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INTERMEDIARY IN BUILDING TRIPLE HELIX COLLABORATION FOR SUSTAINABLE CITIES AND COMMUNITIES: MARMARA URBAN FORUM (MARUF21)

SÜRDÜRÜLEBİLİR ŞEHİRLER VE TOPLULUKLAR İÇİN ÜÇLÜ SARMAL İŞBİRLİĞİ KURULMASINDA ARACI KURUMLAR: MARMARA KENT FORUMU (MARUF21)

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Abstract: This study evaluates the role of intermediary institutions in establishing triple helix collaborations for SDG 11. It focuses on MARUF21 as an international urban forum and analyzes its content and documented interactions among participants. The university emerges as the primary helix actor, while government involvement remains limited. Although some stakeholders reach bilateral consensus, trilateral collaboration is often lacking. MARUF21 facilitates discussions and reflects potential for stronger collaboration. The findings suggest that stakeholders should align on shared goals, act collectively, and improve coordination to enhance the forum's effectiveness as a knowledge and governance intermediary.

Keywords: Sustainable cities, Sustainable communities, Triple helix model, Urban forum, Intermediacy.

JEL: O31, O38, Q56, Q58, R58.

Öz: *Bu çalışma, aracı kurumların SDG 11 için üçlü sarmal iş birlikleri kurmadaki rolünü değerlendirmektedir. Uluslararası bir kentsel forum olan MARUF21'e odaklanmakta ve içeriğini ve raporlanan katılımcı etkileşimlerini analiz etmektedir. Üniversite, birincil sarmal aktörü olarak ortaya çıkarken, devletin katılımı sınırlı kalmaktadır. Bazı paydaşlar ikili konsensüs sağlasa da, üçlü iş birliği genellikle eksik kalmaktadır. MARUF21 tartışmaları kolaylaştırmakta ve daha güçlü bir iş birliği potansiyelini yansıtmaktadır. Bulgular, paydaşların ortak hedefler etrafında birleşmeyi, kolektif hareket etmeyi ve forumun bir bilgi ve yönetişim aracı olarak etkinliğini artırmak için koordinasyonu geliştirmeyi hedeflemeleri gerektiğini göstermektedir.*

Anahtar Kelimeler: *Sürdürülebilir şehirler, Sürdürülebilir topluluklar, Üçlü sarmal modeli, Kentsel forum, Aracılık.*

1. Introduction

According to the United Nations, the global urbanization rate, which stood at 57% in 2022, is projected to reach 60% by 2030 and 68% by 2050. In the case of Türkiye, this figure was 71% in 2021, according to the World Bank (2023) and UN (2018). Analysing the annual trend of urbanization in Türkiye suggests that it will likely exceed 80% by 2050. The increasing urbanization, defined as the rise in the proportion

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of individuals living in cities and towns (EEA Glossary, 2023), has heightened the importance of the sustainability discourse more than ever before. Cities account for over 80% of the global GDP and are responsible for over 70% of global greenhouse gas emissions. Each year, air quality deteriorates, and the accumulation of municipal solid waste persists (UN, 2022). The challenges arising from urbanization, including overcrowding, resource limitations, and transportation disruptions, necessitate addressing the question of how to make cities sustainable. In this context, achieving sustainable cities has become an imperative concern for national and international authorities in recent times.

Founded in 2012 at the United Nations Conference on Sustainable Development in Rio de Janeiro and finalized in 2015 with the 2030 Agenda for Sustainable Development, the Sustainable Development Goals (SDGs) aim to promote sustainable development on a global scale by addressing economic, social, and environmental dimensions in a holistic and balanced manner. In this context, the SDGs include a total of 17 main goals and 169 sub-goals, providing a comprehensive roadmap that aims to protect the ecological balance of the planet while increasing the welfare of humanity (UN General Assembly, 2015).

Table 1. Sub-Targets of Goal 11: Sustainable Cities and Communities

11.1. Safe and Affordable Housing
11.2. Affordable and Sustainable Transport Systems
11.3. Inclusive and Sustainable Urbanization
11.4. Protect the World's Cultural and Natural Heritage
11.5. Reduce the Adverse Effects of Natural Disasters
11.6. Reduce the Environmental Impact of Cities
11.7. Provide Access to Safe and Inclusive Green & Public Spaces
11.8. Strong National and Regional Development Planning
11.9. Implement Policies for Inclusion, Resource Efficiency and Disaster Risk Reduction
11.A. Support Least Developed Countries in Sustainable and Resilient Building

Source: The Global Goals, 2023

Among these goals, SDG 11: Sustainable Cities and Communities aims to make cities and human settlements inclusive, safe, resilient, and sustainable. As urbanization accelerates and cities play a central role in the global economy, this goal focuses on strengthening urban infrastructure, increasing access to basic services for all, and making cities more resilient to crises (UN DESA, 2022). There are 10 sub-targets to measure and guide the achievement of SDG 11 (see Table 1). These goals cover a wide range of areas, from sustainable urban planning to disaster risk management, from environmental sustainability to transportation policies.

However, given that regional differences and institutional capacities continue to be a significant obstacle, evaluating sustainability at the metropolitan level highlights the difficulty of accomplishing SDG targets (Silva Martinelli & Lindner, 2021). Although inclusive public spaces and environmental sustainability are important SDG 11 sub-targets that call for concerted institutional action, their sustainability is frequently threatened by weak governance and a lack of cooperation among urban actors (Gagakuma et al., 2025; Hakeem et al., 2022). Coherent multi-actor collaboration might also be hampered by disparities in institutional perspectives on sustainability (Adewumi et al., 2021).

On the other hand, Habitat, the third United Nations Conference on Housing and Sustainable Urban Development held in 2016 in Ecuador, and its New Urban Agenda are also important complementary efforts for sustainable cities. The conference stands out by assembling a variety of urban participants, including governments, local authorities, civil society, private enterprises, academic institutions, and relevant interest groups, to assess urban and housing policies influencing the destiny of cities (UN HABITAT, 2013). The New Urban Agenda, aimed at enhancing the interconnection among global agendas and establishing a comprehensive reporting system, is an action-oriented framework. It motivates Member States and other pivotal stakeholders to spearhead sustainable urban development initiatives at the grassroots level (UN-Habitat, 2024). To make its implementation more efficient, monitor the progress, and accelerate the achievement of sustainable development goals, a high-level meeting was held in April 2022 by the UN General Assembly. The New Urban Agenda is a significant effort toward sustainable cities, with a focus on ending poverty and fighting inequalities, strengthening fair and environmentally sustainable urban economies, separating urban expansion from environmental pollution, and encouraging inclusive urban planning for crisis response and prevention (UN Habitat, 2022). It is worth adding that Habitat is a stakeholder of the MARUF21, which is the main subject of this study. Although Habitat III may not have been as efficient as expected in general, looking ahead to Habitat IV and considering the future agenda of MARUF within the context of sustainable cities, this partnership not only aims to enhance the efficiency and practicability of Habitat but also reinforces the global dimension of MARUF.

