# Analyzing the factors influencing sustainable decision-making of construction contractors:

# A case study in the Albanian construction industry.

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*Francesko Baho, September 2024*

# Executive summary


## Introduction

The construction industry is one of the most influential culprits that cause pollution around the globe because of the enormous energy and many consumables it uses during construction activities, and the completion of the finalized construction projects. Consequently, there have been concerted efforts by governments, the scientific community, industry leaders, and international organizations to mitigate these environmental impacts, reduce waste production, and promote social equity through sustainability (Kormulu et al., 2024), resulting in sustainable construction. Successful implementation of these goals depends on early informed decision-making, which involves multiple stakeholders in the construction process (Iyer-Raniga et al., 2021). Contractors are specifically involved in implementing sustainable construction practices and thus understanding how their decisions affect sustainability and how this may be enhanced forms part of this investigation.

Albania, an EU candidate since 2014, should adopt the same environmental norms as the construction industry is the most polluting one. While Albanian authorities have made efforts to address these challenges, the sector remains significantly behind in adopting sustainable practices. This delay not only hinders Albania's progress toward achieving the EU's stringent climate and environmental targets—such as reducing greenhouse gas emissions by 55% by 2030—but also poses a critical threat to its ambitions of EU integration. Understanding the factors that influence sustainable decision-making within the Albanian construction sector is thus pivotal to accelerating the country's alignment with EU standards and contributing to broader global environmental efforts. Accordingly, it is essential to understand the unique challenges and barriers faced by construction contractors when making sustainable decisions in Albania's construction sector.

## Research objective and question

This research aims to identify key factors affecting sustainable decisions in Albanian construction contractors by analyzing how contractors settle on similar decisions to attain sustainability. This research seeks to achieve that through empirical data of sustainability. To accomplish the

research objective, the main research question is: "***How to improve sustainable decision-making for contractors in construction sector in Albania?***"

**Research methodology**

The research employed a mixed research methodology that incorporated both qualitative and quantitative approaches sequentially. Specifically, this research project employed two primary research designs: the literature review and the case study (which includes an interview and survey). The objective is to refine and focus on the factors that influence construction contractors' ability to make sustainable decisions, this study combines qualitative and quantitative methodologies. The main aim of the interviews is to explore how the factors impacting contractors' sustainable decision-making identified from the literature review apply in the Albanian context. The literature review identified potential factors that impact sustainable decision-making in the construction industry in the general context, it is important to validate how these factors influence sustainable decision-making in the Albanian context. The survey was conducted to verify and support the findings from the semi-structured interview and the analysis was performed over Excel Analysis Software. In this instance, the majority of the insights produced aided in comprehending how different elements affect contractors' sustainable decision-making in Albania's construction sector. On the other hand, content analysis coding was used to analyze the interview data. The process of content analysis coding entails identifying recurring themes in the exchanges between an interviewer and interviewee. Furthermore, validation was done through data alignment (for internal validity) and expert opinion (for external validation).

**Results**

The qualitative results validated by the survey revealed that the most influential factors that impact Albanian's construction contractors' sustainable decision-making include the cost, the economy, the financial capabilities of clients, lack of government regulations, availability of sustainable materials, and contractor's experience. However, the lack of government regulations was cited as the most influential factor that hinders contractors' sustainable decision-making in the Albanian construction sector as almost all the respondents cited it. This implies that lack of well-stipulated government policies and laws regarding sustainability in the sector including

energy, technologies, requirements, taxes, and government initiatives and subsidies is the main issue hindering contractors from making and implementing sustainable decisions in the construction sector, hence contributing to the low status of sustainability in the Albanian construction industry despite the significant of sustainability in the sector and for the country's aim of receiving the EU candidate.

**Academic implications**

This research has several academic implications. For instance, the study confirms that Albanian construction contractors' sustainable decision-making is very volatile and is highlighted as a result of circumstances since it is argued to be dictated by different factors. The findings revealed that different factors have positive or negative impacts on contractors with different working experiences. For instance, limited access to technology, unavailability of materials, costs, and client's budgets or financial capability limit Albanian contractors into making decisions that are not sustainable just to make sure they work within the project budget and timeline such as not implementing circular construction. However, factors such as lack of strict government regulations and policies on sustainability and contractors' experience with sustainable projects may negatively impact them to stick to what is known resulting in a decision to not implement sustainability in their construction projects. There is a need for well-stipulated norms in terms of policies that contractors need to follow to ensure they comply and make sustainable decisions.

**Practical implications**

The results indicated that there is a need for well-stipulated government policies and regulations with well-laid structures for their strict implementation may help improve the sustainability status of the Albanian construction industry. Thus, Albanian legislators should establish well-structured strict government regulations and policies regarding sustainability in the sector. These regulations and policies should include areas such as energy, technologies, requirements, taxes, government initiatives and subsidies. For instance, the Albanian government should launch regulations on energy use to support companies that are going green to ensure they do not lose profits as this is a major impediment to them. Also, the Albanian state could encourage more companies to invest in sustainable technologies and practices by offering tax rebates, and grants

or by subsidizing some projects that are deemed to reach the high standards, such as the EU standards.

Secondly, the research findings revealed that another major impeding factor for sustainability in the Albanian construction sector is material unavailability and inaccessibility. Therefore, the government should come up with ways to make these materials accessible in the local market to enhance Albanian contractors' sustainable decisions to use these materials. This can be done by implementing policies to enhance access the sustainable materials and technologies in the supply chain such as providing tax incentives or financing portion to importers to expand their supply and reduce costs, which can help them to operate in a large scale to improve sustainable availability to constructors in the sector. Also, the government should introduce policies that are directed toward financing local producers concerned with sustainable construction materials. This can help to improve material availability and accessibility and minimize delays and extra costs associated with a long process of importation that make constructors forgo making and implementing sustainable decisions. Finally, the legislators should establish some regulations regarding project contract specifications aligning with sustainable local design requirements to Albanian construction companies. This will encourage compliance to sustainable principles through sustainable decisions while executing construction projects.

Finally, the findings showed that educating the industry actors and construction companies and creating awareness on the benefits of sustainability to promote this concept and its implementation in the sector is another important aspect that can help enhance sustainability status in the Albanian construction industry. These can include approaches like first, linking the study of the green policies and their impact in the education sector before making it practical in the sector. Also, there should be sensitization on the application of ecological policies as widely as possible in the field of construction.

**Limitations**

The first limitation of this study is the limited number of interviewees (7 participants), which may not be representative findings of the general industry, limiting the generalizability of the findings to the entire Albanian construction sector.

Second, the results of the study were derived from individual experiences. Subjective experiences result from the fact that interviewees see processes differently, sometimes even regarding identical ones. The researcher's subjective assessment of the data is also present. Furthermore, the quality may have been constrained because the interviews served as the main source of information. Interview subjects may have failed to provide all the information requested or may have vested interests in the study's conclusions.

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# Chapter 1: Introduction

## 1.1 Background

The construction industry stands among the most polluting industries in the world; hence, the consideration of the impacts of the construction process and the subsequent finalized constructions provide significant influence on the environment (Kormulu et al., 2024). This sector also demands both solid waste and natural resources and, as the report has it, contributes about 50% of the waste produced globally (Benachio et al., 2020). In the last few decades, considerable attempts have been made by governments, scientific societies, industrialists, and global organizations to minimize these environmental effects, avoid emissions, manufacture waste, and enhance social justice (Kormulu et al., 2024). For this reason, the principles of sustainable construction have emerged to reduce environmental hazards, promote equity, and boost economic development worldwide (Ramprasad et al., 2023). Sustainable construction is a more localized concept that has grown out of the general idea of 'sustainable development,' which became popular about three decades ago in response to increased environmental consciousness and acknowledgment of the need for environmental conservation. It has influenced new changes in thought processes for construction companies that have adapted strategies compatible with sustainable business-oriented thinking (Kormulu et al., 2024).

On the other hand, the construction business has remained criticized for emphasizing the impact of the physical environment more. For instance, the building and construction sector in the USA takes about 40 percent of total energy usage, and this is higher than energy consumption in the transportation and production sectors (Lima et al., 2021). Further, it accounts for the use of 72 percent of total electric power, 40 percent of raw materials, and 14 percent of potable water and it discharges 45 percent to 65 percent of total waste. Nevertheless, the construction sector plays an important role in the world economy, as it comprises nearly 13% of the world's gross domestic product, and this is why the sustainability issue responds to the importance of the construction sector (Mavi et al., 2021).

These external pressures, therefore, have prompted the construction industry to develop strategies for practicing sustainability in the entire chain. Namely, the reduction in waste and emissions, efficient use of energy and water, and proper protection of resources through

recycling, reuse, and integrated sustainable design. The aim is to prevent or even repair the negative environmental impacts resulting from construction practices (Lima et al., 2021). According to Gálvez-Martos and colleagues (2018), construction processes are tremendously damaging to social and environmental spheres, but at the same time, they offer the development of further construction processes and the creation of future construction objects. There are four key objectives to reach this goal: firstly, decreasing the production of waste; secondly, optimizing the use of resources; and thirdly, lessening the impact of waste on the environment (Gálvez-Martos et al., 2018). Mahpour (2018) noted that sustainable strategies such as the circular economy are fully capable of addressing the construction and demolition waste issue as well as maximizing resource efficiency. According to the above-discussed sustainable practices, the construction industry is involved in the improvement of sustainable development throughout the world following the 2030 United Nations Agenda for Sustainable Development by promoting some of the construction-related sustainable development goals (SDGs) such as innovative, sustainable cities, and climate change. Sustainable construction embraces these principles right from the construction planning and sourcing of construction raw materials to the construction, deconstruction, and waste disposal. This systematic strategy seeks to integrate the physical landscape and the construction to foster people's happiness and economic balance (Yılmaz & Bakış, 2015). The construction sector has long been central to global economic development discussions. By meeting key development goals like job creation and revenue generation, it contributes significantly to sustainable economic growth (Ngcengeni, 2020). Sustainable construction is also critical in addressing the global health and environmental challenges posed by traditional building practices (Ramprasad et al., 2023). With the SDGs, the construction industry has a renewed opportunity to prioritize sustainability. Successful implementation of these goals depends on early, informed decision-making, which involves multiple stakeholders in the construction process (Iyer-Raniga et al., 2021). Contractors, in particular, play a crucial role in executing sustainable construction practices, making it essential to examine how their decision-making impacts sustainability and how it can be improved.

## 1.2 Problem statement

The study of the EU objectives brings out the concept of sustainability in its current operations and development. An important precondition is to ensure that EU member states have increased their overall level of emission by at least 55% by 2030 and are striving for climate neutrality by 2050 (Council of the European Union, 2024). EU candidate country since 2014, Albania should meet similar environmental standards, especially since the construction sector is one of the biggest polluters. According to GIZ (2021), by the end of 2020, Albania has scored a performance rate of 48% in the EU acquis Environment and Climate Change chapter. This has led to a higher demand for sustainability in various segments of the Albanian economy, according to the Albanian State University 2015. The construction industry contributes about 10% of the GDP; many activities occur in major developed cities like the capital city, Tirana. Despite the growth associated with the construction sector, it has also led to adverse environmental effects, with 71% of the energy consumption in Tirana emanating from the construction industry (Sherifi, 2017). While Albanian authorities have made efforts to address these challenges, the sector remains significantly behind in adopting sustainable practices. This delay not only hinders Albania's progress toward achieving the EU's stringent climate and environmental targets—such as reducing greenhouse gas emissions by 55% by 2030—but also poses a critical threat to its ambitions of EU integration.

The motive of this research is underscored by Albania's role as a candidate for EU membership since 2014. The construction sector's environmental impact is a major obstacle to compliance with EU environmental norms, which Albania must meet to advance its membership bid. Understanding the factors that influence sustainable decision-making within the Albanian construction sector is thus pivotal to accelerating the country's alignment with EU standards and contributing to broader global environmental efforts. Notably, sustainability in the construction sector has been extensively studied in other regions, particularly in developed nations. For instance, a study by Al Harazi et al. (2023) investigated the multifaceted analysis of the variables impacting Yemen's adoption of sustainable construction by providing recommendations for putting sustainable practices into effect, while other studies have been more broadly focused, such as Lima et al. (2021), Sev (2009) and Yılmaz and Bakış (2015) who examined "sustainability

in the construction industry. Additionally, other studies have focused on sustainable decision-making in the construction sector such as Zavadskas et al. (2017) who studied "sustainable decision-making in civil engineering, construction and building technology." However, none of the studies have particularly focused on sustainable decision-making from the perspective of the construction contractors in Albania. Thus, there is a notable lack of research on how sustainable practices are adopted by contractors in emerging economies such as Albania. This leaves a gap in understanding the unique challenges and barriers faced by construction contractors when making sustainable decisions in Albania's construction sector.

### 1.3 Aims and objectives

The aim of this study, overall, is to understand the factors influencing the sustainable decision-making process among construction contractors in Albania, with a focus on how contractors settle on similar issues to attain sustainability. This research aims to achieve that by providing empirical insights into the sustainable decision-making processes of Albanian construction contractors, a crucial but underexplored area in the context of the nation's EU integration efforts. Albania's strict communist-era foreign policies hindered its development, and significant changes only began in the early 2000s. Thus, in order to finance massive construction projects, the nation applied for assistance from the EU, WB, and ADFB (United Nations, 2020). Complying with the sustainability of these financial sources in the presence of the current economic situation is crucial. This study focuses on construction contractors because they execute the work activities necessary for the project's completion in the construction industry, suggesting that contractors have a big part to play in implementing sustainable construction practices to enhance sustainability in this sector, and thus, it is essential to investigate factors impacting their sustainable decision-making. Accordingly, the primary research goals are:

1. To identify the sustainability-related decisions that construction contractors make
2. To find out the factors that influence the sustainable decision-making of construction contractors
3. To determine how these factors influence the decision-making processes in Albania
4. To identify what measures can be taken to encourage a sustainable decision-making process within construction contractors in Albania

## 1.4 Research scope

This study aims to provide insight into how contractors within the construction industry in Albania can make more sustainable decisions. The focus of this study lies on contractors who manage and execute engineering projects such as infrastructure, utilities, roads, water supply networks, sewerage, bridges and buildings throughout Albania. Tirana, being the best representative of the country's developments, is the ideal location for the study of contractors' sustainable decision-making processes. The construction industry is changing rapidly in Tirana and contractors are the critical actors as a paper from Binshakir et al. (2023) suggests in making sure that development is done in a way that is both economically flourishing as well as more sustainable.

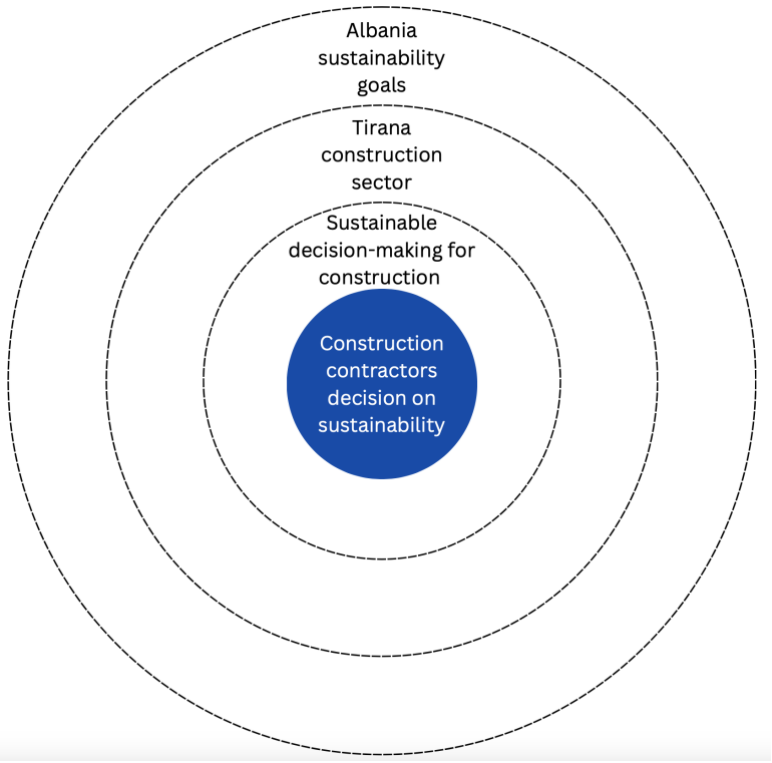


*Figure 1: The scope of the study*

Sustainability poses a particular set of challenges for contractors in the capital, Tirana, because they have to reconcile technical constraints on what counts as sustainable with the idealistic yet poorly defined environmental goals, as was seen in the commitment of Albania in 2017 to reduce the CO2 emissions by 22 percent by 2020 (Sherifi, 2017). In the case of Albania,

there is no national policy framework to tell contractors if a set of practices is sustainable or not. In this context, contractors become the key mediators of the sustainability agenda – these decisions determine whether the initiatives perform or fail concerning sustainability. Another criterion for contractors is social sustainability: beyond environmentally friendly construction processes, contractors should ensure fair labor practices, engagement with the community, and equitable compensation to workers (Cinnirella and Streb, 2017). Paying workers fairly, ensuring implementation of labor laws, and engaging with local communities to determine needs for projects are important for long-term sustainability, as Acharya et al. (2013) suggest. Finally, the decision-making process of contractors has to be mindful of these social pressures, along with the national sustainable development goals. In addition, contractors are fully aware of the need to ensure economic sustainability. For the vast majority of building projects, the margins determine whether a project takes place. These considerations, therefore, influence not only what projects get built but also when and whether the investor will be able to afford sustainable approaches. Contractors must learn to balance the competing imperatives of minimizing costs and maximizing profit with the need to meet sustainability objectives (Jensen, 2002). They must do so in the face of stakeholders (e.g., government and local community) and financial pressures.

Against this background, it is essential to map in detail contractors' decision-making processes in order to understand what sustainability means to them and what practices they adopt, with what difficulties, and what trade-offs. The insights on the implementation of sustainable practices by contractors in Albania can be relevant for contractors elsewhere in the world of transitioning economies who are interested in acting sustainably while continuing to be profitable. Overall, it can be concluded that Albanian contractors are leading the way in Albania's bid to bring its construction practices in line with its sustainability goals. By examining the factors that have the greatest impact on contractors' decisions and actions in implementing sustainability measures in the construction industry, this study aims to identify the nature of the challenges faced by contractors in Albania and assist them in their endeavor to enhance the sustainability of construction projects. The study focuses on contractors at an operational level as they are the main actors in the construction industry through their day-to-day decision-making processes.

## 1.5 Research design and structure

The choice of approach is the most important one for the research design (Verschuren & Doorewaard, 2010). Accordingly, a mixed research strategy was used in the study, integrating both qualitative and quantitative data. Specifically, this research project employed two primary research designs: the literature review and the case study (which includes an interview and survey). These plans addressed the study's main research question:

**How can we improve sustainable decision-making for contractors in the construction sector in Albania?**

This main question is addressed step-by-step by answering five sub-questions:

**RQ0: What is sustainability in the construction industry?**

**RQ1: What sustainability-related decisions do construction constructors make?**

**RQ2: What factors are potentially influencing the sustainable decision-making of construction contractors?**

**RQ3: How do these factors influence the sustainable decision-making of construction contractors in Albania?**

**RQ4: What measures can be taken to encourage a sustainable decision-making process within construction constructors in Albania?**

The literature review is selected to answer the first three research questions since they are fairly broad issues and do not particularly pertain to Albania. Thus, the literature provides a dearth of research articles that are essential in answering these questions. The expected results from these questions should include what constitutes sustainability in the construction sector, sustainability practices that contractors implement as well and the factors that influence when they make these decisions, such as the availability of materials and finances, among others. The answers to these questions act as the foundation of the study as they were used to guide the interviews and surveys and also to support the main findings in the Tirana context (whether the findings agree or contradict), especially with regard to the factors that impact contractors' sustainable decision-making.

However, to assess the factors affecting sustainable decision-making, seeking the views of project managers and site engineers, questionnaires were complemented with interviews in

response to the fourth research question (RQ3). The interview and survey are used because this question concerns Albania, and these methods enable collecting specific information from a specific population. The data collected through the survey and interviews proved useful for deepening the insight into the state of the Albanian construction sector. Finally, insights from the survey, interviews, and a review of the literature will be used to address RQ4 through a synthesis of recommendations. Below, in Table 1, is a conclusive table of the research questions.

*Table 1: Research Sub-Questions*

| Sub-RQs | Methodology | Expected Results |
|---|---|---|
| RQ0: What is sustainability in the construction industry?<br><br>RQ1: What sustainability-related decisions do construction constructors make? | Literature review | To help understand what sustainability is in the construction industry and what sustainable decisions are there for the construction contractors to make. |
| RQ2: What factors are potentially influencing the sustainable decision-making of construction contractors? | (PRISMA table through systematic literature review) (SLR) | Have a list of the influential factors that play a part in the sustainable decision-making process. This in aid to RQ3. |
| RQ3: How do these factors influence the sustainable decision-making of construction contractors in Albania? | Interview<br>Survey | To underline the influence and to what does it result with regards to decision-making models as the main framework of the process of making a decision. |
| RQ4: What measures can be taken to encourage a sustainable decision-making process within construction constructors in Albania? | Synthesis of recommendations | To be able to give suggestions regarding measures that can be taken to improve the sustainable decision-making amongst construction contractors. |

In Table 2 below, the research structure that is divided into chapters is shown with the respective scope and aim.

