

Comparative Analysis of the Construction Industry in the EU and the Arab States of the Persian Gulf (GCC): Its Impact on Economic Growth

Boglárka Veres¹, Brigitta Szóke², Szilárd Malatyinszki³, Lóránt Dénes Dávid⁴

Abstract

The construction industry plays a pivotal role in propelling global economic growth. This research examines the economic contributions of the construction sectors in the European Union (EU) and the Gulf Cooperation Council (GCC) region. The EU's approach is characterised by a focus on sustainability-driven policies, including energy efficiency and circular economy practices. This is intended to foster economic resilience and alignment with international commitments such as the Paris Agreement. In contrast, the construction sector in the Gulf Cooperation Council (GCC) is driven by large-scale infrastructure projects and urbanisation, which are in turn fuelled by oil revenues. This emphasises the importance of diversification as a means of reducing economic volatility. By analysing regulatory frameworks, investment trends and technological innovations, the study demonstrates how the construction industry contributes to GDP growth, job creation and industrial development in both regions. Moreover, it investigates potential avenues for interregional collaboration, underscoring the capacity of sustainable construction practices and innovation to bolster economic stability and competitiveness within the global construction landscape. The study also highlights how circular economy principles can redefine sustainable construction practices, enhancing resource efficiency and promoting resilience.

Keywords: *Construction Industry, Economic Growth, Sustainability, Circular Economy, EU, GCC, Regulatory Frameworks, Innovation.*

Introduction

The construction sector plays a critical role in driving economic growth globally, encompassing the residential, commercial, and infrastructure segments that form the foundation of the construction industry. This research undertakes a comparative analysis of the European Union (EU) and the Arab states of the Persian Gulf (GCC), examining the economic growth impact of their respective construction sectors. The global construction industry will be worth USD 12.74 trillion in 2023. The global construction industry will have revenues of \$15 461.84 billion. There are 738,281 registered construction companies worldwide. 50% of planned construction is likely to come from China, India and the United States.⁵ Incorporating the circular economy into construction practices within both regions could enhance sustainability by promoting resource reuse and reducing environmental impact.

In the EU, the construction industry has for some time had a sustainability focus, in particular on reducing carbon emissions and energy use. Of particular note are circular economy principles, sustainable building standards, energy efficiency codes and the spread of green technologies, which are central issues in EU policy. To increase efficiency in these areas, EU targets are being set, such as the global construction sector aiming for net zero carbon by 2050 to achieve the Paris Agreement, and all new buildings to be net zero carbon by 2030 (United Nations Environment Programme, 2020)(Nations, 2021). The global housing construction market was worth 5.267 billion worldwide in 2022. Several studies have shown that the

¹ Bachelor's degree in Business Administration and Management, Kodolányi János University, Email: veresbogi@yahoo.com

² Assistant Professor, Hungarian University of Agriculture and Life Sciences, Institute of Rural Development and Sustainable Economics, Department of Investment, Finance and Accounting, Email: szoke.brigitta@uni-mate.hu.

³ Associate Professor, Kodolányi János University, Email: mszilard@kodolanyi.hu.

⁴ Full Professor, Department of Tourism and Hospitality, Faculty of Economics and Business John von Neumann University, Kecskemét, Hungary; Department of Sustainable Tourism, Institute of Rural Development and Sustainable Economy, Hungarian University of Agriculture and Life Sciences (MATE), Gödöllő, Hungary; Savaria Department of Business Economics, Savaria University Centre, Faculty of Social Sciences, Eötvös Loránd University; Szombathely, Hungary; Széchenyi István University, Győr, Hungary; Email: dr.david.lorant@gmail.com, (Corresponding Author)

number of investors open to green solutions in the construction sector will continue to grow (Stephen A. Jones, 2021) to establish the relevance of the study.

The Persian Gulf countries are referred to as the GCC (Gulf Cooperation Council) which includes 6 Arab countries. Its objectives include economic integration, political cooperation, regional security and cultural and social relations. The European Union (EU) established a cooperation agreement in 1988, initiating bilateral relations with the Gulf Cooperation Council (GCC). The main element of this cooperation is energy, to develop a functional cooperation beyond the traditional trade relationship between consumers and suppliers. The GCC countries hold almost a third of the world's oil reserves. This unity includes sharing expertise in energy technology, regional integration of energy markets, renewable energy, energy efficiency, carbon capture and storage, and sustainable consumption of gas. The GCC countries typically invest heavily in infrastructure and urban development, but profit-driven and futuristic imaging, luxury investments, futuristic urban development (Dubai, Neom) and infrastructure projects have in the past taken a back seat to sustainable construction. Today, economies based on oil revenues are showing a shift towards diversification and the construction industry is striving for sustainability as the oil-based economy faces long-term environmental and economic challenges.

This study highlights the EU's sustainable approach as a means of fostering economic stability and innovation while identifying the GCC's diversification efforts as a strategic response to mitigate dependency on volatile energy markets. By focusing on economic growth, this comparative analysis contributes to a deeper understanding of how the construction sector fosters stability and competitiveness in the EU while supporting diversification and long-term planning in the GCC. Guided by frameworks such as OECD recommendations, the EU taxonomy system, and IEA findings, this research aims to inform future strategies for sustainable economic development in the construction industry, contributing to shared prosperity and resilience in both regions (Council, 2019).

The impacts of external crises, such as the COVID-19 pandemic, on labor markets and economic stability in the construction sector have been a significant area of recent study. Research highlights how pandemic-driven challenges influenced unemployment trends and workforce management strategies across sectors (Tóth et al., 2023; Dajnoki et al., 2023). Notably, studies on university students' financial security during the first wave of COVID-19 emphasize the economic vulnerabilities induced by crises (Kálmán et al., 2021; Zéman et al., 2021). Moreover, the alignment of financial attitudes with sustainability objectives highlights the role of personal finance in broader economic resilience efforts (Zéman et al., 2023). These findings are complemented by insights into motivational dimensions and their implications for workplace efficiency and organizational participation, underscoring the importance of adaptive strategies in mitigating the adverse effects of economic disruptions (Tóth et al., 2022; Juhász et al., 2020; Juhász et al., 2022). Collectively, these studies provide a framework for understanding how crises impact economic and social systems, offering lessons for bolstering resilience in sectors such as construction.