Can urban forums as intermediaries in innovation policy offer value in accelerating the formation and growth of the triple helix model? Is it possible to contribute to the formation of collaborations focused on sustainable cities and communities? In light of these questions, the study evaluates the Marmara Urban Forum, based on the triple helix model, as an intermediary to develop a suitable innovation network for sustainable cities and communities. The international forum, which has been held twice so far, serves as a relevant case to understand how the triple helix model presents an interaction for the mentioned development goal. While existing studies on the triple helix model and innovation intermediaries predominantly focus on formal intermediary organisations, policy instruments, or long-term institutional arrangements, the forum experience examined in this study highlights the intermediary potential of urban forums as event-based, multi-stakeholder platforms. The forum experience is noteworthy as it focuses on multi-stakeholder interaction at the international level and acts as an intermediary to design and evaluate scientifically based proposals for sustainable cities. The study presents an opportunity not only to assess the role of intermediation in strategic interactions among universities, industry, and the government but also to address the current state of this interaction and identify factors that can shape knowledge production and collaborations in future sustainable city and community projects. In this respect, the study contributes to the literature by evaluating the form and function of an urban forum concerning the production, transfer, and discussion of effective knowledge within a sustainability-oriented triple helix framework.

2. Conceptual and Theoretical Background

2.1 Triple Helix Model and Actors

Studies on triple helix relationships emphasize the growth of triple networks between universities, industry, and government and the increasing blurring of boundaries between these domains (Etzkowitz and Leydesdorff, 1998; 2000; Etzkowitz et al., 2000). In today's conditions of industrial development, driven by the contributions of universities, industry, and government, governmental and industrial activities rely more on scientific knowledge. In relation to this, technological advancements, the increasing complexity of tasks, and rapid technical progress enhance transitions and collaboration within and between institutional domains (Etzkowitz et al., 2000; Etzkowitz, 2008). The university, which is the source of increasingly scientific knowledge-based innovations and also hosts economic development through research groups, incubation centers, and science parks, consolidates its position with the concept of "entrepreneurial university" (Etzkowitz, 2003a; Etzkowitz et al., 2000; Leydesdorff, 2013). More recently, universities have expanded their missions beyond teaching and research through third-stream activities that engage them as active innovation and collaboration agents within the triple helix framework. However, evidence from emerging economies indicates that the scope of these interactions is frequently constrained by institutional pressures and resource limitations (Chatterjee et al., 2023). Similarly, through research and teaching, universities are essential to the advancement of the SDGs; yet, their capacity to operationalize these goals frequently depends on institutional resources and conformity to national policy frameworks (Kabonga et al., 2024).

Alongside the university, the transformation of industry and the government is also developing: The government's encouragement of the academic transformation of the university as a result of its strengthening role in innovation is stated as an economic development strategy regarding the change in the relationship of knowledge producers and users (Etzkowitz et al., 2000). The government, which is the supporter of firm formation and the rule maker of the game, emerges as a public entrepreneur (Etzkowitz, 2003b). The industrial sector, which elevates technology levels, assumes new roles and approaches an academic model by incorporating higher levels of education and knowledge sharing. Innovations born in specific local contexts are quickly reinterpreted and implemented worldwide (Etzkowitz, 2003a).

Recent research, however, shows that this process of transition is not consistent across institutional domains. The industrial sector, which is supposed to convert scientific knowledge into applied innovation, continues to encounter financial and structural constraints that impair its ability to collaborate in many developing contexts, especially when sectoral networks and R&D investments are still dispersed (Mensah et al., 2022). Similar to this, when bureaucratic rigidity and centralized control impede participatory collaboration, the government, which in theory serves as a coordinating and facilitating actor, frequently fails to maintain its intermediary role (Ali, 2022; Rahman and Islam, 2024). Because universities often take the lead in knowledge production, and industry and government actors struggle to align their institutional capacities with sustainability-oriented innovation systems, the interaction among the three helices is still asymmetric.

Metcalfe et al. (2012) discuss the importance of establishing systemic connections between actors and other components to solve specific innovation problems in

national, regional, or sectoral innovation systems. They also mention innovation ecologies that encompass a range of potential innovation actors assumed to form a collective innovation system within a region. This approach is useful for understanding the helix model because it addresses ongoing processes in which these sectors build helix model relationships around common problems or goals, separate from their local ecologies. This claim highlights that all these processes, including the roles of intermediary actors, should be examined with their inherent complexity. Furthermore, the continued interaction among universities, industry, and government strengthens the conditions that foster innovation (Fitjar et al., 2014). Therefore, contributions to the formation of the triple helix through these interactions can be achieved by creating an intermediary platform that integrates elements from various helix domains into corporate designs to promote innovation. However, while numerous studies have examined the performance of intermediary organizations established with substantial funding in the triple helix worldwide, the development of independent intermediary organizations that bridge institutional domains to support innovation has rarely been examined (Champenois and Etzkowitz, 2018).

In contexts with limited institutional capacity and non-participatory governance, such intermediary mechanisms become even more critical to connect diverse actors and to sustain collaborative innovation processes (Rahman and Islam, 2024). Thirdly, the triple helix model, which provides a policy framework, also addresses the challenges that most cities and regions face in collaboratively and effectively establishing multi-actor combinations for innovation processes. Addressing and evaluating these potential challenges are significant resources to be utilized in the functioning process of the helix model. Such coordination challenges are well-documented in developing contexts, where fragmented institutional responsibilities and weak stakeholder engagement often hinder inclusive and sustainable innovation systems (Mensah et al., 2022; Okoh Agyemang et al., 2024).

Burbridge and Morrison's (2021) literature review on university-industry-government partnerships acknowledges the helix model as a useful starting point for understanding the changing roles of actors involved in innovation to guide economic development. However, it points out that the effects of Sustainable Development Goals on the development of partnerships for innovation within the relationships of the three entities have not been addressed, and research focusing on economic and social development is limited in relation to sustainable development. In this regard, the research contributes to this gap by focusing on the collaborative structure of MARUF21, which aims to create triple helix collaboration for sustainable cities and communities and involves relevant stakeholders in the co-design of this field (Marmara Municipalities Union, 2023). Furthermore, as the triple helix approach does not provide detailed recommendations on how development and innovation should be supported, this study develops an applied perspective focused on how the theory can be translated into practice. The study analyses this transformation process by emphasising sustainability-focused networking and interaction activities between institutions and participants.

