ESJ Social Sciences Peer-reviewed

How Intermediate Cities Localise the Sustainable Development Goals through Sustainable Mobility Planning

Grazia Calabro
Department of Economics, University of Messina, Messina, Italy
Fabio Carlucci
Department of Economics and Statistics,
University of Salerno, Fisciano (SA), Italy
Carlotta D'Alessandro
Department of Economics, University of Messina, Messina, Italy
Barbara Trincone
Department of Economics and Statistics,
University of Salerno, Fisciano (SA), Italy

Doi:10.19044/esj.2026.v22n19p53

Submitted: 02 May 2026
Accepted: 07 July 2026
Published: 31 July 2026

Cite As:
Calabro, G., Carlucci, F., D'Alessandro, C., & Trincone, B. (2026). *How Intermediate Cities Localise the Sustainable Development Goals through Sustainable Mobility Planning*. European Scientific Journal, ESJ, 22 (19), 53. https://doi.org/10.19044/esj.2026.v22n19p53

Abstract

The implementation of the Sustainable Development Goals (SDGs) continues to be constrained by a persistent gap between globally defined objectives and their effective translation into local development processes. This challenge is particularly relevant for intermediate cities, which occupy a strategic position between metropolitan centres and peripheral territories and therefore play a crucial role in connecting global sustainability agendas with place-based policy implementation.

This paper investigates how intermediate cities localise SDG objectives through sustainable mobility planning instruments operating within multi-level governance systems. Building on a policy analysis supported by illustrative case studies, the paper investigates this research question.

The findings suggest that Sustainable Urban Mobility Plans (SUMPs) and related mobility planning instruments operate as effective governance mechanisms for translating global sustainability objectives into territorially embedded policies and actions. Through the integration of transport planning,

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

accessibility policies, environmental objectives, and stakeholder participation, these instruments contribute to the implementation of several SDGs, particularly SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), SDG 9 (Industry, Innovation and Infrastructure), and SDG 10 (Reduced Inequalities). The analysis further shows that successful SDG localisation depends on three interrelated conditions: effective coordination across governance levels, integration between mobility and territorial planning, and the adoption of monitoring frameworks based on measurable indicators.

The paper argues that intermediate cities should not be regarded merely as recipients of sustainability policies but as active governance arenas in which global objectives can be operationalised through integrated mobility planning. In this perspective, mobility planning instruments become key policy tools for strengthening territorial cohesion, institutional coordination, and the local implementation of the 2030 Agenda.

Keywords: Sustainable Development Goals; SDG localisation; Intermediate cities; Sustainable Urban Mobility Plans; Multi-level governance; Territorial planning

Introduction

Global warming has accelerated significantly in recent decades, posing major challenges to sustainable development. Greenhouse gas emissions constitute a primary driver of climate change, intensifying the greenhouse effect (Antunes et al., 2023) and posing a significant threat to cities worldwide. Due to their concentration of population, infrastructure, and economic activities, cities both contribute significantly to climate change and are highly exposed to its impacts (Ye et al., 2021). Urban systems are responsible for the largest share of global CO_2 emissions (Luqman et al., 2023), and if global warming reaches 1.5°C, the health and well-being of more than 300 million urban residents could be significantly compromised by 2050 (IPCC Special Report on Global Warming of 1.5°C., 2018). Although urban areas occupy only approximately 2% of the Earth's surface, they are responsible for consuming nearly 75% of global natural resources (Madlener & Sunak, 2011). As urbanisation accelerates, particularly in rapidly developing regions, projections by the International Energy Agency indicate that cities will account for 73% of global energy demand and 76% of CO_2 emissions by 2030, while generating around 50% of global waste (UNEP, 2017). These trends highlight the crucial role of cities in climate mitigation and the need for integrated sustainability strategies balancing environmental, economic, and social goals (Ameen et al., 2015). Growing scholarly and policy attention has focused on intermediate cities as strategic actors in the localisation of the

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Sustainable Development Goals (SDGs). Positioned between metropolitan centres and rural territories, these cities mediate economic, infrastructural, and social flows across regions. In contrast to large metropolitan areas, intermediate cities operate as crucial mediating nodes between regional economies, infrastructure networks, and community-level services.

Transport systems play a pivotal dual role. On the one hand, they enhance economic competitiveness by facilitating flows of goods, labour, and knowledge; on the other, they contribute directly to the achievement of key SDGs—especially sustainable cities and communities (SDG 11), climate action (SDG 13), and reduced inequalities (SDG 10)—through the provision of accessible, low-carbon, and inclusive mobility solutions. Building on debates on multi-level governance and place-based development, this article proposes a conceptual framework linking institutional capacity, territorial integration, and effective implementation. Particular attention is given to mobility infrastructures as enabling tools for SDG localisation. From this perspective, transport governance is conceptualised as a critical cross-scale interface requiring alignment between national strategies, regional planning frameworks, and local mobility policies. Consequently, SDG achievement depends on the design of integrated mobility systems adapted to local territorial conditions. The relevance of intermediate cities within this framework is further clarified by existing institutional definitions. According to UN-Habitat (2015; 2020), an intermediate city is defined as an urban settlement that mediates the flows of people, goods, and services between rural areas and metropolitan centres. ESPON (2014; 2020) conceptualises intermediate cities as nodes embedded within broader Functional Urban Areas, organising territorial connectivity and service provision beyond administrative boundaries. Similarly, the OECD (2021) frames these areas as key actors in promoting regional balance and cohesion through the diffusion of development across non-metropolitan territories. The article therefore examines mobility systems in intermediate cities as tools for implementing locally oriented sustainability policies. To substantiate this argument, the paper presents a set of exemplary European and Italian cases, focusing on the use of planning instruments and, specifically, the development of Sustainable Urban Mobility Plans (SUMPs).

These cases illustrate how intermediate cities can implement global objectives through integrated transport planning, thereby strengthening their role within multi-level governance frameworks. However, this analysis is situated within a broader context characterised by a slowdown in global progress towards the SDGs. Despite the momentum created by the 2030 Agenda, progress toward the SDGs has slowed, especially after the disruptions caused by the COVID-19 pandemic and ongoing global conflicts.