First Industrial Revolution and Its Impact on Global Economic Growth and Development

The Industrial Revolution marked a transformative era in global economic growth, characterized by technological, social, and economic advancements. This transformative period also laid the groundwork for the challenges posed by the rapid acceleration of technological innovation in modern times, such as the rise of automation and artificial intelligence. These advancements have prompted significant shifts in the labor market, necessitating adaptive strategies like universal basic income (UBI) as discussed in recent analyses (Szabó-Szentgróti et al., 2024). It transitioned production from human and animal labor to mechanized industry, with coal-fired steam engines and innovations in the iron and textile industries driving this change (Ashton, London and New York.). This period introduced complex economic systems where agricultural, infrastructural, social, and urbanization structures evolved simultaneously (Rostow, 1960). Agricultural innovations sustained population growth, facilitating urbanization and industrialization. England's agricultural self-sufficiency led to a 60% population increase in the 16th century, spurring large-scale urban migration and development in the construction industry. The enclosure movements and capital accumulation, driven by trade, manufacturing, and colonialism, created a growing labor force eager for industrial work, a process Marx termed the original accumulation of capital. Technological advancements,

particularly in cotton processing, also catalyzed industrial expansion in the 18th century (WHALE). England emerged as a global economic leader, with industrial hubs like the 'Black Country' fostering innovation and dominance. For over 150 years, England led industrialization, becoming the world's workshop (Michael, 1989). Belgium followed under French rule, becoming the most industrialized country on the continent by the 1840s, excelling in railway construction and industrial development. Similarly, Germany's economic reforms and infrastructure advancements established regions like Westphalia as major industrial centers, leveraging coal and iron resources (Landes, 1986). The revolution's influence extended beyond Europe, with regions like the Arab states of the Persian Gulf adapting industrial strategies. Saudi Arabia, for example, utilized its resource wealth to advance industrial projects, such as the King Abdullah Economic City. These developments underscore the interconnectedness of technological progress, labor market transformations, and strategic investments in fostering global economic growth across eras.

Its Impact on World Trade

The Industrial Revolution significantly transformed trade, as well as its environmental and social dimensions. Prior to industrialization, households were primarily rural, operating within small communities. Modernization during the 18th century introduced factory work in urban settings, often offering low wages and harsh conditions but still proving more financially viable than farming (Stearns, 2020). Innovation during this period spurred motivation and enhanced educational quality, driving industrial advancements. Notable inventors, such as Elijah McCoy, revolutionized efficiency by developing lubricating oil that eliminated the need for machinery downtime, reducing risks and boosting economic productivity (Jenkins, 1991). Similarly, James Watt refined the steam engine, while Sir Henry Bessemer pioneered steel production with over 129 patents to his name. Professor Simon Kuznets' research, supported by the Social Science Research Council, provides valuable insight into the long-term economic effects of the Industrial Revolution (W. S. Woytinsky, 1955); (Office, October 1950). As the first nation to industrialize, England initiated unprecedented economic changes by the late 18th century, triggering a process of continual transformation. This rapid economic development set England apart historically, spreading westward to Europe, North America, and Australia throughout the 19th century. Industrialized nations, such as the United States and Western Europe, saw significant income growth relative to non-industrialized regions. Kuznets' analysis reveals that by 1949, the United States' average income was six times the global average, while Western Europe's was double. In contrast, Latin America's income was two-thirds of the global average, with Asia and Africa trailing at less than a quarter. These disparities highlight the growing divide between industrialized and non-industrialized regions (Dyne, 1957). The economic impact of industrialization was profound. Internal market turnover in industry increased by 50% during the 18th century, while external market turnover soared by 450%. These advancements underscored the revolutionary changes brought by the Industrial Revolution, fundamentally altering global economic dynamics.

Economic Changes in the Construction Sector

As a consequence of modernization, the construction industry has also undergone significant developments in conjunction with economic growth. The growth in the number of factory jobs has resulted in a restructuring of the population. The establishment of factories provided employment opportunities, the construction of industrial sites led to the expansion of cities, and the resulting growth and development were a consequence of the industrial revolution. As the population shifted from rural to urban areas, the construction industry faced an increasing demand for its services. The creation of housing and employment opportunities required the input of skilled engineers, the development of infrastructure and the production of building materials. The construction industry as we know it today emerged during the 16th century. It was during this period that architects and civil engineers first emerged as a distinct professional group. The construction industry's growth paralleled the advent of modern developments in the 17th and 18th centuries. Architects and civil engineers benefited from a vast array of materials and techniques, combining traditional methods with innovative new approaches that transformed the very nature of construction. The mainstay of the construction industry was ironworking, with bent iron being associated with Abraham Darby, who in 1709 developed a method of smelting that allowed iron to be bent into shape. Prefabricated elements also gained a foothold, e.g. the Eiffel Tower in Paris was built in 1889 using 12,000 prefabricated

elements. The construction industry remains a cornerstone of economic development. Its historical evolution underscores its role in fostering urbanization, industrialization, and trade, while also presenting opportunities for addressing contemporary challenges through sustainable and resilient practices. Strong construction activity has been reflected in increasing infrastructure development, a surge in renovation activity, and a rapid rise in domestic manufacturing, which has historically led to economic growth. However, there have also been negative impacts, such as the pandemic COVID 19 (Company, 2023) (Singh, 2024) (Aman et al, 2024; Bódis & Papp-Váry, 2021; Poór et al., 2024). In the construction industry, the crisis tends to occur later than everything else, because we are usually talking about long-term projects that need to run out and be contained. The effects of the Russia-Ukraine war cause volatility in commodity prices and geopolitical tensions. This is compounded by rising global interest rates, a shortage of skilled labour, security and cyber security issues, and health and safety challenges in the construction industry.

Explanation of Basic Concepts

Economic growth refers to a steady increase in a country's economic output, most often measured by an increase in gross domestic product (GDP). This process involves an expansion in the production of goods and services, as well as more efficient use of technological innovation, labour and natural resources. Growth helps raise living standards, creates new jobs and contributes to the development of public services. One of the key measures of growth is GDP, which measures the total final goods and services produced by a country. GDP in nominal terms includes price growth, while real GDP shows inflation-adjusted figures. However, growth can also include several dimensions, such as more efficient use of resources, the introduction of new technologies and innovations, and a focus on sustainability. It can also contribute to social welfare by improving people's quality of life, increasing employment and improving access to education, health and other services (Carrier, 2018)(Carrier, 2017)(SHEARER, 1961). However, growth does not automatically guarantee prosperity, as sustainability and environmental impacts must be taken into account. Resource depletion, pollution, and rising inequalities can pose challenges, especially in rapidly developing economies. Overall, economic growth is not only about expanding productive capacity, but also about the ability of a country's economic system to deliver better living conditions and social benefits for its population, while taking into account environmental constraints and sustainability goals. (Szeberényi - Papp-Váry, 2021; Lukács et al, 2023; Kangai et al, 2024; Aman et al, 2023)

Sustainable development, on the other hand, provides a more concrete framework for the concept of development, which aims to increase people's economic and social well-being (Gelencsér et al., 2024) without damaging the environment in the long term. Sustainable development thus represents a development path that ensures economic growth and social well-being while minimising the ecological footprint and promoting a more efficient use of natural resources (Pearce, 1988; Papp-Váry et al 2023) The most common formulation of this concept is the definition developed by the UN Brundtland Commission: 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' (Brundtland, 1987)(Brigitta, 2020; Vinkóczy et al., 2023). Both concepts have in common that economic growth and social welfare cannot be achieved at the cost of over-exploitation of the environment and resources. In addition, the role of corporate culture and leadership personality has been linked to the successful implementation of CSR activities, emphasizing the need for theoretical and practical alignment in such efforts (Módosné Szalai & Jenei, 2021). However, while sustainable development provides a framework for practical implementation, sustainability is seen as a broader goal that seeks to ensure a long-term balance between human activities and nature. (Szeberényi et al, 2022a; Papp-Váry & Lukács, 2019)