2.2 Intermediaries for the Triple Helix Model

The concept of "innovation intermediary" to facilitate interorganizational transfer is expressed in the literature with various terms: intermediaries, technology brokers, knowledge brokers, innovation brokers, infrastructure organizations, bridge-building consultants, boundary organizations, intermediary organizations, regional institutions,

matchmakers, knowledge intermediaries, and open innovation accelerators (Jetter and Munkongsujarit, 2013; Howells, 2006). One of the most commonly used definitions of an innovation intermediary is provided by J. Howells, who defines it as "an organization or body that acts as an agent or broker in any aspect of the innovation process between two or more parties" (2006: 720). The author also highlights the potential policy importance of innovation intermediaries for an innovation system. This is related to their role in increasing connectivity by building bridges within the system and generating new opportunities and dynamism (Howells, 2006). Metcalfe (2010), through the concept of triple helix networks, examines the role of organisations operating in the gaps between three institutions, revealing that these organisations actively influence the formation of university–industry–government relationships through actors, resources, and trade flows. These "intermediary organisations" typically encompass non-profit structures such as professional associations, foundations, consortia, independent research support organisations, and special interest groups.

Metcalfe (2010) acknowledges that intermediary organizations enhance relationships between public and private actors and facilitate the development of direct connections between sectors. These intermediary organizations create networks between public and private entities and serve as channels of exchange. These intermediary organizations that provide bridge and flow control services are strongly oriented towards external components and opportunities, yet they also possess an entrepreneurial character without being solely dependent on these external resources. According to Burbridge and Morrison (2021), various forms of intermediaries emerge through internal dynamics and are facilitated by external opportunities and stimuli (external factors). New forms of intermediaries develop through the convergence of changing actors or power dynamics. Additionally, innovation models are adopted by different actors, such as the public sector or cities (Burbridge and Morrison, 2021). This is because current conditions, in which many domains of society are increasingly reliant on scientific knowledge and knowledge is shaped according to specific needs, direct cities and regions to meet the requirements of this new global knowledge society (Poppen and Decker, 2018). The dynamics of innovation aimed at economic, social, and environmental improvements involve this change in the structure and power relations. In developing contexts, however, institutional fragmentation and non-participatory governance often hinder adaptive and collaborative processes, underscoring the need for intermediary mechanisms that can bridge institutional gaps and sustain long-term coordination (Rahman and Islam, 2024). Yet even where such mechanisms exist, intermediary initiatives may face limitations in highly centralised governance settings where elite networks hinder local participation, as evidenced in developing country cases such as Pakistan (Ali, 2022).

This study takes a more comprehensive approach by keeping the intermediary, which aims consensus and interaction for the formation of the triple helix system, closely with the innovation promoter (IO) (Etzkowitz, 2008). The intermediary is a forum that brings parties together, facilitates brainstorming for possible problem-solving, barriers, and challenges, and creates and implements new designs and plans by bringing together representatives from all institutions. The innovation organizer takes on the coordination of collaboration among the triple helix organizations to achieve a goal. The intermediary evaluates, selects, and brings together existing stakeholders and initiatives in a collaborative structure with their knowledge and expertise. The

innovation organizer gathers resources and enables a transition to organizing and implementing a plan and project that emerges during this process.

Etzkowitz's (2008) study also allows us to explore the dimensions in which organizations like urban forums operate. It can be argued that an urban forum serves as a platform that particularly generates consensus and interaction. Considering this role, certain elements of any intermediary organization are reported (Meyer et al., 2019). It will be necessary for an intermediary to perform coordination functions for triple helix networks, including research, strategic planning, and targeted discussions, as well as evaluating solution proposals. Focusing on open knowledge sharing and activities that promote user participation, and considering their use, the research will propose an inclusive governance structure that accounts for not only technology producers but also users. Additionally, it will need to establish connection rules to guide interactions and a set of shared values. In this regard, the question arises: what role could an intermediary play in defining its function and scope for the formation of triple-helix cooperation within the framework of the sub-targets of the global purpose?

Building on these conceptual insights, recent empirical studies further demonstrate the practical relevance of intermediary structures in urban governance and sustainability contexts. Empirical evidence from Ghana indicates that institutional collaboration and regulatory enforcement are critical to urban resilience, yet limited coordination and weak implementation capacity undermine sustainability initiatives, reinforcing the value of structured intermediary platforms that link policy, academia, and local authorities (Mensah et al., 2021; Mensah et al., 2022). Comparative metropolitan analyses further reveal persistent coordination gaps across regional and institutional scales, which intermediaries can help to mitigate by establishing multi-level governance linkages (Silva Martinelli & Lindner, 2021). Emerging digital governance tools and AI-driven coordination models also present new opportunities for strengthening intermediary capacities by enhancing transparency, data integration, and stakeholder connectivity within triple helix collaborations (Atukpa et al., 2025).

A triple helix-based intermediary can serve as an effective channel for knowledge transfer, consensus, interaction, and coordination among triple helix institutions, thereby fostering the necessary collaboration and partnerships for innovation. By establishing mechanisms that activate national, regional, and local dynamics and capabilities, it is possible to rapidly access resources and foster consensus structures and interactions between regions and organizations. MARUF21 represents a triple helix-based intermediary. By bringing together scattered academic, public, and industrial resources, it exemplifies the functioning of intermediary organizations. It highlights the value created by sharing expertise within the institutional and disciplinary structures. This review facilitates a better understanding of the micro foundations of the triple helix framework and underscores the relevance of MARUF21 as a practical intermediary experience that links global sustainability goals with local innovation ecosystems.

3. Research Methodology

3.1 Research Design and Analysis

The qualitative approach used in this research is well-suited to addressing the research questions and explaining the subject. Qualitative research allows for an in-depth examination of real-life situations and brings many details to light through various analytical approaches (Yin, 2018). It also enables understanding, interpretation, and

description; it reveals qualities and patterns (Merriam, 2009). For empirical research that explores a contemporary phenomenon in the context of real-life, especially when the boundaries between the phenomenon and its context are not clearly defined, a case study research design was adopted (Yin, 2018:45). Examining the role and function of intermediary organizations for triple helix cooperation within the framework of the 11th development goal through the case of an urban forum, which is a complex and multifaceted social phenomenon, is appropriate using a single case study methodology (Yin, 2018). In the study, both actors' interests and approaches were evaluated within triple helix domains to achieve a global goal, and the contribution of intermediary organizations to interactions among institutional domains was highlighted. Case study research is particularly important when the goal is to analyze processual and interconnected structures and answer the "how" question (Eisenhardt and Graebner, 2007). To find answers to the research questions, (1) the place of the global goal in the forum, (2) the interests, approaches, and solution proposals of institutions regarding global goal issues, and (3) the interactions among institutions brought together through intermediation were examined. The case study was conducted under three headings (Champenois and Etzkowitz, 2018): Acknowledging the existence of a gap, bringing together representatives of the triple helix, reaching consensus, and assisting in designing a solution.

