




REVIEW ARTICLE

The significance of circular economy approach in determining corporate sustainability strategies and developments in Türkiye

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ABSTRACT

Türkiye's EU accession process and its extensive trade relations with EU countries accelerated its transition to a circular economy. In this context, significant legal and administrative regulations related to environmental, social and governance (ESG) are being implemented in Türkiye in compliance with EU legislation. However, for the country to sustain its growth in the long term and reach the 2053 net zero emission target, it is necessary to transition to the circular economy model by establishing policies, strategies, a regulatory framework and an institutional platform.

Therefore, in this study, it is aimed to make a technical and legal evaluation in order to determine the strategies in Türkiye in the light of international developments. In this context, it examines the growing global importance of sustainability and the circular economy in mitigating environmental risks and achieving Sustainable Development Goals (SDGs).

Furthermore, the manuscript explores the concept of corporate sustainability requires the integration of environmental, social, and governance (ESG) factors into business decisions and processes and the significance of sustainability reporting. It discusses various international reporting frameworks and analyzes the current state of corporate sustainability reporting in Türkiye by highlighting the importance of meeting international sustainability reporting standards.

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INTRODUCTION

The Global Risks Report by the World Economic Forum has issued warnings on global risks perceived as threats to humanity for the past 20 years. This annual report analyzes the most significant global risks in the short (next 2 years) and long term (next 10 years). The 20<sup>th</sup> edition of the Global Risks Report, published on January 15, 2025, reveals an increasingly fragmented global landscape, where growing geopolitical, environmental, social and technological challenges threaten stability and development. This year's report also says that there is a growing sense of alarm about environmental risks in the short term and emphasizes the need to take urgent measures against environmental problems caused by extreme weather conditions and pollution [1].

According to the report, environmental risks dominate the longer-term outlook, with extreme weather events, biodiversity loss and ecosystem collapse, critical change to

Earth systems and natural resources shortages leading the longterm risk rankings. The fifth environmental risk in the top ten is pollution, which is also perceived as a leading risk in the short term. Its sixth-place ranking in the short term reflects a growing recognition of the serious health and ecosystem impacts of a wide range of pollutants across air, water and land [1].

The consequences of these risks constitute an obstacle to development and even survival for societies, and "sustainability" is of critical importance in solving this problem. The notion of sustainability, which is defined in the most basic sense as sustaining, continuing, maintaining the ability to be permanent, is rooted in the wider concept of "sustainable development" [2].

When examining the international milestones of the sustainable development, the study titled "The Limits to Growth" published by the Club of Rome in 1972 is considered the first major study related to sustainable development [3].

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The "Our Common Future" report, also known as the "Brundtland Report", published by the United Nations Commission on Environment and Development in 1987, defined the sustainable development as "meeting the needs of present generations without jeopardizing the ability of future generations to meet their own needs". The report, which elaborates the concept of sustainable development in detail, emphasizes that in the face of increasingly severe environmental problems, establishing a vital bridge between environmental progress and economic development and ensuring that development is sustainable are considered humanity's pathway forward. [4].

The 1992 United Nations Conference on Environment and Development in Rio can be considered as the first international conference that had a positive impact on the acceptance of the concept of sustainable development. The key outputs of the conference were the Rio Declaration, Agenda 21 and the Commission on Sustainable Development in which all are explicitly related to sustainable development [5].

The Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) has played a pivotal role in shaping global sustainability policies. These annual summits provide an important platform for international cooperation and negotiation on climate action and also pushing governments, businesses, and individuals to take stronger, coordinated action. Following the first summit in Berlin, in 1995, the Kyoto Protocol was adopted at the COP3 held in Kyoto, in 1997. As the first implementation agreement under the UNFCCC to address global warming and climate change, the protocol underscored the importance of adhering to the principles of sustainable development [6].

Sustainable development then gained significant global attention, particularly toward the end of the 20<sup>th</sup> century, and became a global action plan through international agreements. Firstly, at the United Nations (UN) Millennium Summit in September 2000, the Millennium Declaration and Millennium Development Goals (MDGs) were adopted. Among the MDGs, environmental sustainability was highlighted, focusing on integrating sustainable development principles into national policies and programs, reversing the loss of environmental resources, reducing biodiversity loss, and halving the proportion of people without access to safe drinking water [7].

Then the study that currently constitutes the agenda of sustainable development in the world is "Transforming Our World: 2030 Agenda for Sustainable Development," adopted at the UN Sustainable Development Summit in 2015. This comprehensive framework outlines a global roadmap for sustainable development, encompassing 17 SDGs and 169 targets aimed at addressing critical social, economic, and environmental challenges [8].

One of the most significant developments in the field, the Paris Agreement, which outlines the framework for the post-2020 climate change regime, was adopted at the COP21 to the UNFCCC held in Paris in 2015 [9].

In September 2019, Heads of State and Government gathered at the United Nations Headquarters in New York to follow up and comprehensively review the progress in implementing the 2030 Agenda for SDGs. The event was the first UN summit on the SDGs since the adoption of the 2030 Agenda in September 2015. The summit concluded with the adoption of the Political Declaration titled "Preparing for a Decade of Action and Delivery for Sustainable Development" [10].

Taking the UN's 2030 agenda and the SDGs as a basis for all its policies, the EU launched a new climate change-focused growth and sustainable development model in December 2019. With this agreement, called the "EU Green Deal", it is clear that the EU wants to establish environmental, economic and social sustainability [11].

Later on, the Paris Agreement Work Program (Rulebook), which includes the issues on how the Paris Agreement will be implemented, was completed at the COP26 held in Glasgow in 2021. In other words, the Paris Agreement, which regulates the post-2020 climate regime, has been operationalized. The COP26 was also the first summit where National Contributions were reviewed for the first time and included a written decision to phase out the use of coal. Then, COP27, held in Sharm El Sheikh, in 2022, stands out with the goal of establishing the "Loss and Damage Mechanism", which includes a commitment to transfer money from wealthy countries to developing fragile countries to mitigate economic losses caused by climate change. The COP28 took place in Dubai, in 2023 and resulted in a historic agreement on transitioning away from fossil fuels. The Loss and Damage Fund, which was agreed to be established at COP27, was operationalized at COP28, and Global Goals on climate change adaptation were set [12].

