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# Integrating the SDGs Into Urban Renewal Practices: Recommendations From Participatory SDG Monitoring in Stuttgart-Münster

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## Abstract

Implementing the Sustainable Development Goals (SDGs) presents a unique opportunity for collective action across various spatial scales. At the local level, programs to revitalize vulnerable neighborhoods offer significant potential to contribute to the SDGs. In Germany, the "Soziale Stadt/Sozialer Zusammenhalt" (Social City/Social Cohesion) funding program supports municipalities in promoting sustainable development in these areas. However, there is currently no direct linkage between this funding program and the SDGs. This raises questions as to how the instruments of the Social City/Social Cohesion program could support the SDGs and their monitoring processes and vice versa and what adjustments could be recommended to enhance this relationship. The research presented in this article is based on a case study conducted in the urban renewal district of Stuttgart-Münster, Germany. Students and scholars from the University of Stuttgart collaborated with municipal staff and civil society members to explore the funding program's instruments and assess their potential for monitoring the SDGs. Based on the municipal indicator set developed with the assistance of SDG coordinators at the City of Stuttgart—Germany's first city to pilot this indicator set in 2019—the transdisciplinary team adapted specific indicators to the neighborhood level. They also investigated the inclusion of qualitative indicators for assessing SDGs and tested a collaborative approach to gathering data for these localized indicators with input from residents. Based on the findings of this case study, this contribution reflects on recommendations for integrating the SDGs into the initial stages of urban renewal practices and related instruments.

## Keywords

co-production; participation; SDG monitoring; Soziale Stadt; transdisciplinarity; urban renewal

## 1. Introduction—Localizing SDGs Through Urban Regeneration Practice

The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, provide a global framework for addressing critical social, economic, and environmental challenges. While the importance of these goals at the global and national levels, as well as the progress (or lack thereof) in achieving them is well documented, there is a growing recognition of the need to implement the SDGs at the local level—in communities and neighborhoods. A study by Misselwitz et al. (2015) proved that 65 percent of all SDG targets require the active involvement of local urban stakeholders to ensure their success. This emphasizes the necessity of translating global goals into actionable strategies that are tailored to the specific contexts and challenges faced by local communities, alongside suitable monitoring frameworks to assess the effectiveness of these strategies (Benito et al., 2023; Deutsche Gesellschaft für Internationale Zusammenarbeit, 2019; Ley et al., 2022).

Municipal governments and their administrative departments are key players in implementing strategies that have a direct impact on people's lives. They are essential in addressing inequalities, improving living standards, and promoting environmental sustainability. By monitoring progress towards achieving the SDGs, municipalities are equipped with tools to assess their sustainability strategies, identify gaps and inequalities, and allocate resources effectively. This approach is vital to ensure that marginalized communities, whose needs are often overlooked in aggregated national SDG assessments, are not left behind (Sustainable Development Solutions Network, 2015).

To effectively address the needs of marginalized communities, which are frequently unevenly distributed across urban environments, it is essential to implement sustainability monitoring that extends beyond the municipal level and encompasses smaller spatial and social units (see also Sawicki & Flynn, 1996). In this context, integrating the neighborhood level into sustainability monitoring provides an opportunity to collect disaggregated information that can serve as a vital foundation for responding to developmental needs. However, cities and municipalities dedicated to assessing development needs and evaluating their progress toward achieving the SDGs encounter considerable challenges in their efforts (see e.g., Jossin & Peters, 2022; Ley et al., 2022; Lucci et al., 2018; Simon et al., 2016; Valencia et al., 2019). Many of the targets and indicators established for the SDGs address issues that cannot be effectively measured at the municipal level, let alone the neighborhood level. Additionally, the existing SDG targets and indicators often do not adequately capture important aspects of sustainable development within municipalities and neighborhoods.