The collection and analysis of qualitative data involve examining the social and contextual dimensions that give meaning to the qualitative data, as well as exploring nuanced connections. Researchers obtain these nuanced connections and contextual dimensions through qualitative content analysis at the most precise level (Roller, 2019). Focusing on the key elements of this analytical method, Roller and Lavrakas define qualitative content analysis as the systematic reduction or condensation of content examined with particular attention to context; this process aims to extract themes from the data and produce meaningful interpretations (2015: 232). Given the characteristics of this method, the report titled MARUF21 was used as a material within the scope of the study and examined through qualitative content analysis. Given the textual nature of the data source, content analysis was the primary method, and an interpretative approach was adopted. In this regard, the report, which provides detailed information on forum activities under the motto ‘Cities Developing Solutions,’ is suitable as a case study for the research (Marmara Municipalities Union, 2022).

This study is based exclusively on the MARUF21 Report and adopts a documentary qualitative content analysis approach. Accordingly, it does not include primary data such as interviews, surveys, or direct observations of participants. References to stakeholder interactions, therefore, reflect interactions and positions as documented in session summaries, themes, and solution proposals reported in the official forum report. The findings should be interpreted within the boundaries of this document-based evidence.

Quality principles were preceded by embedding as a conceptual framework at every stage of the research process. In this context, when applying the qualitative content analysis method, care was taken in the method selection, coding processes, category development, consideration of outlier examples, and justification of results (Kuckartz, 2014). From the design stage onwards, a comprehensive plan was followed to aim at revealing and interpreting the connections between the data (Roller and Lavrakas, 2015: 241–244). This plan consisted of the following steps: (1) determining the unit

of analysis, (2) developing codes and a context-sensitive code book, (3) pre-testing the codes and checking inter-coder agreement, (4) defining categories, and (5) creating themes and supporting the findings with visual representations. In the initial phase of the research design, the case under examination (MARUF21) was evaluated in the context of sustainable cities and communities; in this process, the sub-objectives of the global goal served as a guiding framework and were integrated into the code development phase. In addition, the triple helix model was also used to make the concepts that emerged in the forum sessions visible. As the research progressed, the categories expanded to reflect the forum themes. Following these assessments, relationship analyses were conducted to better understand the themes, proposed solutions, and the relationships between the triple helix stakeholders. This allowed observation of how the role and function of the forums in triple helix formation were reflected in practice. In conclusion, the case study provides a detailed examination of the forum, which operates to develop triple helix collaboration, within the framework of the 11th Global Goal and its sub-objectives.

SDG 11 includes seven sub-goals. During the analysis process, the sessions in MARUF21 were distributed according to the sub-goals they were relevant to. For example, the first sub-goal of SDG 11, 'Safe and Affordable Housing', was analysed in four sessions, while the fourth sub-goal, 'Protect the World's Cultural and Natural Heritage', was analysed in seven sessions. Consequently, the differences in the number of sessions were also reflected in the number of solution proposals. Continuing with the same examples, 45 solution proposals were included in the analysis under the 'Safe and Affordable Housing' item, while 60 solution proposals were examined under the fourth sub-item, 'Protect the World's Cultural and Natural Heritage'. The shapes created at the end of the coding process represent frequency and intensity. In particular, the lengths and thicknesses of the lines between SDG 11 sub-targets and solution proposals are indicators of these increases and decreases in frequency and intensity. The addition of quantitative figures to the visual was deliberately avoided as it would reduce the readability of the text.

3.2. Case: Marmara Urban Forum 21 (MARUF21)

The urban forum titled MARUF21, which forms the case study of the research, is organized by the Marmara Municipalities Union (MMU). The MMU, headquartered in Istanbul, is Türkiye's first municipal union. It operates at a regional level in 11 provinces: Balıkesir, Bilecik, Bursa, Çanakkale, Edirne, Istanbul, Kırklareli, Kocaeli, Sakarya, Tekirdağ, and Yalova. This includes six metropolitan municipalities, and it comprises a total of 188 member municipalities. To strengthen their institutional capacities, it provides local authorities with administrative, financial, and legal consultancy and training services in various fields such as environmental management, urbanisation, migration and social integration, local diplomacy, local development, urban technologies, and innovation. In addition, it encourages scientific research and supports knowledge sharing and cooperation by organising meetings, workshops, and events that bring together relevant stakeholders (Marmara Municipalities Union, 2023).

Marmara Urban Forum (MARUF), also known as the city forum, has been held internationally every two years since 2019, as one of the events organized by the MMU (Marmara Urban Forum, 2023). After 2019, MARUF was organized again in 2021 under the name MARUF21. In MARUF21, held under the main partnership of UN-Habitat, more than 500 speakers from over 50 countries participated, and more

than 100 broadcasts were conducted simultaneously from 10 parallel rooms. Throughout the three-day event, MARUF21 hosted various programs and claimed the title of the world's largest online city forum to date, with 111 topics across six axes (healthy, sustainable, resilient, inclusive, creative, innovative) addressed by 550 speakers from 52 countries. A total of 108 online sessions were conducted with the participation of 8,057 attendees. In addition to these, eight online exhibitions, eight MARUF on the Go events, 74 panels, seven trainings, five side events, five Dialog Marmara, three awards, one workshop, four discussion sessions, three keynotes, three yountable, and one urban talk were also carried out. The forum garnered endorsements from 113 partners (municipal, academic, and national and international partners such as UN-Habitat, UNESCO, and ICLEI) in support of this overarching institutional framework. The MARUF21 Report, consisting of four sections, presents these activities under the theme "Cities Developing Solutions: Rethink, Co-Act." The report includes the forum's structure and planning process, the main theme of "Rethink, Co-Act," its axes, topic headings, session summaries, prominent issues, and solution proposals (Marmara Municipalities Union, 2023; Marmara Urban Forum, 2023).

