, informal employment, and skill shortages hinder its potential to achieve equitable growth. Addressing these challenges through targeted vocational training programs, labour retention policies, and employment formalization is essential for ensuring workforce stability and enhancing project efficiency. In numerous developing countries, the construction sector is significantly affected by labour migration, as many skilled professionals seek better opportunities abroad. This results in labour shortages and an increased dependence on less qualified workers within the domestic market, ultimately affecting the quality and efficiency of construction projects. This situation underscores the need for targeted policies aimed at workforce retention and skill enhancement.

Future research should expand the scope to include commercial and industrial construction, explore the socio-economic impacts of workforce dynamics, and examine the adoption of advanced technologies across diverse economic contexts. Also, future research should prioritize the development of comprehensive sustainability assessment tools, the

advancement of the social and economic dimensions of sustainability, and the promotion of sustainable practices throughout all phases of construction projects.

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