*Table 2: Structure of the dissertation*

| Section | Scope | Linked Research Question |
|---|---|---|
| Chapter1 (Introduction) | Discusses the study's background, scope, relevance and significance of the research, research design, and research structure. | |
| Chapter 2 (Theoretical framework) | Discusses the theoretical framework selected to guide the study (decision-making models), definitions of sustainability in construction, sustainable decision-making, and factors influencing decision-making. | RQ0<br>RQ1 |
| Chapter 3 (Research methodology) | Presents research methodology applied. | |
| Chapter 4 (Results) | The analysis of the data gained from the interviews and questionnaire, and the synthesis of the findings. | RQ2<br>RQ3<br>RQ4 |
| Chapter 5 (Discussion of the findings) | Discussion of the results and findings obtained along with recommendations for future research. | |
| Chapter 6 (Conclusions) | Discusses how the study questions are answered and concludes the Main Research Question.<br>Also provide recommendations in terms potential measures that may be implemented to support a sustainable decision-making process among construction contractors in Albania. | |

# Chapter 2: Theoretical framework

The topics that are covered in this chapter include sustainability in the construction sector, sustainable decision-making and decision-making models, and factors that influence sustainable decision-making by construction contractors. These topics were chosen because they relate to answering questions RQ0 and RQ1, which were to be answered using a literature review.

## 2.1 Sustainability in the construction industry

### *2.1.1 Three aspects of sustainability*

In today's diverse studies and projects, the term "sustainability" is used after it was established by the United Nations World Commission of Environment Development (WCED) in its 1989 report referred to as the Brundtland Report. Governments, businesses, institutions, nonprofits, and other stakeholders are increasingly driven to adopt sustainable practices due to the global shift toward energy and environmental policies that promote economic growth while safeguarding natural ecosystems (Yılmaz & Bakış, 2015). According to Ramprasad et al. (2023), sustainability generally refers to using natural resources in an equilibrium situation so they never exceed a point of decay or depletion and passing them on to the next generation by developing them. This suggests that we may achieve our requirements today without jeopardizing future generations' ability to survive (Ramprasad et al., 2023). Sustainability consists of three primary aspects: environmental, economic, and societal.

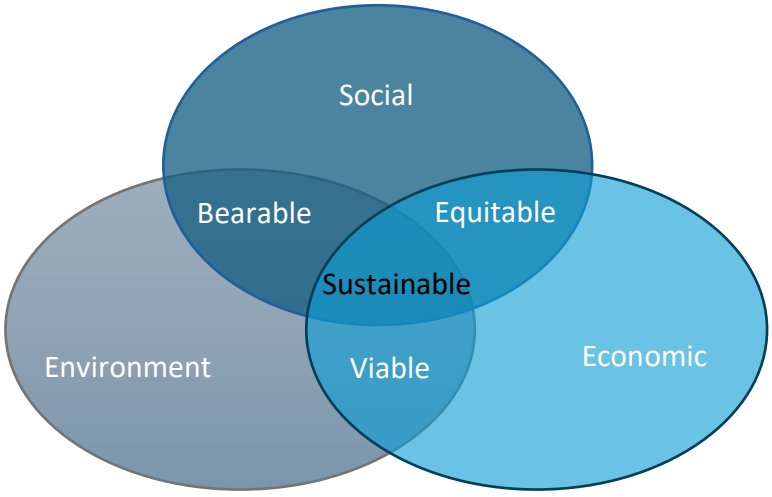


*Figure 2: The components of sustainability (Ramprasad et al., 2023)*

Economic sustainability is a vital component of sustainable development, as the balance between production and consumption in the economy must be achieved with consideration for social justice and environmental responsibility (Zavadskas et al., 2017). Sustainable economic development requires the creation of new markets and business opportunities, cost reduction through greater efficiency with lower energy and resource consumption, and the delivery of added value. In summary, economic sustainability refers to the ability to sustain a steady flow of capital from both public and private sectors while effectively managing resources and assessing economic efficiency based on social factors rather than purely focusing on organizational profitability (Moshood et al., 2024).

According to Moshood et al., (2024), environmental sustainability is the concept that seeks to ensure the welfare of the current and future generations and fair distribution of resources and development across the environment. The sustainable best practice is to encourage the use of renewable resources and energy and discourage dependence on non-renewable resources and energy (Zavadskas et al., 2017) Mining and burning of minerals and fossil fuel leads to dangerous waste and emissions of greenhouse gases, including carbon dioxide. Therefore, achieving sustainability requires that the manufacturing process for project materials be evaluated based on energy consumption, pollution levels, and logistical considerations (Moshood et al., 2024). Key elements of environmental sustainability include protecting biodiversity and ecosystems, conserving life-support systems, using renewable resources responsibly, improving energy efficiency when using non-renewable resources, minimizing environmental damage, and preserving cultural and historical sites (Ramprasad et al., 2023).

Social sustainability is grounded in the idea that future generations should have the same access to social resources and facilities as the current generation. Key social issues to consider when developing a project include preventing child labor, promoting women's empowerment, ensuring health and safety, conserving natural resources, and making social investments for the benefit of future generations. Social impact assessment for sustainability relates to the analysis, evaluation, and control of the direct and indirect, intended and unintended positive and negative social consequences of strategic planning individuals, programs policies, plans, projects, as well

as social change processes that may be resultant from such strategies and interventions Moshood et al., 2024). The summary of the three concepts of sustainability is presented in Appendix A.

*2.1.2 Sustainability concept in the construction sector through contractors*

To respond to RQ0 for this study, this section explains what is encompassed under sustainability in the construction industry. Accordingly, Bal et al. (2013) define sustainability in the construction sector through contractors as enhancing worker and employee lifestyles while achieving social and economic goals without compromising the environment. Ramprasad et al. (2023) affirm that in the construction industry, sustainability goes much beyond just controlling emissions. It covers an all-encompassing strategy that incorporates prudent resource management and a sophisticated comprehension of environmental effects that vary from global warming to more regional problems like acid rain, water consumption, and habitat degradation. It is suggested to take a more comprehensive approach that considers more than simply carbon emissions when analyzing the environment (Lima et al., 2021).

Concerning the Albanian construction industry, sustainability constitutes the practice of environmentally, economically, and socially appropriate measures from the conception phase to the design-build-operations-dispose phase of projects. This relates to all aspects of construction and design, starting with the procurement of construction materials and energy consumption during construction to the disposal of construction wastes and how buildings will be useful to the environment and to the societies as they stand. As mentioned earlier, the context of this research is to provide a definition of sustainability and subsequently apply the onus to the Albanian construction market environment and economic and social context. Environmental sustainability relates to a pro-environmental approach to using environmentally friendly resources, energy, and technology, which has a low impact on the environment. Economic sustainability entails the achievement of long-term economic benefits through efficient resource management, cost-effective practices, and innovation in construction processes. Finally, social sustainability ensures that construction projects benefit local communities by adhering to fair labor practices, promoting health and safety standards, and incorporating community needs into urban planning.

The fundamental theory of sustainable building is to minimize its adverse environmental effects and promote economic sustainability while offering customers and consumers affordability, long-term value, efficiency, and efficiency. All these goals of the construction industry are simultaneously meant by sustainability in simpler terms on an operational level amongst contractors. Through concepts such as green building, sustainable construction, and sustainable/ecological architecture, among others, construction contractors cope with sustainability positively.

To guarantee intergenerational equality and preserve the capacity of the planet's natural systems to benefit humanity, it is necessary to create informed institutions and infrastructures, handle risks and uncertainties appropriately, and preserve information and knowledge (Bal et al., 2013). Moshood et al. (2024) state that sustainability in construction actively works to mitigate the negative effects that constructions have on the environment, the economy, and society to achieve several important goals, such as reducing or eliminating the utilization of non-renewable natural resources, lowering maintenance requirements and costs, boosting energy efficiency, enhancing community social interactions, and producing less waste.

Sustainability in the construction industry is reflected in concepts such as green building, sustainable construction, and sustainable/ecological architecture, among others.

*2.1.2.1 Green building*

Sustainable construction, according to the US EPA, is the practice of constructing buildings that are environmentally friendly throughout their life cycle, right from their location to their construction, operation, repairs, renovating, maintenance, refurbishing, and demolishing. The traditional architectural design principles of economy, usability, durability, and comfort are expanded upon and enhanced by this method (Sherifi, 2017). This comprehensive idea provides important insight into how the built environment might impact the economy, the natural environment, and the health of the occupants. Thus, it is critical to use strategies that support a healthy outdoor and indoor environment and minimize damage to the environment's natural resources to maximize the built environment's good benefits and reduce its negative ones (Komurlu et al., 2024).

With the primary objective of minimizing the impact on the environment and human health throughout the construction life cycle, Murtagh et al. (2020) define green building as the

practice of improving the efficiency of constructions and infrastructure while taking into account not only the use of materials, energy, and water but also the site within which it will be set (design, construction, maintenance, operation, and demolition). Reducing construction maintenance and construction expenses is an additional objective (Murtagh et al., 2020). The environmental advantages of green buildings include supporting ecosystems, protecting natural resources, enhancing the quality of the air and water, and reducing waste generation (Yılmaz & Bakış, 2015). According to Kormulu, green buildings are now a competitive option to conventional ones since they provide a better and more efficient living environment, use 35–40% less energy, and have reduced operating expenses (Komurlu et al., 2024). Accordingly, the terms "sustainable architecture" and "sustainable construction" refer to notions that support a methodical approach to the field of green building by identifying the key ideas, tactics, and techniques for resolving environmental issues brought on by construction (Yılmaz & Bakış, 2015).

*2.1.2.2 Sustainable construction*

Sustainable construction refers to the integration of sustainable development ideas at every stage throughout the construction life cycle right from planning to developing facilities, mining and producing raw materials, using the materials for construction, demolishing them, and disposing of the wastes. Constructions that are appropriate for people as well as economic justice are a broad process of creating still, stable, and healthy communities that try to balance the human-nature interface, which is a notion of sustainable construction as proposed by Moshood et al. (2024). It encompasses the proper formation of suitable built surroundings, the use of efficient resources, and acknowledged principles of the environment. For the sustainable construction sector, the following guidelines are presented: minimizing material consumption, maximizing material recovery, using recyclable and renewable resources, minimizing the impact on the environment and committed to providing a safe and healthy climate, striving for better performance of built environment (Kiani Mavi et al., 2021). Thus, SC is underpinned by three key principles: social development, conservation of the environment, and improved economic growth (Moshood et al ., 2024).

For feasible and sustainable built environments, sustainable construction and multiple construction practices are fundamental (Iyer-Raniga, et al., 2021). It focuses on sustainable production and consumption, which uses the available resources, right from the planning stage

to the whole design effective life of a construction (Yılmaz & Bakıs, 2015). Therefore, SC is the connected resource efficiency toward sustainable construction practices to meet the present and future generation requirements. Given its social equity orientation and a smaller importance of profit, SC includes such elements as preservation, reuse, recycling, and waste management within the context of constrained environmental impacts (Yılmaz & Bakış, 2015, p. 60).


*Figure 3: Overview of sustainable construction components (Moshood et al., 2024)*

*2.1.2.3 Ecological architecture/sustainable architecture*

Sustainable design is a formulation of measures, many of which are policies or strategies aimed at decreasing the negative effects of human activities on the environment, preserving the natural systems, and at the optimal use of resources necessary for constructing, using, and dismantling necessary structures. Among them, a major part of construction input is basic resources, including energy, water, and material (Yılmaz & Bakış, 2015). Among several principles of sustainable architecture, the principle of protection of energy, water, and materials is considered to affect the architectural design. Therefore, controlling the use of non-renewable resources in construction or managing construction waste can conserve energy, water, and material (Bauer et al., 2009).

*Table 3: Differences between sustainable construction and sustainable/ecological architecture*

| Differences | Sustainable construction | Ecological architecture |
|---|---|---|
| Definition | Comprise implementing sustainable approaches concepts to the construction life cycle—from planning and designing to developing, mining, and producing raw materials to using them as construction materials, demolishing them, and managing waste (Moshood et al., 2024). | Entails a set of thinking, processes and methodologies that employ "sustainable approaches" in the projects' life-cycle (Aliamin, 2021). |
| Key concept | Entails key actions such as minimizing resource usage, optimizing resource recovery, employing the technology of recycling and renew materials, saving the environment, opting a safe and healthy atmosphere, and seeking greatness in the built environment (Kiani Mavi et al., 2021). | Is observed to be found in factors that influence architectural design such are: energy, water, and materials (Bauer et al., 2009). |
| Key principles | Three key principles underpin sustainable construction: social advancement, environmental preservation, economic prosperity, and sustainable procurement among others (Moshood et al., 2024) Etc. | Sustainable architecture is seen usually in matters such as: "Economy of Resources," "Design of Life Cycle," and "Humane Design" as shown above (Yılmaz & Bakış, 2015). |
| Components | It encompasses sustainable environmental regulations in the construction industry that lead to eco-friendly and intelligent structures. It also involves bringing government and industry in alignment, to be proactive and monitor progress toward sustainable construction activities (Aliamin, 2021). | It entails creating and innovating an environment which is made artificially based on ecologic design and resources used in an efficient manner (Zabihi & Habib, 2012). |

This section answers **RQ0: What is sustainability in the construction industry?**

It regards sustainability in the construction industry, revealing that sustainability in this sector goes much beyond just controlling emissions. It covers an all-encompassing strategy that incorporates prudent resource management and a sophisticated comprehension of environmental effects that vary from global warming to more regional problems like acid rain,

water consumption, and habitat degradation. On a practical aspect through contractors' work, is reflected in new approaches to sustainable technology such as green building, sustainable construction, and sustainable/ecological architecture. All these concepts have a main goal, which is to decrease the impact of construction activities on the environment and society through sustainable designs, processes, and final products (construction projects).

## 2.2 Decision-making models

This section explores decision-making models that help contractors make decisions day to day with their projects. It is later used to discuss how the factors influence sustainable decision-making as it entails applying decision models to decide. Therefore, this section discusses decision models and how they help to analyze the results regarding which decision model construction contractors use. Accordingly, Taherdoost and Madanchian (2024) argue that making wise judgments often becomes more difficult as the number of options rises because each option has pros and cons of its own. Decision-making models ease the process of choosing from numerous feasible choices, given that making good decisions is challenging and leads to various outcomes (Taherdoost & Madanchian, 2024). Decision-making models provide guidance and rules for choosing the right option and for the efficient completion of decisions. They are tools to be employed in scenarios where defining decision-making pathways may be challenging to achieve more effective decisions. Thus, the following several decision-making models are beneficial to help establish the general problem or issue, the possibilities of approaching the problem, and ultimately, the decision on the resolution to the problem. Furthermore, depending on the decision-making context and the choice alternatives that influence it, they provide various techniques for making good decisions (Lunenburg, 2010). Applying the decision-making models for making organized judgments reduces the possibility of failure to a significant extent and makes it easier to make the right decisions (Taherdoost & Madanchian, 2024). That is why familiarising with different decision-making models helps decision-makers to be ready in advance for what choice they should make if numerous options are given to them. As it has been established, decision-making models are categorized into multiple kinds in various ways. In this article, the four main categories of decision-making models can be identified.

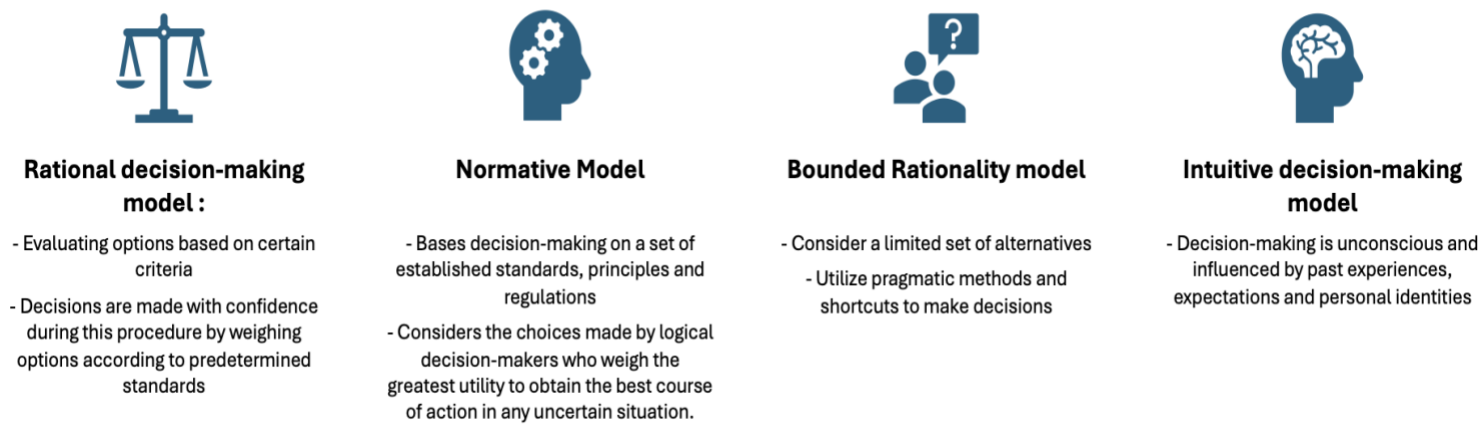


*Figure 4: Decision-making models*

### *2.2.1 Bounded rational models*

Because of constraints on resources (time, information, money, etc.), not all of the aforementioned procedures can be authorized in full in many decision-making processes. As a result, judgment calls are made using limited logic, an incomplete set of options, and consideration of experiences, intuition, and guidance. Decisions are always based on a limited range of options through the use of heuristics and shortcuts, resulting in partial and, to some extent, inadequate knowledge of the nature of the problem being faced (Taherdoost & Madanchian, 2024). It is not possible to take into account every option, carry out a thorough analysis, offer a precise prediction, or ensure that the best course of action is taken in these models. As was previously mentioned, most decisions are made subconsciously. However, in other circumstances, evaluating the advantages and disadvantages of each possibility in a controlled setting could also serve as the foundation for a decision-making process (Lunenburg, 2010).

In general, a variety of circumstances influence the decision-making process, overshadowing the outcome. These elements may include social, psychological, cultural, and rational aspects. Many decision-making challenges revolve around rational elements, which include quantitative variables like time and cost. Individuals tend to overlook qualitative aspects in favor of quantitative ones. Among the psychological determinants are the decision-makers' backgrounds, skills, and personalities. Cultural elements are the accepted norms and shared values within a certain environment and culture. Last but not least, social factors are additional agreements that may influence the decision-maker (Bouyssou et al., 2013). Therefore, solving

the problem rather than looking for the best scenario is the main goal of the bounded rational models. Thus, for teams with little time to deliberate and come up with ideas, this model can be a practical way to reach a decision right away (Taherdoost & Madanchian, 2024).

The concept of bounded rationality posits that individuals make decisions based on limited information, time constraints, and cognitive limitations. This model is highly applicable to the findings of this study, as contractors in Albania often operate under significant constraints—such as limited access to sustainable materials, tight project timelines, and fluctuating budgets. In practice, the contractors' decision-making is constrained by their financial resources and the availability of sustainable materials. For example, even when contractors are aware of more sustainable options, they often opt for less sustainable practices due to the high cost or unavailability of eco-friendly materials. This demonstrates bounded rationality, where contractors make decisions that are good enough rather than optimal for sustainability because they are working within practical limitations.

*2.2.2 Normative models*

To arrive at the best conclusions possible, this model bases decision-making on a set of established standards, principles, and regulations. These theories take into account the choices made by logical decision-makers who weigh the greatest utility to obtain the best course of action in any uncertain situation that can cause them to veer off course. Making the best selection feasible out of the options provided, therefore, depends on taking the decision-makers intentions and expected results into account (Bouyssou et al., 2013). Therefore, the decision-making process is founded on standards and norms and provides people with precise guidelines and instructions to help them make the best choice possible. Stated differently, the normative decision-making models only highlight the idea that the optimal decision is the one that produces the best outcome. These models typically employ numerical values to be ascribed to the possibilities to rationalize the decision-making process (Taherdoost & Madanchian, 2024).

*2.2.3 Descriptive models (intuitive decision-making model)*

Naturalistic decision-making is more of a snapshot of how people go through their experiences to make decisions out there in the field. Three components are highlighted as influencing decision-making: The decision-maker’s awareness and exposure, aspects related to the job, level of difficulty, and environmental factors (Taherdoost & Madanchian, 2024). The basis of these

models is the decision-making choice model that seeks to make a realistic prediction of a given choice. Individuals simply cannot engage in the normatively rational process most of the time; decisions are subconscious and are colored by past events. Hence, decision-making is constructed based on anecdotes related to the possible implications instead of numbers. People's decisions are conditioned by the demands of society and people's perception of themselves. Here, the most reasonable among all of what has to happen in the future narrations determines the final choice (Bouyssou et al., 2013). The decision-making model, which is at the center of this paper, entails reaching decisions by the use of emotions, experience, and hunch and not through a process of systematically evaluating all the possibilities. We saw this model play out in many of the interviews, especially among contractors who have spent several years in the industry. Decision makers in construction projects, for instance, contractors, settle on experience and sometimes their gut feeling due to time constraints and or by responding to barriers that may be encountered along the construction process.