On Construction in the EU and the GCC

The construction industry is a cornerstone of economic activity, significantly contributing to development and growth globally. In 2022, it accounted for \$14.39 billion, or 14.2% of global GDP, with a projected CAGR of 6.6%. In the European Union (EU), the sector employs 25 million people and contributes nearly 10% of GDP, supported by policies enhancing productivity and circular economy practices, such as material recycling and energy-efficient renovations, promoting sustainable economic growth (COMMISSION, 2023). Similarly, the Gulf Cooperation Council (GCC) region leverages the construction sector for

economic development and diversification. Governments strategically use infrastructure, housing, and transport projects to boost employment, attract foreign investment, and stimulate domestic markets. These initiatives demonstrate the construction industry's pivotal role in fostering economic expansion and resilience, despite challenges like labor shortages and material costs. The GCC's focus on sustainability and smart technologies positions the sector for long-term growth and stability. The construction industry in both the EU and GCC exemplifies its critical role in economic progress, balancing strategic investments, innovation, and sustainability.

Impact of the Construction Sector on Economic Growth

The construction industry plays a fundamental role in driving economic growth, both through direct and indirect impacts on various sectors of the economy. Direct impacts include job creation, project financing, investment in construction materials, and direct contributions to GDP. Indirect impacts extend to the broader economy, influencing infrastructure development, strengthening supply chains, stimulating the housing market, fostering technological innovation, and enhancing international trade and exports. In the European context, the construction sector is a major consumer of natural resources, utilizing between 1.2 and 1.8 million tonnes annually, and contributes significantly to global construction waste, which exceeded 3 billion tons in 2012 (Forum, 2015). Efforts to mitigate these environmental challenges have led to the adoption of the circular economy (CE). (Szeberényi et al, 2022b) This approach decouples economic growth from finite resource usage by emphasizing waste elimination, recycling, and regeneration of natural systems (Jouni Korhonen, 2018). Circular tourism, as part of a broader CE framework, integrates sustainable construction practices with tourism infrastructure, promoting environmental and economic benefits. (Kabil et al., 2024) Economic recovery measures, such as those analyzed in comparative studies between Slovakia and Hungary, illustrate effective strategies to enhance entrepreneurship resilience during crises (Mura et al., 2022). Frameworks such as the 3Rs (Reduce, Reuse, Recycle) and more advanced models like the 10R form the backbone of CE practices, promoting sustainable development globally (Geraldine Brennan, 2015); (Denise Reike, 2018). These initiatives are bolstered by legislative measures such as the EU Waste Framework Directive and China's CE Development Law, reinforcing the global push toward resource efficiency and sustainable growth (Julian Kirchherr, 2017) (Luanda Lima c, 2021).

In the Gulf Cooperation Council (GCC) region, the construction industry significantly contributes to infrastructure development, urban expansion, and economic diversification. For instance, in the United Arab Emirates (UAE), the construction sector historically accounted for 10% of GDP in 2012, with the real estate sector adding another 9%. Together, these sectors represented 20% of the national economic output. By 2012, the UAE's construction sector was valued at AED 375 billion, comprising 44% of the GCC construction market (13 United Arab Emirates : Yearbook 2013, 2013). Mega-projects like the Burj Khalifa and Abu Dhabi's Saadiyat Island, which include landmarks such as the Louvre Abu Dhabi, exemplify the sector's dual role in bolstering urban infrastructure and elevating the global profile of GCC countries. These projects also indirectly benefit other sectors, particularly tourism, as seen with developments like Dubai Parks and Resorts, which include Legoland and Bollywood Parks. Such investments align with the UAE's strategy to position itself as a premier global destination while advancing economic diversification objectives. However, the GCC construction industry faces challenges, including volatile oil prices, reduced government investment, and corporate restructuring. For example, UAE GDP growth slowed to 1.3% in 2019, partly due to global economic slowdowns and a 3.5% contraction in GDP in 2020 caused by the pandemic. The effects of the COVID-19 pandemic on labor markets, particularly in Slovakia and Hungary, highlight significant regional disparities in employment outcomes and recovery strategies (Mura et al., 2022; Jenei & Módosné Szalai, 2021). In response, the UAE implemented fiscal stimulus packages, public investments, and structural reforms. Measures such as issuing USD 10 billion in bonds in 2019 and introducing a 5% VAT in 2018 have diversified revenue streams while maintaining construction sector investments (Cherian, 2020). The GCC governments continue to prioritize large-scale infrastructure projects, such as the Barakah nuclear power plant, as part of their national economic vision. These initiatives aim to reduce dependence on oil, create jobs, boost tourism, and attract foreign investment, demonstrating the construction sector's critical role in shaping the region's economic future. In conclusion, both the EU and GCC showcase the transformative power of the construction sector. The EU's focus on

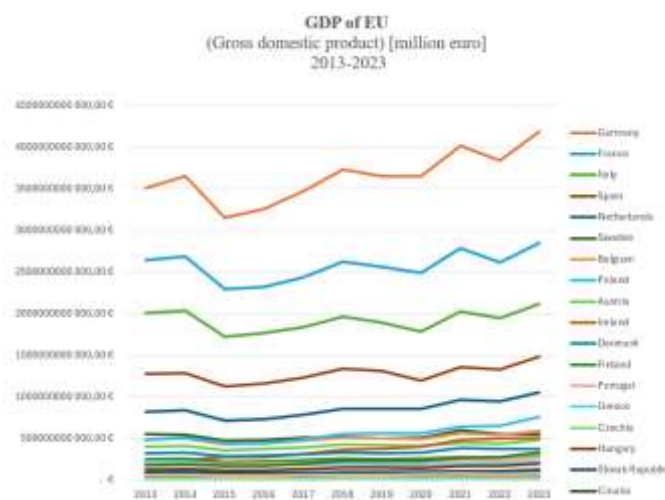
circular economy practices underscores its commitment to sustainable economic growth, while the GCC leverages large-scale infrastructure projects to foster diversification and economic resilience. Both regions highlight the indispensable role of construction in driving global economic progress and addressing future challenges.