The COP29 meeting in Baku, held on November 2024, referred to as the "COP on Finance", went down in history as a summit where financial mechanisms and sustainable investment strategies came to the fore. As seen, together these COPs continue to shape the global response to climate change and ensure that sustainability is integrated into national and international policies [13].

Finally, the UN Future Summit, held in September 2024 at the UN Headquarters in New York, explored how to better collaborate to move towards achieving the SDGs. The Summit resulted in the "Pact for the Future" an action-oriented document designed to bolster global cooperation and adapt to current challenges effectively for the benefit of all and future generations [14].

The above mentioned and other important developments on this issue on a global scale are given chronologically in Figure 1.

All these developments have led to the search for an economy that ensures the efficient use of scarce resources and environmental sustainability, and for another economic model that can be substituted for the linear economy. In this context, the "circular economy" approach has come to the forefront.

Circular economy is a new production and consumption model [15] which is seen as an important step in achieving sustainable development goals, is being increasingly understood each passing day. This approach involves the use, repair, renewal and recycling of existing materials and products as much as possible instead of the "take-make-use-dispose" model in the linear economy, and aims to gradually separate growth from the consumption of limited resources.

Proposed as a potential solution to the imbalance of the current economic system between limited resources and increasing demand, the circular economy focuses on reducing the use of raw material and energy by sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of the products is extended [16].

The successful implementation of the circular economy encompasses all three fundamental dimensions of sustainable development. Accordingly, it directly addresses:

the economic dimension, by reducing resource use; the environmental dimension, by minimizing waste generation through recycling and recovery activities; and the social dimension, by raising public awareness and creating new job opportunities. Today, the transition to a circular economy is regarded as an indispensable pathway to achieving sustainable development and in this context, a circular economy is also considered a sustainable development initiative [17].

in the activities and decisions of organizations together with corporate governance principles and the effective management of risks related to these factors. In its simplest terms, corporate sustainability can be expressed as the adoption of the concept of sustainable development to the organizational level [18].

The most basic indicator for documenting corporate sustainability efforts today is the reports in which organizations disclose environmental and social management performance information to the public in addition to their economic activities. These reports are labeled with various concepts in the literature such as sustainability reporting, non-financial reporting, triple bottom line reporting, and corporate social responsibility reporting. The common point where all these concepts intersect is that organizations have environmental, social and economic responsibilities, and a balance should be established between them [19].

In this study, the concept of sustainable development, which is closely followed all over the world, is examined along with its historical development and global milestones, as well as the concept of the circular economy. Institutional developments related to sustainable development and the circular economy in Türkiye is also analyzed. Additionally, the study evaluates the concept of corporate sustainability and the latest developments in sustainability reporting both globally and in Türkiye. In the last part, the literature on sustainable development, the circular economy, and corporate sustainability reporting is reviewed and a general evaluation is made.

### DEVELOPMENTS IN THE FIELD OF SUSTAINABLE DEVELOPMENT AND CIRCULAR ECONOMY IN TURKIYE

Türkiye first put the concept of sustainable development on its agenda just after the UN Conference on Environment and Development organized in Rio in 1992, and included the issue of sustainable development concretely in all its National Development Plans starting from the 7<sup>th</sup> National Development Plan (1996-2000). The 7<sup>th</sup> National Development Plan adopts sustainable development as a principle, harmonizing economic and social policies with environmental policies, adhering to international agreements and supporting social consensus and mass participation. The National Environmental Strategy and Action Plan (NESAP), which started to be prepared during the 7<sup>th</sup> National Development Plan period, was finalized in 1998. Planned to be implemented for a 20-year period, the NESAP's objectives include improving the quality of life and environmental management, raising environmental awareness and sensitivity, and achieving sustainable developments in socioeconomic and cultural dimensions [20].

The EU accession process initiated with the 1999 Helsinki Summit can also be considered a significant development for Türkiye in terms of sustainable development, particularly the start of harmonization studies with EU environmental legislation within the scope of the "environment and climate change" chapter. Indeed, within the scope of these studies, with the amendment made to Environmental Law No. 5491, which entered into force in 2006, the purpose of national environmental policy was defined as "to ensure the protection of the environment, which is the common asset of all living things, in line with the principles of sustainable environment and sustainable development".

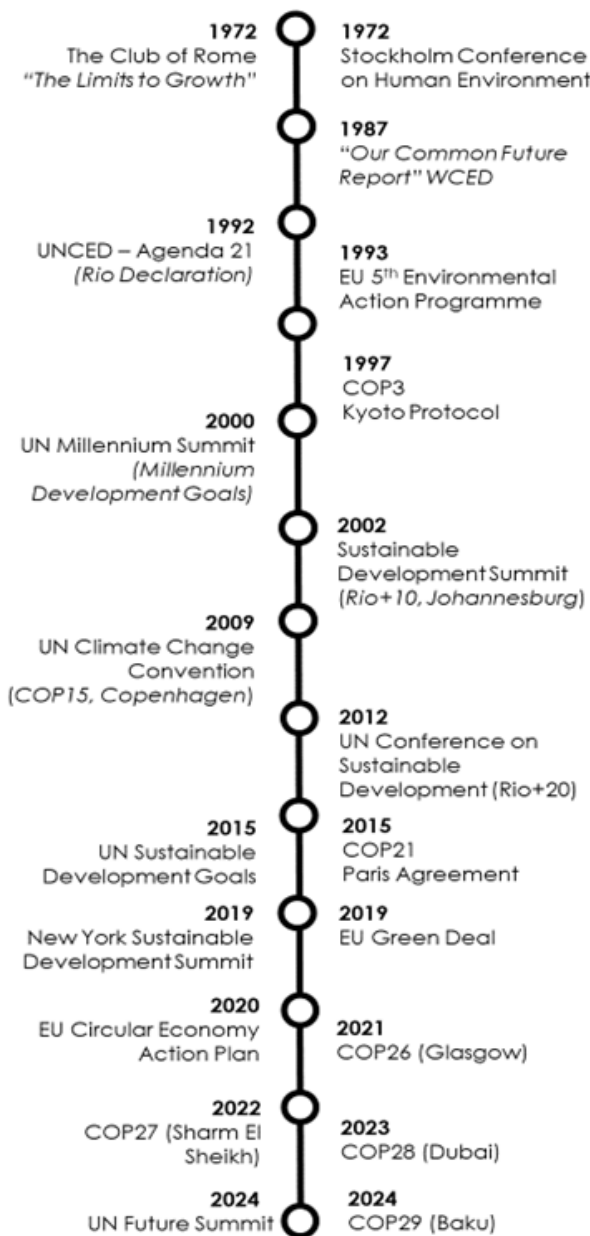


Figure 1. International timeline for the milestones of sustainable development

As a result, sustainability is becoming an increasingly important goal for all institutions that have effects on the environment and create an economic order. Under these conditions, it is inevitable that all structures considered within the concept of institutions have a responsibility to be sustainable. In this sense, "corporate sustainability" is the consideration of environmental, social and economic factors