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

The pandemic not only reversed progress in key areas such as poverty reduction, health, and education, but also exposed structural weaknesses in governance systems, contributing to what has been described as a post-COVID stagnation in SDG advancement (United Nations, 2020; Yuan et al., 2023). At the same time, a persistent implementation gap remains between global SDG commitments and their effective translation into local policies and actions.

This gap is especially evident in cities, where local governments often face financial, institutional, and coordination constraints that limit effective SDG implementation (Valencia et al., 2019; Sharifi, 2022). These structural limitations reveal the extent to which sustainability transitions depend on institutional coordination mechanisms capable of integrating policy objectives across administrative and territorial scales. Within this context, intermediate cities—and their transport systems—emerge as critical arenas for experimentation and implementation. By examining the relationship between intermediate cities, mobility governance, and SDG localisation, this paper contributes to current debates on the territorial implementation of global sustainability agendas.

The remainder of the manuscript is organized as follows. Section 1 presents the Theoretical framework. Section 2 discusses interpretation and policy implications. Section 3 concludes and outlines future perspectives.

Methodology

The methodology adopted to address the research question consists of a policy analysis supported by illustrative case studies, exploring the role of intermediate cities and transport systems in the localisation and implementation of the Sustainable Development Goals (SDGs). The research is grounded in the assumption that SDG implementation is not merely a matter of policy adoption but rather a process of territorial translation requiring institutional coordination, place-based planning, and context-sensitive governance mechanisms. Academic contributions were selected based on their relevance to these themes and included both foundational studies and recent publications addressing the implementation challenges of the 2030 Agenda.

The review was complemented by the analysis of institutional and policy documents produced by international and European organisations, including the United Nations, OECD, UN-Habitat, ESPON, the European Commission, and national and regional public authorities. Particular attention was devoted to policy frameworks addressing sustainable urban mobility, territorial development, climate action, and local governance.

The empirical component of the study is based on a purposive selection of European and Italian intermediate-city experiences. The selected cases include Freiburg, La Rochelle, Vitoria-Gasteiz, Brindisi, Salerno, Potenza,

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Cosenza–Rende, and Nocera Inferiore, including case studies from Southern Europe, and particularly from Southern Italy. These areas are widely acknowledged as facing more significant mobility challenges and lower levels of technological development than Northern Italy and many regions of Central Europe. Similarly, the discussion of Nocera Inferiore is explicitly presented as a documentary policy analysis based on the examination of planning documents, including the Sustainable Urban Mobility Plan (SUMP), regional mobility strategies, and territorial planning instruments.

The cases were not intended to constitute a statistically representative sample. Rather, they were selected because they provide documented examples of sustainable mobility planning, innovative transport policies, Sustainable Urban Mobility Plans (SUMPs), or governance arrangements relevant to the localisation of sustainability objectives in intermediate urban contexts. Their inclusion serves an illustrative and exploratory purpose, enabling the identification of recurring governance mechanisms and planning practices across different territorial settings.

To operationalise the research question, the analysis adopts an SDG-centred comparative framework. Rather than comparing cities as isolated units, the framework examines how specific SDG objectives are localised through mobility planning instruments under different governance arrangements. Table 1 summarises the analytical structure adopted in the study.

Table 1: Analytical Framework for SDG Localisation through Sustainable Mobility Planning in Intermediate Cities

SDG	Localisation Objective	Mobility Planning Instrument	Governance Arrangement	Illustrative Cases	Evidence of Implementation	Main Constraints	Transferable Lessons
SDG 11 Sustainable Cities and Communities	Accessibility and sustainable mobility	SUMP	Local–regional coordination	Freiburg, Nocera Inferiore	Public transport integration, cycling infrastructure	Governance fragmentation	Integrated mobility planning
SDG 13 Climate Action	Emission reduction and modal shift	SUMP, Regional Mobility Plans	Multi-level climate governance	La Rochelle, Salerno	Low-emission mobility measures	Financial constraints	Decarbonisation strategies
SDG 10 Reduced Inequalities	Territorial inclusion and accessibility	Accessibility plans, integrated transport systems	Inter-municipal cooperation	Potenza, Cosenza–Rende	Improved access to services	Spatial inequalities	Inclusive mobility policies
SDG 9 Industry, Innovation and Infrastructure	Infrastructure and innovation	ITS, intermodal systems	Regional and national support frameworks	Brindisi, Nocera Inferiore	Smart mobility and logistics solutions	Implementation capacity	Digitalisation and innovation
SDG 3 Good Health and Well-being	Active mobility and healthier lifestyles	Cycling and walking strategies	Local mobility-health coordination	Freiburg, Vitoria-Gasteiz	Promotion of active travel	Behavioural resistance	Health-oriented mobility planning
SDG 17 Partnerships for the Goals	Stakeholder participation and governance coordination	Participatory planning processes	Multi-level governance networks	All cases	Stakeholder engagement	Coordination complexity	Collaborative governance

Source: Authors' elaboration

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Theoretical framework

The transition to low-carbon energy systems requires addressing interconnected social, economic, technological, and institutional challenges (Saraji & Streimikiene, 2023). In this context, several studies highlight the importance of adopting quality-oriented improvement strategies as a means of advancing sustainability objectives (D'Alessandro et al., 2024).

The United Nations (UN) General Assembly established the 2030 Agenda for Sustainable Development as a global framework that integrates climate and development priorities through the Sustainable Development Goals (SDGs) (Georgeson & Maslin, 2018; D'Amato et al., 2024).

The Agenda includes 17 SDGs and 169 targets supported by monitoring and implementation mechanisms designed to guide global development towards more sustainable pathways (Halkos & Gkampoura, 2021). Collectively, the SDGs aim to promote more sustainable development by addressing poverty, inequality, and climate change while improving access to education, healthcare, and responsible consumption practices (Slimani et al., 2024), expanding access to education and healthcare, and supporting the emergence of more equitable and inclusive societies (Saxena et al., 2021). These SDGs are essential for achieving environmental equilibrium, social cohesion, and economic development at the global scale (Arora & Mishra 2019), impacting numerous nations worldwide. Although current patterns of economic, social, and cultural development have contributed to rising emissions and environmental degradation, businesses, institutions and governments should urgently address these externalities in a more direct and incisive manner. SDGs are frequently employed as a coordinating framework for key dimensions of urban development (Kutty et al., 2020). Given heterogeneity of territorial contexts, each region, along with its provinces and cities, develops its own tailored sustainable agenda for implementation and ongoing monitoring (Alvarez-Risco et al., 2020; D'Amico et al., 2021). Urban areas play a decisive role in achieving these objectives through multiple, interrelated dimensions. Cities account for more than 70% of global CO_2 emissions and generate over 80% of global GDP, positioning them simultaneously as major contributors to climate change and as key agents of mitigation and transformation (Ye et al., 2021). Within this context, urban mobility and logistics systems emerge as critical operational domains, as they directly influence energy consumption, emissions, accessibility, spatial organisation, and economic productivity.