Material and Methodology

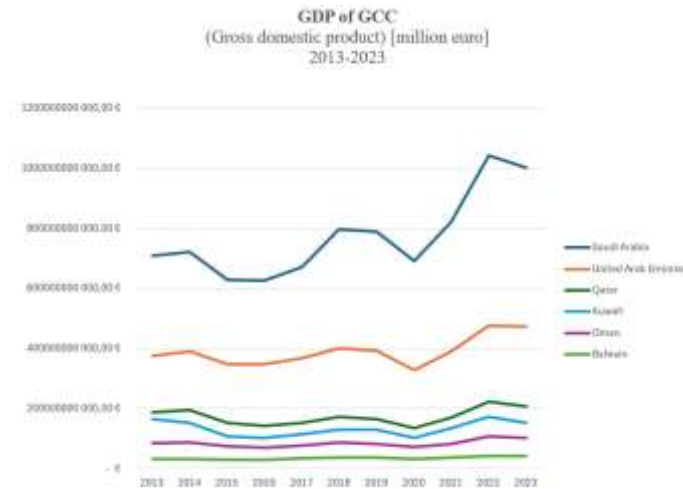
This research explores the economic growth strategies of the construction industry within the European Union (EU) and the Gulf Cooperation Council (GCC), focusing on modernization efforts and the implementation of policies aimed at enhancing economic performance. The study examines core areas such as macroeconomics, investment trends, industrial diversification, global competitiveness, and the influence of regulatory frameworks on the economic contributions of the construction sector. Data was drawn from authoritative sources, including scientific publications, industry reports, and databases from international organizations like the World Bank, the International Energy Agency (IEA), and the OECD. These sources provided critical insights into GDP contributions, employment generation, and investment trends within the EU and GCC construction sectors. The analysis involves a comparative assessment of the two regions, focusing on their respective approaches to modernization and economic diversification. While the study primarily reviews data from 2013 to 2023, certain limitations arose due to resource constraints and incomplete data sets, leading to shorter analyzed periods in some cases. Despite these challenges, the research identifies key trends, strategies, and outcomes, offering a valuable framework for understanding the construction sector's role in driving economic growth.

The Economic Role of the Eu and Gcc Construction Industries

The research examines the economic structures and the role of the construction sector in the European Union (EU) and the Gulf Cooperation Council (GCC) countries, with a particular focus on the sector's contribution to GDP. The analysis aims to explore the different economic structures of the two regions, the degree of diversification, responses to economic crises, strategies and sustainability aspects of the construction sector, and the macro factors determining development. The construction sector plays a key role in the economic development of both regions but is integrated into their economic models in different ways. The analysis starts by looking at the GDP of the two regions separately and in relation to each other. It is important to put the analysis aspects on a sound footing, for which the GDP analysis serves a good purpose. Globally, it plays a key role in driving economic development, but the different economic models of the two regions under study integrate this sector in different ways along the path of economic growth. Although the GCC economy, which is heavily dependent on the energy sector, is larger in volume, the EU, with its diversified economic base, has a more stable economic development.



Source: own edits based on *World Bank and OECD*



Source: own edits based on *World Bank and OECD*

Sustainable Economy and Stability in the EU

In the EU, the construction sector is intrinsically linked to sustainable economic growth and the objectives of the European green transition. In order to achieve carbon neutrality, technologies and materials used in the construction sector are subject to strict regulation. Initiatives such as the EU Green Deal emphasise the need to tighten energy efficiency standards and stimulate innovation. This approach makes sense for the increasing use of energy efficient buildings and renewable materials. The 2008 economic crisis highlighted the vulnerability of the EU construction industry, particularly in the southern Member States. The financial crisis and the subsequent debt crisis in Europe have left a deep mark on the EU economy, but particularly on the construction sector. There has been a significant fall in GDP in some countries, particularly in southern Member States such as Greece, Spain and Portugal, where the bursting of the housing bubble and high unemployment rates have had long-term consequences (Xose Luis Fernández, 2015). However, the EU has successfully responded to the challenges: economic policies and recovery funds such as the NextGenerationEU programme, EU economic and financial regulatory frameworks have provided increased and targeted support for the re-launch of the construction sector, with a particular focus on energy efficiency projects (Klaus Armingeon, 2022). The relaunch of the construction sector was essential for the recovery of the economy. Typically, periods of crisis are always felt later in the construction sector, as the period for which projects are carried out is regulated. In the EU, the downturn caused by the epidemic has particularly affected the construction industry, as closures, transport difficulties and disruption to supply chains have severely hampered construction projects, which in addition to this has led to a significant increase in material prices, with an increase of up to 18%, the first time this has occurred between 2020 and 2021 (IEMS, 2022). In Hungary, the pandemic also underscored the importance of hygiene and responsibility among employers and employees, which played a critical role in mitigating risks (Poór et al., 2021).

GCC Dependence and Diversification Needs

The GCC countries' construction industries rely mainly on energy sector revenues. A significant share of oil and gas revenues is directed towards infrastructure investments, which explains the rapid growth of the sector. Grandiose projects such as the NEOM city in Saudi Arabia or Expo 2020 in Dubai symbolise the modernisation efforts of the GCC countries. But heavy dependence on the energy sector carries significant risks. The volatility of oil prices, particularly during the COVID-19 pandemic, led to a severe economic downturn in the construction sector, highlighting the need for diversification. At the same time, GCC

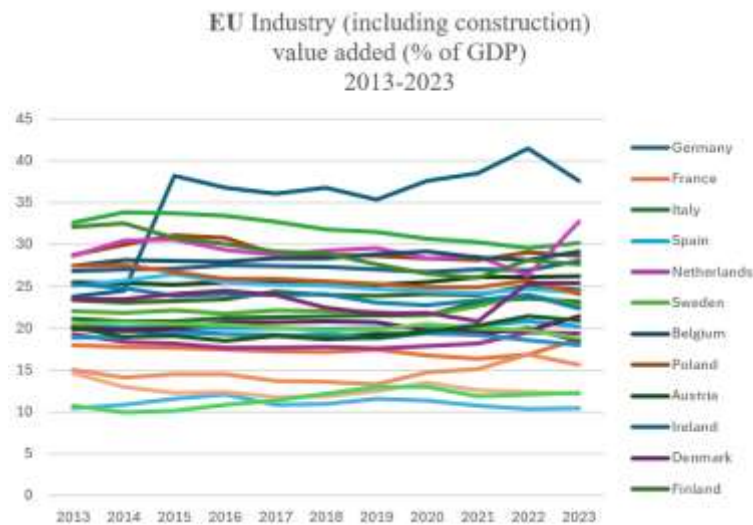
countries are gradually opening up to new industries, such as renewables and technology, which are less dependent on oil and gas revenues (Mishrif, 2019) While the region is open to foreign capital inflows, its regulations are strict. Under UAE law, foreign investors are allowed to hold up to 49 percent of a company's shares. However, the bylaws of many companies prohibit foreign ownership. The composition of FDI in the Gulf Cooperation Council (GCC) is as follows: 59% is in the services sector and 27% in manufacturing. Manufacturing and 14% are primary sectors where extensive restrictions remain in place, particularly in the oil and gas extraction sector. The services sector accounted for 19% of business activities, 14% of construction and 9% of finance (Nations, WORLD INVESTMENT REPORT 2012 TOWARDS A NEW GENERATION OF INVESTMENT POLICIES, 2012) Since 2006, the average annual outflow of foreign direct investment from the European Union to the GCC has been €4.5 billion (Nations, WORLD INVESTMENT REPORT 2013 GLOBAL VALUE CHAINS: INVESTMENT AND TRADE FOR DEVELOPMENT, 2013). The construction industry in the GCC relies heavily on foreign labour, especially guest workers from Asia. This dependence poses sustainability and social challenges, especially in times of global crises. Similarly, workforce challenges during the pandemic underscored the vulnerabilities faced by disabled individuals in Hungary and Slovakia, particularly in accessing equitable labor market opportunities (Jenei et al., 2024). Attracting local labour and diversifying the labour market is key to the economic stability of the region.