It can be said that MARUF21 aims to shape collaborative interactions with an approach that encompasses the concrete and symbolic aspects of institutions and integrates physical, social, and mental boundaries (Battard et al., 2013): Physical (by attracting and bringing together human resources from different fields), social (by creating new social connections among groups), and mental (by transforming the cognitive framework of various professionals). Looking at its content, it is clear that its activities aim not only to disseminate existing knowledge but also to create cognitive proximity, design solutions, and thus generate new knowledge and transform the expectations and visions of existing stakeholders. It can be argued that there is intense interaction among the three domains within a stable organization toward a validated development goal, which can provide the greatest benefit to a region.

4. Findings of Content Analysis: Sustainable Cities and Communities Goal Headings and MARUF21

In the MARUF21 report, all forum sessions were summarized, and each summary included participants' solution proposals. Additionally, each session was structured around various themes based on its content, and these themes were expressed as hashtags in the report. For example, for the session titled "Unleashing Potential: Youth Initiatives of Local Governments," four themes were identified as "youth," "participation," "local government," and "governance." The themes identified across all sessions were included in the analysis, classified as code categories, and assigned to the relevant sub-target headings of SDG 11. The session themes were analyzed using the seven sub-target headings of SDG 11, and the relationships among themes, solution proposals, and participants were evaluated.

4.1. Safe and Affordable Housing

The first target under the Sustainable Cities and Communities heading is defined as "Safe and Affordable Housing." Within this scope, the aim is to ensure everyone has access to adequate, safe, and affordable housing and to improve informal settlements by 2030. In MARUF21, four sessions were held on this topic, and 45 solution proposals were submitted. In the analyses, the presence of themes named "home", "housing", "worksite", "real estate", and "architecture" was sought in the said sessions.

The patterns exhibited by the solution proposals around these themes and how the stakeholders of the triple helix model approached them were investigated (Figure 1). Accordingly, the industry, university, and government collectively address the sub-target heading of "Safe and Affordable Housing," with the industry being more prominent. The subject is primarily approached in the context of architecture. It is evident that the university focuses more on the issues of "home" and "housing" and has a closer relationship with the government in this regard.

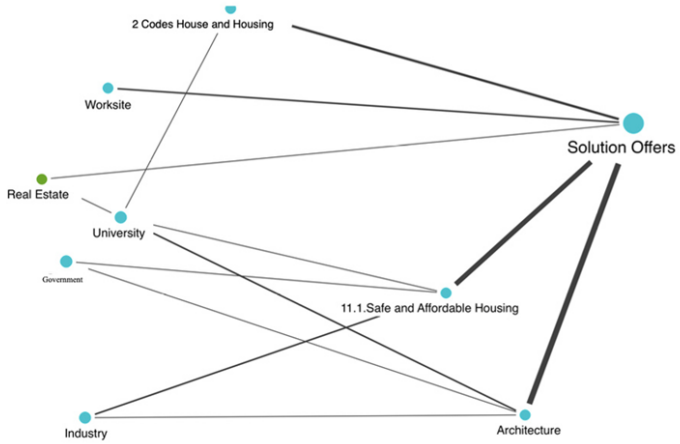

Figure 1. Relationship between SDG 11.1 Themes-Solution Proposals-Triple Helix Model Stakeholders

4. 2. Affordable and Sustainable Transport Systems

The second target under the Sustainable Cities and Communities heading is designed as "Affordable and Sustainable Transportation Systems." In this context, the aim is to improve road safety by focusing on the needs of vulnerable groups, particularly individuals in fragile situations, women, children, persons with disabilities, and the elderly. The objective is to ensure access to safe, affordable, accessible, and sustainable transport systems for all by 2030, primarily by improving public transport. In MARUF21, six sessions were held on this topic, and 58 solution proposals were submitted. In the analyses, the presence of themes such as "transportation," "pedestrian," "urban design," "urban planning," and "infrastructure" in these sessions was examined. The patterns exhibited by the solution proposals around these themes and how the stakeholders of the triple helix model approached them were investigated (Figure 2). Overall, urban planning takes the lead in the solution proposals, followed by urban design. Among the stakeholders in the triple helix model, industry, universities, and government show interest in the topic, respectively. In addition, it is understood that neither transportation nor pedestrian priorities dominated, indicating that both are given equal importance. It was concluded that the fourth group also came to the fore in this title and that the transportation theme outweighed the pedestrian contact in this group. In this study, the fourth group refers to participants outside the university–industry–government domains, such as civil society organisations, professional networks, and international or independent initiatives. This group is analytically distinguished from the triple helix framework to retain analytical clarity regarding triple helix dynamics. However, it is understood that the actors within the

fourth group follow a different solution strategy compared to the stakeholders in the triple helix model and dominate the sub-target heading of affordable and sustainable transportation systems with their proposed solutions.

Figure 2. Relationship between SDG 11.2 Themes-Solution Proposals-Triple Helix Model Stakeholders

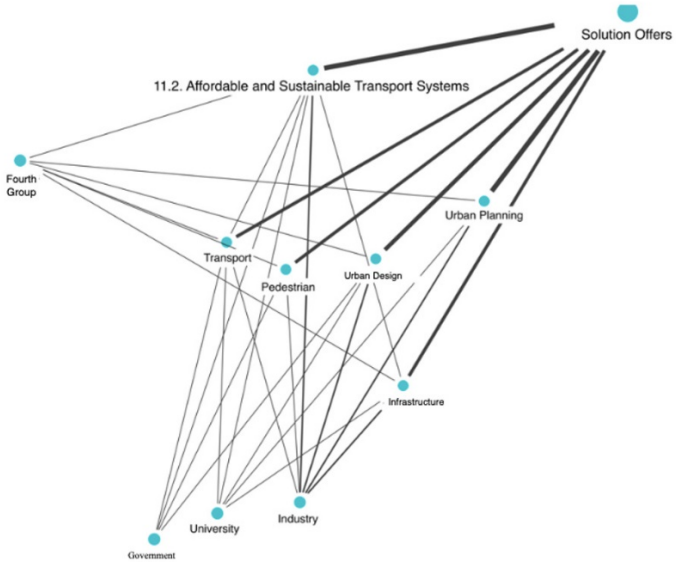

Figure 2. Relationship between SDG 11.2 Themes-Solution Proposals-Triple Helix Model Stakeholders

4. 3. Inclusive and Sustainable Urbanization

The third target under the Sustainable Cities and Communities heading is titled "Inclusive and Sustainable Urbanization." Within this scope, the aim is to achieve inclusive and sustainable urbanization in all countries by 2030, focusing on strengthening the capacity to plan and manage participatory, integrated, and sustainable human settlements. In MARUF21, 16 sessions were held on this topic, and 164 solution proposals were submitted. In the analyses, the presence of themes such as "sustainability," "circular economy," "agriculture," "food," "rural development," "urban development," "urban economy," "employment," "labor," and local development" was sought in the said sessions. The patterns exhibited by the solution proposals around these themes and how the stakeholders of the triple helix model approached them were investigated (Figure 3). Accordingly, in the sessions held at MARUF21, the triple helix actor that examined the context of inclusive and sustainable urbanization the most was the university. Speakers representing the university discussed urban economy, urban development, and rural development together, highlighted the possibilities of a circular economy, and focused on agriculture and food themes, providing solution proposals for all these headings. It is also observed that universities shaped their intellectual contributions around the emphasis on sustainability.