Sustainable urban planning, investment in public transport, and the deployment of renewable energy systems, therefore represent key mitigation pathways, while mobility systems connect environmental, economic, and social sustainability objectives. Among the 17 SDGs, SDG 11 ('Sustainable Cities and Communities') is particularly relevant (D'Adamo et al., 2022), as

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

it promotes inclusive, safe, resilient, and sustainable urban environments (Allam & Jones, 2021). A key dimension of this goal relates to reducing the environmental impacts of cities through the improvement of air quality and the development of sustainable transport systems (Pérez et al., 2024). SDG 11 emphasises sustainable mobility and improved air quality, while transport policies also contribute to health, economic productivity, infrastructure resilience, and climate action, contributing to SDG 3 (health, through reduced pollution and increased safety), SDG 8 (economic productivity and efficient logistics), SDG 9 (resilient infrastructure and innovation), and SDG 13 (climate action).

In this context, Sustainable Urban Mobility Plans (SUMPs) represent an important governance tool for coordinating land use, transport infrastructure, and mobility policies in support of SDG objectives. Urban logistics also remain a critical but often overlooked dimension of sustainability planning. Freight transport is responsible for a significant share of urban congestion, emissions, and land-use pressure; therefore, the adoption of sustainable urban logistics solutions—such as low-emission zones, urban consolidation centres, last-mile electrification, and digital freight platforms—becomes essential for achieving climate and efficiency targets (Percoco, 2023). Global initiatives such as ICLEI – Local Governments for Sustainability, the C40 Cities Climate Leadership Group, and UN-Habitat's New Urban Agenda reinforce the role of cities in advancing sustainable urbanisation. However, their effectiveness depends on localisation processes and the capacity of local authorities to integrate transport and logistics within broader planning frameworks. According to OECD estimates, inadequate coordination with local and regional authorities could leave a substantial share of SDG targets unattainable (OECD, 2020a). This highlights the importance of multi-level governance and place-based policy approaches (Blasi et al., 2022), as well as the role of cities as mission-oriented organisations prioritising collective welfare (Ioppolo et al., 2014).

Finally, from a governance perspective (SDG 17), indicators such as stakeholder participation, the degree of integration between transport and land-use planning, data availability, and implementation rates of SUMP measures reflect institutional capacity and coordination effectiveness. Within the multi-scalar architecture of SDG implementation, intermediate cities emerge as a strategic but underexplored level of action. Defined as urban centres with populations ranging between 20,000 and 500,000 inhabitants (Bolay & Kern, 2019), they function as meso-level governance nodes linking regional systems with local service provision. Their compact urban form and lower congestion levels facilitate the implementation of integrated mobility and logistics solutions.

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Notwithstanding persistent structural constraints (Revi et al., 2014), intermediate cities offer significant opportunities for policy experimentation and innovation, particularly in the domain of sustainable transport. Their scale allows for faster implementation cycles, closer interaction between stakeholders, and more adaptive governance structures. As noted by Bell and Jayne (2009), these cities represent 'alternative spaces of globalisation', in which development processes can be more inclusive and territorially embedded. Empirical evidence confirms that intermediate cities can function as living laboratories for integrated mobility and logistics planning. The definition of intermediate cities remains subject to considerable variation across international organisations and academic studies. While UN-Habitat adopts different population thresholds according to regional and policy contexts, and ESPON emphasises functional urban relationships, this study follows Bolay and Kern (2019), adopting the range of 20,000–500,000 inhabitants. This threshold is considered particularly suitable for the European and Italian context, where many cities perform intermediary economic, service, and governance functions despite relatively limited demographic size. Consistent with contemporary place-based approaches, the analysis therefore prioritises the functional role of intermediate cities over purely demographic criteria. European cases such as Freiburg, La Rochelle, and Vitoria-Gasteiz demonstrate how coordinated investments in public transport, cycling infrastructure, demand management, and sustainable urban logistics can significantly improve environmental performance and urban liveability. These experiences highlight the importance of integrating passenger and freight transport within coherent and unified planning framework. In Italy, intermediate cities play a crucial role due to administrative fragmentation and the need for inter-municipal coordination. They operate as key hubs for education, healthcare, and economic activities, while also providing a suitable scale for implementing integrated planning instruments such as SUMPs and urban logistics strategies. National and European programmes (URBACT, CIVITAS, Urban Innovative Actions) have further demonstrated their capacity to lead sustainable transitions.

Empirical evidence from Southern Italy—including Brindisi (port-city logistics integration), Salerno (low-emission freight systems), Potenza (urban accessibility through vertical mobility), and Cosenza–Rende (active mobility and light rail integration)—illustrate how adapted to local contexts mobility and logistics strategies can address territorial constraints while contributing to SDG targets (Percoco, 2023; Telesca, 2020; MATEC Web of Conferences, 2024). Within this framework, Nocera Inferiore represents a relevant case of an intermediate city in transition. Its Sustainable Urban Mobility Plan reflects an effort to align local transport policies with SDG objectives, particularly in terms of emission reduction, accessibility, and territorial cohesion. The city's

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

role within a densely urbanised and administratively fragmented context highlights the importance of integrating mobility and logistics planning at the inter-municipal scale, while also strengthening participatory governance mechanisms.

Results and Discussion

The comparative analysis demonstrates that intermediate cities localise Sustainable Development Goal (SDG) objectives not through isolated transport interventions but by embedding sustainable mobility within broader territorial governance strategies. Across the European and Italian experiences examined, Sustainable Urban Mobility Plans (SUMPs) and related mobility planning instruments emerge as governance platforms that translate global sustainability objectives into locally adapted policies, integrating environmental, social and economic priorities within coherent place-based development strategies. Rather than representing purely technical transport plans, these instruments facilitate coordination across administrative levels, promote stakeholder engagement and support the operationalisation of SDGs through measurable actions and monitoring mechanisms.