Comparison, Territorial Challenges and Opportunities

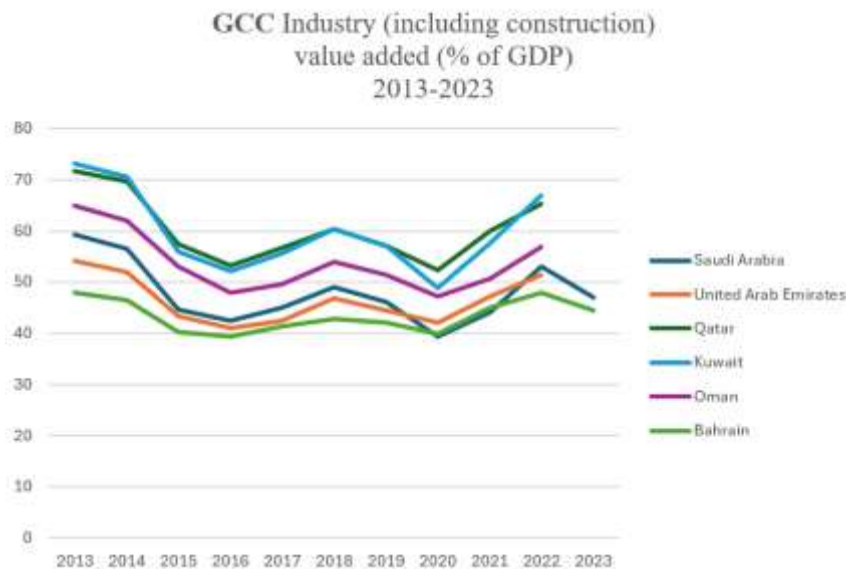
A comparison of the EU and GCC construction industries reflects the economic and social differences between the two regions. The EU construction industry is built on solid foundations, underpinned by sustainability goals and energy efficiency efforts. The construction industry is not only a driver of economic growth but also a means of reducing social inequalities, in particular through the development of the CEECs. In contrast, the GCC construction industry is growing faster but also faces greater risks due to volatile oil prices and reliance on foreign labour. Diversification efforts, such as the shift to renewable energy and the introduction of sustainable construction technologies, are promising but require a long-term commitment. Promoting sustainable construction practices is a priority for both the EU and the GCC. The EU's regulatory and technological experience can provide a valuable example for the GCC countries, while the large-scale projects in the GCC region can provide lessons for the EU in the field of innovative urban development. Both regions can benefit from cooperation and knowledge sharing to achieve sustainable economic growth.

Value Added of the Industrial Sector in the Regions

The aim of the industrial sector analysis is to map the contribution of the industry to economic growth through the construction sectors in the European Union (EU) and the Gulf Cooperation Council (GCC) countries, while reflecting the different economic structures and challenges in the two regions. The analysis examines the differences in industrial structures and their impact on long-term economic stability, highlighting the contribution of the construction sector to GDP and sustainability efforts. The industrial sectors of the EU and the GCC show significant differences in terms of both economic policies and the market role and dynamics of industrial actors. In the case of the EU, the construction sector fits well into integrated economic models that focus on sustainability and long-term economic resilience. In contrast, in the GCC region, the industry is highly dependent on the energy sector, which carries both short-term risks and diversification needs.



Source: own editing based on *World Bank*



Source: own editing based on *World Bank*

Structural Characteristics of the EU Construction Industry

The construction industry in the European Union is an integral part of advanced economic models, where the sector's stable contribution to GDP is outstanding. Countries such as Germany and France are leading the way in innovation in the construction sector, particularly in the use of energy-efficient technologies and the optimisation of material use. The example of Germany illustrates how high levels of technological integration and sustainability can support economic growth. In some southern European countries, such as Spain and Italy, the performance of the construction sector has declined following the 2008 economic crisis. The long-term effects of the housing market glut and high unemployment have highlighted the structural challenges facing the sector. At the same time, Central and Eastern European Member States such as Poland and Hungary have achieved significant growth through infrastructure development programmes supported by EU funds. These regions have identified construction as a strategic development area that can contribute to reducing economic disparities in the EU.

The Economic Structure of the GCC Construction Industry

The GCC construction industry relies on revenues from the energy sector to ensure rapid infrastructure development. Major projects such as NEOM City and Dubai Expo 2020 are not only aimed at economic modernisation, but also at attracting international attention. The region's industrial sector is primarily focused on large-scale development financed by revenues from oil and gas exports. However, this economic model has significant risks. Fluctuations in oil prices and changes in global energy demand leave the GCC countries vulnerable. This became particularly apparent during the COVID-19 pandemic, when a drop in global demand caused a severe loss of revenue, which also set back the pace of construction projects. A strong reliance on the energy sector will require economic diversification and the development of new industries. The dominance of foreign labour is also a key challenge. The proportion of guest workers in the construction sector is extremely high, especially in countries such as Qatar and the UAE. This dependence is a long-term obstacle to the development of the local workforce and the creation of a sustainable economic model.

Differences Towards Sustainability

The main differences between the EU and the GCC construction industry stem from different economic strategies and priorities. The EU's long-term goal is to put the construction industry at the heart of the green transition, while maintaining the stability of economic growth. Energy efficiency, innovation and a strong regulatory framework will help achieve sustainability goals. In contrast, in the economic model of the GCC countries, the rapid growth of the construction sector serves short-term goals, largely determined by the dominance of the energy sector. While diversification efforts and the introduction of new technologies are encouraging, their realisation will require a longer timeframe and significant investment. A common challenge for both regions is the sustainable transformation of the construction industry to balance economic growth with environmental concerns. The EU's experience can provide valuable lessons for the GCC on tightening regulations and sustainable practices, while the GCC's innovative megaprojects can provide inspiration for further developing EU urban development strategies.