It is understood that the industry supports the Inclusive and Sustainable Urbanization target around the themes of employment and labour, and the solution proposals were

formulated accordingly. The government, on the other hand, approached the topic within the context of local development and arranged the solution proposals accordingly. It is understood that this government perspective is shared by the participants in the fourth group. In fact, the group is also close to the industry's employment- and labour-oriented perspective. The same category seems to be quite distant from the agenda of the university. In this regard, it is understood that the agendas of universities, industry, and government differ significantly on the topic of Inclusive and Sustainable Urbanization.

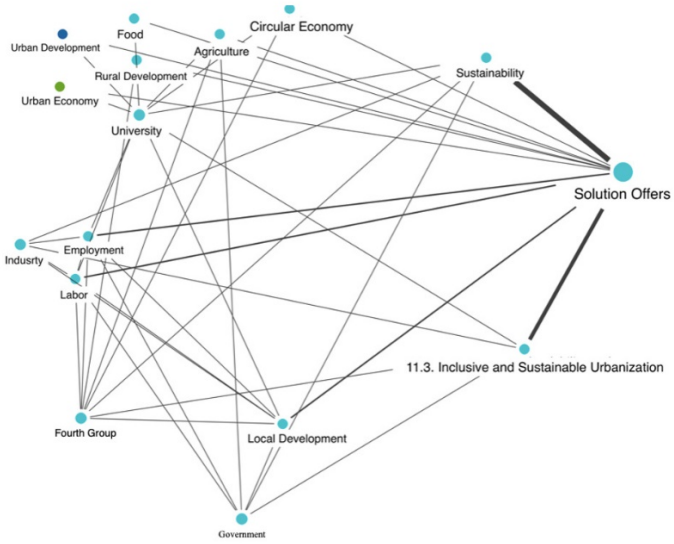

Figure 3. Relationship between SDG 11.3 Themes-Solution Proposals- Triple Helix Model Stakeholders

4. 4. Protect the World's Cultural and Natural Heritage

The fourth target under the Sustainable Cities and Communities heading is titled "Protect the World's Cultural and Natural Heritage". Within this scope, the aim is to enhance efforts to preserve and safeguard the world's cultural and natural heritage. In MARUF21, seven sessions were held on this topic, and 60 solution proposals were submitted. In the analyses, the presence of themes such as "culture," "art," "urban identity," "cultural heritage," "history," "urban heritage," and "urban conservation" in these sessions was examined. The patterns exhibited by the solution proposals around these themes and how the stakeholders of the triple helix model approached them were investigated (Figure 4). Accordingly, the industry, along with participants from the fourth group, proposed solutions related to culture and art. The industry's increasing influence on cultural and artistic activities may help explain this tendency. The university, on the other hand, chose to present its solution proposals by leveraging its intellectual knowledge in academic subjects such as history, urban heritage, and urban identity. The government pursued a solution strategy for cultural heritage and urban conservation. In conclusion, the university and the government, by showing a greater inclination toward similar topics, demonstrate a stronger willingness to work together.

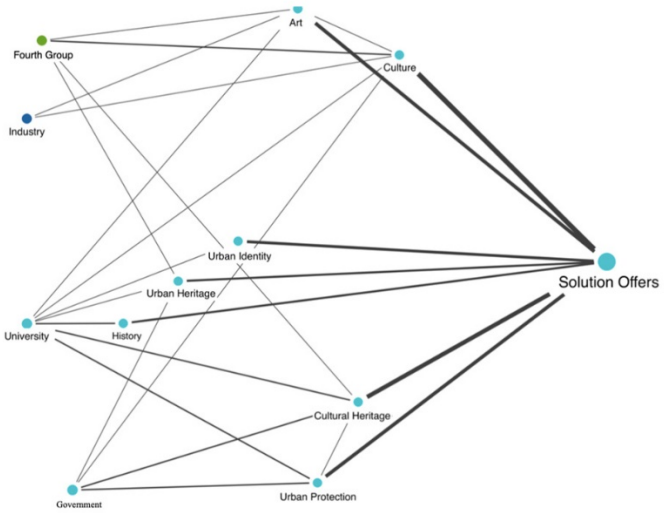

Figure 4. Relationship between SDG 11.4 Themes-Solution Proposals- Triple Helix Model Stakeholders

4.5. Reduce the Adverse Effects of Natural Disasters

The fifth target under the Sustainable Cities and Communities heading is titled "Reduce the Adverse Effects of Natural Disasters". In this context, the aim is to significantly reduce the direct economic losses of disasters, including water-related disasters, on global gross domestic product by 2030. The goal also includes significantly reducing deaths and the affected population, with a focus on protecting poor and vulnerable individuals. In MARUF21, eight sessions were held on this topic, and 101 solution proposals were submitted. In the analyses, the presence of themes such as "urban networks," "risk management," "durability," "disaster management," "capacity building," and "risk prevention" in these sessions was examined. The patterns exhibited by the solution proposals around these themes and how the stakeholders of the triple helix model approached them were investigated (Figure 5). Accordingly, durability and risk management emerged as the prominent themes in solution proposals aimed at reducing the adverse impacts of natural disasters. It is observed that industry and government, as stakeholders in the triple helix model, share similar perspectives and converge on their solution proposals, emphasizing risk management and durability. The university, on the other hand, focuses on disaster management, risk mitigation, and capacity building, which shape its solution proposals. In this regard, it can be evaluated that universities should make efforts to coordinate with the government and the industry. Additionally, participants in the fourth group focused on urban networks and developed a solution strategy that differed from that of the stakeholders in the triple helix model.