The European experiences reveal that effective SDG localisation depends primarily on the capacity to integrate mobility planning within long-term governance arrangements. Freiburg illustrates how the continuous integration of land-use planning, public transport investment and active mobility policies has progressively transformed sustainable mobility into a structural component of urban development rather than a sectoral transport policy. The city's experience demonstrates that accessibility improvements, cycling infrastructure and public transport enhancement contribute simultaneously to SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action) and SDG 3 (Good Health and Well-being), confirming that mobility planning becomes considerably more effective when supported by stable institutional coordination and long-term political commitment.

A complementary governance pathway emerges from the experience of La Rochelle, where sustainable mobility policies have been explicitly integrated with wider climate strategies. Rather than pursuing transport efficiency alone, mobility planning has been employed as an instrument for decarbonisation, linking modal shift, public transport improvement and low-emission policies within a broader environmental agenda. This experience suggests that SDG localisation is strengthened when transport planning is coordinated with climate governance and supported by policy coherence across multiple administrative levels.

Similarly, Vitoria-Gasteiz demonstrates that urban design and mobility planning can jointly contribute to sustainability objectives by integrating active mobility, environmental quality and public health. The implementation

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

of pedestrian-oriented policies and the reallocation of urban space illustrate how mobility interventions may generate benefits extending beyond transport performance, simultaneously supporting healthier lifestyles, more liveable urban environments and lower environmental impacts. Collectively, these European experiences indicate that successful SDG localisation is less dependent on the adoption of individual mobility measures than on the existence of governance systems capable of integrating transport, spatial planning and sustainability objectives within a common strategic framework.

The Italian experiences reveal a different but equally significant localisation pathway. While operating within institutional and financial contexts characterised by greater administrative fragmentation and more heterogeneous territorial conditions, the analysed cities demonstrate that sustainable mobility planning can nevertheless become an effective instrument for translating global SDG objectives into local development strategies. Rather than replicating Northern European models, these experiences adapt mobility planning to different geographical, economic and governance conditions, confirming that SDG localisation is inherently place-based and context-dependent.

The cases of Brindisi and Salerno highlight the growing importance of integrating urban logistics and freight mobility within sustainable mobility planning. In both contexts, transport policies extend beyond passenger mobility to address the relationships between logistics efficiency, economic competitiveness and environmental sustainability. These experiences illustrate how mobility planning contributes simultaneously to SDG 9 (Industry, Innovation and Infrastructure), SDG 11 and SDG 13 by promoting more efficient transport systems while reducing environmental externalities associated with urban freight distribution. The analysis therefore suggests that sustainable mobility planning should be interpreted as a comprehensive territorial policy rather than as a sector-specific transport intervention.

Further evidence emerges from Potenza and the Cosenza–Rende urban area, where accessibility and inter-municipal coordination represent the principal mechanisms through which mobility planning contributes to sustainable development. In Potenza, geographical constraints and dispersed settlement patterns have required mobility strategies explicitly oriented towards improving territorial accessibility and reducing spatial inequalities, thereby reinforcing the contribution of mobility planning to SDG 10 (Reduced Inequalities). Conversely, the Cosenza–Rende experience demonstrates that mobility systems increasingly operate across functional urban areas rather than within individual municipal boundaries, making inter-municipal governance an essential condition for effective planning. These cases collectively confirm that intermediate cities do not follow a single model of SDG localisation; instead, they develop differentiated governance

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

arrangements reflecting their institutional capacities, territorial characteristics and socio-economic priorities while pursuing common sustainability objectives. Within this comparative perspective, the Sustainable Urban Mobility Plan (SUMP) of Nocera Inferiore represents an illustrative example of how intermediate cities can operationalise SDG localisation through integrated mobility planning. Rather than constituting an isolated planning document, the SUMP translates global sustainability objectives into locally embedded interventions by combining strategic vision, governance coordination and measurable implementation actions. As summarised in Table 4, the proposed measures extend beyond conventional transport policies and include the enhancement of public transport accessibility, the expansion of cycling and pedestrian networks, the promotion of intermodality, the rationalisation of parking systems, the digitalisation of mobility services and the reduction of private car dependency. Collectively, these interventions contribute simultaneously to several Sustainable Development Goals, particularly SDG 3 (Good Health and Well-being), SDG 9 (Industry, Innovation and Infrastructure), SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action) and SDG 17 (Partnerships for the Goals), demonstrating the multidimensional nature of mobility planning within contemporary urban governance.

The analysis also reveals, however, that the effectiveness of these planning instruments depends not only on the quality of the proposed measures but also on the governance conditions under which they are implemented. Similar to many Italian intermediate cities, Nocera Inferiore operates within an institutional environment characterised by fragmented administrative responsibilities, overlapping competences and the need for continuous coordination between municipal, provincial and regional authorities. These governance conditions do not prevent the localisation of SDGs, but they significantly influence the capacity to translate strategic objectives into operational policies and measurable outcomes. Consequently, the case confirms that governance should not be regarded as an external condition influencing mobility planning, but rather as one of its fundamental components. Sustainable mobility planning becomes effective when institutional coordination, stakeholder participation and policy integration evolve simultaneously with the implementation of transport measures.

The comparative evidence further highlights the importance of monitoring systems capable of assessing whether planning objectives are effectively translated into sustainability outcomes. One of the limitations emerging from several of the analysed experiences concerns the absence of harmonised indicators linking mobility policies with SDG implementation. In this respect, the KPI framework proposed in Table 2 represents an operational contribution of this study. Rather than functioning as a generic monitoring

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

tool, the framework establishes explicit relationships between Sustainable Development Goals, localisation objectives, mobility planning measures and measurable indicators. By connecting strategic planning with observable outcomes, the proposed framework supports evidence-based decision-making, facilitates policy evaluation and enables local administrations to assess progress in implementing Sustainable Urban Mobility Plans through consistent and comparable indicators. Furthermore, the framework contributes to improving the comparability of intermediate cities by providing a common reference structure that may be progressively harmonised with existing European monitoring initiatives and datasets.