*2.2.4 Rational models*

In this instance, decisions are made with confidence during this procedure by weighing options according to predetermined standards. In other words, because the decision-makers are aware of the options, the selection criteria, and the results of each, they can select the best option and carry it out. When the process is reasonable, all of these processes are required (Uzonwanne, 2016). The rational model is predicated on a series of actions that make sense and ultimately result in a choice. As a result, after identifying the issue, potential remedies are considered and evaluated. When there is a thorough grasp of the issue and ample time for discussion, brainstorming, and, ultimately, risk reduction, this methodology works well. Nevertheless, it is ineffective when there is little time or comprehension of the issue (Taherdoost & Madanchian, 2024).

In this study, the focus is on what decision-making models construction contractors use and how this is influenced by various factors. For instance, the Saieg et al. (2018) study revealed that contractors frequently use a constrained rationality decision-making model in construction projects when they have limited resources and time. When doing a comprehensive study is not practical, contractors may choose to consider time limits and available information while

selecting alternative options that meet their needs and are sufficiently sustainable (Saieg et al., 2018). Thus, the decision-making model theory helps in analyzing how the various factors impact contractor's decision-making and the decision models they apply. The results of this may help in formulating and implementing policies on a uniform model that all Albanian contractors can use while making sustainable decisions.

## 2.3 Sustainable decision-making in construction industry

This sub-section aims to answer **RQ1: What sustainability-related decisions do construction constructors make?** Therefore, the section reviews construction contractors making sustainable decisions to enhance sustainability in the sector.

Lu et al. emphasize that efficient and economically sustainable design and construction can be achieved by making well-informed decisions as early as possible (Lu et al., 2024). According to Bino et al. (2015), decision-making involves several important issues, including funding, brain drain, and inadequate infrastructure, all of which are crucial when it comes to finding long-term and creative solutions. Mojtahedi et al. (2010) affirm that determining possible hazards related to construction projects is a step in the decision-making process. Methods like expert opinion, generating ideas, and historical data analysis are adopted to identify and classify risks.

The construction industry must also make decisions that are sustainable in terms of resource efficiency, which reduces waste through thoughtful material usage planning, recycling, and the adoption of effective construction techniques; circular economy, which embraces prefabricated components, modular construction, and demolition for future reuse; and life cycle considerations: assessing choices in light of a construction's overall life cycle, taking into account factors including quality, environmental impact, and resource usage (Sivasubramanian & Lee, 2022). It also includes choices that are made with social responsibility in mind, such as those that take stakeholders, communities, and employees' welfare into account; Environmental impact: reducing adverse effects on the environment; economic efficacy: optimizing costs while retaining quality (Sivasubramanian & Lee, 2022).

Overall, in civil engineering and construction, sustainable decision-making entails weighing social, economic, and environmental considerations (Zavadskas et al., 2017). It includes these essential elements: materials selection: choosing environmentally friendly, energy-efficient, and recyclable materials; space efficiency: making the most use of available space to minimize the overall footprint of infrastructure and structures; waste reduction: reducing construction waste through effective resource management and planning; and renewable energy: using clean energy from renewable sources for operation and construction (Zavadskas et al., 2017).

As stated by Lee et al., it is the contractors' role in the construction industry to complete the work activities needed to finish the project. Contractor activities include legal issues, construction site safety, and project and control activity (Lee et al., 2014). Bal et al. (2013) fully support the claim that the introduction of highly salient stakeholders to the built environment is due to the sustainability strategy. For instance, the importance of programs like "Considerate Constructors" has increased due to the necessity to address social sustainability issues that have an impact on the nearby communities where construction is taking place, such as noise, traffic, dust, and site security (Bal et al., 2013). This suggests that contractors have a big part to play in sustainable construction.

In supporting Bal et al.'s assertion, Holloway and Parrish (2015) claim that contractors are being forced to deliver more sustainable projects as a result of the global adoption of sustainable construction ordinances. Nevertheless, contractors have not historically been regarded as collaborators in the development of sustainability goals and aims for projects. Furthermore, with the growing popularity of alternate project delivery techniques, contractors have both the chance and, increasingly, the obligation to participate more fully in sustainability initiatives throughout the construction life cycle (Holloway & Parrish, 2015). Involving all parties involved in the supply chain—from suppliers to clients, architects, and contractors—can help ensure that sustainability is successfully implemented from the very beginning of the design process. (Moshood et al., 2024). In this instance, by actively supporting eco-friendly methods across a project's lifecycle, construction contractors play a critical role in sustainable construction.

Contractors must employ updated construction techniques, isomorphic drives (coercive, mimetic, and normative), and an accumulation of expertise, abilities, and operational resources to adjust to environmentally conscious construction, according to Ferreira et al. (2024). Because of this, the procurement sector has to enhance sustainable procurement management procedures and increase stakeholders', contractors', and clients' awareness of sustainability (Ferreira et al., 2024). According to Rezgui et al. (2016), contractors must make choices that lessen negative environmental effects and encourage sustainable practices, such as using eco-friendly construction materials and energy-efficient construction methods. This is the choice made by those involved in the construction industry (contractors in this case) to include cutting-

edge new construction materials, digital technology, regulatory incentives, and regulations that are supportive of decarbonization (Rezgui et al., 2016). This section's review finding builds on the study as it helps to form a foundation to understand the kind of potential sustainable decisions that construction contractors can make.

*Table 4: Summary of sustainable-related decisions of contractors*

| **Sustainability-related decisions of constructors** | **Explanation** |
|---|---|
| *Decision to implement circular construction* | Mainly involve contractors (builders) preventing construction and demolition waste from ending up in the trash by buying used and recycled goods and materials, implementing source reduction, salvaging, recycling, and reusing existing materials (Rezgui et al., 2016). |
| *Prioritizing the use of carbon-reduction tools* | Contractor's prioritizing using open-source, free carbon-calculator and carbon-reduction technologies to increase the transparency of greenhouse gas emissions from construction materials process due to industry collaboration (Zavadskas et al., 2017). |
| *Decision to use sustainable construction materials* | This entails the decision of contractors to procure sustainable construction materials that will minimize environmental impact (Rezgui et al., 2016) |
| *Prioritizing lean construction* | Deciding to use lean construction focuses on short-term waste reduction in all forms, both disciplines strive for the efficient utilization of scarce resources; a systems-based strategy can assist in achieving hidden cost reductions while generating more sustainable results (Sivasubramanian & Lee, 2022).<br><br>Lean construction strives to minimize material waste since it reduces flaws overall. |
| *Preferring modular, prefab, and industrialized construction* | These decisions to implement off-site construction that lessens the impact on communities, and prefabrication technologies consume fewer natural resources, minimize pollution, optimize material utilization (Sivasubramanian & Lee, 2022). |

# Chapter 3: Methodology

## 3.1 Systematic literature review with the PRISMA approach

Lame et al. (2019) defined systematic literature review (SLR) as a clear and verifiable approach to summarizing scientific data on a particular issue or research question. A systematic literature review was conducted with the PRISMA approach to develop the conceptual and theoretical framework of the study. While the SLR approach wishes to diminish the impact of bias throughout the article review process, it does so in an incredibly transparent manner by providing explicit, systematic methods for bias avoidance in article selection and inclusion as well as in the assessment of the reliability of the identified articles (Lame, 2019).

After the research sub-questions were drawn, the set of databases to be used was determined, including EBSCO Host, ProQuest, Elsiver's, Google Scholar, Scopus and Taylor & Francis. These databases were explored using the PRISMA diagram through which the study was able to identify ultimately the articles to be used when addressing RQ2. From there, the search terms were defined based on the research sub-question two, respectively: **What factors are potentially influencing the sustainable decision-making of construction contractors?** Therefore, the search terms are: **"factors", "sustainable", "construction", and "decision-making".** As indicated in Figure 5 below, after a thorough search of the databases, 546 articles were obtained. Then, from this point, duplicate articles were eliminated from this number, resulting in a total of 246 articles. Using both exclusion and inclusion criteria, the remainder of the articles were filtered. According to Swift and Wampold (2018), inclusion and exclusion criteria are crucial to secondary inquiry because they allow the researcher to ensure that the chosen data sources support the goals of the study and add to its validity and dependability. These recommendations are essential because they point researchers in the direction of trustworthy data sources, particularly when they are reviewing the literature and selecting studies. Meline (2016) argues that the five primary reasons why inclusion and exclusion criteria are important include preserving researcher concentration, enhancing quality control, guaranteeing consistency, and avoiding bias.

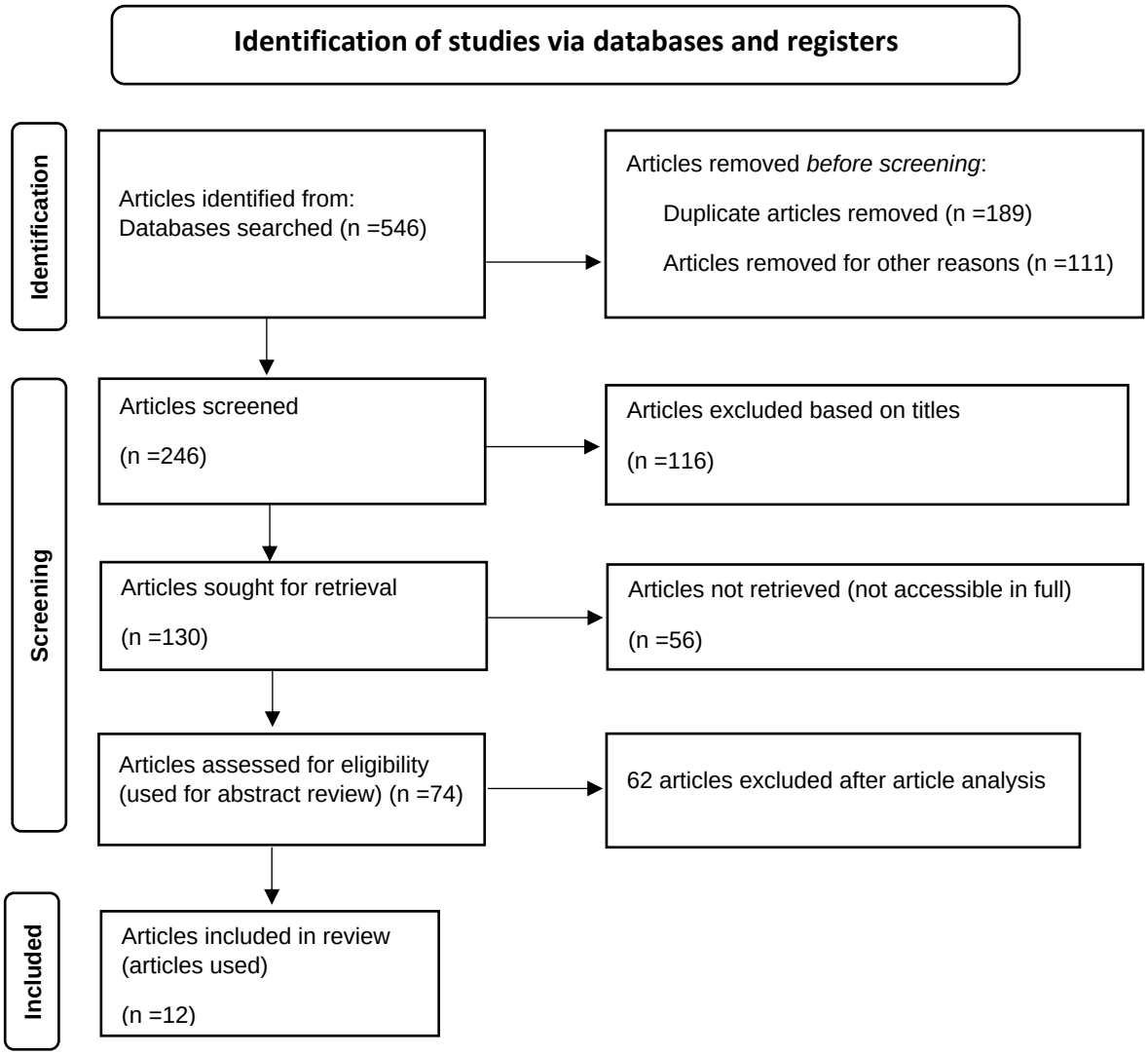


*Figure 5: The PRISMA Diagram*

Accordingly, in this study, the inclusion criteria included articles written in English, published from all times to the present, were accessible in full, and specifically related to or directly answered the three study questions (including sustainability in the construction or sustainable construction, sustainable decision-making by construction contractors and factors that impact sustainable decision-making in the construction industry). The articles were also filtered using their topics and abstracts to qualify for inclusion. The exclusion criteria involved articles published in languages other than English (non-English publications), not related to or answered the three research questions, and articles that could not be accessed in full. This

resulted in 12 articles that were chosen to be used to address RQ2. Important data was extracted, such as the study plan, analysis of the findings, and important conclusions. An example of the data extraction process is illustrated above in Figure 5.

## 3.2 Mixed method approach

To investigate how the factors influence construction contractors' ability to make sustainable decisions, this study **combines qualitative and quantitative methodologies** (a mixed research design), which means that qualitative and quantitative data are integrated. In particular, a **semi-structured interview and an anonymous survey.**

According to Padua and Shooter (2014), mixed methods reserve to represent a kind of research study where the investigator gathers, evaluates, synthesizes, and draws conclusions utilizing qualitative as well as quantitative methods. The rationale for this approach is the mitigation of possible drawbacks of analytical tools based solely on quantitative or qualitative information while various approaches are used simultaneously and include elements of inductive and deductive analysis. Mixed methods allow for a simultaneous and holistic understanding of the topic, and the advantages of different approaches used in data collection enable more robust results. It can offer solid background information on the data, complement the analysis of the quantitative findings, or shed light on the general consequences of the limited sample qualitative conclusion (Almalki, 2016).

The operational definition of sustainability, as outlined in Chapter 2, is essential for framing the data collection process. This definition was used to structure the interview and survey questions, ensuring that the research gathered data on environmental, economic, and social aspects of sustainability in the Albanian construction industry. For example, interviewees were asked specific questions about their use of eco-friendly materials, their financial decision-making processes, and how they incorporate community benefits into construction projects. This approach allowed the study to evaluate how contractors understand and apply sustainability in their decision-making.

### *3.2.1 Semi-structured interviews*

The main aim of the interviews is to explore how the factors impacting contractors' sustainable decision-making identified from the literature review apply in the Albanian context. Since the review identified factors that impact sustainable decision-making in the construction industry in the general context, it is important to validate how these factors influence sustainable decision-making in the Albanian context. In order to attain this, interviews are held with stakeholders who work in the sector. Their experience, as well as knowledge, is essential in uncovering how various factors influence the sustainable decision-making of construction contractors in the Albanian construction industry.

Accordingly, experts in the field are interviewed in a semi-structured manner, in which the questions are purposefully left open-ended to promote more discussion and elaboration (Kallio et al., 2016). The list of variables derived from the literature review is tailored and appropriated for the overall environment of the construction sector. As such, these criteria must be verified within the framework of Albania's construction sector, which is accomplished through semi-structured interviews. In this case, the semi-structured interview is chosen in order to promote "reciprocity between the interviewer and participant." Additionally, a semi-structured approach is used for this study due to its flexibility and adaptability as an interviewing technique (Kallio et al., 2016), which enables the collection of more in-depth data as respondents have time to explain their answers during the interview.

Interviews are also crucial to this study because, as predicted by (Bloomberg and Volpe,2019), it would be simple to remember everything an interviewee said while data was being collected. Furthermore, the data is comprehensive, capturing crucial aspects like the respondents' unfiltered emotions. Rich data gathering and the research subjects' sincere participation provide additional advantages. Therefore, the purpose of the semi-structured interviews is to elucidate in depth the key variables influencing contractors' sustainable decision-making in the Albanian construction sector. The information is taken out of the interview transcripts. Furthermore, the study's focus is on the respondents' attitudes and ideas about sustainable decision-making, which makes semi-structured interviews helpful (Kallio et al., 2016).

There are various formats and methods for conducting interviews. For instance, interviews can be conducted over the phone with a program like Microsoft Teams or in person (Kallio et al., 2016). In this study, since all interviewees are from Albania, face-to-face interviews are carried out in order to read the interviewee's facial expressions. Every interview goes for about twenty-five minutes. This permits open-ended questions to lead to productive dialogue and provides sufficient time to establish a relationship with the interviewers to prevent discomfort or avoidance that could jeopardize the interview's authenticity and dependability. The information is transcribed after the interviews are recorded and then analyzed through content analysis. The analysis is guided by the decision-making models that construction contractors use. Creating a category of significant elements that affect contractors when they make sustainable decisions in the Albanian construction industry is the aim of the interviews conducted for this study. The main points of emphasis in the interview are the interviewee's approach to making decisions about sustainability, the decisions they make, and the obstacles they face or overcome in order to avoid making sustainable decisions. These serve as the foundation for the interviewee's actions.

To ensure that all parties have a thorough understanding of the subject and to facilitate a pertinent and productive discussion, the interviews start with an explanation of the subject. The interview adheres to a strict format to facilitate an open dialogue that helps generate ideas. The goal is to discover the project-related, client-related, economic, contractor-related, social, and societal aspects that influence contractors' sustainable decision-making through conversation, with the questions viewed through the lens of stakeholder theory and the triple bottom line approach.

#### *3.2.1.1 Interview participant selection*

There were conducted seven interviews—with three site managers, three civil engineers, and one accountant. The reason behind this selection is to gather data from influential decision-makers both prior to and following the start of construction projects. Respectively, as Willar et al. (2020) mentioned, site managers are in charge of how they manage the construction site

because of their technical expertise in urban planning, the built environment, and the impacts of construction on the economy, ecology, and society. Furthermore, they are the ones who should be making decisions in the construction business firsthand (Willar et al., 2020). They are appropriate for this investigation. Secondly, since the study investigates the process of decision-making, it is relevant to interview also civil engineers who specialize in structure (design phase). The sustainable decision-making is also present in the design phase, where materials and methods of construction evaluating environmental considerations are determined. The names of the participants are kept confidential. Lastly, the input from an accountant is also valuable since a potential factor to influence sustainable decision-making is the cost and finance capability.

*Table 5: The interviewees sampled*

| **Role of interviewees** | **Quantity** | **Date of interview** |
|---|---|---|
| Site Manager/Engineer | 3 | 03.08.2024 - 14.08.2024 - 14.08.2024 |
| Civil Engineer/Structural | 3 | 09.08.2024 - 15.08.2024 - 16.08.2024 |
| Accountant | 1 | 13.08.2024 |

*3.2.1.2 Interview question design*

Interview subjects are questioned regarding how they arrive at pertinent, sustainable decisions for their roles or why they choose not to make more sustainable judgments for their jobs. Additionally, the respondents are questioned regarding the significant elements influencing their ability to make sustainable decisions as well as suggestions they may have for enhancing sustainable decision-making in the Albanian construction sector.

The interview is divided into three topics: (1) general information on the case, (2) sustainable-related decisions and approaches, and (3) influential factors that impact sustainable decision-making. The complete interview questions are illustrated below:

1. General information

The purpose of the generic questions is to better comprehend the interviewee's function and the particular scenario. It is requested to locate more case-related information not available in public documents and sources.

2. Sustainable-related decisions (decisions approach)

The interviewees are first asked about their understanding of sustainability in the construction industry. Also, it is questioned how they decide on sustainability-related matters in Albania or why they make sustainable decisions. These questions are designed with the aim initially to check what the participants know about sustainability in the construction industry and secondly to discover what the participants have in mind concerning sustainable decision-making in the Albanian construction industry.

3. Influential factors impacting sustainable decision-making

These questions aim to find out what factors impact the participants' capacity to make sustainable-related decisions in their respective roles in the Albanian construction industry. It is also asked if the interviewees had advice for the construction industry in order to improve sustainable decision-making. Since the interview that is used for this study is a semi-structured interview, the respondents' answers will also be analyzed as input with regard to decision-making models. There are no direct questions linked to them except indications that the interviewees might give with regard to a decision-making model through their own personal experience when making a decision. The interview and survey questions are attached in Appendix B.

### *3.2.2 Surveys*

The anonymous survey is conducted to verify and potentially align the findings from the semi-structured interview. The questionnaires gather quantitative data from beneficiaries of the numerous construction projects in Albania, while their insights enhance qualitative research and viewpoints from decision-makers. It is recommended to use mixed research for this topic because

of the complementary link. Analyzing the responses of influential decision-makers and community members is fascinating.

One point is assigned for strongly disagreeing and five points for strongly agreeing on a constructed 5-point Likert scale, which is used in the research questionnaire survey. The purpose of the test is to gauge the respondents' comprehension of the various elements influencing their ability to make sustainable decisions in the Albanian construction sector. The structured questionnaires are designed to guarantee that the participants stay within the parameters of the research, which is informed by the diverse elements that influence sustainable decision-making. This approach assists with RQ3. However, answering how these factors influence the decision-making process of contractors is also aided by the interviews. The survey is done to align and validate the interview findings regarding identifying the most influential factors impacting contractor's decision-making process.