As for circular economy studies in Türkiye started with the "Circular Economy Action Plan" adopted by the EU in 2015 and gained momentum with the "Zero Waste Project" that started in 2017. And the concept of a circular economy was introduced to national legislation for the first time on November 29, 2018, and in the same year, provisions were added to the Environmental Law regarding the pricing of plastic bags, the implementation of recycling participation fees, the dissemination of zero waste management systems, and regulations on the deposit-refund system. In 2019, the Zero Waste Regulation was introduced, followed by the publication of the "Zero Waste Management System Implementation Guidelines" in 2020 [21]. Within this scope, a "Deposit Management System", which was created to reduce the environmental impact of beverage packages and bring them into the economy was developed by the Turkish Environment Agency, aims to prevent environmental pollution and to contribute economically by renewing the disposable packaging production system, which turns into an economic loss [22].

Following the ratification of the Paris Agreement in 2021, an important milestone in the global fight against climate change, along with the announcement of the "2053 Net Zero Emission" target, Türkiye's national climate action and sustainable development studies gained significant momentum [23].

In addition, Türkiye hereby communicated its first Nationally Determined Contribution (NDC), updated on 2023 in the context of the Glasgow Climate Pact, which the Parties adopted to the UNFCCC and the Paris Agreement during the COP26. Through this communication, Türkiye confirms to reduce its greenhouse gas (GHG) emissions by 41% through 2030 (695 Mt CO<sub>2</sub> eq in year 2030) compared to the Business as Usual (BAU) scenario given in Türkiye's first NDC considering 2012 as the base year [24].

To contribute to Türkiye's transition to a sustainable development and circular economy, the Ministry of Trade published the "Green Deal Action Plan" in 2021. The aim is to adapt with the comprehensive changes envisaged by the European Green Deal and to preserve and further advance the integration provided under the Customs Union. Under the heading of "Green and Circular Economy", there are 8 objectives and 23 actions outlined. These include initiatives such as development of green transformation and circular economy in industry, the strengthening technological infrastructure for green transformation, integrated pollution prevention and control activities, sustainable use of water and development of wastewater reuse, harmonisation with the sustainable product initiatives and harmonisation with the EU legislation on chemicals. The aim is for these actions to be in line with the policies to be implemented under the EU Circular Economy Action Plan so that the country will be prepared for the possible effects of the changes to be implemented by the EU [25].

To further stage the circular economy studies carried out in Türkiye to develop sustainable practices and determine the strategy and roadmap for a circular economy, the "Technical Assistance for the Assessment of Türkiye's Potential for Transition to Circular Economy", which is funded by the EU and has an implementation period of 3 years, commenced on February 7, 2022. With this project, the potential of Türkiye's transition to circular economy would be analyzed on the basis of the EU Circular Economy Model. A National Strategy and Action Plan for waste and resource management, in line with the EU Circular Economy Package, would also be developed. Moreover, the technical capacity of national and local

governments would be improved in terms of integrated waste management [26].

Another study conducted in this field is the "Preliminary Research Report on Circularity Potential in Five Sectors in Türkiye," published by the Sustainable Development Association of Türkiye in 2022. This report focuses on five specific sectors: plastic packaging, textiles, white goods, automotive, and construction. The report emphasizes that one of the main reasons for the increasing circularity in Türkiye is trade and companies exporting to other markets, particularly to the Europe, are investing more in circular strategies in order to comply with EU regulations and maintain their competitiveness. Furthermore, the report highlights that Türkiye, which has intensive trade relations with the European market, will increase its competitiveness in the international arena by transitioning to a circular economy in cooperation with the public, private sector, Non-Governmental Organizations (NGOs), consumers and academia [27].

Furthermore, sustainable development approaches are included in many sectoral and thematic national policy and strategy documents. When national policy documents, legislation, and institutional frameworks are examined, it can be seen that the SDGs are largely covered directly or indirectly.

As a matter of fact, the 11<sup>th</sup> National Development Plan (2019-2023), included the establishment of a well-functioning and participatory institutional coordination mechanism for monitoring and reviewing the SDGs, expanding the scope of the national indicator set in line with priorities in parallel with the developments in the global SDGs indicator set and establishing a national sustainable development goal monitoring and evaluation system for sustainable development goals [28].

Similarly, it is clearly observed in the latest published 12<sup>th</sup> National Development Plan (2024-2028) of the country, which includes elements of the circular economy and is designed as an important national strategy in line with contributing to the EU accession process. The Plan clearly states that programs will be organized to build human and technical capacity for waste management within the scope of transition to circular economy and a National Circular Economy Action Plan will be prepared. The Plan also emphasizes that in line with the SDGs, the main objectives are to ensure the transition to a low-carbon economy that is resilient to the impacts of climate change, to protect and manage the environment and natural resources [29].

Moreover, to maintain and strengthen its competitiveness "Türkiye's International Direct Investment Strategy" (2024-2028) states that the concept of environmental sustainability has become increasingly important with the impact of global and regional climate policies such as the Paris Agreement and the EU Green Deal. The report also emphasizes that the weight of issues such as access to green energy, green workforce, corporate sustainability and ESG (environmental, social and governance) reporting, compliance with international standards, etc. in investor decision criteria has increased [30].

Besides that, in the Medium-Term Program for 2025-2027 published in September 2024, it was envisaged that the studies for the establishment of a "National Green Taxonomy", which is compatible with international taxonomy examples, especially the EU taxonomy, and which considers Türkiye's needs, will be completed [31].

In this context, the Ministry of Environment, Urbanization and Climate Change published the Draft Regulation on Green Taxonomy and Draft Technical Screening Criteria and submitted them for public consultation. The main purpose of the Draft Regulation is to define sustainable economic activities and support these activities at the national level. The Draft Regulation provides a framework to encourage green investments and prevent greenwashing by setting sustainability criteria for both the private sector and public institutions [32].