Taken together, the comparative analysis suggests that the localisation of SDGs through sustainable mobility planning follows a series of recurrent governance mechanisms that transcend the specific characteristics of individual cities. First, Sustainable Urban Mobility Plans emerge as integrated governance instruments rather than purely technical transport strategies, capable of coordinating environmental, economic and social objectives within a shared territorial vision. Secondly, successful localisation depends less on the adoption of individual mobility measures than on the institutional capacity to coordinate policies across multiple governance levels, confirming that governance quality constitutes a decisive enabling factor for implementation. Thirdly, the analysed cases demonstrate that intermediate cities develop differentiated localisation pathways according to their territorial, institutional and socio-economic contexts, indicating that SDG localisation should be understood as an adaptive rather than standardised process. Finally, the introduction of measurable KPI systems transforms sustainability planning from a strategic commitment into an operational governance process, enabling cities not only to implement mobility policies but also to evaluate their contribution to the achievement of the Sustainable Development Goals.

Overall, the findings support the argument that intermediate cities should not be regarded merely as recipients of global sustainability agendas but as active governance arenas where Sustainable Development Goals are interpreted, negotiated and translated into territorially embedded development policies. Sustainable mobility planning therefore represents considerably more than a sectoral transport instrument: it constitutes a governance framework through which local administrations coordinate institutions, stakeholders and policy measures to operationalise SDG objectives within multi-level governance systems. The comparative evidence presented in this study demonstrates that, although implementation pathways vary across different territorial contexts, the integration of mobility planning, governance coordination and performance monitoring provides a coherent mechanism through which intermediate cities can progressively localise the 2030 Agenda while strengthening territorial sustainability and institutional capacity.

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Table 2: KPI Framework for Monitoring SDG Localisation through Sustainable Mobility Planning

SDG	Localisation Objective	KPI	Measurement Purpose	Related Mobility Policy
SDG 11 Sustainable Cities and Communities	Improve accessibility and sustainable mobility	Population within 300 m of a public transport stop (%)	Measure accessibility to public transport services	Public transport enhancement and intermodal integration
SDG 11 Sustainable Cities and Communities	Promote sustainable travel behaviour	Modal share of public transport, walking and cycling (%)	Evaluate transition towards sustainable mobility modes	Active mobility and modal shift strategies
SDG 13 Climate Action	Reduce transport-related emissions	Per capita CO_2 emissions from transport	Assess effectiveness of decarbonisation policies	Emission reduction and low-carbon mobility measures
SDG 13 Climate Action	Reduce private car dependency	Motorisation rate (vehicles per 1,000 inhabitants)	Monitor behavioural transition towards sustainable mobility	Demand management and modal shift policies
SDG 10 Reduced Inequalities	Improve territorial inclusion	Average travel time to essential services	Assess accessibility to healthcare, education and public services	Accessibility and territorial cohesion policies
SDG 10 Reduced Inequalities	Increase mobility affordability	Public transport expenditure as a share of household income	Evaluate equitable access to mobility services	Social mobility policies and fare integration
SDG 9 Industry, Innovation and Infrastructure	Strengthen transport infrastructure efficiency	Intermodal connectivity index	Measure integration among transport modes	Intermodal planning and infrastructure development
SDG 9 Industry, Innovation and Infrastructure	Promote innovation in mobility services	Share of digital mobility services available (%)	Assess adoption of smart mobility solutions	ITS and digital mobility platforms
SDG 3 Good Health and Well-being	Promote healthier mobility patterns	Length of cycling and pedestrian infrastructure per capita	Measure opportunities for active mobility	Cycling and walking strategies
SDG 3 Good Health and Well-being	Improve urban environmental quality	Annual average concentration of NO_2 and PM10	Evaluate health impacts of mobility policies	Air quality and emission reduction measures
SDG 17 Partnerships for the Goals	Strengthen stakeholder participation	Number of stakeholder engagement activities per year	Assess inclusiveness of planning processes	Participatory mobility planning
SDG 17 Partnerships for the Goals	Improve implementation capacity	Percentage of SUMP measures implemented	Monitor policy delivery and governance effectiveness	Sustainable Urban Mobility Plan implementation

Source: Authors' elaboration

A fundamental shift in socioeconomic systems is imperative to secure a sustainable future. As demonstrated by Puertas et al. (2023) environmental education plays a pivotal role in fostering citizen awareness and action. Early-stage education is particularly significant, as it can contribute to the development of generations that are more strongly committed to sustainability principles.

In addition, university campuses are at the forefront of sustainable practices, demonstrating innovative approaches to energy conservation, waste reduction, and green transportation. Education is key to inspiring a population that is both aware of the climate crisis and motivated to act (Puertas et al., 2023).

Furthermore, municipal governments are actively implementing strategies to transition cities toward a more sustainable model. These efforts include reducing carbon emissions, promoting green infrastructure, and enhancing energy efficiency (Pamučar et al., 2023).

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

By working together with businesses, educational institutions, governments, and citizens, we can create a more sustainable future for all.

The combined use of operational planning instruments—such as the Sustainable Urban Mobility Plan (PUMS), the Regional Mobility Master Plan 2021–2030, and Provincial Territorial Coordination Plans (PTCP)—together with national and regional sustainable development strategies, provides a structurally coherent yet operationally heterogeneous framework for addressing the challenges of intermediate cities like Nocera Inferiore (Italy).
The SUMP of Nocera Inferiore represents the most locally grounded instrument, characterised by an integrated and place-based approach that combines active mobility, public transport, and digitalisation strategies. Its alignment with EU frameworks (e.g. Urban Mobility Package) and national guidelines enhances its potential to attract funding and implement sustainable interventions. However, its effectiveness is constrained by fragmented implementation processes, limited inter-municipal governance, and weak monitoring systems—factors that directly undermine progress towards measurable SDG targets.