Conclusion

During the drafting of the summary, several suggestions emerged that would help the construction sector to have a positive impact on economic growth. Optimising the price of innovative materials through government support, tax incentives or subsidies could, over a period of time, promote their wider use, thereby increasing demand for them. During the subsidised period, the development of the manufacturing industries may reach a level where they can make their products price competitive even after the subsidies have ended. This process could contribute to the long-term market success of innovative materials and to the industry's self-sustainability through a multiplier effect. Incorporating circular economy principles across construction sectors in the EU and GCC can drive resource efficiency, support sustainability goals, and enhance resilience against economic fluctuations. The introduction of mandatory and stricter sustainability criteria in public procurement could ensure that public projects are sustainable in the long term. Providing research funding to explore and optimize possible solutions would increase demand for the use of sustainable materials. Exchanges of experience between the EU and the GCC could facilitate the global spread of sustainable construction. Joint research programs and technology transfers could facilitate inter-regional development. However, some questions have been raised that are worth exploring, for example, to what extent would economic growth and competitiveness be held back if the GCC area were to pay more attention to environmental sustainability and adapt EU green policies? How could public investment be optimized to achieve sustainability goals in the construction sector in both regions?

Summary

The global importance of the construction industry is evident in its crucial role in driving economic growth and stability. Its contributions extend far beyond infrastructure, influencing broader economic expansion and development in significant ways. The EU and GCC regions operate under distinctly different economic models, regulatory frameworks, and strategies, making it essential to understand how these differences

shape their respective approaches to economic growth. Such insights provide a clearer view of the opportunities and challenges unique to each region.

In both the EU and GCC, the construction sector plays a vital role in supporting GDP growth and creating employment opportunities. The economic impact of the industry is underscored by its potential to foster long-term stability and resilience through initiatives such as the circular economy in the EU, which combines resource efficiency with sustained growth. Meanwhile, in the GCC, large-scale projects funded by oil revenues act as a cornerstone for economic diversification and stability, driving development and financial expansion across the region. To explore these dynamics, this analysis utilizes a robust combination of primary and secondary data sources. This approach offers an in-depth understanding of regulatory frameworks, investment trends, and technological advancements shaping the construction sector in both regions. By doing so, the economic role of the industry is thoroughly documented, providing insights into how its activities influence broader market conditions. The EU construction industry is heavily supported by a structured regulatory framework that aligns sustainability with economic objectives, promoting energy efficiency and long-term financial benefits. In contrast, the GCC's industry is marked by rapid development, largely underpinned by revenues from oil and significant infrastructure investments. This dynamic growth highlights the region's ability to spur economic activity, although often with less immediate emphasis on sustainability.

Despite these differences, both regions encounter common challenges, such as managing the high costs of advanced construction technologies and balancing economic ambitions with external demands. Addressing these issues requires innovative solutions that enhance efficiency and maintain the sector's growth trajectory, ensuring it remains a pillar of economic development. Technological innovation has emerged as a defining feature of the construction industry in both regions. Public opinion on sustainability, labor market dynamics, and environmental protection further highlights the importance of integrating these dimensions into industrial development strategies (Remsei et al., 2023). Advances such as self-curing concrete, alternative reinforcement methods, modular systems, and energy-efficient technologies are proving instrumental in reducing costs and increasing productivity. These innovations also contribute to the broader economic objectives of enhancing competitiveness and driving market expansion. The potential for mutual learning between the EU and GCC regions is significant. The EU's regulatory systems, particularly in the adoption of advanced green technologies, can serve as a benchmark for the GCC's evolving frameworks. Conversely, the GCC's large-scale urban projects, with their ambitious scope and rapid execution, offer valuable lessons for the EU in terms of scalability and economic impact. Collaboration between these regions has the capacity to unlock substantial economic benefits. Shared expertise and joint strategies can strengthen the construction industry's global competitiveness while aligning with overarching growth objectives. By focusing on modernization and strategic investment, the construction sector can contribute meaningfully to sustained economic progress in both regions, creating a more robust and dynamic industry worldwide.

Acknowledgement

Acknowledgements and funding: This work was supported by the Flagship Research Groups Programme of the Hungarian University of Agriculture and Life Sciences (MATE).

References

- (2013). 13 United Arab Emirates : Yearbook 2013. Retrieved from <https://altibrah.ae/book/11132>
- Aman, E. E., Kangai, D. & Papp-Váry, Á. (2024). Digital Marketing Role in the Tourism Sector in Post-COVID-19. In: Korstanje, M E; Gowreesunkar, V GB; Maingi, S W (eds.). *Tourist Behaviour and the New Normal, Volume I: Implications for Tourism Resilience*. Cham: Springer Nature Switzerland, pp. 129-146. Paper: Chapter 8., https://doi.org/10.1007/978-3-031-45848-4_8
- Aman, E E - Omer, A. - Papp-Váry, Á. (2023). Tourism Marketing & Economic Sustainability of Tourist Destinations: Perspectives of Bale Mountains National Park. *Economy and Society*, 16 (34) : 2, pp. 40-70., <https://doi.org/10.21637/GT.2023.2.02>
- Ashton, T. (London and New York.). *The Industrial Revolution 1760-1830*. 1948: Oxford University Press.