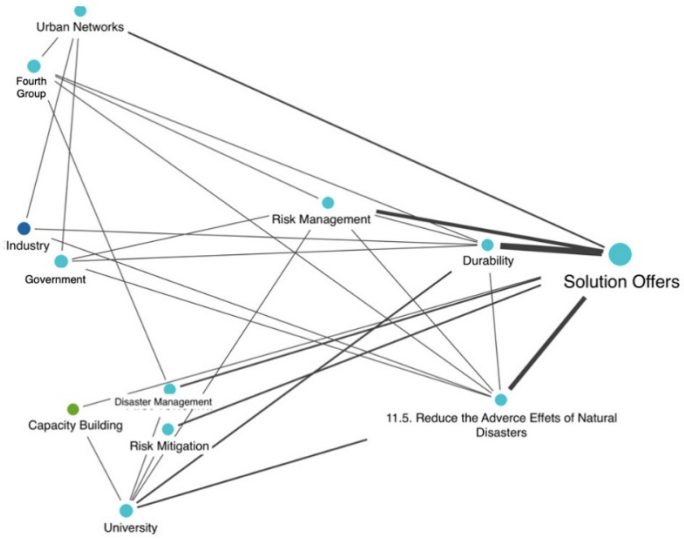

Figure 5. Relationship between SDG 11.5 Themes-Solution Proposals- Triple Helix Model Stakeholders

4. 6. Reduce the Environmental Impact of Cities

The sixth target under the Sustainable Cities and Communities heading is titled "Reduce the Environmental Impact of Cities". Within this scope, the aim is to reduce cities' per capita negative environmental impacts by giving special importance to air quality, municipal waste management, and other waste management by 2030. In MARUF21, 11 sessions were held on this topic, and 172 solution proposals were submitted. In the analyses, the presence of themes such as "climate crisis," "climate change," "ecosystem," "biodiversity," "environment," "nature," "waste management," "ecology," and "energy" in these sessions was examined. The patterns exhibited by the solution proposals around these themes and how the stakeholders of the triple helix model approached them were investigated (Figure 6). Accordingly, the solution proposals strongly emphasize the climate crisis and climate change. The stakeholders in the triple helix model appear to be equally distant from both issues. It has been determined that the university is engaged in intellectual production in the fields of the environment, ecosystems, biodiversity, nature, waste management, and ecology, and that it develops solution proposals in this context. However, as another actor within the triple helix model, the industry has developed an energy-focused strategy, receiving support from the fourth group as well. It is understood that the government, on the other hand, is closely aligned with the industry’s interests and also offers solutions to potential threats posed by climate change.

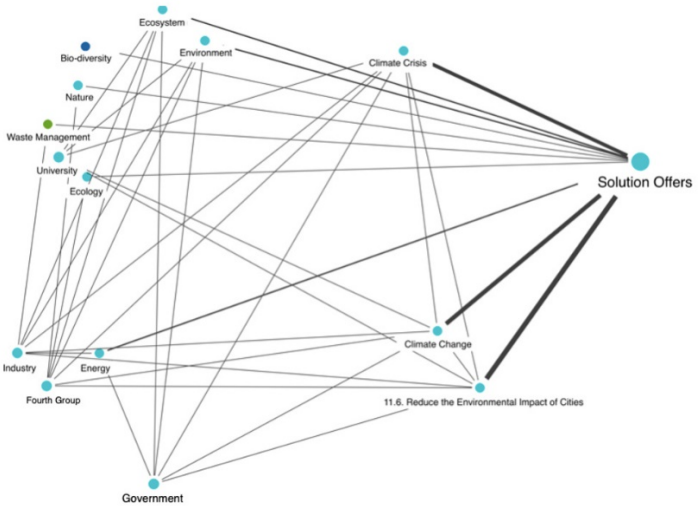

Figure 6. Relationship between SDG 11.6 Themes-Solution Proposals- Triple Helix Model Stakeholders

4.7. Provide Access to Safe and Inclusive Green and Public Spaces

In the Sustainable Cities and Communities category, the seventh goal is defined as Provide Access to Safe and Inclusive Green and Public Spaces. In this context, the aim is to ensure universal access to safe, inclusive, and accessible green spaces and public areas by 2030, particularly for women, children, the elderly, and people with disabilities. In MARUF21, three sessions were held related to this issue, and 27 solutions were proposed. In the analyses, the existence of the themes named "environmental right", "water quality", "air quality", "life quality", "public space", "creating space", and "public life" was sought in the said sessions. The patterns exhibited by the solution proposals around these themes, along with the approaches of the stakeholders in the triple helix model, were examined (Figure 7). According to this, public space stands out in the solution proposals. All stakeholders of the triple helix model are equally engaged in this topic. The government addresses the issue of ensuring access to safe, inclusive green spaces and public areas in the context of environmental rights and water quality. It is natural for proposals related to solving water issues arising from the climate crisis to gain prominence in a forum where municipalities in the Marmara Region predominate. Quality of life is a common ground among industry, government, and universities. Despite this, air quality, unlike water quality, follows a pattern aligned with the university's agenda. The fourth group, outside the triple helix, plays an important role in public life and ensures that public space takes top priority in the solution proposals. In terms of place-making patterns, this group also collaborates with the industry.

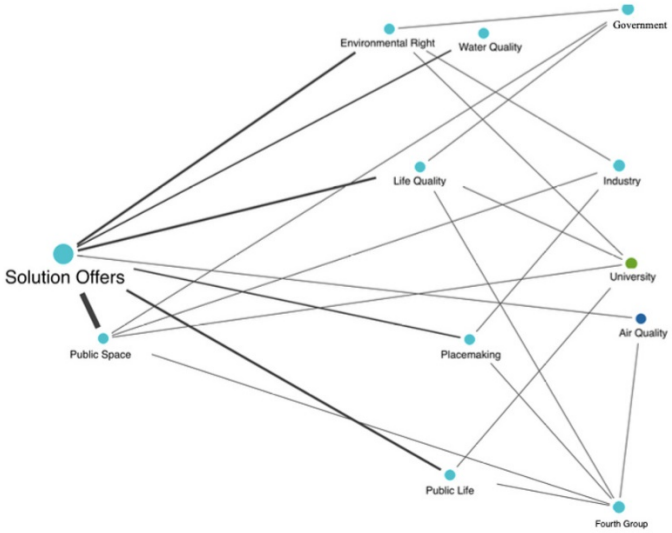

Figure 7. Relationship between SDG 11.7 Themes-Solution Proposals- Triple Helix Model Stakeholders

5. Discussion

The primary focus of this article is to explore the role of intermediating triple helix collaborations. The case of MARUF21 examined in this research serves as an intermediary structure within the triple helix framework. As consistently stated in theory and literature, and as this research shows, innovation involves stakeholders with diverse interests and priorities, underscoring the indisputable need for collaboration. In this capacity, MARUF21 brings representatives from all three helices to the same event, facilitating the start of engagement and collaboration. Moreover, as a regularly scheduled forum, it serves to unite actors who might otherwise remain dispersed and out of touch within the system, operating under a specific theme. The forum directs and intermediates discussions to offer solutions and achieve consensus, transcending mere opportunities and activities. There is more focus on "solutions" and "proposals" than on problems, with an emphasis on the theme of "sustainability," and a dominant focus on the "social," "public," and "global" aspects of the topics discussed.