Large study populations are well-suited for structured questionnaires, which also provide simple data coding if the acquired data is deemed useful for qualitative research (Patton, 2015). For example, if 100 respondents were given semi-structured or unstructured questionnaires, it would be difficult to assess the various responses. However, as Cheung (2021) shows, unstructured surveys take a lot of time, which makes them inappropriate for a large sample size. Thus, the study makes use of standardized questionnaires. The use of questionnaires in the quantitative study is significant since, as established by Miles et al. (2019), they yield objective, dependable data that is simple to interpret. Furthermore, the approach would help provide rich data to facilitate qualitative study.

The online distribution of the survey questionnaire was planned accordingly through personal connections. The researcher distributed the anonymous survey via online platforms such as social networks. The QR code was also shared amongst students and professionals who share their backgrounds and areas of expertise.

### 3.3 Data analysis techniques

A statistical data analysis is employed since questionnaires are used to collect quantitative data. Research trends are evaluated using statistical data analysis and quantitative data. It looks at feedback and establishes a connection between the information gathered before producing scientific results. Since the survey is conducted through Microsoft Forms, the analysis is performed using Excel Analysis Software. In this instance, the majority of the insights produced aid in comprehending how different elements affect contractors' sustainable decision-making in Albania's construction sector.

However, since the material of the interview is qualitative, content coding and analysis help with analyzing the interview data. The process of content coding analysis entails identifying recurring themes in the exchanges between an interviewer and interviewee. This process is going to be done through manual inductive coding, going through the transcripts, highlighting the input and personal perspective, and put into categories. The code entails two parts (R1.2- respondent number 1 and category number 2). To confirm the accuracy of the provided information, qualitative data analysis is employed in addition to quantitative data. This analysis helps address RQ3. The category of influential elements is created using the interview transcripts. Finding the justifications the actors have for their choices is accomplished by coding and. analyzing the transcripts. Transcript inductive coding manual analysis is a technique that aids in the interpretation of interviews. This study employs the concept-driven method for the interview analysis. This is carried out in order to ascertain the actors' justifications for their acts, which is the aim of the interviews. The reasons why or why not the respondents made sustainability-related decisions, as derived from the interview arguments, are labeled using decision-making models. These ideas can be used to better understand the factors that influence respondents' decision-making. To create a strong case and facilitate discussion regarding the influence of decision-making in Albania's construction sector, the results are compared to the information provided by quantitative research. When combined, questionnaires and interviews provide a true picture of the circumstances in Albania since they address respondents' individual experiences as they are conveyed in a language they can most easily comprehend.

## 3.4 Ethical considerations

Ethical choices were made throughout the questionnaire distribution and interview procedure. To make sure they don't impede data gathering, confidentiality, privacy, and conflicts of interest were thoroughly considered (Institutional Review Board, 2021; Miles et al., 2019). Furthermore, even in the case of structured surveys, informed permission and autonomy were upheld to guarantee that the positionality and point of view of the researcher do not compromise the accuracy of the data. Consequently, informed consent was obtained for the research (Miles et al., 2019). Each individual chosen for this study provided the author with permission or authority to conduct research for this study. The interview and survey were carried out in compliance with the guidelines provided by the respective organizations. Throughout the interview, informed consent was also obtained.

The researcher first asked the participants about their perceptions of the elements that influence their decision-making concerning sustainability after making it apparent that participation in the study was fully voluntary (during the interview). An interview format is offered to participants in advance, allowing them to think about and analyze the experiences they desired to share on the factors and how they believed these features affected their decision-making regarding sustainability in construction projects. To ensure the accuracy of the research findings, a comparable set of research instruments (interview questionnaires) is created to confirm the study's validity and reliability. However, the investigator ensured that each participant signed an authorization form attesting to their intent to engage voluntarily to increase the authenticity of the material acquired from the interviews.

Additionally, the researcher ensured transparency, meaning that, unless specifically required by the research design to ensure that the correct data is obtained or that the researchers' safety is not compromised, researchers should make an effort, to be honest and open with participants and other stakeholders (Arifin, 2018). As a result, the researcher was truthful and provided participants with explanations as needed to guarantee that the right data was gathered. Finally, the author assured the participants of the confidentiality of the information they would give by assuring them that the information was going to be strictly used for study purposes and privacy would be maintained to prevent any information from reaching unintended persons (Miles et al., 2019).

## 3.5 Validation

### *3.5.1 Internal validation*

The internal validations are achieved through mutually comparing the results of the qualitative and quantitative data collected. The reliability of the survey's findings is examined in light of the results that have been obtained from it. Since the study incorporates both a quantitative and a qualitative study, then the results of both show internal reliability before being validated by an external contractor involved in the construction industry in Tirana, Albania.

### *3.5.2 External validation*

In order to do external validation for this study, a professional opinion is obtained. According to Johansen and Fischer-Hübner (2023), experts can offer insights into whether the study's conclusions apply to real-world scenarios. Their background and expertise can be used to assess if the findings can be applied outside of the particular study setting (Johansen & Fischer-Hübner, 2023). In this instance, an industry expert is contacted—a significant contractor or engineer from a significant Albanian construction company. The main topics of discussion in the interview are how these factors have hampered or helped sustainability in the industry, as well as the variables that support or undermine contractors' ability to make and carry out sustainable decisions. The expert is requested to discuss the factors and to share his expertise, comprehension, and viewpoints.

# Chapter 4: Results

This chapter addresses RQ2 through the SLR using PRISMA methodology, as well as RQ3 and RQ4 through the survey and interview results integration.

## 4.1 Influential factors in construction sustainable decision-making

This sub-section aims to address **RQ2: What factors are potentially influencing the sustainable decision-making of construction contractors?** The finding of this section helps to build the study foundation in terms of guiding the interview and survey findings, therefore, analyzing the factors is an important foundation for the study in the context of Albanian contractors' sustainable decision-making.

Making decisions in the construction industry that are both ecologically and financially sustainable requires taking several things into account. Economic aspects are among those that are important to take into account when making decisions since they need to be maximized for things like estimation of costs, managing financial risks, allocation of resources, and budgeting (Phillips & Bana, 2007). Contractors are, therefore, encouraged to weigh market trends and return on investment when determining long-term, lucrative economic feasibility. Social and environmental elements are also present. When making decisions based on social aspects, factors including community involvement, cultural preservation, labor rights, and safety requirements are taken into account. These elements help subcontractors and contractors make well-informed judgments, which results in more efficient decisions made throughout the sustainable construction process (Zavadskas et al., 2017). Among the significant variables that this investigation found are:

***Client's financial capabilities and reputation***: Sustainable decision-making heavily relies on the client's financial standing. Enough money guarantees that sustainable practices are put into place. In this instance, contractors are able to carry out the project's sustainable decisions, such as using cutting-edge technologies and sustainable materials, to lessen the negative effects of construction projects on the environment and society, provided they have access to sufficient cash. In addition, all projects must be planned with a budget in mind. Projects have goals, and they are designed to achieve these goals within the constraints of a budget (Binshakir et al., 2023). Furthermore, reliable clients are more inclined to support sustainable initiatives, which in turn will motivate contractors to carry out the project's necessary sustainable construction

activities (Zavadskas et al., 2017). Thus, this finding indicates that clients with enough finances encourage contractors to make sustainable decisions since the finances are there to cater to the implementation of sustainable practices and vice-versa.

***Construction project risks***: It is crucial to evaluate and reduce risks associated with sustainability, such as those pertaining to the environment and resource scarcity. Decisions are informed by risk management (Qazi et al., 2021). Prioritizing cutting-edge sustainable practices, such as using green materials, cutting-edge technologies, and regulations, can, according to Erdenekhuu et al., make the built environment substantially more unpredictable and volatile than it already is, putting construction projects at risk for a variety of intricate issues (Erdenekhuu et al., 2022). The incorporation of sustainable practices into construction management is still relatively new, according to Qazi et al. (2021). Sustainable construction projects have risks and obstacles, just like any other new endeavor. Contractors, or construction managers, are still learning about and adjusting to adopt sustainable techniques. Because of this, the risks associated with sustainability in construction projects differ greatly from traditional hazards (Qazi et al., 2021). In addition, using sophisticated construction methods, intricate designs and materials, and improved participant communication are all necessary for sustainability in construction projects. It takes a long time to obtain permits for the new materials (Qazi et al., 2021). All of these could have an impact on the contractors' decisions regarding whether or not to incorporate sustainable techniques into their construction projects.

***Project complexity***: Sustainable solutions may be specific to complex undertakings. The notion of project complexity and its correlation with success are becoming more and more important as projects get more intricate. Project complexity is well acknowledged in the literature to be a significant factor in project failure. Complexity makes it difficult to finish projects and necessitates extra work to be successful. Structure, dynamics, and ambiguity interact to produce project complexity, which is a basic feature of a project (Azmat & Siddiqui, 2023). One of the main problems with construction projects is their complexity, which leads to low project delivery success rates (Lafhaj et al., 2024). The complexities of every project must be taken into account by decision-makers or contractors in this case. Achieving sustainable goals may present additional obstacles for complex undertakings (Sivasubramanian & Lee, 2022). This

implies that the complexity relating to sustainable construction solutions may hinder contractors' ability to make sustainable decisions.

***Experience in similar projects***: Important insights are provided by a contractor's prior expertise with sustainable construction. Construction contractors may make more sustainable decisions and create more sustainable structures by drawing on past project knowledge (Zavadskas et al., 2017). Experience with such projects can help contractors make more sustainable decisions because sustainability in construction projects demands contractors to have specific qualities in order to ensure project success (Qazi et al., 2021). Large-scale construction projects are thought to benefit financially from the presence of seasoned contractors because they need substantial capital. Because of its steadiness, clients and banking institutions are subsequently giving it confidence (Binshakir et al., 2023). This finding shows that contractors' experience with sustainable projects may enhance their sustainable decision-making.

***Political stability:*** It is also essential to provide a stable administration that will safeguard all parties involved and ensure the project is completed. Furthermore, political unrest can seriously impair the nation's economic standing, which can have an impact on the cost and availability of workers, machinery, and materials, as well as the laws governing the construction sector (Binshakir et al., 2023). This implies that the ability of contractors to make decisions relating to sustainability is influenced by the political situation which in turn impacts the economy and things such as costs of materials, among others.

***Government regulations, codes, and policies:*** in the construction sector, all stakeholders are required to adhere to these. The implementation of these regulations is required, and they typically diverge from the regulations that apply to regular construction projects. As a result, the contractor may need to take into account additional expenses and a specific level of skill (Binshakir et al., 2023). Because contractors must comply with government regulations and standards relevant to sustainability, they may make decisions that align with these regulations and laws while managing construction projects.

***Environmental regulations and safety standards:*** these are essential elements that contractors follow to guarantee compliance with regional laws and construction codes (Binshakir

et al., 2023). According to Sebastian (2011), in order to provide clients with solutions, contract contractors frequently work in conjunction with stakeholders, including suppliers, engineers, and architects. Because it facilitates effective project management and quick execution, this is especially crucial for guaranteeing standard construction (Sebastian, 2011). According to Binshakir et al., regulatory compliance guarantees that companies abide by the laws, regulations, and policies set forth by the government, and this is supported by stakeholder theory (Binshakir et al., 2023). This implies that where there are environmental laws and safety standards, contractors will be compelled to comply, and this enhances their sustainable decision-making and vice versa.

***The stability of the economic situation*** has to do with the state of the economy as a whole, as well as the variations in costs for labor and supplies brought on by inflation. Variations in the cost of labor and sustainable materials might negatively impact the contractor's ability to make sustainable decisions financially and result in project losses. Information on the state of the economy allows the contractor to complete the preparatory work of the bid and consider these changes in relation to sustainability measures (Binshakir et al., 2023). An analysis of different aspects of implementing sustainable construction reveals that the most critical aspect is the economic aspect. The order of the three most significant Social, Environmental, and Economic factors is competitiveness, better quality of life, and better and more controlled indoor environment. Al Harazi et al. (2023) state that the use of sustainable methods in construction projects in Yemen is mainly influenced by the competitiveness factor. This, therefore means that the economic environment will determine whether or not contractors can make and execute sustainable decisions based on things such as the price tag of sustainable materials.

**Access to technologies for sustainable execution**: It matters that the required technologies are available. Contractors must have access to the technologies needed to carry out sustainable projects. Reliable and imaginative contractors use cutting-edge technologies and inventive construction methods to guarantee lower project costs, increased productivity, and better project results (Zavadskas et al., 2017). The usage of automation, BIM, and prefabrication are a few examples of this technological adoption. Throughout the construction process, quality assurance is highly prioritized to make sure that projects meet or surpass consumer demands

and industry requirements (Binshakir et al., 2023). Making decisions is influenced by the technology that is available for sustainable construction. Green practices can be implemented by contractors who have access to eco-friendly tools (Zavadskas et al., 2017). These digital tools aid in the identification of the most sustainable design solutions, decreasing material waste, energy usage, and environmental impacts (Lu et al., 2024). Thus, easy access or having technologies that enable the execution of sustainability in construction projects enhance contractors' sustainable decision-making and implementation.

***Material Availability***: The availability of sustainable materials has a positive influence on decision-making. To reduce adverse environmental effects within the construction industry, it is essential to encourage the use of new construction materials with relatively low emission levels established by Abera (2024). More to the environmental benefits, sustainable construction materials also provide better-built end structures that are long-lasting, healthier, and energy efficient. The construction industry utilizes wood from well-recycled structures, metal from decommissioned structures or equipment, bamboo from areas using sustainable methods of construction, glass that was reused, rammed earth, and hempcrete and comes against the negative effects of construction activities and the misuse of scarce natural resources (Tazmeen & Mir, 2024). As pointed out by Erdenekhuu et al. (2022), material selection plays a crucial role in building a better environment because it determines the quality, durability and cost, energy and GHM consumption, and, more importantly, the longevity of any construction during its life cycle. If one is selecting the type of material that effectively means sustainable use, then the characteristics that can be considered by the general public are availability, less processing, hazardous effects, ability to recycle, cultural acceptability, self-build, naturalness, low energy use, and low cost of maintenance. All this affects their decision to act sustainably (Erdenekhuu et al., 2022).

Required products are essential for the local market because they will be more affordable, quicker to source, and reduce the overall project risks (Zavadskas et al., 2017). Contractors should understand that there are just a few products in the market, and with this factor, it is very difficult to import them, and as a result, it is very costly to transport them and other related expenses. For the contractor, increased material delivery, fluctuation in price, and inflation will also pose

considerable costs (Binshakir et al., 2023). Again, the sources of sustainable materials are favorable to the contractors' sustainable choices.

***Project Type***: The sustainability standards for various project categories (such as residential, commercial, and infrastructure) vary. It is imperative to customize decisions to the specific project type, as this will subsequently impact contractors' decision-making concerning sustainability (Sivasubramanian & Lee, 2022). This implies that the type of project will influence contractors to make and implement sustainable decisions or not.

***Health, labor rights, and safety standards*:** Stakeholders place occupant health and energy-efficient constructions at the top of their priority list. However, greater expenses and a lack of knowledge may prevent builders from implementing sustainability and producing sustainable projects based on these standards (Binshakir et al., 2023). The knowledge of these standards and their importance may impact contractors to make sustainable decisions.

***Contractor's financial capabilities and risk management***: For contractors to complete sustainable projects, they must have financial stability. Sufficient resources allow contractors to make more sustainable decisions and embrace eco-friendly practices (Al Harazi et al., 2022). Overall, in the context of this study, this finding helps in analyzing how these various impact contractors, whether they encourage or limit contractors' sustainable decision-making.

*Table 6: Summary of influential factors for sustainable decision-making of construction contractors*

| Factor | Category | Source |
|---|---|---|
| Construction project risks | Project-related factors | Qazi et al., (2021). Erdenekhuu et al. (2022) |
| Health labour rights and safety standards | Social factor | Binshakir et al. (2023) |
| Government regulations, codes, and policies | Environmental factor | |
| Contractor's financial capabilities and risk management | Contractor-related factors | Al Harazi et al. (2022) |
| The stability of the economic situation | Economic factor | Binshakir et al. (2023) Al Harazi et al. (2023) |

| | | |
|---|---|---|
| Project type | Project-related factor | Sivasubramanian & Lee (2022). |
| Sustainable materials availability | Environmental-economic factors | Abera (2024), Tazmeen & Mir (2024), Erdenekhuu et al. (2022) Binshakir et al. (2023). Zavadskas et al. (2017). |
| Access to technologies for sustainable execution | Environmental-economic factor | Binshakir et al. (2023). Zavadskas et al. (2017). |
| Political stability | Environmental factor | Binshakir et al. (2023) |
| Experience in similar projects | Contractor-related factor | Zavadskas et al., 2017). (Qazi et al., 2021), (Binshakir et al., 2023) |
| Environmental regulations and safety standards | Environmental factor | Binshakir et al., (2023). Sebastian (2011) |
| Project complexity | Project-related factor | Azmat & Siddiqui (2023), Lafhaj et al. (2024); Sivasubramanian & Lee (2022) |
| Client's financial capabilities and reputation | Client-related factors | Binshakir et al. (2023). Zavadskas et al. (2017). |

## 4.2 Interviews findings

In Appendix C, a table of the interviewees is shown. The interviews' transcripts were coded inductively, as the process in (Appendix D) suggests.

*4.2.1 Contractors' sustainable decision-making*

As mentioned in section 3.1.2, which depicts the structure of the interview, the following conclusions refer to "General Information", "Sustainable related decision," and "Influential factors impacting sustainable decision-making".

All the interviewees agreed that contractors' sustainable decisions or practices pertain to boosting energy efficiency and minimizing waste by engaging in a number of practices such as ensuring the use of sustainable materials (using eco-friendly materials), using materials that consume less water such as geotextile (water conservation) (R1.5), using technology to enhance sustainability, reuse/recycling of materials for gardening or excavating them so they are not transported to the landfill, using local materials to minimize on transportation (R1.5 &R1.6), incorporating green spaces where possible, budget planning and allocations, and obtaining certification where needed (R1.3).

This finding aligns with the sustainable decision-making practices of contractors (in the theoretical framework), including the reuse/recycling of materials for gardening or excavating them so they are not transported to the landfill corresponds to the decision to implement circular construction that mainly involves contractors (builders) preventing construction and demolition waste from ending up in the trash by buying used and recycled goods and materials, implementing source reduction, salvaging, recycling, and reusing existing materials (Rezgui et al., 2016). Using technology to enhance sustainability corresponds to prioritizing the use of carbon-reduction tools in which contractors prioritize using open-source, free carbon-calculator and carbon-reduction technologies to increase the transparency of greenhouse gas emissions from construction materials process due to industry collaboration (Zavadskas et al., 2017). Ensuring the use of sustainable materials (using eco-friendly materials) corresponds to the decision to use sustainable construction materials, which entails the decision of contractors to procure sustainable construction materials that will minimize environmental impact (Rezgui et al., 2016). Finally, using materials that consume less water, such as geotextile (water conservation),

corresponds to prioritizing lean construction that involves decisions to use lean construction focuses on short-term waste reduction in all forms, both disciplines strive for the efficient utilization of scarce resources; a systems-based strategy can assist in achieving hidden cost reductions while generating more sustainable results (Sivasubramanian & Lee, 2022). Lean construction strives to minimize material waste since it reduces flaws overall.

*4.2.2 The most influential factors*

The interview findings showed that the most influential factors, according to the participants, include the cost, the economy, the financial capabilities of clients, government regulations, availability of sustainable materials, and client budget (R2.2, R2.3, R2.4, R2.5 & R2.7). However, **government regulations** were cited as the most influential factors that hinder contractors' sustainable decision-making in the Albanian construction sector, as almost all the respondents cited it.