In addition, the Regulation on Industrial Emissions Management was published in the Official Gazette dated January 14, 2025 and entered into force. The Regulation aims at green transformation, circular economy and decarbonization in industry in order to prevent and reduce industrial emissions and wastes at source and to use resources efficiently. Pursuant to the Regulation, industrial enterprises will be required to obtain a "Green Transformation Certificate in Industry" in order to prove that their activities comply with the principles of environmental sustainability [33].

Given the completion of the implementation period of the 2011-2023 Climate Change Strategy and Action Plan prepared by the Ministry of Environment, Urbanization and Climate Change, preparations for a new strategy and action plan have initiated, in line with the 2053 Net Zero Emission Target, 12<sup>th</sup> Development Plan, Medium Term Program, NDC and Climate Summit Decisions. To realize the announced NDC targets, two separate strategy and action plans for the period of 2024-2030 were prepared under the coordination of the Directorate of Climate Change setting out Türkiye's road maps on climate change mitigation and adaptation. These documents aim to establish shared objectives for tackling climate change and to build a sustainable future together [23]. However, despite all these developments and regulatory changes, Türkiye has not yet made sufficient progress in terms of SDGs. As a matter of fact, in the "Sustainable Development Goals Index (SDGI)" 2024 Report, in which the performance of countries on the basis of SDGs is evaluated by the UN, Türkiye ranks 72<sup>nd</sup> with an index score of 70.5. Among 167 countries, Finland took the leadership for the fourth time in a row with a score of 86.4, while Northern European countries ranked top three as in previous years (Table 1).

It's important to note that while these countries consistently rank high, they still face challenges in achieving all the SDGs. However, their strong foundation in social, economic, and environmental sustainability provides a solid base for continued progress [34].

The report says Türkiye has made progress on some targets, such as quality of education (SDG 4), industrial innovation and infrastructure (SDG 9) and healthy and quality life (SDG 3), but overall greater momentum is needed. The report also recommends that a comprehensive and long-term policies should be adapted to support sustainable development efforts and invest more to climate change and environmental sustainability for Türkiye to achieve the sustainable development goals [34].

## CORPORATE SUSTAINABILITY AND REPORTING

Sustainability principles need to be integrated into corporate strategic policies and business processes in order to internalize and manage corporate sustainability, which is accepted as the business-level of the sustainable

development [35]. At this point, "sustainability reporting" comes to the forefront in terms of integrating sustainability with its environmental, social and governance (ESG) dimensions into the value chains of organizations and documenting it.

A major contribution to sustainability frameworks in the corporate sphere was conceived in 1994 by Elkington, it was known as "The Triple Bottom Line". It was a sustainability framework that aimed to balance a company's social, environmental and economic impact. The triple bottom line concept was adopted by many corporations in the late 1990's as it offered a first step for companies to balance their environmental and social responsibilities with their economic goals [36].

Today, organizations intending to conduct sustainability reporting have benefitted from several prominent reporting frameworks and standards as their roadmap. The most commonly used ones are the Carbon Disclosure Project (CDP), Integrated Reporting (IR), Sustainability Accounting Standards Board (SASB), Task Force on Climate-Related Financial Disclosures (TCFD), Global Reporting Initiative (GRI), International Financial Reporting Standards (IFRS), and European Sustainability Reporting Standards (ESRS).

Although the history of sustainability reporting began in the 1980s with the publication of the first environmental reports by chemical companies, the establishment of GRI in 1997 is considered to be the first significant milestone in sustainability reporting. Two years after its foundation, GRI published the exposure draft of its first sustainability reporting guidelines in 1999. The first version of the GRI Sustainability Reporting Guidelines (G1) was then published in 2000 [37].

The ESG approach, which combines the environmental, social, and governance dimensions of sustainability and enables organizations to report on their performance, was largely developed and popularized by the "Global Reporting Initiative (GRI)", an international organization that promotes the standardization of corporate reporting on a global scale.

According to the GRI, a sustainability report is a report in which the economic, environmental and social impacts of an organization's daily activities are published and includes the values and management model of the organization [38].

Another important development in sustainability reporting was the official launch of the United Nations Global Compact in 2000. This initiative encouraged businesses to commit to ten principles covering human rights, labor, environment and anti-corruption and were expected to submit annual reports detailing their progress and further promote ESG reporting [39].

In the same year the non-profit organization Carbon Disclosure Project (CDP) is founded. Its aim is for companies to publish environmental data such as greenhouse gas emissions and water consumption, and it now manages the largest database of its kind in the world.

The 2000s witnessed a surge in the adoption of ESG reporting as companies recognized its significance for reputation, risk management, and long-term sustainability. One of key developments during this period was in 2009, the U.S. Securities and Exchange Commission (SEC) issued guidance on disclosing climate change-related risks, pushing ESG considerations into mainstream financial reporting [40].

Another development is the establishment of the Sustainability Accounting Standards Board (SASB) in 2011, which focuses on industry-specific sustainability metrics related to financial performance by providing industry-

specific standards that help investors understand sustainability risks and opportunities in different industries.

Furthermore, in 2015, the Paris Agreement and the UN's SDGs provided a global framework for environmental and social reporting, and companies around the world have started to align their efforts with these goals.

**Table 1.** SDGI scores of Sweden, Denmark, Finland and Türkiye (2017-2024) [34]

Country	2017	2018	2019	2020	2021	2022	2023	2024
Sweden	85.6	85.0	85.0	84.7	85.6	85.2	86.0	85.7
Denmark	84.2	84.6	85.2	84.6	84.9	85.6	85.7	85.0
Finland	84.0	83.0	82.8	83.8	85.9	86.5	86.8	86.4
<b>Türkiye</b>	<b>68.5</b>	<b>66.0</b>	<b>68.5</b>	<b>70.3</b>	<b>70.4</b>	<b>70.4</b>	<b>70.8</b>	<b>70.5</b>

Then, the Task Force on Climate-related Financial Disclosures (TCFD), established in 2017 by the Financial Stability Board (FSB) and currently monitored by the IFRS Foundation, provides guidelines for reporting on climate-related financial risks and opportunities, which aim to increase transparency on the impact of climate change on financial performance [42].