- Brigitta, S. P.–Z. (2020). A FENNTARTHATÓ FEJLŐDÉS, A FENNTARTHATÓSÁG ÉRTELMEZÉSI KÉRDÉSEI A MEGVALÓSÍTÁS ÉRDEKÉBEN. Forrás: https://www.iskolakultura.hu/index.php/jelenkori_tars-gazd_folyamatok/article/view/33921/32984
- Brundtland, E. (1987). „Our Common Future” by World Commission on Environment and Development, WCED. Forrás: <chrome-extension://efaidnbmnnnibpcjpcglclefindmkaj/https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>
- Bódis, G. & Papp-Váry, Á. (2021). Future-proofness in the post-Covid tourism sector. In: Baracska, Z; Vukovic, D; Janjusevic, J (eds.) Economic and Social Development 73rd International Scientific Conference on Economic and Social Development Development – "Sustainable Tourism in Post-pandemic World" - Book of Proceedings. Varazdin, Croatia: Varazdin Development and Entrepreneurship Agency, pp. 20-33.
- Carrier, J. G. (2017). Moral economy: What's in a name. Retrieved from <https://doi.org/10.1177/146349961773>
- Cherian, A. (2020). The Construction Industry in the Perspective of an Economic Boost of The United Arab Emirates (UAE). Forrás: https://www.researchgate.net/publication/343547695_The_Construction_Industry_in_the_Perspective_of_an_Economic_Boost_of_The_United_Arab_Emirates_UAE
- COMMISSION, E. (2023). Transition pathway for Construction. Forrás: <file:///C:/Users/veres/Downloads/Transition%20Pathway%20Construction%2015%20March%202023%20final.pdf>.
- Company, T. B. (2023). By Region, Opportunities and Strategies – Global Forecast to 2032.
- Council, W. G. (2019). Bringing embodied carbon upfront. Retrieved from https://worldgbc.s3.eu-west-2.amazonaws.com/wp-content/uploads/2022/09/22123951/WorldGBC_Bringing_Embodied_Carbon_Upfront.pdf
- Dajnoki, K., Poór J., Jarjabka Á., Kálmán B. G., Kőműves Zs. S., Pató-Szűcs B., ... Kun A. I. (2023). Characteristics of Crisis Management Measures in the HR Area During the Pandemic in Hungary - Results of a Countrywide Survey of Organizations. *Acta Polytechnica Hungarica*, 20(7), pp. 193–210. <http://doi.org/10.12700/APH.20.7.2023.7.11>
- Denise Reike, W. J. (2018). The circular economy: New or Refurbished as CE 3.0? — Exploring Controversies in the Conceptualization of the Circular Economy through a Focus on History and Resource Value Retention Options. Retrieved from <https://doi.org/10.1016/j.resconrec.2017.08.027>
- Dyne, P. (1957). The Industrial Revolution and Economic Growth: The Evidence of Early British National Income Estimates.
- Forum, W. E. (2015). Project MainStream – a global collaboration to accelerate the transition towards the circular economy Status Update. Forrás: https://www3.weforum.org/docs/WEF_Project_Mainstream_Status_2015.pdf?utm_source=chatgpt.com
- Ganesan, S. (2000). Employment, Technology and Construction Development With Case Studies in Asia and China. doi:<https://doi.org/10.4324/9781315186115>
- Gelencsér, M., Kőműves, Z. S., Hollósy-Vadász, G., & Szabó-Szentgróti, G. (2024). Modelling employee retention in small and medium-sized enterprises and large enterprises in a dynamically changing business environment. *INTERNATIONAL JOURNAL OF ORGANIZATIONAL ANALYSIS*. <http://doi.org/10.1108/IJOA-09-2023-3961>
- Geraldine Brennan, M. T. (2015). Business and production solutions Closing loops and the circular economy. Forrás: <https://www.taylorfrancis.com/chapters/edit/10.4324/9780203109496-14/business-production-solutions-geraldine-brennan-mike-tenant-fenna-blomsma>
- IEMS. (2022). Proceeding of the international conference on industry, engineering & management system. Retrieved from https://www.iemsconference.com/_files/ugd/f76c8e_2fb597d720984414815865257125c4bf.pdf#page=8
- Jenei, Sz., & Módosné Szalai, Sz. (2021). A koronavírus járvány hatásai a humán erőforrás-menedzsment különböző területeire 2020-ban. *Új Munkaügyi Szemle*, 2(2), 53–64.
- Jenei, Sz., Módosné Szalai, Sz., Leicht, F., Molnár, S., Varga, E., & Poór, J. (2024). The workforce challenges of disabled people in Hungary and Slovakia during the COVID-19 pandemic. *Alter*, 18(3), 23–49. <https://doi.org/10.4000/alter.6467>
- Jenkins, E. S. (1991). Bridging the Two Cultures: American Black Scientists and Inventors. Retrieved from <https://www.jstor.org/stable/2784340>
- Jouni Korhonen, C. N. (2018). Circular economy as an essentially contested concept. Retrieved from <https://doi.org/10.1016/j.jclepro.2017.12.111>
- Juhász T., Kálmán B. G., & Tóth A. (2020). The Impact of Competitive Individual School Sports on the Individual's Future Participation in Competitive Organisational Situations (Based on Empirical Evidence). *Management and Marketing (MMCKS)*, 15(4), pp. 665–674. <http://doi.org/10.2478/mmcks-2020-0038>
- Juhász T., Kálmán B. G., & Tóth A. (2022). Offences and Punishments in the Workplace. *Economics and Sociology*, 15(3), pp. 59–73. <http://doi.org/10.14254/2071-789X.2022/15-3/3>
- Julian Kirchherr, D. R. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. Forrás: <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Kabil, Moaaz; Rahmat, Al Fauzi; Hegedűs, Mihály; Galovics, Bernadett; Dávid, Lóránt Dénes (2024). Circular Economy and Tourism: A Bibliometric Journey through Scholarly Discourse. *CIRCULAR ECONOMY (BERLIN)*, 2(1), Paper: HGWO7144, 21p. <https://doi.org/10.55845/HGWO7144>
- Kálmán B. G., Bárczi J., & Zéman Z. (2021). The Impact of the First Wave of Covid-19 on the Financial Security of Economics Students in Higher Education. *Pénzügyi Szemle//Public Finance Quarterly*, 2021(3), pp. 359–380. http://doi.org/10.35551/PFQ_2021_3_3