Table 3: Case Selection and Analytical Relevance for SDG Localisation through Mobility Planning

Case	Country	Main SDGs Addressed	Mobility Planning Instrument	Governance Arrangement	Analytical Relevance for SDG Localisation
Freiburg	Germany	SDG 11, SDG 13, SDG 3	Integrated Sustainable Urban Mobility Strategy	Strong local-regional coordination	Illustrates how long-term integrated mobility planning can support accessibility, modal shift, and climate objectives.
La Rochelle	France	SDG 11, SDG 13	Sustainable Mobility and Low-Carbon Transport Policies	Multi-level climate governance	Demonstrates the integration of mobility and climate policies within an intermediate urban context.
Vitoria-Gasteiz	Spain	SDG 11, SDG 13, SDG 3	Superblocks, active mobility and public transport integration	Municipal leadership supported by regional policies	Shows how urban design and mobility planning can jointly contribute to environmental and health-related SDGs.
Brindisi	Italy	SDG 8, SDG 9, SDG 13	Port-city logistics integration and sustainable freight planning	Local, regional and port governance coordination	Highlights the contribution of logistics and transport infrastructure to economic sustainability and decarbonisation.
Salerno	Italy	SDG 9, SDG 11, SDG 13	Urban logistics and low-emission mobility initiatives	Local-regional planning integration	Illustrates how mobility and logistics policies can support climate and urban sustainability objectives.
Potenza	Italy	SDG 10, SDG 11	Integrated accessibility and mobility systems	Local and regional cooperation	Demonstrates how mobility planning can improve accessibility and territorial inclusion in geographically constrained contexts.
Cosenza–Rende	Italy	SDG 11, SDG 13, SDG 10	Light rail integration and active mobility planning	Inter-municipal governance arrangements	Provides evidence of how coordinated planning across municipalities can support sustainable mobility and social inclusion.
Nocera Inferiore	Italy	SDG 9, SDG 10, SDG 11, SDG 13, SDG 17	Sustainable Urban Mobility Plan (SUMP)	Multi-level and inter-municipal governance	Serves as the main illustrative case of how mobility planning instruments can operationalise SDG localisation within a fragmented territorial and institutional context.

Source: Authors' elaboration

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Table 4: Nocera Inferiore SUMP and SDG Localisation

SUMP Strategic Objective	Related SDG	Expected Contribution
Enhancement of public transport accessibility	SDG 11	Improved accessibility and social inclusion
Promotion of active mobility	SDG 3, SDG 11	Reduced emissions and healthier lifestyles
Intermodal integration	SDG 9, SDG 11	Improved transport efficiency
Reduction of private car dependency	SDG 13	Lower greenhouse gas emissions
Digitalisation of mobility services	SDG 9	Smart and integrated mobility management

Source: Authors' elaboration

The Nocera Inferiore SUMP includes measures aimed at:

- enhancing public transport accessibility;
- expanding active mobility infrastructure;
- promoting intermodal integration;
- reducing private car dependency;
- supporting digital mobility services;
- improving accessibility to essential services.

However, the effectiveness of these instruments is constrained by their outdated nature, weak binding capacity, and lack of operational detail, which hinder their ability to guide short-term priorities and investment decisions. Italian national and regional sustainable development strategies further strengthen this framework by introducing cross-cutting 'vectors of sustainability', including participation, multi-level governance, innovation, and capacity building. These vectors are particularly relevant for intermediate cities, where governance fragmentation and limited administrative capacity frequently represent structural constraints. In this context, participatory approaches—especially involving younger generations—can enhance policy legitimacy, promote behavioural change towards sustainable mobility (e.g. active travel, shared mobility), and support more inclusive urban regeneration processes.

Table 5: Proposed KPI Framework for the Sustainable Urban Mobility Plan of Nocera Inferiore

SDG	Objective	KPI
SDG11	Accessibility	Population within 300m of PT
SDG13	Emissions reduction	CO_2 transport emissions
SDG10	Inclusion	Travel time to services

Source: Authors' elaboration

Despite these strengths, the overall framework remains characterised by a high degree of abstraction, extended execution timelines, and challenges in monitoring and evaluation at the local scale. The absence of standardised

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

and operational indicators further constrains the capacity to assess progress towards SDGs in a consistent and measurable way. In synthesis, although the integration of planning tools and sustainability strategies provides a robust strategic foundation, their effectiveness in intermediate cities such as Nocera Inferiore ultimately depends on three critical factors:

- Strengthening multi-level governance and inter-municipal coordination;
- Improving administrative and financial implementation capacity;
- Developing of coherent monitoring systems aligned with SDG indicators.

Overall, Nocera Inferiore illustrates the complete localisation pathway proposed in this study. Global SDG objectives are translated into local mobility priorities through the SUMP, coordinated across multiple governance levels, implemented through integrated transport measures and monitored through dedicated KPI systems.

The analysis identifies four recurring findings.

- Intermediate cities localise SDGs through integrated mobility planning rather than isolated transport projects.
- Governance capacity determines implementation success more than the availability of infrastructure alone.
- SUMPs act as governance platforms connecting global SDGs with local territorial policies.
- KPI frameworks transform SDG localisation from a strategic objective into a measurable implementation process.

Conclusions

This study investigates how intermediate cities can use sustainable mobility planning instruments to localise Sustainable Development Goal (SDG) objectives within multi-level governance systems. By combining a policy analysis with illustrative European and Italian case studies, the paper demonstrates that the localisation of the SDGs is not merely a process of policy implementation but a governance challenge requiring the integration of planning instruments, institutional coordination and context-sensitive territorial strategies.

The analysis yields four main findings. First, intermediate cities emerge as strategic territorial arenas for SDG localisation because their scale enables them to connect regional planning frameworks with local implementation processes while maintaining close relationships with communities and stakeholders. Secondly, Sustainable Urban Mobility Plans (SUMPs) and related mobility planning instruments operate as governance platforms rather than solely as transport planning tools, providing an operational framework through which sustainability objectives can be

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

translated into integrated territorial policies. Thirdly, the comparative evidence indicates that successful implementation depends less on the adoption of individual mobility measures than on the capacity of local institutions to coordinate actors, planning instruments and decision-making processes across multiple governance levels. Finally, the findings confirm that sustainable mobility planning contributes not only to improvements in accessibility and transport efficiency but also to wider objectives related to territorial cohesion, social inclusion, climate action and institutional innovation.

The comparative analysis also demonstrates that no single model of SDG localisation exists. While the European experiences illustrate the benefits of long-established planning traditions and consolidated governance arrangements, the Italian cases show that intermediate cities can pursue effective localisation pathways by adapting mobility planning to their own territorial, institutional and socio-economic conditions. In this respect, the case of Nocera Inferiore illustrates how a Sustainable Urban Mobility Plan can translate global sustainability objectives into locally embedded policies through integrated transport measures, multi-level governance arrangements and a structured monitoring framework based on measurable indicators. Although governance fragmentation, limited administrative capacity and the absence of harmonised monitoring systems continue to constrain implementation, these challenges reinforce rather than weaken the importance of integrated planning approaches.