Another important development regarding reporting is the establishment of the "International Sustainability Standards Board (ISSB)", which will be compulsorily applied on an international scale by the IFRS based on the decision taken at the COP26 Climate Summit held in Glasgow, Scotland in 2021. The purpose of the ISSB is to publish IFRS sustainability disclosure standards that address environmental, social, and governance issues that companies need to address in determining their enterprise value, disclosing both risks and opportunities. Consequently, the goal is to eliminate the current fragmented structure in sustainability reporting. IFRS S1 and IFRS S2, published in June 2023, were announced to the public as the first global documents standardizing sustainability and climate-based reporting [42].

The most effective step towards the gradual transition of sustainability reporting from voluntary to mandatory and the widespread adoption of reporting standards came from the EU. On February 23, 2022, the European Commission adopted the "Corporate Sustainability Due Diligence Directive" proposal, which includes obligations to encourage companies to promote a sustainable and responsible approach that respects human rights and the environment in their global value chains. The following year, on January 5, 2023, the "Corporate Sustainability Reporting Directive (CSRD)" was adopted, followed by the "Corporate Sustainability Due Diligence Directive (CSDDD)" on April 25, 2023, and the "European Sustainability Reporting Standards (ESRS)" on July 31, 2023 [43].

The CSRD, which replaces the "Non-Financial Reporting Directive (NFRD)", makes sustainability reporting a mandatory activity across the EU. The CSRD aims to increase the transparency of companies' ESG data and ensure the comparability of this data and introduces two important concepts and innovations. One of these concepts is the principle of double materiality and the other is the publication of ESRSs with the most comprehensive data set. Double materiality requires companies to consider not only their financial impact but also their impact on the environment and society, and requires impact materiality in reporting [43].

With regard to all these developments in reporting, necessary legislative works have also commenced in Türkiye. In this context, with the amendment made on June 4, 2022 in the

In 2016, GRI produced the first global set of sustainability reporting standards - the GRI Standards. A major update of standards took place in 2021 with new Universal Standards to strengthen the GRI reporting foundations and to incorporate expectations on sustainability due diligence [41].

Turkish Commercial Code Law, the "Public Oversight, Accounting and Auditing Standards Authority (POA)" has been authorized to determine the "Turkish Sustainability Reporting Standards (TSRS)". As a result of the agreement signed between ISSB and POA, the TSRS-S1 and TSRS-S2 standards were created by translating the IFRS S1 and S2 standards into Turkish. With the board decision published in the official gazette dated December 29, 2023, the TSRS-S1 and TSRS-S2 standards entered into force. Thus, the scope of sustainability reporting has been determined for Türkiye [44].

The TSRS-S1 covers the General Provisions for Disclosing Financial Information Related to Sustainability, while the TSRS-S2 provides guidance on Climate-related Disclosures. In other words, Türkiye's Sustainability Reporting Standards adopt ISSB standards [44].

The reliability of prepared reports in sustainability reporting, much like in financial reporting, is directly related to the number of assurance audits conducted. As the quality of the conducted audits improves, the reliability of the report will correspondingly increase. In this context, the POA has published the "Non-Mandatory Guideline on the Application of Standard on Assurance Statements 3000 to Sustainability and Other Extended External Reporting Assurance Audits" which can be used in audits of sustainability reports.

In this context, with the Decision published in the Official Gazette dated September 05, 2024, assurance audits on sustainability reporting became mandatory and it was decided that assurance audits should start with limited assurance. Lastly, the "Regulation on Sustainability Audit", which regulates the procedures and principles regarding sustainability audits to be conducted, independent audit institutions and independent auditors to operate in the field of sustainability, was published in the Official Gazette dated January 17, 2025 and entered into force. This regulation, based on ESG criteria, will help companies define their responsibilities more clearly and carry out these processes in a transparent manner, and is considered an important step for Türkiye to comply with sustainable development goals [45].

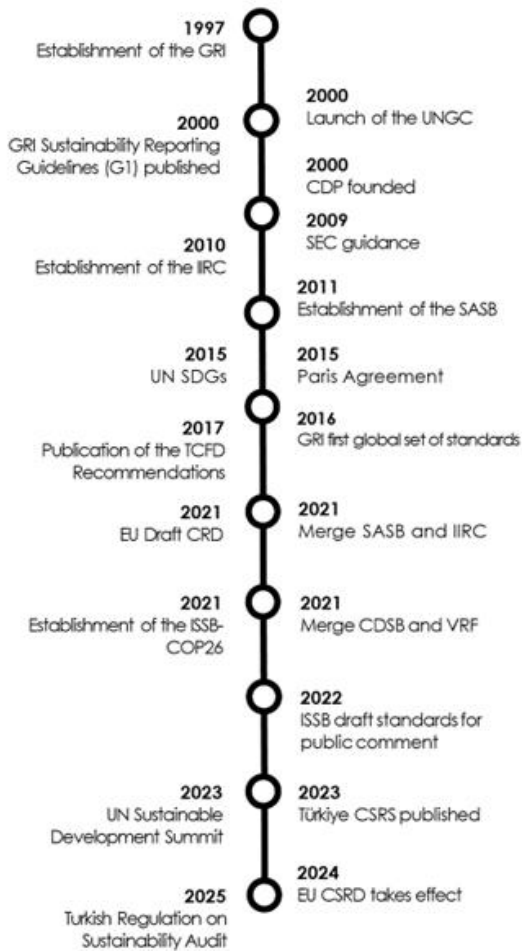
All these important developments in sustainable reporting frameworks are given in Figure 2.

## LITERATURE REVIEW

In the previous sections, information about the real situation in Türkiye and the World was provided, while in this section, studies from the scientific literature have been compiled.

Bolayır and Eroglu [46] examined the concept of sustainable development and the current situation in Türkiye, interpreted the index values of selected indicators and

sustainable development goals within the scope of Türkiye's sustainable development history and conducted a literature review. In the study, a descriptive analysis was made on the phenomenon of sustainable development in the Turkish economy from past to present. It was also observed that Türkiye's sustainable development goals index score increased by 4.7 points between 2016 and 2023.