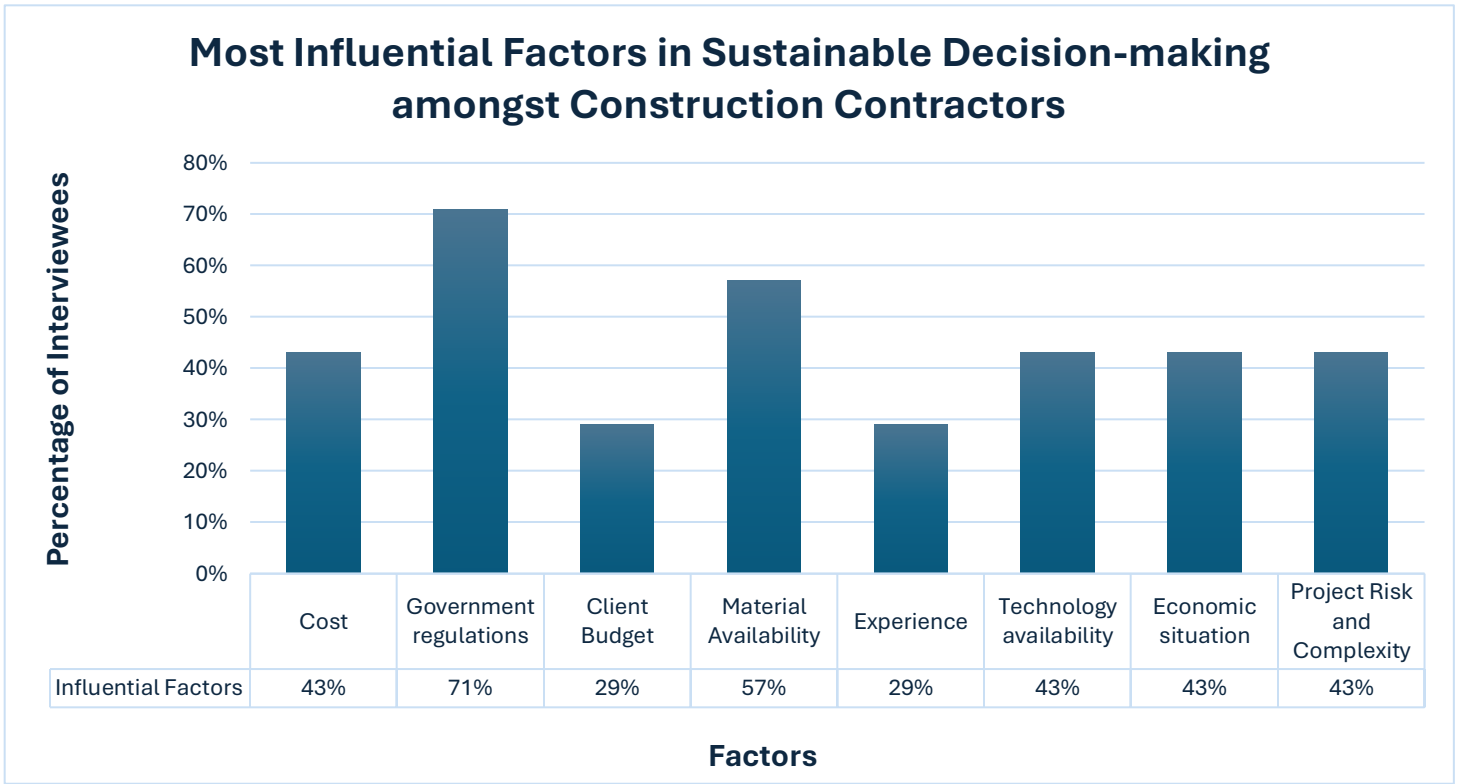


*Figure 6: Most Influential Factors*

#### *4.2.2.1 Influence of government regulations on sustainability*

Government regulations emerged as one of the most influential factors affecting the sustainable decision-making of contractors in the Albanian construction sector. The findings indicated that while contractors recognize the importance of sustainability, the lack of clear, enforceable government policies often discourages the adoption of sustainable practices. Contractors cited inconsistent enforcement, lack of financial incentives, and unclear sustainability guidelines as major barriers to integrating sustainability into their projects. One of the main challenges contractors face is the absence of government incentives for sustainable construction. Interviewees noted that while international projects funded by the European Union require adherence to strict sustainability standards, locally funded projects do not benefit from similar incentives. As a result, contractors are less motivated to adopt green practices in their domestic projects, especially when these practices are more expensive or complex to implement.

Another key issue is the inconsistent enforcement of existing regulations. Contractors explained that while certain environmental standards do exist on paper, there is often little follow-up or inspection to ensure compliance. This creates an environment where contractors can bypass sustainability requirements without facing significant penalties, further disincentivizing the implementation of sustainable practices. Government policies also play a role in the availability of sustainable materials. Contractors reported that the lack of government support for local sustainable material production makes it difficult to source eco-friendly materials, forcing them to rely on imported goods, which are often more expensive. Without government intervention to stimulate the production and availability of sustainable materials, contractors are left with few viable options.

### *4.2.3 Ten types of factors that influence contractors' sustainable decision-making*

#### ***(1) Availability of sustainable materials***

All the interview participants reported that accessibility and availability of materials impact the contractors' decision to apply the sustainability guidelines of using sustainable materials because these materials are imported, as they are not produced in Albania. The participants claimed that even though sustainable materials are important in ensuring

sustainability as they contribute to making the city cleaner and in turn better the life of people and the community, importing them increases costs and there are delays (R2.5, R2.3 & R2.4), all which inhibit the contractor's ability to use those materials. They end up having a construction that is not sustainable in the end of material unavailability and inaccessibility. However, one interviewee suggested that pre-ordering of sustainable materials can help constructors adhere to sustainability in their construction projects because this will help them get the materials on time (R2.2).

***(2) Client's expectations/client's budget /client's financial capability***

The majority of the interview respondents (71%) agreed that sustainable decision-making of contractors depends on clients' financial capability and budget since fixed budgets may not allow the implementation of sustainable materials or technologies due to extra costs. The participants reported that financial capabilities and the willingness of clients to invest are very important as this will determine the extent to which contractors can implement sustainable tools and materials (R2.6, R2.1, & R2.7). Furthermore, client expectations are important in sustainable decision-making as contractors have to deliver the expectations of the client, and so if sustainable materials or construction techniques are required, they have to comply (R1.5).

***(3) Cost of materials***

The interview findings demonstrate that the cost of materials negatively impacts contractors' decision-making. Many participants reported that making sure that contractors apply sustainability guidelines of using sustainable materials in construction depends on the costs of materials as sustainable materials are a bit more expensive than non-sustainable ones, so most construction companies do not pay attention to comply with it (R2.4, R2.3 & R2.5). The most economical materials are chosen in the long run, which is preferring non-sustainable materials over sustainable materials (R2.2). This mainly comes from construction companies in Albania Tirana are mainly concerned with profit making so costly materials may add extra costs to them, which may be outside their budgets.

***(4) Technology availability***

Most of the interview participants (71%) acknowledged that access to technology is influential in sustainability (like stopping using concrete), but access to these technologies is a

challenge. Since the state is not strict in regulating sustainability being implemented in the construction sector, they do not promote it (R2.1, R2.3 & R2.6). So, even access to technologies that promote sustainability is on behalf of construction companies and not the government (R2.1, R2.3 & R2.6), which hinders contractors' ability to implement sustainable decisions in construction projects. However, one participant (14%) acknowledges that some technologies are currently available and are being used (R2.2), while one respondent (14%) said that they access the technologies through AU (R2.4). This finding implies that improving these technologies in the Albanian market will enhance the sustainable decision-making of contractors. This is demonstrated in these interview excerpts:

***(5) Project type***

All the interview respondents reported that the type of project, whether residential, commercial, or infrastructure, influences the decision-making of contractors regarding sustainability, and they varied reasons to justify this. For instance, the respondents cited that tall buildings influence the sustainable decisions of construction contractors in Albania (R2.1 & R2.4), a residential may follow a different sustainability approach from industrial or commercial projects (R2.7), special projects like an embassy project or landmark constructions will compel contractors to include sustainability in them (R2.3).

***(6) Government policies and regulation***

The majority of the respondents (71%) reported that there are some government regulations and guidelines, but there is laxity of the government to supervise the application of sustainability guidelines and promote their implementation, thereby inhibiting sustainable decision-making of contractors as they have space to decide whether to go the sustainable way or not (R2.1, R2.3, R2.4 & R2.6). However, some respondents (29%) said that the government in Albania does not have specific environmental regulations with regard to sustainability in construction and so other sustainability requirements such as the US (for those who are working for the US embassy) (R2.5) or company-specific policies apply (R2.2). In this case, companies will decide to implement sustainable practices in their construction projects only if they want because there is no strict regulation. The participants further reported that if there are clearly stated government regulations concerning sustainability for the construction industry, the

contractors have to comply, and this will enhance their sustainable decision-making when undertaking construction projects (R2.7).

***(7) Contractor's Experience***

All the interview participants who addressed this point agreed that experience plays a crucial role in the sustainable decision-making of contractors. The interviewees cited that the more experienced contractors are with sustainability and its implementation, the more they are encouraged to make sustainable decisions in the projects they undertake because they understand the significance of sustainability (R2.1, R2.3 & R2.5). Also, the experience of contractors helps with a lot of things, such as risk assessments based on experience from past projects, as this can help them understand the risks involved in different forms of sustainable production (R2.2 & R2.4). Additionally, experience helps in cost management as this helps them to improve their ability to decide on the right costs for sustainable materials and technologies (R2.7). Furthermore, experienced contractors with sustainability teach other people on the team, and this encourages sustainability implementation (R2.4).

***(8) Economic situation***

More than half of the participants (57%) said that the economic situation impacts contractors' sustainable decision-making. Since the Albanian economic situation is not as strong as that of a developing country, finances are fixed with tight budgets are tight and clients prioritize saving on costs over sustainability (R2.2, R2.3 & R2.5). Sustainability is viewed to cost more, which makes clients see that it is not necessary because it will end up making losses on the business side (R2.1). So, in the end, sustainable decisions will be avoided to ensure the projects will remain within the confines of the budget and time (R2.6). This limits contractors' ability to make and implement sustainable decisions in their projects. On the contrary, one respondent commented that the economic situation and finances are not so much a hindrance factor for sustainability but only about the well-structured policies to guide implementation and make sustainability work in Albania (R2.4).

***(9) Project risk and complexity***

The 43% of the respondents who addressed this factor reported that project risk and complexity influence the sustainable decision-making of contractors because sustainable

construction projects have some risks and obstacles as it is a new concept, and thus contractors, or construction managers, are still learning to adjust and adopt sustainable techniques and they make avoid sustainability altogether because of these risks and complexities (R2.4, R2.3, R2.5 & R2.7).

***(10) The newness of the sustainability concept in Albania***

Another factor revealed to influence Albanian contractors' decision-making is the unfamiliarity with sustainability concepts in the construction sector. The majority of the respondents (86%) recognized that sustainability is an important concept and are aware of it, but they said that it is still a new concept in the sector since some contractors are still not familiar with it (R2.2, R2.5 & R2.6) while other respondents (14%) reported that sustainability guidelines exist in the sector but companies are still not being compliance with the laws (R2.1). However, as Figure 6 indicates, one respondent also reported that the sustainability concept is new in Albania, but the actors (contractors are learning from outside to gain experience since there are still no laid down specific standards for sustainable construction in Albania (R2.4). These influence their decision-making as some forgo making and implementing sustainable decisions because they put less emphasis on the concept of newness in the sector.

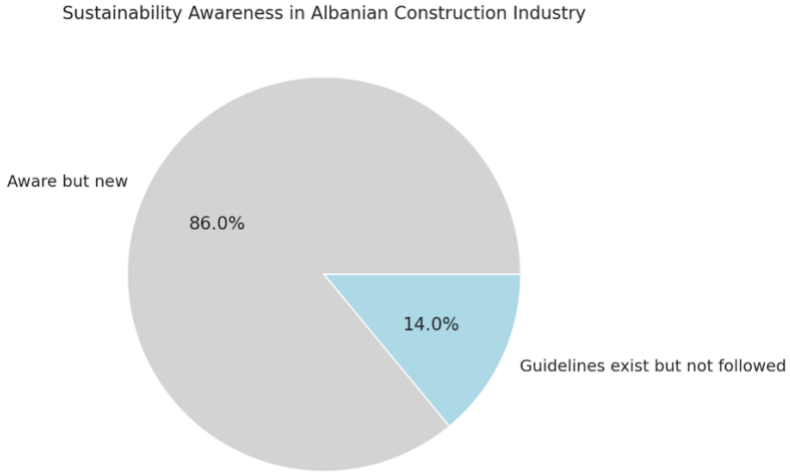


*Figure 7: Pie Chart of Sustainability Awareness*

Notably, the main reason given for the low status of sustainability in the Albanian construction sector is the lack of specific laid-down standards for sustainable construction and the lack of government strictness in promoting policy compliance in the sector (R2.2).

Accordingly, 3 respondents suggested that sustainability in the construction sector should start with the government introducing it through specific guidelines and being strict in its implementation (R2.5 & R2.6).

In line with answering this question of sustainability status in the Albanian construction sector, the respondents who acknowledged that sustainability exists in the sector (43% of the respondents) recognized Albania's prospect for the EU as the main driver of their sustainable decisions in the construction sector as this will help raise the sustainability standard of the country (R2.3, R2.4 & R2.7). This shows the importance of sustainability in supporting this candidature.

## 4.3 Survey findings

A total of 32 respondents aged between 18-54 participated in the survey, of which 12 (37.5%) were women while 20 (62.5%) were men with related background to construction contractors. The survey asked the respondents to rate the factors that impact sustainable decision-making (1-5, where 1- strongly disagree and 5- strongly agree). Figure 8 below shows the respondents' choices highlighted in colors and the percentage of them feeling the same impact.

*4.3.1 Factors that influence contractor's sustainable decision-making*

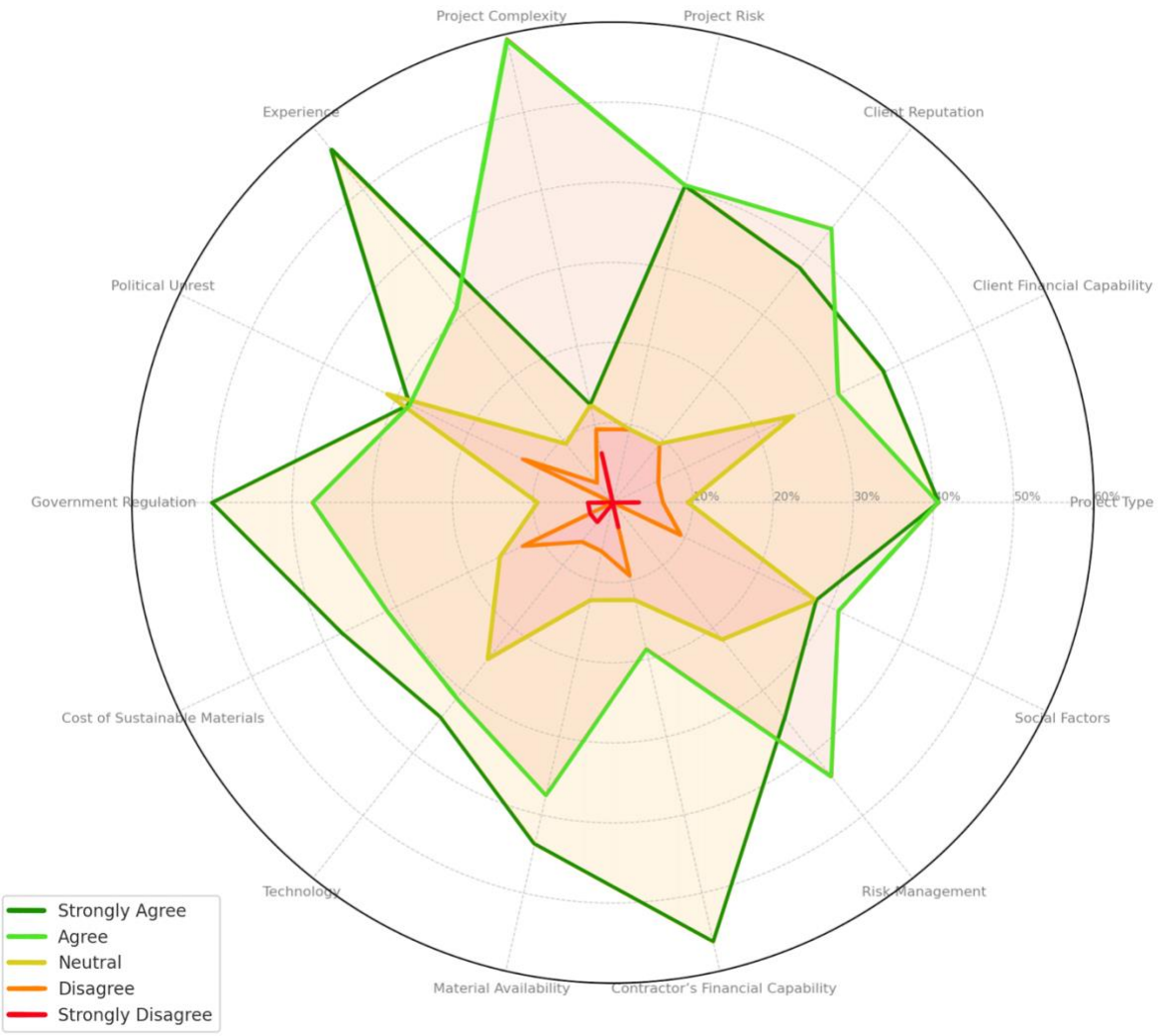


*Figure 8: Factors Influencing Sustainable Decision-Making*

It is worth noting that 50% of the respondents strongly agreed that “Governmental Regulations” is the strongest factor influencing the sustainable decision-making process of construction contractors. Retrieved from the survey, among the most influential factors are also “Financial Capability”, “Project Complexity,” and “Experience”. The radar chart depicts the survey responses to the factors that affect sustainable decisions in construction. There are five response levels, including "Strongly Agree" (dark green), "Agree" (green), "Neutral" (yellow), "Disagree" (orange), and "Strongly Disagree" (red), used to evaluate the impact of the factors on the sustainable decision-making of construction contractors. The main observation can be made on the dark green lines for "Strongly Agree" on most of the axes, including "Project Complexity", "Client Financial Capability", "Experience", "Government Regulation," and "Project Risk". This suggests that the majority of respondents believe these factors have a significant influence on sustainable decisions in the construction sector. The green lines for "Agree" are very close to the orange lines on most of the axes despite there being some slight deviations. This suggests that although respondents did not see these factors as critically influential, they generally agreed on the importance. The yellow lines for "Neutral" are closer to the centre for most factors, indicating that very few respondents are not very sure of the role of these factors in sustainable decisions or see their influences less significantly. The orange lines for "Disagree" and red lines for "Strongly Disagree" are mostly staying close to the centre as well, indicating less than 10% of the respondents. However, slight deviations on some of these lines for factors "Material Availability" and "Technology" might imply some disagreement or scepticism on their role in the influence on sustainable decisions. We can conclude from the survey results that the factors such as "Project Complexity", "Client Financial Capability", "Experience," and "Government Regulation" are universally perceived as the most influential factors in driving the sustainability of construction projects. Construction industry stakeholders, therefore, may want to focus their efforts and resources on these factors as they are the most likely to be critically important in promoting sustainability.

*4.3.2 Final remarks*

The respondents gave different remarks. Three respondents cited financial circumstances, government regulations such as incentives and contractor's experience as the most influential factors holding back sustainability in the Albanian construction sector since sustainable construction comes with higher expenses and prices for the service offered by the company. For instance, regulatory policies can drive contractors to adopt sustainable practices due to compliance requirements while client demands and potential cost savings from sustainable methods significantly impact decision-making in construction projects. They also cited that sustainability is important in the construction industry and is crucial for the industry's future. It minimizes environmental impact, conserves resources, and promotes energy efficiency. By adopting sustainable practices, the construction industry can contribute to a healthier planet and create safer, greener environments for everyone. They acknowledge that investing in sustainability in construction not only supports environmental stewardship but also makes strong economic sense by reducing operational costs, increasing property value, and mitigating long-term risks. The respondents also note that the contractors tend to not implement sustainable practices as a result of lack of experience with these practices as well as the experience of being used to the traditional approaches.

The survey respondents additionally gave various comments which can act as recommendations to the construction sector in Albania regarding sustainability. These include legislators encouraging sustainable practices through tax incentives; project contract specifications aligning with sustainable local design requirements and sensitizing and applying ecological policies as widely as possible in the field of construction; first linking the study of these green policies and their impact in the education sector before making it practical in the sector.

## 4.4 Results integration

This section aims to conclude by addressing **RQ3: How do these factors influence the sustainable decision-making of construction contractors in Albania?**

The literature and interview findings supported by the survey revealed that the sustainable decision-making of contractors is influenced by various factors, which either positively or negatively impact their decision-making. The review showed 12 potential factors that impact contractors' decision-making. In the Albanian context, the interview findings supported by the survey indicated the ten most influential factors that were found to influence Albanian construction contractors' sustainable decision-making. Additionally, the interview findings show that contractors' decision-making for sustainability in their construction projects considers factors such as costs, their experience with such projects, availability of materials and technology, finances, client's expectations and budget, and profitability. Some respondents also reported that they decide to coordinate with clients as clients have to approve certain requirements before they are implemented, indicating that clients have the final say in such a situation. As indicated in Figure 9 below in **blue**, contractors' sustainable decision-making process is affected by a set of factors that directly influence contractors into not implementing circular construction in a project. This is to not compromise the project budget and timeline. These decisions are made with judgment calls using limited logic, an incomplete set of options, and consideration of experiences, intuition, and guidance through the use of heuristics and shortcuts (Taherdoost & Madanchian, 2024). For instance, the contractors focus more on timeline and budget and what the client requires rather than analyzing the benefits of including circular construction practices or sustainable material. In addition to Albanian contractors' sustainable decision-making, Figure 9 suggests in **purple** that because there is a lack of regulations and standards and a lack of prior experience, these contractors' work methodology is mainly composed of traditional construction methods, their managerial reflex to stick to what is known is what results in them not having to/ being able to implement modular, prefabricated, and industrialized construction. The decisions that they make also seem to be natural, taking into account their experiences and knowledge on matters like costs and materials availability, which condition the process of making a decision

(Taherdoost & Madanchian, 2024). The most encountered decision appeared to be whether to implement sustainable materials or prioritize lean construction in their construction projects or not. So, it is the factors that influence their decision-making by limiting their options concerning sustainability. For instance, considering the unavailability of sustainability materials and the increase in cost and delay when they import such materials limits their potential options to only use unsustainable materials that are readily available and cheap so they can finish their construction projects within the budget and timeline.