The principal contribution of this study lies in the proposed analytical framework linking SDG localisation, sustainable mobility planning and multi-level governance. By demonstrating how mobility planning instruments can operationalise global sustainability objectives through coordinated territorial policies, the paper contributes to the growing literature on place-based development and intermediate cities. Furthermore, the proposed KPI framework provides an operational tool capable of supporting policy evaluation, strengthening evidence-based decision-making and improving the monitoring of Sustainable Urban Mobility Plans in relation to SDG implementation.

From a policy perspective, the findings suggest that strengthening multi-level governance, enhancing institutional capacity and adopting coherent monitoring systems are essential conditions for improving the effectiveness of sustainable mobility planning in intermediate cities. Rather than replicating individual best practices, policymakers should promote governance arrangements that enable planning instruments to be adapted to local territorial conditions while maintaining coherence with broader sustainability objectives.

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Future research should extend the comparative analysis to a wider range of intermediate cities and examine longitudinally how different governance configurations influence the implementation of Sustainable Urban Mobility Plans and the localisation of SDGs. Further work should also focus on the harmonisation of KPI frameworks and their integration with emerging European monitoring initiatives, thereby supporting more robust and comparable assessments of sustainable mobility policies across different territorial contexts.

Conflict of Interest: The authors reported no conflict of interest.

Data Availability: All data are included in the content of the paper.

Funding Statement: The authors did not obtain any funding for this research.

References:

1. Allam, Z., & Jones, D. S. (2021). Future (post-COVID) digital, smart and sustainable cities in the wake of 6G: Digital twins, immersive realities and new urban economies. Land use policy, 101, 105201. https://doi.org/10.1016/j.landusepol.2020.105201
2. Alvarez-Risco, A., -Arcentales, S. D. A., & Rosen, M. A. (2020). Sustainable development goals and cities. Building Sustainable Cities: Social, Economic and Environmental Factors, 313-330. https://doi.org/10.1007/978-3-030-45533-0_21
3. Ameen, R. F. M., Mourshed, M., & Li, H. (2015). A critical review of environmental assessment tools for sustainable urban design. Environmental Impact Assessment Review, 55, 110-125. https://doi.org/10.1016/j.eiar.2015.07.006
4. Antunes, J., Tan, Y., Wanke, P., & Jabbour, C. J. C. (2023). Impact of R&D and innovation in Chinese road transportation sustainability performance: A novel trigonometric envelopment analysis for ideal solutions (TEA-IS). Socio-Economic Planning Sciences, 87, 101544.
5. Arora, N. K., & Mishra, I. (2019). United Nations Sustainable Development Goals 2030 and environmental sustainability: race against time. Environmental Sustainability, 2(4), 339-342. https://doi.org/10.1007/s42398-019-00092-y
6. Bell, D., & Jayne, M. (2009). Small cities? Towards a research agenda. International Journal of Urban and Regional Research, 33(3), 683–699.
7. Blasi, S., Ganzaroli, A., & De Noni, I. (2022). Smartening sustainable development in cities: Strengthening the theoretical linkage between

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

smart cities and SDGs. Sustainable Cities and Society, 80, 103793. https://doi.org/10.1016/j.scs.2022.103793

8. Bolay, J. C., & Kern, A. L. (2019). Intermediate cities. The Wiley Blackwell encyclopedia of urban and regional studies, 1-5. https://doi.org/10.1002/9781118568446.eurs0163
9. D'Amato, V., Di Lorenzo, E., Piscopo, G., Sibillo, M., & Trotta, A. (2024). Insurance business and social sustainability: A proposal. Socio-Economic Planning Sciences, 93, 101880. https://doi.org/10.1016/j.seps.2024.101880
10. D'Adamo, I., Gastaldi, M., Ioppolo, G., & Morone, P. (2022). An analysis of Sustainable Development Goals in Italian cities: Performance measurements and policy implications. Land use policy, 120, 106278. https://doi.org/10.1016/j.landusepol.2022.106278
11. D'Alessandro, C., Szopik-Depczyńska, K., Tarczyńska-Łuniewska, M., Silvestri, C., & Ioppolo, G. (2024). Exploring Circular Economy Practices in the Healthcare Sector: A Systematic Review and Bibliometric Analysis. Sustainability 16(1), 401. https://doi.org/10.3390/su16010401
12. D'Amico, G., Szopik-Depczyńska, K., Dembińska, I., & Ioppolo, G. (2021). Smart and sustainable logistics of Port cities: A framework for comprehending enabling factors, domains and goals. Sustainable Cities and Society, 69, 102801. https://doi.org/10.1016/j.scs.2021.102801
13. ESPON (2014), Second Tier Cities and Territorial Development in Europe, Available at: https://archive.espon.eu/sites/default/files/attachments/ESPON_policy_brief_second_tier_cities_0.pdf
14. ESPON (2020), Functional Urban Areas and Territorial Cohesion (policy evidence), Available at: https://archive.espon.eu/sites/default/files/attachments/Functional%20Urban%20Areas%20and%20Regions%20in%20Europe%20-%20Final%20Report.pdf
15. Georgeson, L., & Maslin, M. (2018). Putting the United Nations Sustainable Development Goals into practice: A review of implementation, monitoring, and finance. Geo: Geography and Environment, 5(1), e00049. https://doi.org/10.1002/geo2.49
16. Europe Sustaibale Development report 2023-24. https://doi.org/10.25546/104407
17. Halkos, G., & Gkampoura, E. C. (2021). Where do we stand on the 17 Sustainable Development Goals? An overview on progress. Economic analysis and policy, 70, 94-122. https://doi.org/10.1016/j.eap.2021.02.001