According to the findings, there is consensus on the need to achieve the "new" and the "different" together, and the forum is the starting point for this achievement. It is also very valuable to conduct it publicly. A nuanced understanding emerges when tracing participants' collaborations and activities to develop viable solutions. On the other hand, it should be acknowledged that providing both before-and-after information about the forum and its participants would strengthen a sustained explanation. It will become more comprehensive if there is more insightful, publicly available information on the preparation stages or on post-event institutional internal evaluations. The comprehensiveness of the content could be further improved by including more insightful, publicly available information on the preparation stages or on post-event institutional internal evaluations. Specifically, details about the preparation phases and the official corporate assessments conducted after the reports

are prepared would significantly enrich the content. Future research could strengthen this line of inquiry by complementing report-based analyses with interviews or observational data to capture participants' perspectives and informal interaction dynamics more directly. While Türkiye recently celebrated the 100th anniversary of its republic, the forum itself is a relatively new structure, approximately 6-7 years old. Despite its youth, it holds promise for a developing country and aligns with global goals.

Based on the findings, the forum content significantly overlaps with the 11th Sustainable Development Goal and its sub-targets. The content of the sessions and solution proposals focuses notably on reducing the environmental impacts of cities and inclusive and sustainable urbanization. The university, which stands out for its contributions to almost all target areas and solution proposals, seems to be the driving force in the current triple helix structure. On the other hand, the government, which becomes an important partner in the collaboration process at an earlier stage, adopts a relatively distant approach in this case study (except for the inclusive and sustainable urbanization goal), remaining less actively involved as the process progresses.

Although the government's initial involvement is evident, its passive stance in later stages may be attributed to inherent bureaucratic structures, centralized management approaches, and limited adaptability to innovation processes. Future research should delve deeper into the underlying reasons for this passivity and explore strategic measures, such as adopting more flexible management models, enhancing multi-stakeholder engagement, and promoting government-industry innovation programs, to bolster active governmental participation.

Furthermore, while the study emphasizes the forum's role as an intermediary, it is equally important to translate the theoretical and analytical findings into concrete, actionable steps. In practice, establishing robust communication and collaboration mechanisms among universities, industry, and government is crucial for achieving sustainable cities and communities. Policy recommendations, the integration of strategic planning processes, and enhanced dialogue with local administrations are key measures that, if supported by clear resource allocation, monitoring, and evaluation frameworks, can provide policymakers with practical guidance and expand the study's real-world impact.

It is also observed that stakeholders come together and reach a dual consensus in certain headings, creating a shared vision. In some areas, all three stakeholders are seen converging, but these meetings remain relatively limited. MARUF21, which extensively discusses the sustainable development goals and sub-targets while efficiently facilitating participation from the triple helix domains, provides valuable intermediary support for discussions of targets and solution proposals and underscores its openness to further development through collaboration and interaction.

The relationship networks among themes, solution proposals, and participants indicate that each stakeholder needs to work toward common ground to cover all sub-targets equally, demonstrate greater willingness to collaborate, and engage in coordinated participation. Furthermore, the importance of regional collaborations involving multiple cities is highlighted in the context of work on sustainable cities and communities. Efforts are made to bring a regional perspective to the concept of sustainable cities and to introduce the notion of sustainable regions. By incorporating both local emphasis and the global agenda of the increasingly interconnected world,

the forums align with the concept of sustainable cities. In terms of forums, including international experiences as well as national experiences, the current agenda of a globalized world is added to the concept of sustainable cities, which emphasizes localization.

6. Conclusion

The research aimed to demonstrate how forum intermediation activities can promote triple-helix collaborations, aligning with the goal of sustainable cities and communities. For this purpose, an international urban forum that brings together all the actors of the triple helix and is organized through an independent intermediary was examined. The study sought to clarify the role and function of this intermediary organization in shaping the triple helix model for sustainable cities and communities. On the other hand, it sought to determine the current state of interaction among institutions within the sub-targets of the development agenda and to identify aspects that can guide knowledge generation and collaboration in future work on sustainable cities and communities. The article also sought to highlight the strengths and limitations of a triple-helix-based intermediary to pave the way for triple-helix collaborations and evaluate its connection with the sub-targets of the global agenda.

Based on the results, the forum supports the formation of a collaboration network but needs further development of governance mechanisms to promote efficient interaction among multiple stakeholders and policymakers. Drawing on the theoretical background and analysis provided in this case study, it is evident that cultivating MARUF21 through a clear, deliberate application of theoretical knowledge related to intermediacy and the helix model would significantly contribute to establishing a sustainable structure and innovation network within triple helix innovation collaborations.

The MARUF21 report is quite comprehensive; however, detailed information about the Marmara Urban Forum beyond website content is currently unavailable. Gaining more detailed insights into the forum's organizational structure could improve the interpretation of this research and future studies. To promote greater information sharing, consensus, and interaction among innovation stakeholders, and to foster collaboration, a certain level of intermediacy is necessary to strengthen and protect the system, from the meeting network to triple-helix cooperation. Therefore, urban forums that provide a discussion platform can act as catalysts throughout the entire process as independent organizations.

To contribute to the sub-targets of the global agenda, it may be discussed that many international forums should be held in a way that emphasizes and incorporates regional elements within the framework of the triple helix model. Additionally, the lack of binding force of the proposals presented in MARUF21 and their presentation solely as recommendations indicates a significant deficiency in both monitoring the forum's actual outcomes and discussing them at subsequent meetings. However, it should be noted that this deficiency may still be considered as an early stage, given that the meeting was held for the second time in 2021. Steps toward making the decisions binding could be considered in the coming years.

Translating the analytical findings into practice is critically important. Therefore, it is necessary to outline specific steps and strategies that turn theoretical and analytical results into actionable measures. In particular, achieving the goals of sustainable cities and communities requires establishing strong communication and collaboration

mechanisms among universities, industry, and government, along with developing practical policy recommendations, integrating them into strategic planning processes, and improving dialogue with local authorities. By supporting these concrete proposals with proper resource allocation and monitoring and evaluation systems, policymakers can be equipped with guiding strategies that lead to tangible results.

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