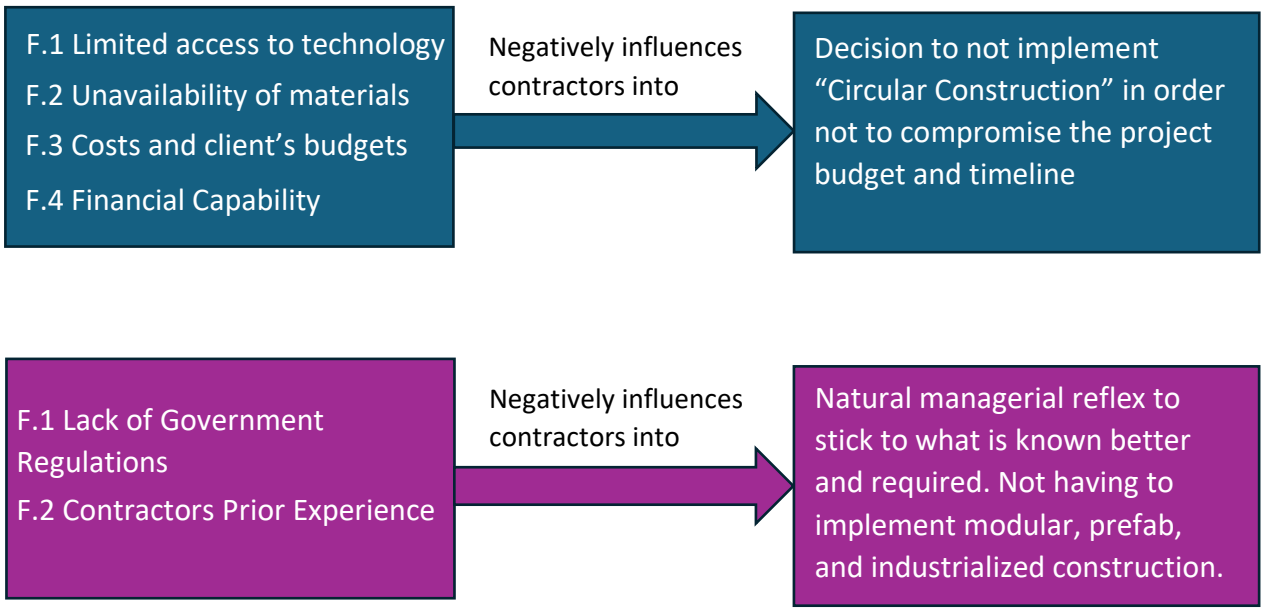


*Figure 9: The Influence of Factors to the Sustainable Decision-Making Process*

## 4.5 Recommendations

This section addresses **RQ4: What measures can be taken to encourage a sustainable decision-making process within construction constructors in Albania?** It concludes the recommendations given by both survey respondents' remarks and interviewees' opinions. The interview participants gave various recommendations to enhance the sustainable decision-making of contractors in Albania. Overall, the respondents cited that the Albanian government needs to introduce strict policies and regulations on sustainability and apply measures to ensure that construction industry actors are implementing sustainability in their projects. This was the main recommendation reported by the majority of the participants (R3.1, R3.2, R3.3, R3.4, R3.5 & R3.6).

The interview respondents agreed that many of them do not make or include sustainable decisions in their construction projects because there are no strict rules to compel them, thus, sustainability implementation is left at the discretion of construction companies who can choose to implement them or not. This implies that Albania needs to work on its sustainability regulations and policies and introduce a strict system of implementation that will make sustainability work. Accordingly, these are the strategies recommended to help the country in this as per the findings:

### *4.5.1 Improve the availability of sustainable materials*

The research revealed that limited access to sustainable materials is one of the key barriers to sustainable decision-making among Albanian contractors. To address this, the Albanian government and construction industry stakeholders should take the following specific actions.

- **Promote circular construction materials":** The government should encourage the use of circular materials such as recycled and reused construction products. By providing tax incentives and subsidies to local suppliers of these materials, the government can lower the costs and increase the availability of eco-friendly construction options. It would support contractors in adopting sustainable practices without significantly increasing their project costs.
- **Establish a national green material database:** A centralized database of available sustainable materials would allow contractors to easily access information on where to

source eco-friendly materials. This initiative should include specifications for recycled materials, local sustainable products, and green building certifications to guide contractors in making informed decisions.

- **Facilitate partnerships for materials supply chains:** The Albanian government should work with regional suppliers to create partnerships aimed at reducing the logistical challenges and import costs associated with sustainable materials. This would make it easier and more cost-effective for contractors to access sustainable materials, thus removing one of the significant barriers to sustainability identified in this study.

*4.5.2 Strengthen government regulations on sustainability*

Government regulations were cited by contractors as a major barrier to implementing sustainability. Current policies are either insufficient or poorly enforced making it difficult for contractors to justify the added costs of sustainability initiatives. But there is this issue the following specific measures should be taken:

- **Introduce mandatory sustainability standards for construction projects:** the government shouldn't implement sustainability standards for construction projects requiring that a certain percentage of materials used be from renewable or recycled sources. This will not only ensure compliance with EU standards but also push the construction sector towards greener practices.
- **Provide incentives for sustainable construction:** In addition to strict regulations, the government should offer financial incentives for contractors who meet or exceed sustainability targets. These could include tax rebate grants and low-interest loans for companies that adopt green building technologies or use sustainable materials.
- **Enforce energy efficiency requirements:** To address Albania's goal of reducing carbon emissions, there should be mandatory energy efficiency standards for buildings. Contractors should be required to use energy-saving technologies such as solar panels and efficient insulation to reduce the overall energy consumption of construction projects.

*4.5.3 Enhance contractor education and training*

Another finding from the research highlighted the lack of awareness and knowledge about sustainability among contractors. This gap in knowledge affects their ability to make informed decisions. To improve this, here are some recommendations:

- **Develop specialized training programs:** The government in collaboration with industry associations should offer specialized training for contractors on sustainable construction practices. These trainings should cover topics such as green building, energy efficiency technologies and eco-friendly materials. Offering certified training programs that would raise awareness and competence in applying sustainability in construction projects.
- **Integrate sustainability into construction education:** The Albanian education system particularly in universities and vocational institutions should integrate sustainable construction principles into their curricula. By educating future contractors engineers and architects on sustainable practices from an early stage, Albania can build a more informed and sustainability-conscious workforce.

## 4.6 Validation of results

*4.6.1 Internal validation*

The internal validation of the findings is done through the findings themselves. The findings from the survey on the most influential factors on sustainable decision-making appear to align with the results concluded from the interview's findings. It is important to ensure the reliability of the research outcomes, and this alignment supports just that. The results from the survey data highlight key factors such as government regulations, project complexity, cost of sustainable materials, and material availability. Respondents expressed varying degrees of agreement on these factors, with a notable concentration of responses around government regulation, project complexity, and client financial capability.

The validation agreed with the results of the survey as (71%) emphasized government regulation as a primary factor influencing their sustainable decision-making process. The alignment proved to be true as well on other key factors such as: "Material Availability" and "Cost considerations" which suggests that the results from the quantitative method are reliable as Figure 8 indicates.

*4.6.2 External validation*

The experienced contractor who was separately interviewed to get an expert opinion on the most influential factors that impact Albanian contractors' sustainable decision-making in construction confirmed the study findings and raised some novel ideas on this topic. When asked whether contractors in the Albanian construction industry are aware of sustainability and its significance, he said that most of them are aware of this term and its existence in the sector, but not all are aware of its importance, and therefore, many do not take it seriously to implement sustainable decisions when they undertake construction projects, even with the big projects.

When asked about his opinion regarding what is preventing or inhibiting construction contractors in Albania from making and implementing sustainable decisions, he reported and explained four main factors, including the cost/finances, government regulations, and unavailability of technology and sustainable materials. However, he emphasized the governmental role concerning sustainability policies being the most important ones, as there are policies but not well-laid-down approaches to implementation. This makes many construction companies overlook sustainability practices. The contractor noted that even if cost is a barrier, with strict regulations, the construction companies will have no option but to comply. So, it is up to the government to be serious and make sustainability work. If the government becomes strict, construction companies and contractors will have to extend their budgets to accommodate sustainability to prevent them from getting into the wrong side of the law.

Notably, it was reported that with good government policies, such as those that can be implemented to enhance technology and sustainable materials availability (such as through giving incentives or tax cuts for local productions), more contractors would start to have more information on these technologies and these materials and thus employ other decision-making models to become more sustainable in the short and long-run. This points to a novel idea that with stricter government regulations, sustainability status in the Albanian construction industry will improve, and more contractors will start implementing sustainable decisions in projects they undertake.

# Chapter 5: Discussion

## 5.1 Discussion of results

This research analyzed Tirana's construction contractors' sustainable decision-making. The contractors are acknowledged as playing an important role in implementing sustainability through the key roles they play in making and implementing decisions in construction projects. Due to their roles, they are regarded as the most crucial actors in the industry to enhance the sustainability status of the sector. This research has generated some important insights targeted at contractors and the industry in general from a practical point of view.

### *5.1.1 Sustainability status in the construction sector in Tirana*

First, the study findings revealed that the Albanian construction industry is mainly composed of males as males had a higher percentage among the respondents, indicating that it is a male-dominated industry. This finding is consistent with the World Bank Group (2019) report which revealed that in Albania, the construction industry accounts for 7% of all employment and is primarily dominated by men. The proportion of female employees is quite low. Based on the insights from the survey, women's work in the construction sector is restricted and falls into a certain niche, whereas men's involvement in the industry is more varied. Due to women's major role for family care, males in the construction industry represent an array of age groups, occupations, and job categories. They are also more mobile. Men's networks and unofficial channels, which have existed since undergraduate studies and facilitate job placement for men upon graduation, are the primary means of recruitment in private enterprises. It is discovered that the cooperation lacks between Vocational Education and Training (VET) institutions such are faculty, and both public and private firms in the industry. This has a detrimental effect on internship opportunities for female students and the hiring of female graduates (World Bank Group, 2019). The high domination of men could be a contributor to why Albania's construction sector still lags behind in sustainability because there are no fresh brains and perspectives from a diverse population to strictly adhere to and implement sustainability in the sector.

Noteworthy is that the study results indicated the sustainability status in the Albanian construction industry as low since it is still a new concept. Though many contractors demonstrated awareness of the sustainable construction concept and others learned it from

outside experience, their concern is that sustainability guidelines are still not clear and are not implemented by the construction companies because the government is not strict in promoting sustainability awareness and implementation through well-stipulated policies. This contributes to its low status because it may be a reflection that they know sustainability exists for the sector and the country as a whole, but they mostly ignore it because of the low weight given to the significance of the concept and also since nothing compels them to comply. This finding is in agreement with Sheriff who observes that Albania seems to be still comparatively slow in fostering sustainable construction business ventures despite the centrality of sustainability in Albania's construction industry as sustainability is still a new concept and still in development infancy( Sheriff, 2017). The finding further connects with Buhaljoti and Abazi (2022) whose study identified a lack of knowledge as one of the major concerns hindering the implementation of circular economy (sustainable) practices within the Albanian construction Industry. The low level of sustainability achieved in the Albanian construction sector constitutes the consequence of the absence of people who can professionally supervise the environmental management methods and industry players who are unaware of the potential opportunities in sustainability activities. This goes to prove that ignorance of the importance of sustainability and the non-preparedness of the people to coordinate implementation are factors that prevent the industry sustainability.

Interestingly, the research finding of low sustainability status in the Albanian construction sector disagrees with Ndoka and Alimehmeti (2023), which show a high Albanian construction commitment to sustainability. Ndoka and Alimehmeti's (2023) findings showed that Albania has pledged to significantly lessen its carbon footprint, and it has responded very well to this green initiative through energy-saving elements, including enhanced insulation, effective cooling and heating systems, and the utilization of renewable energy sources are highly sought after in green buildings (Ndoka & Alimehmeti, 2023). This implies that there is a trial to boost sustainability in the sector, but sustainability is still low.

This study finding also demonstrated that Albania's prospect for the EU as the main driver of their sustainable decisions in the construction sector as will help raise the sustainability standard of the country. Sherifi study's findings confirm that Albania has shown a commitment to implementing and adapting construction efficiency solutions following the goal of becoming

an EU candidate-driven in part by a few environmental laws that are a major catalyst for green development—contradict this research finding of the low status of sustainable construction practices in the country's construction sector. The finding further agrees with Icka et al. (2021) study that some Albanian microenterprises believe that adopting sustainable practices is necessary to gain access to profitable foreign markets, including the European Union. This indicates that EU candidature is the factor behind the strong demand for green initiatives throughout a variety of Albania's economic sectors, including the country's construction industry. This points to the need of the industry to emphasize the significance of sustainability to construction companies and contractors by emphasizing EU candidature.

#### *5.1.2 Factors influencing sustainable decision-making in the construction industry*

Sustainability in the construction sector is known to be of great importance because the sector is a major emissions contributor. This implies that enhancing the sustainability of the sector can greatly help in achieving an enhanced sustainability status of the country as a whole because it aims to minimize environmental damage, enhance social fairness, and stimulate economic growth (Ramprasad et al., 2023). However, the Albanian construction sector is still lagging in implementing sustainability, and this majorly connects to the factors that hinder construction contractors from making and implementing sustainable decisions. Notably, government policies and regulations are the main reason or factor for low sustainability achievement status in the Albanian construction industry. As per the study results, there are some government regulations and guidelines, but there is laxity of the government to supervise the application of sustainability guidelines and promote their implementation, thereby inhibiting sustainable decision-making of contractors as they have space to decide whether to go the sustainable way or not, meaning implementing sustainability is at their discretion. Additionally, the findings also showed that there is a lack of effective government regulations, such as tax incentives, among others, as noted by some respondents, which contributes to low sustainability achievement in Albania's construction sector since contractors are not obligated to comply with the sustainable policies and regulations.

Binshakir et al. (2023) research found that because contractors must comply with government regulations and standards relevant to sustainability, they may make decisions that

align with government regulations, codes, and policies while managing construction projects. As per the paper from Binshakir et al. (2023), in the construction sector, all stakeholders are required to adhere to these. The implementation of these regulations is required, and they typically diverge from the regulations that apply to regular construction projects. As a result, the contractor may need to take into account additional expenses and a specific level of skill (Binshakir et al., 2023). De Angelis (2022) study results add that in underdeveloped countries like Albania, the construction industry faces significant challenges in implementing circular economy principles, which are sustainability practices. These challenges are primarily related to institutional, procedural, and organizational concerns rather than technology. Ndoka and Alimehmeti also point out that the biggest challenge to the adoption of a circular economy in Albania's building industry is the absence of government subsidies (Ndoka & Alimehmeti, 2023). This implies that procedural such as well-laid-down guidelines and standards for implementing sustainability in the construction sector are one of the main factors hindering the implementation of sustainability practices.

Other than government regulations and policies, Albanian’s constructor sector still lags in sustainability because contractors are negatively impacted in making and implementing sustainable decisions due to the high cost and unavailability of sustainable materials as well as the challenge of accessing technology for implementing sustainability. They view sustainable materials as a bit more expensive than the non-sustainable ones, and also importing them adds to its costs and delays. Accordingly, most construction companies do not pay attention to complying with the use of sustainable materials and end up avoiding sustainability altogether in their construction projects. The most economical materials are chosen in the long run, which is preferring non-sustainable materials over sustainable materials since most construction companies in Albania Tirana are mainly concerned with profit making, so costly materials may add extra costs to them outside their budgets because finances are fixed. Binshakir et al. (2023) and Al Harazi et al. (2023) note that the economic situation influences whether contractors can make and implement sustainable decisions as it impacts things like the cost of sustainable materials. Variations in the cost of labor and sustainable materials might negatively impact the contractor's ability to make sustainable decisions financially and result in project losses.

Understanding the status of the economy enables the contractor to properly prepare the bid and consider these variations when making decisions pertaining to sustainability (Binshakir et al., 2023). Ndoka and Alimehmeti's findings point out that cost obstacles prevent the Albanian construction industry from implementing circular economy techniques because stakeholders view sustainability as an expensive undertaking rather than an investment (Ndoka & Alimehmeti, 2023). Buhaljoti and Abazi's (2022) study further concur with the issue of technology access and found that technical obstacles make it difficult for the building industry to adopt sustainable practices like the circular economy. These obstacles include the inability to obtain the proper technology to facilitate energy-efficient practices, the lack of technology to facilitate recycling, and the inflexibility of the current system and technology to be redesigned in an environmentally friendly manner (Buhaljoti & Abazi, 2022). So, the cost of sustainable materials, unavailability of these materials (since most are imported), and access to technology seem to be a significant problem for contractors, hindering their sustainable decision-making and implementation.

Of importance to note is the finding that contractors' experience with sustainability positively correlates with their sustainable decision-making and implementation. Experience plays a crucial role in the sustainable decision-making of contractors as the more experienced contractors are with sustainability and its implementation, the more they are encouraged to make sustainable decisions in the projects they undertake because they understand the significance of sustainability. Also, the experience of contractors helps when it comes to risk assessments, based on experience from past projects, as this can help them understand the risks involved in different forms of sustainable production as well as in cost management as experience improves their ability to decide on the right costs for sustainable materials and its technologies. Furthermore, experienced contractors on sustainability can teach their team on sustainability implementation and ensure sustainability is implemented throughout the project life cycle. This finding agrees with Zavadskas et al. (2017), Qazi et al. (2021), and Binshakir et al. (2023), who showed that contractors' experience with sustainable projects may enhance their sustainable decision-making. For instance, Zavadskas et al. noted that important insights are provided by a contractor's prior expertise in sustainable construction. Construction contractors may make

more sustainable decisions and create more sustainable structures by drawing on past project knowledge (Zavadskas et al., 2017).

The finding of lack of financial resources as another main factor negatively impacting sustainable decisions among Albania's contractors aligns to Ndoka & Alimehmeti study, which found that the adoption of sustainable practices in the Albanian construction industry is negatively impacted by a lack of effective financial resources for initiating circular economy practices, carrying out daily operations of the circular economy, and providing inadequate financial support for facilitating the implementation of sustainable practices (circular economy model) (Ndoka & Alimehmeti, 2023). Thus, even though a client's financial capabilities and expectations may be viewed as a major obstacle to Albanian contractors' sustainable decision-making, with strict government regulations and policies, this may not seem like a major factor anymore. This is because, with strict regulations, construction companies and their clients must adhere to the rules and, therefore, will have to provide a budget that can accommodate sustainable practices in their construction projects. The study concluded that clients restrict contractors' budgets, leaving not much space for improvement and other considerations to new sustainable approaches.