**Figure 2.** Developments in sustainability reporting frameworks

In the study by Filho et al. [47] current situation in the SDGs targeted for the 2030 Agenda and barriers and existing risks to achieving the targets were examined. The paper predicts that progress in achieving the SDGs is at risk of being lost, that progress on all SDGs has stalled globally and that targets will not be met. The paper also reports on an expert-driven literature review of the implementation of the SDGs and a bibliometric analysis, aimed at identifying some of the issues which have been slowing SDGs' progress. Based on the information gathered, it suggests some specific measures which may be deployed, in order to accelerate their implementation by 2030. The findings of this study have shown that there are many obstacles hindering the achievement of the SDGs. Countries and their authorities are principally responsible for carrying out the 2030 Agenda. The 'leave no one behind' promise of the 2030 Agenda for Sustainable Development remains unfulfilled, according to

the Global Civil Society Report on the 2030 Agenda and the SDGs.

The Hoffman et. al [48] endeavor to investigate the intersection and relationship between sustainability, business models and a circular economy. These three pillars highlighted the areas of intersection and engagement between the circular economy and business models. The three pillars, or stakeholders, need to be considered equally and, where there is sacrifice and benefits, they need to be balanced. A scoping review was chosen, as the starting point, to ascertain the literature in the field. The results of the scoping review showed a lack of research conducted at the point of intersection between these three fields. Finding a solution by creating and implementing a circular economy will have positive effects on the economy, environment and society, as there is, proverbially, "not much time left" and everyone in the process will sacrifice and benefit. The research has highlighted the need to explore the intersection and relationship between sustainability, business models and the circular economy as a concept, and future research should develop frameworks to guide the development and implementation of this intersection to include all relevant stakeholders.

The study by Knäble et. al [49] presents a comprehensive analysis of the effect of the circular economy on the three dimensions of sustainable development at the country level. The paper analysed the impact of each circular economy source of value (renewable energy, reuse, repair, recycling) and the influence of an overall factor-analysis-derived measure of the circular economy on the economic, environmental and social dimensions of sustainable development. The aim was to compare the individual impacts and outcomes of the circular economy and its sources of value in a single study. Panel data analysis was performed using a sample of 25 European countries for the period 2010 to 2019. The findings show a major impact of the circular economy on achieving sustainable development, which has positive effects on the economy, environment and society. However, the results show that the impact of each circular economy value source on the three sustainable development dimensions varies. While renewable energies and reuse reduce the impact on the environment, recycling has no effect, and repair increases green house gas emissions. However, repair is the only circular economy source with a positive economic impact at the country level. Finally, renewable energy, repair and recycling reduce unemployment. According to the study, decision makers should conduct impact analysis to design suitable, efficient and targeted measures depending on each country's specific objectives.

The study by Velenturf et. al [50] revisit the systems ecology literature that construed the context for both circular economy and sustainable development. Values and principles in core sustainable development literature were analysed to offer a foundation against which circular economy can be discussed. The paper also analysed and critically reflect upon the strengths, shortcomings and theoretical flaws within the values and principles that emerged from the evolving circular economy literature. It proposed a value framework and set of ten principles for the design, implementation and evaluation of a sustainable circular economy. The paper finished with a call for action for both practitioners and research agenda for academia.

In the study by Balbay et al [51] the concept of circular economy was explained and the latest situation in Türkiye was evaluated through the information studies conducted by industrial organizations and associations in the world and in

Türkiye and the studies on the subject in the literature. In the study, the status of Circular Economy applicability in Türkiye was revealed by performing PEST and SWOT analyzes. It is stated that the Circular Economy in Türkiye has started to be implemented under the name of sustainability since 2019 and has been on the agenda since the beginning of 2021 due to the impact of the pandemic, climate change and droughts (high temperatures) due to the EU's mandatory Green Deal. As a result, it was emphasized that this process, which operates intensively around the world, should be given the necessary importance in Türkiye and that the necessary measures should be taken and implemented as soon as possible.

Selimoğlu and Yazıcı [52] aim to examine the relationship between corporate governance and corporate sustainability in Türkiye, within a conceptual framework. In this context, the mechanisms and rules for the implementation of corporate governance are discussed in detail. The study utilizes literature review as a research method and explores some effective corporate governance principles such as transparency, accountability, responsibility, independence, fairness and equity to ensure business sustainability in the Turkish environment. The result shows that corporate governance regulation in Türkiye, has been improved, but the implementation still needs to be optimized because corporate governance will positively affect corporate sustainability. It was underlined that in Türkiye, the board of directors, board of commissioners and audit committees are directly related to their effective implementation, so leadership and management efforts are very important. However, it was also emphasized that the contribution of government, business and society is needed to comprehensively support the synergy of corporate governance implementation. The study provides important insights on the implementation of corporate governance in achieving corporate sustainability in Türkiye.

The aim of the study by Ay Türkmen and Kılıç [53] is to draw attention to the circular economy model, one of the sustainable development approaches. In the study; general information about the concept of circular economy, circular economy principles, circular economy structure, circular economy transition strategies and obstacles encountered for this purpose were given. As a result of the study, it is emphasized that sharing ideas or repairing products on the basis of circular economy provides economic, social and environmental advantages, changing the consumption habits of the society and creating a sustainable life awareness and encouraging future generations to think and design sustainably, as well as the increasing importance of circular economy in building a better future.

The paper by Kristensen and Mosgaard [54] reviewed 30 indicators of a circular economy at the micro level, where the majority of indicators focused on recycling, end-of-life management or remanufacturing, while fewer indicators consider disassembly, lifetime extension, waste management, resource-efficiency or reuse, and the majority of the papers are published in the last few years. It was stated that there were no commonly accepted way of measuring circular economy in general at the micro level, nor within the different circular economy principles of recycling, remanufacturing etc. As circular economy often is presented as a means to a sustainable development, the alignment between the three dimensions of sustainability and the reviewed indicators was analyzed, which showed that the majority of indicators focus on economic aspects, with environmental and especially social aspects included to a lesser extent. It was concluded that this approach to circular economy that favors economic

aspects over environmental and social impacts can lead to sub-optimizations when companies apply circular economy and may lead to a narrower approach to sustainability than what has previously been the case.