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

18. Hurlimann, A., Moosavi, S., & Browne, G. R. (2021). Urban planning policy must do more to integrate climate change adaptation and mitigation actions. Land use policy, 101, 105188. https://doi.org/10.1016/j.landusepol.2020.105188
19. Ioppolo, G., Heijungs, R., Cucurachi, S., Salomone, R., & Kleijn, R. (2014). Urban Metabolism: Many open questions for future answers. Pathways to environmental sustainability: Methodologies and experiences, 23-32. https://doi.org/10.1007/978-3-319-03826-1_3
20. IPCC Special Report on Global Warming of 1.5°C (2018), edited by V. Masson-Delmotte et al
21. Kutty, A. A., Abdella, G. M., Kucukvar, M., Onat, N. C., & Bulu, M. (2020). A system thinking approach for harmonizing smart and sustainable city initiatives with United Nations sustainable development goals. Sustainable Development, 28(5), 1347-1365. https://doi.org/10.1002/sd.2088
22. Lella, L., & Osés Eraso, N. (2023). Monitoring the SDGs at regional level in EU. REGIONS2030 pilot project. Publications Office of the European Union. https://doi.org/10.2760/02404, JRC135594
23. Luqman, M., Rayner, P. J., & Gurney, K. R. (2023). On the impact of urbanisation on CO2 emissions. NPJ Urban Sustainability, 3(1), 6. https://doi.org/10.1038/s42949-023-00084-2
24. Madlener, R., & Sunak, Y. (2011). Impacts of urbanization on urban structures and energy demand: What can we learn for urban energy planning and urbanization management?. Sustainable cities and society, 1(1), 45-53.https://doi.org/10.1016/j.scs.2010.08.006
25. OECD (2020), OECD Regions and Cities at a Glance 2020, OECD Publishing, Paris,https://doi.org/10.1787/959d5ba0-en.
26. OECD/UN-Habitat (2022), Intermediary Cities and Climate Change: An Opportunity for Sustainable Development, OECD Publishing, Paris, https://doi.org/10.1787/23508323-en.
27. OECD. (2020a). A territorial approach to the sustainable development goals. OECD Publishing, Paris. https://doi.org/10.1787/e86fa715-en
28. Pamučar, D., Durán-Romero, G., Yazdani, M., & López, A. M. (2023). A decision analysis model for smart mobility system development under circular economy approach. Socio-Economic Planning Sciences, 86, 101474. https://doi.org/10.1016/j.seps.2022.101474
29. Percoco, M. (2023). I servizi di mobilità sostenibile: il caso Napoli e Salerno. Milano: ISPI. https://www.marcopercoco.eu/static/upload/per/percocomarco_iservizidimobilitsosteni_20241218213304.pdf.
30. Pérez, L. E., Pérez, A. E., & Vásquez, Ó. C. (2024). Evaluation of mitigation initiatives for simultaneous air pollution and municipal

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

solid waste systems: A System Dynamics Approach. Socio-Economic Planning Sciences, 95, 102010. https://doi.org/10.1016/j.seps.2024.102010

31. Puertas, R., Guaita-Martinez, J. M., & Marti, L. (2023). Analysis of the impact of university policies on society's environmental perception. Socio-Economic Planning Sciences, 88, 101672. https://doi.org/10.1016/j.seps.2023.101672
32. PUMS di Nocera Inferiore. https://nocerainferiore.wixsite.com/pumsnocerainferiore
33. the Regional Mobility Master Plan 2021–2030. https://www.regione.campania.it/sites/default/assets/asset/documents/ds-piano-direttore-mobilita-2021-2030.pdf
34. PTCP Campania Region. https://www.cittametropolitana.na.it/pianificazione_territoriale/ptcp
35. Revi, A., Satterthwaite, D., Aragon-Durand, F., (2014), Urban Areas in Climate Change 2014: Impacts, Adaptation, and Vulnerability, IPCC, Cambridge, Available at: https://www.ipcc.ch/report/ar5/wg2/.
36. Saraji, M. K., & Streimikiene, D. (2023). Challenges to the low carbon energy transition: A systematic literature review and research agenda. Energy Strategy Reviews, 49, 101163. https://doi.org/10.1016/j.esr.2023.101163
37. Saxena, A., Ramaswamy, M., Beale, J., Marciniuk, D., & Smith, P. (2021). Striving for the United Nations (UN) sustainable development goals (SDGs): what will it take?. Discover Sustainability, 2, 1-14. https://doi.org/10.1007/s43621-021-00029-8
38. Sharifi, A. (2022). Cities and the SDGs: Realities and possibilities of local engagement in global frameworksAmbio, 51:1416–1432. https://doi.org/10.1007/s13280-022-01714-2
39. Slimani, S., Omri, A., & Abbassi, A. (2024). International capital flows and sustainable development goals: The role of governance and ICT diffusion. Socio-Economic Planning Sciences, 93, 101882. https://doi.org/10.1016/j.seps.2024.101882
40. Telesca, M. (2020). Mobilità verticale e riqualificazione urbana: il caso Potenza. Urbanistica Informazioni, n. 286.
41. UN-Habitat (2015), The Role of Intermediate Cities in the Urban Agenda, Available at: https://unhabitat.org/the-role-of-intermediate-cities-in-strengthening-urban-rural-linkages-towards-the-new-urban-agenda
42. UN-Habitat (2020), World Cities Report 2020: The Value of Sustainable Urbanization, Available at: https://unhabitat.org/sites/default/files/2020/10/wcr_2020_report.pdf

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

43. UNEP (2017), Resilience and Resource Efficiency in Cities, United Nations Environment Program, Available at: https://www.unenvironment.org/resources/report/resilience-and-resource-efficiency-cities
44. United Nations (2020). Impact of COVID-19 on SDG Progress: A Statistical Perspective, Available at: https://digitallibrary.un.org/record/3881166?v=pdf
45. Valencia, S. C., Simon, D., Croese, S., et al. (2019). Adapting the Sustainable Development Goals and the New Urban Agenda to the city level. International Journal of Urban Sustainable Development, 1(1):4-23. DOI:10.1080/19463138.2019.1573172
46. Ye, B., Jiang, J., Liu, J., Zheng, Y., & Zhou, N. (2021). Research on quantitative assessment of climate change risk at an urban scale: Review of recent progress and outlook of future direction. Renewable and Sustainable Energy Reviews, 135, 110415. https://doi.org/10.1016/j.rser.2020.110415
47. Yigitcanlar, T., & Dizdaroglu, D. (2015). Ecological approaches in planning for sustainable cities: A review of the literature. Global journal of environmental science and management, 1(2), 159-188. https://doi.org/10.7508/gjesm.2015.02.008
48. Yuan, H., Wang, X., Gao, L., et al. (2023). Progress towards the Sustainable Development Goals has been slowed by indirect effects of the COVID-19 pandemic. Communications Earth & Environment, 4(1). DOI:10.1038/s43247-023-00846-x