### *5.1.3 Albanian contractors with regards to decision-making models*

Albania's construction contractors are pre-determined to not implement sustainable approaches to their projects as they are limited to only two models of decision-making. More in detail, the study suggests an interesting insight into the Albanian contractors. From the interviews through indications, the study was able to argue that the contractors have found themselves limited in applying the "Bounded Decision-Making Model" and "Intuitive Decision-Making Model" as a result of constraints on resources such as time, budget, information, access to technology, normative standards and governmental regulations. These two decision-making models impact the sustainable decision-making process negatively as the main actors of the construction industry, contractors, decide not to implement sustainable approaches in order not to compromise the project budget and timeline. It is worth noting the natural managerial reflex to stick to what is known better and required empowers the choice. In addition to the main research questions, the contractors need to be put in positions where they have multiple choices

of implementations and are **able to apply other decision-making models** such are "Normative Decision-Making Model" or "Rational Decision-Making Model" which are applied in the cases of predetermined standards. If the government of Albania would introduce regulations and standards other than the recommendations in section 4.5, and invest in the available technology for sustainable approaches towards construction, such are "Green Buildings", "Ecological Architecture", "Sustainable Architecture" and "Sustainable Construction" as addressed in section 2.1.2, contractors would be able to have more options when it comes to new practices implementation. To conclude, the study suggests that since the construction industry is always affected by factors that influence the decision-making process through the decision-making models, then the contractors must find themselves in a position where they have all the information, have access to the available technology that serve the cause of sustainability in construction, understand the requirement to comply to regulations and set of standards to be able to apply a more inclusive decision-making model such as the normative or the rational model. This would result in contractors being able to implement sustainable decisions such as the ones explained in section 2.2, Table 4, which would not only positively impact the sustainable decision-making process of construction contractors but also bring the country a step closer to EU participation through complying with its regulations. Based on the findings, the study suggests the following process to take place when making decisions on sustainability matters:

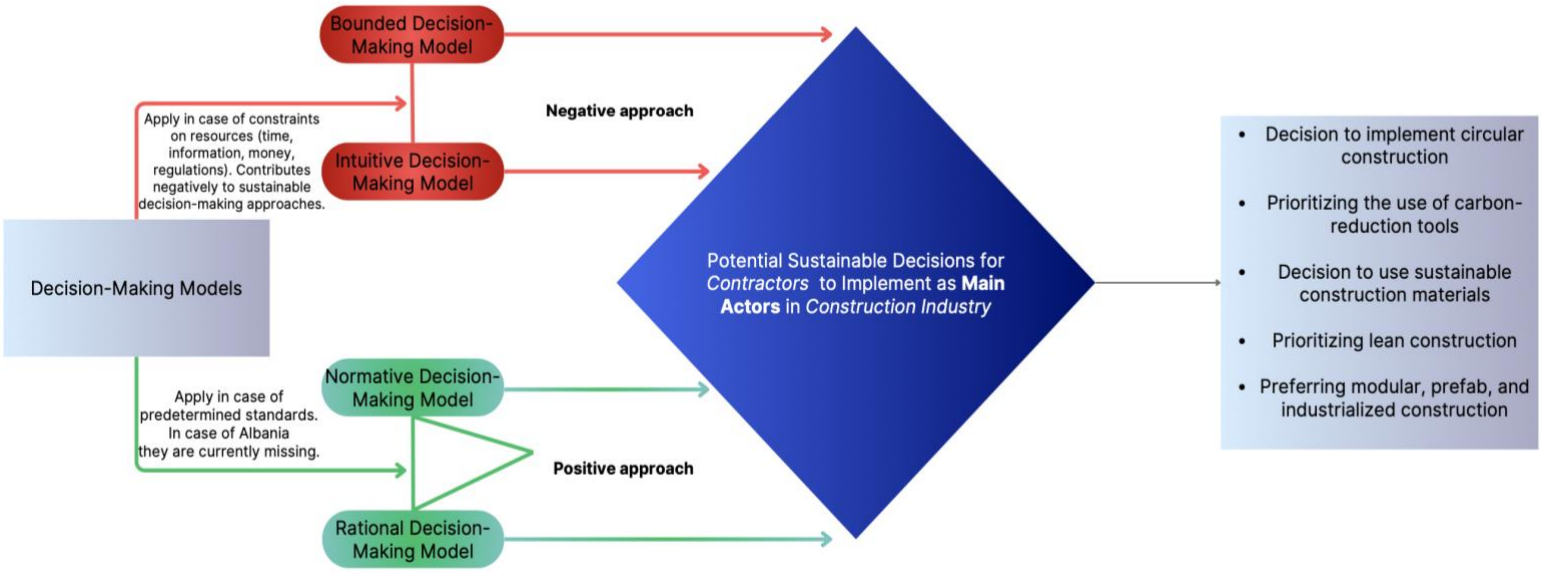


*Figure 10: Decision-making process with regard to models*

The interview and survey findings revealed that Albanian contractors' decision-making processes are influenced by a combination of bounded rationality, intuitive decision-making, and normative decision-making. These models provided a framework to understand how contractors navigate the complex trade-offs between sustainability, cost, material availability, and regulatory requirements.

#### *5.1.3.1 Bounded Rationality*

Contractors often operate under constraints such as limited budgets and material shortages**,** leading them to make decisions that prioritize practical feasibility over optimal sustainability outcomes. For example, many contractors reported opting for less sustainable materials due to their lower cost or easier availability. This reflects the bounded rationality model, where contractors make decisions based on the best available options, even if they are not ideal from a sustainability standpoint.

#### *5.1.3.2 Intuitive Decision-Making*

The findings also highlighted the frequent use of intuitive decision-making, particularly in high-pressure situations where quick decisions were needed. Contractors with more experience tended to rely on their intuition when deciding between sustainable and non-sustainable options, especially when faced with time constraints or unexpected challenges. This model was evident in cases where contractors had to make on-the-spot decisions without fully analyzing all potential sustainability impacts.

#### *5.1.3.3 Normative Decision-Making*

Contractors were more likely to follow normative decision-making processes when they were subject to external regulations. Projects funded by international organizations, such as the EU, imposed strict sustainability requirements that influenced contractors' decision-making. In these cases, contractors adhered to established rules and guidelines, even if it meant adopting practices they were less familiar with. This highlights the importance of external governance in promoting sustainability in the Albanian construction sector.

## 5.2 Relevance of the findings

First, the low status of sustainability in the construction sector, as indicated by the study results, implies that Albania still has to pull up its effort to implement sustainable practices by adopting strategies to enhance contractors sustainable decision-making as they execute the work activities necessary for the project's completion in the construction industry (Lee et al., 2014), suggesting that they have a big part to play in implementing sustainable construction practices to enhance sustainability in this sector. Also, Albania should employ some strategies to improve gender balance in the sector, as this may also assist in implementing sustainable practices and enhance sustainability in the industry. This is because the gender imbalance issue sounds to be more inclined to the low sustainability status in the sector and, thus, needs some attention.

Second, the study results from both survey final remarks and interview showed that the most influential factors, according to the participants, include the cost, the economy, financial capabilities of clients, government regulations, availability of sustainable materials, and contractor experience. However, **government regulations** were cited as the most influential factors that hinder contractors' sustainable decision-making in the Albanian construction sector, as almost all the respondents cited it. This implies that lack of well-stipulated government policies and laws regarding sustainability in the sector including energy, technologies, requirements, taxes and government initiatives and subsidies is the main issue hindering contractors from making and implementing sustainable decisions in the construction sector, hence contributing to the low status of sustainability in the Albanian construction industry despite the significant of sustainability in the sector and for the country's aim of receiving the EU candidate. Therefore, the government must address this issue by introducing stricter government policies and regulations to improve sustainability in the sector, as construction companies will be obliged to comply with the laws. Still, all the other factors should be taken into consideration when designing strategies to raise sustainability status in the industry as they were also identified as influential factors for contractor's decision-making.

## 5.3 Limitations

The first limitation that this study faces is the limited number of interviewees (7 participants), which may not be representative findings of the general industry, limiting the generalizability of the findings to the entire Albanian construction sector. However, these participants were from various companies holding different positions, and they gave in-depth responses and explanations. Moreover, the interview findings were also validated by the survey results. All these counter the limitation and help to enhance the generalizability of the study findings. Second, the results of the study were derived from individual experiences. Subjective experiences result from the fact that interviewees see processes differently, sometimes even regarding identical ones. The researcher's subjective assessment of the data is also present. Furthermore, the quality may have been constrained because the interviews served as the main source of information. Interview subjects may have failed to provide all the information requested or may have vested interests in the study's conclusions. However, when feasible, the interview results were cross-checked with information from other literature sources. Additionally, quantitative data gathered via surveys validated the interview findings, improving the findings' validity and dependability. Another significant limitation of this research is the generalizability of its findings. The study focused on construction contractors in Tirana, Albania, and while this context provided valuable insights, the results may not be fully applicable to the broader Albanian construction industry or other regions. The specific socio-economic, political, and regulatory conditions in Albania, particularly the limited access to sustainable materials and the evolving nature of government policies on sustainability, heavily influenced the outcomes of this study.

# Chapter 6: Conclusions

This study sought to answer the main research question**: How to improve sustainable decision-making for contractors in the construction sector in Albania?**" The findings from the interviews, supported by the survey results, adequately answered each research sub-questions.

## 6.1 Answer to Research Questions

**RQ0: What is sustainability in the construction industry?**

The study uncovered the fact that sustainability in the construction industry is much wider than emissions, as the construction industry is not only trying hard to minimize these effects but also it is rather working towards achieving several objectives related to the environment, economy, and society, including making available or incorporating more and more non-renewable resources, reducing or eliminating maintenance requirements and costs, increasing energy efficiency, enhancing interactions among people in the buildings and minimizing wastage. The emphasis is on assuring long-term value, accessibility, performance, and optimal cost to clients and users, as well as decreasing negative effects on the environment, which increases economic sustainability. Sustainability in the construction industry is expressed in terms like green building, sustainable construction, or ecologically sustainable architecture. For instance, green building means creating buildings through economically and environmentally sustainable means in all stages of a building's life: location, design, construction, use, refurbishment, decommissioning, and demolition. Sustainable construction integrates sustainable development practices throughout the construction life cycle, starting with construction planning, design, choice of the building materials, construction phase, decommissioning, and disposal of construction waste. On the other hand, sustainable design is defined as the process of practices meant for environmentally responsible, atmospheric stability, as well as efficient use of energies, water supplies, and other materials used during the construction, operation, and deconstruction of buildings.

**RQ1: What sustainability-related decisions do construction constructors make?**

First, the findings showed that construction contractors make various significant sustainable decisions. For instance, they play a critical role in delivering sustainable constructions or green

buildings. Contractors employ updated construction techniques, isomorphic drives (coercive, mimetic, and normative), and an accumulation of expertise, abilities, and operational resources to adjust to environmentally conscious construction. Also, contractors make choices that lessen negative environmental effects and encourage sustainable practices, such as using eco-friendly building materials and energy-efficient construction methods, including the decision to use cutting-edge new building materials, digital technology, regulatory incentives, and regulations that are supportive of decarbonization. Overall, the major decisions they make regarding sustainability include the decision to implement circular construction, prioritizing the use of carbon-reduction tools, the decision to use sustainable construction materials, prioritizing lean construction, and preferring modular, prefabricated, and industrialized construction. All these decisions aim to ensure sustainable and green construction practices.

**RQ2: What factors are potentially influencing the sustainable decision-making of construction contractors?**

The study findings showed that various factors influence contractors' ability to make sustainable decisions when undertaking construction projects. These factors include construction project risks, health labor rights and safety standards, government regulations, codes and policies, contractor's financial capabilities and risk management, the stability of the economic situation, project type, sustainable materials availability, access to technologies for sustainable execution, political stability, experience in similar projects, environmental regulations and safety standards, project complexity, and client's financial capabilities and reputation. These factors may influence contractors to make and implement sustainable decisions or not. For instance, materials unavailability and inaccessibility may demotivate contractors from making sustainable decisions to use sustainable materials and instead deliver non-sustainable projects using available materials.

**RQ3: How do these factors influence the sustainable decision-making of construction contractors in Albania?**

Regarding the fourth research sub-question, the interview findings validated by the survey results revealed that various factors influence Albanian construction contractors' sustainable decision-making, including construction project risks, government regulations, codes and policies,

contractor's financial capabilities and risk management, the stability of the economic situation, project type, sustainable materials availability, access to technologies for sustainability execution, experience in similar projects, project complexity, and client's financial capabilities and reputation. However, the most influential factors, according to the findings, include the cost, the economy, the financial capabilities of clients, government regulations, availability of sustainable materials, contractor's experience, and client budget, with government regulations being the most significant factor hindering contractors' sustainable decision-making in the Albanian construction sector. Notably, the findings revealed that different factors have positive or negative impacts on contractors with different working experiences. For instance, limited access to technology, unavailability of materials, costs, and client budgets or financial capability condition Albanian contractors to not implement circular construction just to make sure they work within the project budget and timeline. However, factors such as the lack of strict government regulations and policies on sustainability and contractors' experience with sustainable projects negatively impact them to stick to what is known to them and use traditional methods instead of implementing modular, prefabricated, or industrialized construction.

**RQ4: What measures can be taken to encourage a sustainable decision-making process within construction constructors in Albania? Improve the availability of sustainable materials**

This study recommends the following:

- Strengthen government regulations and policies on sustainability.
- Improve the availability of sustainable materials and technology.
- Enhance contractor education and training.

## 6.2 Conclusion to the Main Research Question

Finally, to conclude and address the main Research Question: "**How to improve sustainable decision-making for contractors in the construction sector in Albania?**"

The main research question concerned how to improve sustainable decision-making for contractors in Albania's construction sector. The most effective way to do this is to take a holistic approach that considers multiple factors that currently hinder progress while leveraging existing opportunities within the industry. Sustainable decision-making is a critical concern for Albania's construction sector because it has a significant impact on the environment, society, and economy. One of the outstanding findings from the research is that while some contractors are aware of sustainable practices, their decision-making is often constrained by external pressures. This includes weak government regulations and economic factors. The findings also showed that one of the central challenges is the lack of clear and enforceable sustainability guidelines. There is no denying that Albania's government has made strides in addressing environmental concerns, particularly as part of its bid to join the European Union. However, these efforts have not yet translated into firm and industry-wide standards for sustainable construction. The lack of these regulations results in contractors lacking the guidance and incentives needed to consistently prioritize sustainability over short-term financial concerns. If the government provided clear and actionable policies, contractors would have access to a roadmap for integrating sustainable practices into their decision-making processes.

Another obstacle to improving sustainable decision-making is the financial aspect. The findings illustrated that contractors often perceive sustainable construction practices as more costly whenever they are required to use eco-friendly materials and energy-efficient technologies. This perception discourages contractors from adopting sustainable methods. If they were to import sustainable materials, their costs would further increase, adding to the reluctance of contractors to embrace these practices. Two ways to deal with this would be to improve local production of sustainable materials and to offer financial incentives like tax breaks for companies that implement green building practices.

In addition, the study showed that the availability of technology plays a significant role in shaping contractors' decisions. It was also evident that the construction sector in Albania is still

developing in terms of technological advancements. Many contractors lack access to the digital tools and technologies that could help them implement sustainable practices more efficiently. Some of them lack energy-efficient designs or advanced construction methods such as modular or prefabricated building techniques. Most of them do not even use digital project management tools, although all these could improve sustainability outcomes. However, the lack of access to these technologies inhibits contractors from making informed, sustainable decisions. They should, therefore, be encouraged to adopt these tools through subsidies or technology partnerships to help bridge this gap and empower contractors to make decisions that prioritize sustainability without sacrificing project efficiency.

The role of experience is also important in contractors' decision-making processes. Contractors with more experience in sustainability are better positioned to assess risks. They also do a better job of managing costs and implementing sustainable practices effectively. Those who had a longer period in the industry tended to have a deeper understanding of how to balance the immediate costs of sustainable materials with long-term benefits such as reduced energy consumption and lower maintenance costs without lowering the quality of buildings. This means that one way to improve the decision-making capacity of contractors would be to invest in the professional development of contractors and provide training programs focused on sustainability.

Another key factor influencing sustainable decision-making is the role of client expectations and financial capabilities. Many contractors are constrained by clients who prioritize cost savings over sustainability. In contrast, clients often have limited budgets and do not fully understand the potential long-term savings and benefits associated with sustainable practices. In such cases, contractors may default to traditional building methods. These are usually less environmentally friendly but more cost-effective in the short term. To address this, it is essential to raise awareness among clients about the advantages of sustainable construction. The companies within the industry have the responsibility to educate clients on the long-term economic, environmental, and social benefits of green buildings. The clients should be aware of how their projects can improve energy efficiency while also enhancing market value. Additionally, providing financial incentives to clients, such as green financing options or reduced interest rates for

sustainable projects, could encourage them to support contractors in adopting more sustainable practices.

The Albanian government's role is also central to driving sustainable decision-making. However, the current lack of strict enforcement allows contractors to prioritize short-term financial gains over sustainable practices. The government should strengthen its intervention through well-defined sustainability standards and rigorous enforcement to compel contractors to comply with sustainable construction guidelines, especially along the lines of energy-efficient technologies, sustainable material usage, waste management, and green building certifications.

Finally, the finding also pointed out the need for a certification system for sustainable construction practices to offer a formal mechanism to incentivize contractors to adopt sustainable decision-making frameworks. There are two fundamental advantages of such a system. First, a well-thought-out certification program would set clear standards and create accountability. What this does to the industry is ensure that contractors adhere to specific sustainability criteria to maintain their certified status. At the same time, certification also introduces a competitive element that motivates contractors to enhance their sustainability credentials to stand out in the marketplace.

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# Appendix A

*Table 7: Summaries of the three perspectives of sustainability*

| | |
|---|---|
| Social sustainability | This is centred on some fundamental freedoms and rights that are specific to being human, which entails the equality and generational balance. This component is concerned with ensuring that resources are preserved so that they can be passed down to the following generations in order to support them and make them affluent (Ramprasad et al., 2023).<br><br>This means that each person will have access to basic necessities like a job, a place to live, good health, education, and cultural opportunities as well as improved life quality (Ramprasad et al., 2023). |
| Environmental sustainability | Environmental sustainability seeks to fairly meet the environmental and developmental needs of both the current and future generations (Moshood et al., 2024).<br><br>Examples include the utilization of renewable resources and energy sources while discouraging the use of non-renewable ones (Zavadskas et al., 2017) |
| Economic sustainability | It is concerned with production-consumption balance in the economy that must be determined by taking social justice and ecological sensitivity into account (Zavadskas et al., 2017).<br><br>It comprises the ability to maintain a consistent flow of capital from the public and private sectors while managing resources well and evaluating economic efficiency based on social factors rather than organizational profitability (Moshood et al., 2024).<br><br>Examples include cost reduction through increased efficiency from lower energy and resource input in generation, and provision of added value to achieve sustainable economic development (Moshood et al., 2024). |

# Appendix B

The questions used for the semi-structured are written below. These questions have been used to guide the interview but since it is a semi-structured interview, the interviewee was allowed and encouraged to follow his train of thought.

**Interview questions**

1. For how long have you worked as _____in a contracting firm?
2. How would you describe your working experience in a contractor/contracting firm in Tirana, Albania?
3. In your work in a contractor/contracting firm, are you familiar with the term sustainable construction? If yes, what do you understand by it in simple terms?
4. What is your role with regard to the conservation of energy (boosting energy efficiency) in construction projects in your position?
5. How do you engage in the management of resources during the entire construction project process in your area?
6. What practices do you lay down to ensure that constructions produce less waste to the environment?
7. What other strategies do you employ in your position to make sure that construction projects have less impact on the environment, economy, and community?
8. How do you make these relevant sustainable decisions in your position?
9. What makes you not make more sustainable decisions in your position?
10. When making these sustainable decisions, what are the factors that influence your decisions? For instance, how does project type influence your sustainable decision--making?
11. How do risk and complexity influence your sustainable decision-making?
12. In which way does sustainable material availability influence your sustainable decision-making?
13. How do government regulations and policies influence your sustainable decision-making?

14. In what way would you describe access to technologies as a factor that influences your sustainable decision-making?

15. How does the economic situation influence your sustainable decision-making?

16. In which way would you say your experience with sustainable projects influences your sustainable decision-making?

17. Do the client's financial capabilities influence your sustainable decision-making?

18. How do your risk management abilities influence your sustainable decision-making?

19. In what way do environmental regulations influence your sustainable decision-making?

20. What would you say are the most influential factors that you mainly encounter among the ones mentioned, and how have they influenced your sustainable decision-making? (negatively or positively)

21. Would you say the benefits o importance of these sustainable decisions that you make in your area?

22. In regard to the above question, what recommendations would you suggest for improving sustainable decision-making in the Albania construction industry?

23. What else would you like to add?

**Survey Questions**

The Survey was anonymous and used a (1-5 scale) method. The statements used on the survey are written below:

- What is your profession or academic background?
- What is your age range?
- Do you think sustainability is important in the construction industry
- Project type (whether residential, commercial, or infrastructure) impacts contractors' decision-making concerning sustainability in construction projects.
- Client's financial capabilities (clients with enough money for project execution) guarantee that sustainable practices are put into place, i.e. enable contractors to carry out the project's sustainable decisions.

- Clients with good reputations support sustainable initiatives, which motivates contractors to carry out the project's necessary sustainable construction activities.
- Sustainable project risks (such as lengthy waits to obtain permits for new materials, sophisticated construction methods, and intricate designs) impact the contractors' decisions regarding whether or not to incorporate sustainable techniques into their construction projects.
- Sustainable construction solutions may be specific to complex undertakings (add to project complexity) and thus may negatively impact contractors' ability to implement sustainable decisions.
- Construction managers/contractors' prior experience/expertise with sustainability projects helps them make more sustainable decisions.
- Political unrest negatively impacts the ability of contractors to make decisions relating to sustainability in construction projects.
- Government regulations, codes, and policies may compel contractors to comply (regulatory compliance) with sustainable construction practices and hence positively influence them to make and implement sustainable related decisions in construction projects.
- Variations in the cost of labor and sustainable materials (economic condition instability) might negatively impact the contractor's ability to make sustainable decisions financially and result in project losses.
- Making sustainable decisions is influenced by the technology that is available (access to technology) for sustainable construction as green practices can be implemented by contractors who have access to eco-friendly tools.
- The decision for the "right" material for sustainable use is determined by factors like availability, less processing, harmful effects, recycling capabilities, cultural acceptability, self-construction, natural origin, low consumption of energy, and low cost of upkeep, which in turn influence contractors' ability to implement the sustainable construction decision

- The availability of necessary sustainable products on the local market positively influences construction managers' ability to implement sustainable construction decisions.
- Contractor's financial capabilities impact their ability to complete sustainable projects (Sufficient resources allow contractors to make more sustainable decisions and embrace eco-friendly practices.
- Contractors' risk management influences their sustainable construction decisions implementation.
- Social factors such as health labor rights and safety standards influence contractors' sustainable decision-making in construction projects.
- Please make any other relevant comments.