The paper by Schroeder et. al [55] identified the extent to which circular economy practices are relevant for the implementation of the SDGs. According to the study, the results of a literature review and a matching exercise to determine the relationship between circular economy practices and SDG targets showed that circular economy practices, potentially, could contribute directly to achieving a significant number of SDG targets. The paper also explored synergies that could be created through circular economy practices among several of the SDG targets. It also identified several potential trade-offs between targets for decent work, safe working environments, human health and current circular economy practices relating to recycling of municipal waste, e-waste and wastewater, and provides suggestions how these could be overcome. The paper concluded that circular economy practices can be applied as a "toolbox" and specific implementation approaches for achieving a sizeable number of SDG targets.

The review paper by Camilleri [56] examined relevant regulatory guidelines, policies, and recommendations on sustainable development, where it traced the origins of circular economy. Afterwards, it sheds light on key theoretical underpinnings on circular economy's closed loop and product service systems. The findings suggested that the circular economy's regenerative systems minimise the environmental impact as practitioners reduce their externalities, including waste, emissions, and energy leakages through the use and reuse of resources. The study offered a critique on circular economy's inherent limitations and discusses about the implications of having regulatory interventions that are intended to encourage responsible consumption and production behaviours. It also implied that circular economy is creating value to business and the environment. It was concluded that the closed loop and product service systems can unleash a new wave of operational efficiencies through increased throughput in production processes, as practitioners repair, reuse, remanufacture, refurbish, and recycle resources, whilst safeguarding the natural environment.

The study by Marrucci et. al [57] aimed to provide a literature review on the integration between circular economy and sustainable consumption and production tools. It was stated that Environmental Management System, Green Public Procurement, Ecodesign Directive, Ecolabel, Energy Label and Environmental Technology Verification have been considered either by academic and practitioners as tools useful to promote circular economy. In the paper the revisited material consisted of 455 studies and was evaluated using a systematic approach. By critically analysing 35 papers, the study identified Environmental Management System and Ecodesign as the tools with the highest level of integration with circular economy, while the other tools seem to be characterized by a "stand-alone" approach. It was also identified three main areas for future research agenda in order to spur further academic and technical debate in which the first major area concerns the role of Environmental Management System in increasing organisations' circularity; the second main area includes Ecodesign Directive and Environmental Technology Verification in the design and manufacturing processes of the products; the third main area focuses on Green Public Procurement, Ecolabel and Energy

Label in driving greener consumption by setting products' circular criteria.

The study by Rodriguez et. al [58] aimed; to determine, through exploratory factor analysis and correlation analysis, whether there is a statistically significant relationship between circular economy initiatives undertaken in the EU and compliance with the SDGs; to check, through a cluster analysis, if there are homogeneous groups of countries worldwide in terms of compliance with the SDGs; and using this same technique, to check whether the countries that make up the EU achieve similar results in terms of compliance with the SDGs. Once the research method that has been used is presented, the relationships between the circular economy and the SDGs are presented from the perspective of European legislation. It was concluded that there were groups of countries that could be considered homogeneous in the fulfillment of SDGs.

The main objective of the paper prepared by Busu and Trica [59] was to analyze the sustainability of the circular economy indicators and to elaborate a multilinear regression model with panel data for determining the dependency of the main circular economy factors on EU economic growth. Starting with the model of economic growth based on circular material use rate, recycling rate of municipal waste, trade in recycling materials, labor productivity, environmental taxes, and resource productivity as independent variables, six statistical hypotheses were validated through a multiple regression model with the use of the statistical software EVIEWS 11. In this paper, it was developed a methodology for studying the sustainability of the circular economy model, based on environmental indicators, and its impact on EU economic growth. The study conducted on advanced economies have revealed multiple assets of the civil society in the spirit of environmental protection, in parallel with the investments in recycling infrastructure. The positive effects of the circular economy model can be offset by increasing the level of municipalities' income, the labor force employed, and the profit obtained by the contractors providing the environmental infrastructure.

In the study by Stewart and Niero [60], a systematic review was performed of 46 corporate sustainability reports in the Fast-Moving Consumer Goods sector aiming to explore how companies incorporate the Circular Economy concept in their sustainability agenda. The study focused on (i) companies' uptake of Circular Economy, (ii) the relationship between Circular Economy and sustainability and (iii) the Circular Economy practices presented. The paper showed that Circular Economy has started to be integrated into the corporate sustainability agenda. Most reported activities were oriented toward the main product and packaging, focusing on end-of-life management and sourcing strategies, and to a lesser extent on circular product design and business model strategies. It was concluded that most identified collaborations were with businesses, whereas initiatives addressing consumers are largely missing although considered critical for the transition toward a Circular Economy.

The article prepared by Galvão et. al [61] aimed to provide an overview on barriers and challenges for the implementation of the circular economy. In the study, a number of barriers were identified and grouped through a content analysis. The paper adopted bibliometric research as a methodological approach. The research method combined bibliometric, networks and content analysis. The sample is composed of 195 articles extracted from the Web of Science Core Collection and Scopus databases. The main barriers identified

in the literature were: (i) technological, (ii) policy and regulatory, (iii) financial and economic, (iv) managerial, (v) performance indicators, (vi) customer and (vii) Social. Barriers and challenges from the literature analysis that could help the circular economy implementation obtained from the literature analysis were highlighted, and future studies could focus on the analysis each identified barrier in-depth, including their mitigation and how governmental and non-governmental entities could support this.

In the study conducted by Önder [62], the economic approach called circular economy, which was put forward to dominate the understanding of sustainable development, was examined. In addition, linear economy as the dominant economic approach and the concepts of green and blue economy, which were put forward until the circular economy, were mentioned. As a result, it is emphasized that by changing production and consumption patterns within the basic operating principles of the circular economy, it may be possible to a certain extent to use natural resources without reducing the welfare of future generations, but it is wrong to insist on the linear economic structure, and for this purpose, the efforts put forward by the circular economy should be supported.

The study by Saban et. al. [63] aimed to provide information on some methods and approaches to corporate sustainability reporting and to indicate the role and importance of accounting in sustainable reporting. In the study, sustainability, sustainable development and corporate sustainability issues are discussed in the conceptual framework, some reporting frameworks related to sustainability reporting are mentioned and the role of accounting in sustainability reporting is tried to be explained. The study also emphasized that the provision and auditing of reliable and consistent information needed in all types of reporting will only be possible with the accounting function and that accounting serves as the main actor in sustainable reporting. In the study, it was concluded that accounting is one of the most important measurement tools in business life, measuring performance and using the economic value of the business efficiently is possible thanks to the accounting system, ensuring the integration of sustainable reporting with the accounting organization increases the sustainability of businesses and thus their added value, creates a sustainable business image and thus creates a competitive advantage.