- Kangai, D., Odunga, S O., Aman, E E., Weveti, Ch K., Papp-Váry, Á., Szente, V. & Szabó, K. (2024). Tourism safety as a catalyst for sustainable community resilience : Best practices and global implications. In: Isaac, R K.; Maingi, S W; Gowresunkaar, V GB (eds): *Tourism Safety, Security and Resilience: Integrated Community-Based Approaches*, London, UK: Routledge, pp. 159-174., <https://doi.org/10.4324/9781003479673-15>
- Klaus Armingeon, C. d. (2022). *Voices from the past: economic and political vulnerabilities in the making of next generation EU*. Springer Nature. doi:10.1057/s41295-022-00277-6
- Landes, D. S. (1986). *Az elszabadult Prométheusz*.
- Luanda Lima c, E. T. (2021). Sustainability in the construction industry: A systematic review of the literature. *Forrás: https://doi.org/10.1016/j.jclepro.2020.125730*
- Mihály, M. (1989). *Az U.S.A. első ipari forradalma*. In: Ránki Emlékkönyv. old.: 156–167.
- MIHÁLY, M. (dátum nélkül). *A MODERNIZÁCIÓ FÉNY-ÉS ÁRNYOLDALAI*. *Forrás: http://publikacio.uni-eszterhazy.hu/6376/1/47_73_M%C3%B3zes.pdf*
- Mishrif, A. (2019). Industrialization and Diversification Strategies in the GCC Countries. Retrieved from https://www.researchgate.net/publication/330081651_Industrialization_and_Diversification_Strategies_in_the_GCC_Countries
- Módosné Szalai, Sz., & Jenei, Sz. (2021). *Cégkultúra, vezetői személyiség, HR szervezet és a vállalati CSR tevékenység: I. Elméleti alapok*. *Opus et Educatio: Munka és Nevelés*, 8(2), 197–206.
- Mura, L., Barcziová, A., Bálintová, M., Jenei, Sz., Molnár, S., & Módosné Szalai, Sz. (2022). The effects of the COVID-19 pandemic on unemployment in Slovakia and Hungary. *Vadyba: Journal of Management*, 38(1), 25–35. <https://doi.org/10.38104/vadyba.2022.1.03>
- Mura, L., Barcziová, A., Bálintová, M., Jenei, Sz., Molnár, S., & Módosné Szalai, Sz. (2022). Economic measures to recover the area of entrepreneurship: A comparative analysis Slovakia-Hungary. *Scientific Bulletin of Uzhhorod University. Series «Economics»*, 2(60), 15–26.
- Nations, U. (2012). *WORLD INVESTMENT REPORT 2012 TOWARDS A NEW GENERATION OF INVESTMENT POLICIES*. Retrieved from https://unctad.org/system/files/official-document/wir2012_embargoed_en.pdf
- Nations, U. (2013). *WORLD INVESTMENT REPORT 2013 GLOBAL VALUE CHAINS: INVESTMENT AND TRADE FOR DEVELOPMENT*. Retrieved from https://unctad.org/system/files/official-document/wir2013_en.pdf
- Nations, U. (2021). *UNITED NATIONS CLIMATE CHANGE ANNUAL REPORT 2021*. *Forrás: https://unfccc.int/sites/default/files/resource/UNFCCC_Annual_Report_2021.pdf*
- Office, U. S. (October 1950). *National and Per Capita Incomes, Seventy Countries (for 1949 incomes)*.
- Papp-Váry, Á. & Lukács, R. (2019). Is sustainability a value element of higher education? In: Rekettye, G. (ed): *Value Creation 4.0 : Marketing Products in the 21th Century*. London, UK: Transnational Press London pp. 179–183.
- Papp-Váry, Á., Pácsi, D. & Szabó, Z. (2023). Sustainable Aspects of Startups among Generation Z—Motivations and Uncertainties among Students in Higher Educations. *Sustainability*, 15 : 21 Paper: 15676, <https://doi.org/10.3390/su152115676>
- Pearce, D. (1988). *Economics, equity and sustainable development*. *Forrás: https://doi.org/10.1016/0016-3287(88)90002-X*
- Poór, J., Módosné Szalai, Sz., & Jenei, Sz. (2021). Responsibility of the employers and employees in Hungary: The importance of hygiene during the pandemic. *Acta Oeconomica Universitatis Selye*, 10(2), 85–109.
- Poór, J., Kosár, S. T., Huszárik, E. S., Zsigmond, T., Szabó-Szentgróti, G., & Tóth, Z. (2024). The Impact of the Difficult Economic Situation on the Operation of Slovak Companies in the Shadow of War. *Journal of Ecohumanism*, 3(7), 2213–2230. <http://doi.org/10.62754/joe.v3i7.4372>
- Remsei, S., Módosné Szalai, Sz., & Jenei, Sz. (2023). Hungarian battery production – Public opinion on sustainability, labor market, and environmental protection. *Chemical Engineering Transactions*, 107, 691–696. <https://doi.org/10.3303/CET2317116>
- Robert W. Lesley, J. B. (1924). *History of the Portland cement industry in the United States*. Retrieved from <https://bayarearetrofit.com/wp-content/uploads/2021/12/Portlad-cement-part-2.pdf>
- Rostow, W. W. (1960). *Vezető szektorok szerinti korszakolást látunk Simon Kuznets: Leading Sectors and the Take Off*. pp. 22–43.
- SHEARER, R. A. (1961). *THE CONCEPT OF ECONOMIC GROWTH*. *Forrás: https://deepblue.lib.umich.edu/bitstream/handle/2027.42/75479/j.1467-6435.1961.tb00368.x.pdf?sequence=1*
- Singh, S. (2024). *Construction Market Research Report Information By Type Of Construction (Buildings Construction, Heavy And Civil Engineering Construction, Specialty Trade Contractors, and Land Planning And Development), By End-Use Sector (Public and Private) By Type Of C. Market Forecast Till 2032*.
- Stearns, P. N. (2020). *The Industrial Revolution in World History*. doi:<https://doi.org/10.4324/9781003050186>
- Stephen A. Jones, D. L.-C. (2021). *World Green Building Trends 2021 SmartMarket Report*. Retrieved from https://www.corporate.carrier.com/Images/Corporate-World-Green-Building-Trends-2021-1121_tcm558-149468.pdf
- Szeberényi, A. & Papp-Váry, Á. (2021). Research of microregion-related renewable energy tenders for local governments. *Engineering for Rural Development*, 20, pp. 1272–1279., <https://doi.org/10.22616/ERDev.2021.20.TF280>
- Szeberényi, A., Lukács, R. & Papp-Váry, Á. (2022a). Examining environmental awareness of university students. *Engineering for Rural Development*, 21, pp. 604–611., <https://doi.org/10.22616/ERDev.2022.21.TF198>
- Szeberényi, A., Rokicki, T. & Papp-Váry, Á. (2022b). Examining the Relationship between Renewable Energy and Environmental Awareness. *Energies*. 15 : 19 Paper: 7082, <https://doi.org/10.3390/en15197082>
- Szabó-Szentgróti, G., Walter, V., & Végvári, B. (2024). Support for universal basic income: A cross-disciplinary literature review. *JOURNAL OF INFRASTRUCTURE POLICY AND DEVELOPMENT*, 8(10). <http://doi.org/10.24294/jipd.v8i10.7486>

- Tóth A., Juhász T., & Kálmán B. G. (2022). Determining factors of Motivational Dimensions. *Acta Polytechnica Hungarica*, 19(4), pp. 229–250. <http://doi.org/10.12700/APH.19.4.2022.4.12>
- Tóth A., Kálmán B. G., & Poór J., & Cseh-Papp I. (2023). Impact of the Covid-19 pandemic on unemployment in selected countries and country groups. *Regional Statistics*, 13(3), pp. 451–486. <http://doi.org/10.15196/RS130304>
- United Nations Environment Programme, A. I. (2020). UNEP in 2019 - Letter from the Executive Director [Annual Report]. Forrás: <https://wedocs.unep.org/20.500.11822/32374>
- Vinkóczy, T., Koltai, J. P., Nagy, N. G., Szabó-Szentgróti, E., & Szabó-Szentgróti, G. (2023). The Sustainable Contribution of Artificial Intelligence to Higher Education - Results of a Pilot Study. *CHEMICAL ENGINEERING TRANSACTIONS*, 107, 487–492. <http://doi.org/10.3303/CET23107082>
- W. S. Woytinsky, E. S. (1955). *World Population and Production: Trends and Outlook*. doi:<https://doi.org/10.2307/212238>
- Xose Luis Fernández, M. P. (2015). From the Boom to the Collapse: a Technical Efficiency Analysis of the Spanish Construction Industry during the Financial Crisis. doi:10.5130/ajceb.v15i1.4168
- Zéman Z., Kálmán B. G., & Bárczi J. (2021). Trends of Standard of Living Preferences of Economics University Students as a Result of the Economic Crisis. *Economic Annals-XXI*, 190(5–6(2)), pp. 181–195. <http://doi.org/10.21003/ea.V190-17>
- Zéman Z., Kálmán B. G., Bárczi J., & Pataki L. (2023). The Evolution of University Students' Financial Attitudes and Their Role in the Sustainability of Personal Finances. *Sustainability*, 15(8), ID: 6385. <http://doi.org/10.3390/su15086385>.