# Appendix C

*Table 8: Table of Interviewees*

| Interviewee | Gender | Position | Years worked |
|---|---|---|---|
| M1 | Male | Engineer of facades/site engineer | 10 |
| M2 | Male | Site manager/site engineer | 8 |
| M3 | Male | Mechanical manager/ civil engineer | 22 |
| M4 | Male | Technical director / site engineer | 21 |
| M5 | Female | Quality control engineer / civil engineer | 2 |
| M6 | Male | Civil engineer/ structural | 7-8 |
| M7 | Male | Accountant | 21 |

# Appendix D

**Below the Coding of the transcripts is shown:**

***Sustainability status in Albania (category 1)***

Are aware of what sustainable construction is but recognized that it is not so much used in Albania. There are sustainability obligations regarding sustainable construction guidelines (laws) that should be implemented by construction companies. However, the companies are not strictly complying with the laws because the government is not strict in supervising the implementation of these sustainability laws for construction companies “I have listened about sustainable construction, but I think in Albania it's not used so much. They try to, they have some obligations, but they don't apply” (R1).

“Nowadays, we have come to terms with the sustainable constructions. We've been using more the sustainable construction and the idea like facades with thermal insulation facades, ventilated facades, old formworks, plastic formwork, recycled materials.” (R2)

Working faster to complete within the construction timelines compromise sustainability and even quality.

This concept is still new in Albania and some constructors are not familiar with it “So regarding this topic, Albania is not very well familiar, since it is a country on development still, and still learning about this stuff, so not very experienced. Workers as well. Yeah, the workers are our problem” R6

Aware of the term sustainability (sustainable construction)-R3

Sustainability in the construction sector is still a new concept but the actors (contractors are learning from outside to gain the experience since there are still no laid down specific standards for sustainable construction in Albania. “I mean, it's not even in the university, it doesn't exist still in our books and our standards. Our concept still is not open to this field of sustainability. But we are having expertise from outside, abroad of Albania, and we are gaining the experience of them” R4

Sustainability in the construction sector in Albania should by the government introducing to the academic style at first or as government regulations to make the concept widespread. R4

Aware of the sustainable construction “Yes, I am familiar in simple terms. It's designing and building structures in a way that minimizes environmental impact” R5

“So, regarding the sustainable constructions, yes, we are familiar as a company, usually we try not to make compromises with the environment but also the work needs to be done. So, we try to use different methods to achieve this objective. So, for example in asphalt road construction we try to recycle as many materials as we can like asphalt, we excavate it and then we reuse it.” R6

Using eco-friendly materials

Familiar with the term “Yes, I am familiar with the term. In my job as an accountant for a construction company, sustainable construction means practice of building that have a minimal environment footprint, but at the same time they make best use of resources.” R7

Some (3 respondents) recognize the Albania’s prospect for EU as the main driver of their sustainable decisions in the construction sector as this will help raise the sustainability standard of the country “y. For example, sustainable financial planning means that I integrate sustainability into financial planning by prioritizing projects using green materials and energy efficient designs, thereby reducing environmental impact and improving Albania's prospect for EU membership. So, the EU membership that Albania is towards is one of the drivers, you'd say? Yes, of course.” R7

***Contractors’ sustainable decision-making (category 2)***

Contractors have a role to boost energy efficiency and minimize waste by ensuring sustainable materials are used in the façade and inside position. R1

Ensuring sustainable energy is used in the construction because this results in many profits in terms of increased energy efficiency than non-renewable sources of energy. “Because we have to see profit, non-profit, profit in the future, profit we have to have profit nowadays. And in

terms of long-term profits, the sustainable energy has always prevailed on our decisions. Mostly during the usage of wood, thermal glasses and the part of facades, ventilated facades and rockwool for usage for facades." (R2).

Ensuring waste management through using materials that consume less water such as geotextile (water conservation), reusage of materials for gardening or excavate them so they are not transported to the landfill. This saves on transport energy.

Through using sustainable materials and obtaining certifications where needed such as LEED building construction needs LEED certificate R3

Ensuring that the work adheres to specified regulations and requirements of sustainability such as energy conservation through using materials and construction techniques that meet sustainability criteria. "Well, my role as a quality control engineer is to ensure that work adheres to the specified regulations. For example, if sustainability includes energy conservation and it's part of my project requirements, I have to enforce those standards. So, for example, this might involve using materials and construction methods that meet sustainability criteria." R5

"So, regarding the conservation of energy or energy boosting efficiency it is important that we make some decisions in order for transportation, excavation needs to be done properly at the exact quote, transportation needs to be combined in order not to do two or three transportations. So, efficiency is important in this kind of job" R6

Engage in sustainability in different ways such as through minimizing waste, recycling materials, reusing resources, which needs careful planning and coordination. Using local materials to minimize on transportation, incorporating green spaces where possible. Constructors make these decisions, and their decisions consider long-term economic benefits of sustainability. R5

Analyzing the financial implications of sustainable materials such as energy-efficient technologies and materials. Also, y roles are budgeting and financial planning to assess other available alternative financial initiatives to support sustainable projects such as international grants or energy efficiency loans. "One of my jobs or one of my roles is to look at the financial

implication of using energy-efficient technologies and materials in construction by doing best cost-benefit analysis to determine whether the long-term savings from lower energy use outweigh the higher initial costs of the sustainable materials. This cost can be used to estimate potential financial savings from lower operation costs and increased property value due to energy-efficient features." R7

Management of resources – "Well, I engage by budget planning and allocations. So, I prepare detailed budgets for entire construction projects, including anticipating the cost of materials, labour, equipment and other resources. Also, one of my roles in the management of resources is cost monitoring and control, financial reporting analysis, procurement and supply chain management, sustainability and waste reduction." R7

**Factors that impact Albanian contractors' decision-making (category 3)**

***Availability of sustainable materials (sub-category 1)***

Accessibility and availability of materials impact the contractors' decision to apply the sustainability guidelines of using sustainable materials because these materials are imported, as they are not produced in Albania. Sustainable materials are important in ensuring sustainability as they contribute to making the city cleaner and in turn better the life of people and the community. "For me, it's very important to use these sustainable materials because they make for sure better the life of the people and the community. That maybe you don't, the people don't see directly. It's a concept that they don't touch, they don't affect in a direct way" (R1).

"Limited availability of sustainable materials in Albania means that we might have to import them, which actually increases cost and delays the project. And then it would make it more difficult to prioritize it in decision making. R5"

It is taking so long to order the sustainable materials, making the site manager not to go with sustainability (sustainable decision making) because it takes a toll on the site duration, but profitable on the long-term. But to the business side, they cannot wait for these materials. R2

Availability of sustainable materials make a lot of different. And since they are aware of this, they decide in the first days and make pre-order of the materials to avoid delays. Okay. Also,

like nowadays, we've been using those green terraces. It's becoming like a fashion design for all these constructions on the rooftop. Also, on this, you can use those green, implement those plants during the facade, all the way to the facade. It's like nowadays (sustainable materials being used) R2

Unavailability of raw materials can make contractors not to make sustainable materials because it becomes the materials are not available in Albania and importing them is expensive and takes a lot of time, which may stall the projects. “But when it comes to material, now the raw material or the products that you are going to use, sometimes it is unavailable. For example, if you want to use copper pipes that are produced from scrap, so maybe in Albania, you can't find those, so you have to bring them from another place. So, in that case, we have to think like this. So, it is going to be expensive plus in order for us to bring it, we are going to transport it” R3

Unavailability of materials is making contractors to use sustainable materials in their construction projects. This is because most materials are imported from abroad “I can say that half, mostly of the half of technology and materials which are implemented in the new buildings that we are building every day are coming from abroad. Mainly from Italy and from Spain.” R4

The decision to make and implement sustainability in the construction projects (the special US embassy project) depends on the availability of the sustainable materials. “Well, these are the client's expectations and also available resources.” R5

“We have some lack of materials regarding this kind of jobs, so it's not always easy to make sustainable decisions, so projects or processes if we don't have the material, especially if they will cost more, so yeah, material is definitely something that will be decision making.” R6

“What's readily available and what's not is a direct factor in cost. If materials are commonly accessible nearby, they tend to be less expensive, which makes the financial argument to use them a bit easier. In contrast to that, rarely available materials come with a premium price tag as they are often imported at a high cost with a far lower supply. Project timeline and scheduling, if availability is scarce, for example, this can cause delays in materials delivery and timelines” R7

“Several factors can limit the ability to make more sustainable decisions. For example, one high initial cost. Sustainable materials and technologies tend to have high upfront costs. Lack of financial incentives without the help of government incentives or subsidies for adopting sustainable practices, such as reduced tax or direct rewards for embracing environmentally friendly solutions. Also, budget constraints, lack of experience, not enough competence to experience among key stakeholders of sustainable construction” R7

***Client’s expectations/clients’ budget /client’s financial capability (sub-category 2)***

The sustainable decision-making of contractors depends on clients’ expectations, they have to deliver the expectations of client and so if sustainable materials or construction techniques are required, contractors have to comply. “Yes, it's type of a project, it's the client's budget, it's the availability of the materials that I might consider the main factors” R5

Financial capability of client is a factor that hinders sustainable decisions because of their budgets are fixed and cannot accommodate the implementation of sustainability such as using sustainable materials or some technologies, then contractors does not implement sustainable construction practices in their projects. “Yeah, just like I told you earlier, the financial is a problem on this side, and since this kind of decisions are not only part of my job, but also the boss has to approve everything, it also affects the financial capabilities, will always be a problem on these decisions” R6

The financial capabilities and the willingness of clients to invest are very important for me, as this will determine the extent to which I can implement sustainable tools and materials. If clients have a robust financial capacity, this means they will pay, will be more open to using advanced sustainable materials and tools. Of course, since they are more expensive. In contrast with clients that have a limited budget, my decision must be focused on cost-effective solutions. R7

***Cost of materials (sub-category 3)***

Making sure that contractors apply sustainability guidelines of using sustainable materials in construction depends on the costs of materials as sustainable materials are a bit expensive than

the non-sustainable ones, so most construction companies does not pay attention to comply with it. The respondents recognized that finances and costs of sustainable materials is a strong factor because Albania economy is not high like in the European countries/cities. R4

The most economical materials are chosen in the long run.

May be in the future, the pressure from European government may make the Albania government apply more and be strict to the construction companies to apply the sustainable approach in construction if they want to be EU member because sustainability must apply in all the projects. (R1)

Sustainable materials are expensive, and contractors choose to go with the cheaper option to enable them work within the budget so they would likely make unsustainable decisions. R2

Cost is the primary barrier for making sustainable decisions “The primary barriers for me are cost and availability of those materials.” R5

***Technology availability (sub-category 4)***

The technology to implement the sustainable materials is not available in Albania. It is still a new thing and is somehow being applied in big projects such as such as roads, power plants but not in the buildings. (R1).

“So, the technology is missing. The technology is missing also, and purchasing the technology will make it a lot more expensive. This is also where the government takes part to introduce incentives and push the companies to a greener... It should do some investments maybe or... Understandable. And to sum up, these are the last questions.” R6

The access to the technology is influential in sustainability (like to stop using concrete), but access to these technologies is a challenge. Since the state is not strict in regulating to see sustainability being implemented in the construction sector, they do not promote it. So, even access to technologies that promote sustainability is on behalf of construction companies and not government. (R2). “But also, the missing technology would then make you not be able to

use a sort of sustainable approach, but that you don't yet have. So, the access to this technology would be very influential. It would be influential, the access to technology."

Have access to AU technology but Albanian government needs to consider these and start bringing these technologies to enhance accessibility "So, thinking like that, I mean, knowing this, it will be not a difficult task to implement such a technology and to find this technology because we already are building with AU technology in our everyday structures" R4.

But Albania is making progress because there is availability of some of these technologies. "But nowadays, Albania is making very good progress. Okay. Toward this technology, obtaining this kind of technology. Nowadays, we've been using VRF systems for toll buildings everywhere. So, it's like, okay, we're good. We're making progress in air conditioning." R3

Technology is helping to enhance sustainability but in Albania the access is still a problem "So, technology is of course helping, but nowadays the buildings are, for example, with not that much floor height. So, they have less, but you have mechanical and electrical systems to make it comfortable" R3

No implementation of these new technologies for contractors to gain expertise in using them making it a struggle for them in Albania.

"The availability of advanced technologies within the Albanian market dictates the type and the scale of the sustainability agenda of the project. Superior technologies that are readily available allow for the implementation of more advanced systems such as advanced energy management or green materials which in turn boost the sustainability profit of the project." R7

***Project type (sub-category 5)***

Project type whether (whether residential, commercial, and infrastructure influence the decision-making of contractors regarding sustainability.

Type of project like tall buildings influence sustainable decisions of construction contractors in Albania. For instance, in tall buildings, they don't like using plastic framework that are

sustainable because they break faster while in other construction projects like roads and pavement, they make sustainable decisions through the reuse of asphalt. R2

“A residential project might have to follow a different approach of sustainability for a commercial or even an industrial project” R7

Type of project matters since some projects would compel contractors to be more sustainable and make sustainable decisions while other will not encourage this. For instance, a special project, like, let's say, an embassy project that you need to follow the regulations. R3

Certain areas of a project- But when it comes to terms of thermal insulation, facades, air conditioning, we always go with sustainable materials. Rockwool is the best form of insulation. XPS, polystyrene is the best ones you can use (R2).

Project type influence contractors’ sustainable decisions, for instance, construction of buildings that are landmark in the city must the concept of sustainability included in it, and therefore, contractors have to make sustainable decisions regarding that. “One building that is very vulnerable or it is very, let's say, that it will be as a landmark of the city. That for sure has to have this concept included in his design” R4

“Well, *type project budgets and timelines* often limit the extent to which sustainable practices can be implemented” (R5)

***Project risk and complexity*** **(sub-category 6)**

The projects at the cost use certain type of materials than projects on other sites.

Financial risk, for instance, arises because high upfront costs are associated with most sustainable technologies. This requires that the cost of benefits analysis of every project must be rigorously assessed to confirm that a sustainable approach would allow for acceptable returns on the investment. R7

“Well, higher risk and complexity might require a more conservative approach, which can limit the use of untested practices. So, we need to ensure that the project remains on track” R5

***Laxity of the government to supervise the application of sustainability guidelines (government policies and regulation) (sub-category 7)***

Some construction companies just decide not to go the sustainable way because the government has regulations but not so strict, so the companies have space, meaning they are relaxed in applying sustainability approach. “Only the price, I think, if they don't want to go. And an opinion on the government regulations? The government, it has their regulations. Maybe not so strong, maybe not so strict. But for sure, if the government is not strict, the companies have space” (R1).

Only the construction company policies apply because there is currently no strict state regulation concerning sustainability for construction companies. So, companies decide to go green or the sustainable way only if they want to and their own costs. (R2). “Again, on this sustainable decision- making policies, we can talk only about construction companies' policies. Because we don't have a strict regulation, state regulation. From the government. From the government's regulation about this. If the company wants to go green and sustainable using this kind of materials, they decide on their own costs” (R2).

The government in Albania does not have specific environmental regulation with regard to sustainability in construction and so other sustainability requirements such as the US apply for those who are working for the US embassy. “I'm still working in Tehran actually, but to me, not only Albanian regulations apply, US as well. And these US regulations, which differentiate too much from the Albanian regulations, require us to meet specific standards for our project. And these regulations guide our decision making and ensure that we prioritize it” R5

“Well, as an accountant expert involved in the construction sector in Albania, government regulations and policies play a critical role in my decision-making as far as sustainability is concerned. Due to the impact of the current legislation directly on the project costs and investment decision, financial incentives such as subsidize, or tax breaks are crucial for my organization.” R7

If there are clearly stated government regulations concerning sustainability for the construction industry, the contractors have to comply, and this will enhance their sustainable decision-

making when undertaking construction projects. So, there are in Albania, but they are not effective because the government is laxed on their implementation. There is no strict environmental regulation in Albania. R3

“As far as I am informed, the Albanian government does not have very strict regulations, which limits the pressure to adopt these practices. Yeah, and make it not necessarily necessary. Not a requirement.” R5

Environmental regulations are important as they set the standard of sustainability requirements to be implement and thus enhance sustainable decision-making “Minimum compliance with environmental regulation sets the minimum standards of sustainability that all projects must at least meet. As an accountant, I need to make sure that our projects not only meet the minimum standards in terms of compliance, but also consider the costs associated with such compliance.” R7

“Well, the most influential ones are the availability of sustainable materials, client budget, and I would put third, government regulations.” R5

Well, I would say financial capabilities of clients, government regulations. And I can explain them if you want in a more detailed way R7 Well, if you could just the positive approach. Well, the benefits of financial capabilities of clients are that wealthy clients have sufficient financial resources. It facilitates the use of advanced sustainable technologies and approaches. In this way, projects can develop the best of the new practices that push the boundaries of sustainability and efficiency, thereby being innovative and setting new industry standards. This is a benefit. What about the government regulations? A positive approach from government means a rigorous environmental regulation, encourage firms to comply and to ensure that every project meets an absolute minimum standard of sustainability.

***Experience (sub-category 8)***

The more experienced contractors are with sustainability and its implementation, the more they encouraged to make sustainable decisions in the projects they undertake because they understand the significance of sustainability.

Site duration, workers experience, because many of our workers don't know how to cope with new materials. We have to educate them with this kind of new materials. (R2)

We are working with engineers from abroad who are bringing this new concept of sustainability that we now implementing in the new constructions we are understating. Once we have learned this, we now have some experience to make these sustainable decisions and spread it to other projects that we undertake R4.

Experience plays an important role as someone with experience about sustainability in the construction sector will bring the experience and encourage more sustainable decisions to be made than someone without experience. “And also, this makes for the factor that a company needs to have previous experience or some company to express and bring this experience to us” R3

“Well, the more experience that you have, the more aware you are of the importance of sustainability and how to integrate it into construction practices. Personally, for me, it has influenced my decision making, because it highlights the long-term benefits. And it actually encourages me to find more ways to incorporate, even if I'm faced with those type of challenges that are cost or time, or even design” R5

Experience helps with a lot of things Risk assessments, based on experience from past projects, we can understand the risks involved in different forms in sustainable production. Cost management, also hands-on experience, has helped me to improve my ability to decide on the right costs for sustainable materials and its technologies “So, knowledge base, each sustainable project I have been part of, has been an opportunity to learn more about what works and what does not. This practical knowledge is a useful resource in avoiding pitfalls, appreciating the nuances of the issues and recognizing effective solutions.” R7

***Economic situation (sub-category 9)***

“The economic situation in Albania, being a country under development, means that the budgets are often tight, and clients prioritize cost saving over sustainability. They want to finish the project fast. It makes it harder to implement sustainability practices.” R5

Finances are not so much of an obstacle to making sustainable decisions because already they are using a lot money on concrete that they could on sustainable materials so, it's mainly about the policies as well-structured policies will compel engineers and other actors in the construction industry to start making and implementing sustainable decisions. R4

"A stable or unstable economy may directly influence the scale and feasibility of sustainable approaches in the project. With a stable economy, of course, there might be more funds available for investing in high-tech and costly sustainable technologies as the companies are willing to tolerate the short-term costs for the long-term benefits. But of course, being able to implement these technologies, it comes to experience." R7

"The most, it is the cost, the economy, economy is the problem. Okay, so as long as we're talking about business and construction industry, it all comes down to the finances and the profit"

Sustainability tends to cost more, which makes clients see that it is not necessary because it will end making losses on the business side. So, in the end, sustainable decisions will be avoided to ensure the projects will remain within the confines of the budget and time "We have some lack of materials regarding this kind of jobs, so it's not always easy to make sustainable decisions, so projects or processes if we don't have the material, especially if they will cost more, so yeah, material is definitely something that will be decision making." R6

**Recommendations (category 4)**

To educate people construction companies (including all engineers) on the importance of sustainable construction. There should be something like publicity from the government. R1

Need for government regulation regarding technologies- "And nowadays, we cannot achieve that kind of... The technology is available, but in how many years can I obtain profit from this kind of technology? If the state doesn't regulate this kind of... We need the state to regulate this kind of politics, taxes, politics, to sustain more companies that are focused on this kind of technology. And also, to shift the technology, to shift the idea and prospect using toward green" (R2)

Government regulations on energy use, supporting companies that are going green to ensure they don't lose profits, (R2.)

There should be some training courses for contractors. R3

Familiarize the concept of sustainability among engineers as this not already known among them. This will make it easy for them to implement the new concept of sustainable designs. R4

"Well, I would recommend the Albanian government to introduce stricter regulations. Education and awareness raising about the long-term benefits of sustainability for both the environment and economy are crucial, I would say" R5

Government regulations "In my opinion, the government should do some actions, should take some actions on this part. So, reducing the taxes, making some obligations on the new projects, for example, that X percent of the materials should be recyclable or sustainable. By this way, most of the construction will be obligated to use the sustainable materials and make the projects more pro-environment. So, reducing the taxes from the government is definitely something that I suggest, or I think it will work" R6

government initiatives and subsidize. The Albanian state could encourage more companies to invest in these technologies and practices by offering tax rebates, grants or subsidize some projects that deemed to reach the high standards, so the EU standards. Another recommendation, accessing the sustainable materials and technologies, supporting sustainable materials, technologies in the supply chain and financing local producers and importers to expand their supply and reduce costs can help them to come to scale. It would be also worth exploring local production of such materials R7