The paper conducted by Murray et. al. [64] traced the conceptualisations and origins of the Circular Economy, tracing its meanings, and exploring its antecedents in economics and ecology, and discusses how the Circular Economy has been operationalized in business and policy. The paper found that while the Circular Economy placed emphasis on the redesign of processes and cycling of materials, which may contribute to more sustainable business models, it also encapsulated tensions and limitations. These included an absence of the social dimension inherent in sustainable development that limits its ethical dimensions, and some unintended consequences. It was proposed a revised definition of the Circular Economy as *"an economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human well-being"*.

In the study prepared by Andrews [65], it was argued that the origins of the linear economy - the 'take-make-use-dispose' model of consumption - date from the Industrial Revolution and the global economy developed around this model and

various social, economic and environmental factor mean that it is no longer sustainable. It was underlined that a radical new model - the Circular Economy - was being advocated but as yet it was not widely practiced. The paper proposed that designers are crucial to the development of this new economic model; furthermore, this model facilitates education for sustainability and enhances employability.

The report prepared by Wijkman, and Skånberg [66] focused on the social benefits that a transformation from a linear to a circular economy would entail. The main purpose of the report was to broadly explore the potential for a significant increase in resource efficiency and to specifically assess what the main benefits for society would be - looking at carbon emissions and employment in particular. The Dutch, Finnish, French, Spanish and Swedish economies was used as test cases. The study was relevant not only from an academic but also from a political perspective, particularly in the EU context. The report could provide valuable input to the discussion on the Commission's new proposal, as well as national policies, particularly in terms of highlighting the opportunities offered by the Circular Economy for the EU's competitiveness and jobs agenda. In the report it was stated that the circular economy would attract both increased political interest and research efforts in all of the areas.

The purpose of the paper conducted by Persson [67] was to provide a literature review of the environmental policy integration (EPI) concept and how it has been studied and evaluated in practice, in order to identify key conceptual choices for further theorisation and empirical study of EPI. Following a brief overview of EPI initiatives at the global level (Agenda 21), EU level and national level in Sweden, questions have guided the literature review. The paper is concluded by highlighting key conceptual choices and making recommendations for further EPI study, including more theory-driven and explorative approaches.

Lozano [68] classifies the main reasons that push organizations to integrate sustainability into their operations into two categories: internal and external factors. According to the results of his case studies, the internal factors primarily include leadership, followed by shared values among employees, organizational resources, cost reduction efforts, and moral and ethical considerations. In addition, preparing a corporate sustainability report, which is also an internal factor, was also mentioned as a factor that requires working more effectively on sustainability. On the other hand, external factors are led by laws and regulations, which play a crucial role in guiding organizations toward sustainability. Other external factors include increased public awareness, customer demands and expectations, as well as environmental and social crises. Balancing these internal and external factors is critical for organizations to achieve their environmental, social, and economic sustainability goals effectively.

## CONCLUSION

Sustainable development is a fundamental component of Türkiye's national development strategy and is outlined in broad strokes in National Development Plans, which determine all national policies and priorities at the macro level. It is also integrated into the relevant legislation and strategy documents of various policy areas and sectors. When examining the country's five-year development plans, the transformation and development of sustainable development policies in Türkiye over time can be observed. However,

Türkiye needs to promptly implement these policies to realize its sustainable development strategy.

The increase in population and industrialization, along with the rise in production and consumption, has created pressure on the environment through natural resource depletion and increased waste burden, leading to climate change. Additionally, the continuous increase in raw material demand has accelerated the search for a new economic model focused on sustainable development all over the world, and the "circular economy" approach has come to the agenda.

The circular economy makes a significant contribution to creating a sustainable economy with high resource efficiency by minimizing waste generation, contributing to the policy of combating climate change and reducing the need for raw materials and energy, as well as the potential to create jobs.

In this regard, all studies and regulations aimed at determining the potential of transition to a circular economy in the country, identifying priority sectors and areas, and preparing a roadmap are extremely important for Türkiye.

However, it is also clear that the transition to a circular economy requires not only holistic policy measures and necessary investments, but also the use of advanced technology and fundamental behavioral changes.

The EU's journey toward a circular economy model plays a key role in the formation of the ecosystem in Türkiye due to both the requirements of the EU accession process and commercial relations. It is possible that with the adaptation of Turkish companies exporting to Europe to this new model, exports to the EU will increase further, business volume will expand and this situation will bring new opportunities.

With this change and transformation, the environmental, social, and governance performance of companies is becoming increasingly important. This situation has revealed the necessity for companies to integrate environmental, social and governance risks into their corporate strategy and operations as well as their financial performance. In this sense, corporate sustainability reporting has become an important tool for businesses.

Therefore, with the widespread use of sustainability reporting according to internationally accepted standards, it is seen that legislative studies in this field have increased. Closely following developments in the field of reporting, Türkiye has recently enacted Turkish Sustainability Reporting Standards (TSRS). The TSRS aims to ensure that companies transparently disclose their environmental, social and governance performance by making sustainability reporting mandatory for companies within its scope. This transparency, in turn, is expected to protect and increase access to finance and the competitive advantage in the market, especially those doing business with EU. Thus, the establishment of a well-functioning national corporate sustainability reporting system in which international corporate sustainability reporting frameworks are strengthened and responsible supply chain practices are gaining importance due to climate change, will facilitate Türkiye's achievement of sustainable development goals.

In conclusion, sustainable development and a circular economy are of critical importance in addressing global risks and building a more liveable world for future generations. Although the progress in Türkiye is not sufficient to reach the set targets, efforts in this field should be continued and improved, and policies and programs should be implemented as soon as possible. In particular, efforts in the field of environmental sustainability and increased cooperation among stakeholders will significantly contribute to Türkiye's

achievement of its sustainable development goals and the completion of its transition to a circular economy.

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#### DATA AVAILABILITY STATEMENT

No data was used for the research described in the article.

#### CONFLICT OF INTEREST

The author declares that there is no conflict of interest with any individual, institution, or organization in the preparation, evaluation, or publication of this study.

#### USE OF AI FOR WRITING ASSISTANCE

Not declared.

#### ETHICS

There are no ethical issues with the publication of this manuscript.

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