This situation reflects some of the more general shortcomings of the indicator-based monitoring methodology implemented alongside SDGs. Critics have raised various concerns about the general logic of monitoring sustainability using a predefined set of indicators (see e.g., Fukuda-Parr & McNeill, 2019; Goonesekera & Olazabal, 2022; Kaika, 2017; Lami et al., 2023; Lyytimäki et al., 2023). These concerns center around applying a generic, top-down framework for measurement on complex local conditions, which may not capture the root causes that require sustainable transformation in the first place (Kaika, 2017). Furthermore, by establishing mainly quantitative targets to be achieved within a specific timeframe and using an indicator-based monitoring tool to assess progress, there is a risk that the focus on numerical data will overshadow the pursuit of shared social norms represented by the SDGs—or even alter their intended meaning (Fukuda-Parr & McNeill, 2019). In this context, Lami et al. (2023) emphasize the importance of appropriately conceptualizing localized indicators, considering their implicit ethical or cognitive values when

constructing and selecting these indicators. With regard to the construction of the indicators, it is critically discussed that the prevailing focus on siloed indicators can lead to a lack of systemic and holistic reporting, neglecting interlinkages across issues (Lyytimäki et al., 2023). Moreover, it is important to recognize that the interpretation of indicator-based information in reporting may depend on the specific perspectives and interests of those interpreting it. This reliance on interpreters' viewpoints can introduce subjectivity, potentially marginalizing certain knowledge, ideas, and communities and perpetuating power inequalities (Goonesekera & Olazabal, 2022).

These critical aspects must be considered in translating global sustainability monitoring frameworks to the local level, aiming for a more precise alignment of global agendas with the unique contextual characteristics of local environments. It is widely acknowledged that the global monitoring framework of SDGs also needs to be translated to the local level of cities and communities (Jossin & Peters, 2022; Mair et al., 2018; Valencia et al., 2019), and attempts to do so have produced several notable results. The applicability of SDG targets and indicators at the urban level has been tested (see, e.g., Simon et al., 2016), guidelines on SDG indicators for municipalities have been developed (see e.g., Bertelsmann Stiftung et al., 2020) and pilot cities have published voluntary reviews detailing their progress in implementing SDGs (see, for instance, Barcelona City Council, 2023; OECD, 2020; State Capital Stuttgart et al., 2023). While these contributions to SDG monitoring at the local level have provided valuable insights, they primarily focus on aggregated quantitative data for the entire urban area. Efforts to adapt the SDG monitoring framework to smaller scales—such as city districts or neighborhoods—are still in the early stages and are hindered by a lack of data at these levels.

Moreover, the existing guidelines for a localized indicator system inadequately consider qualitative factors, such as the quality of green and recreational spaces, beyond merely measuring their area in square meters. This limitation has been critically addressed in discussions on developing a localized monitoring system (see e.g., Jossin & Peters, 2022; Lyytimäki et al., 2023; Ulbrich et al., 2019). Furthermore, it has been emphasized that incorporating qualitative aspects cannot be accomplished through existing data sets alone, as statistical offices lack this information. Instead, it necessitates innovative ideas and participatory approaches to co-create knowledge for qualitative SDG assessment (Bonsu et al., 2020; Szetey et al., 2021). These approaches not only aim to fill existing data gaps but also seek to establish a knowledge base on sustainability aspects at the neighborhood level. This contributes to shifting the emphasis away from strictly numerical monitoring, allowing for discussions about the underlying values that are important to the community. Additionally, they could become an empowering mobilizing factor for engaging in further activities, such as, e.g., in the participatory budgeting process (Bürgerhaushalt). Experiences gained from bottom-up, participatory assessments of SDGs could build upon earlier efforts for localizing sustainability agendas (Agenda 21) and could be shared through emerging global networks of local actors, such as ICLEI–Local Governments for Sustainability and the Global Covenant of Mayors (Reuter, 2023). This would contribute to the advancement of sustainability monitoring methods.

Alongside the need for methodological advancements, local actors encounter practical challenges. Limited resources are often barely sufficient to maintain day-to-day operations. This hampers additional efforts to implement the SDGs, let alone the voluntary collection of data for SDG monitoring (Reuter, 2023). As a result, a critical discussion has emerged about the need for "bridging the gap between monitoring and local action" (Jossin & Peters, 2022, p. 9). In this context, it becomes clear that there is an urgent demand to create synergies between the strategic instruments and programs that cities employ to address their urban

development challenges and the processes required to implement and monitor SDGs. However, there has been limited research on how to best create these synergies and which instruments and programs might be particularly suitable in this regard.

This contribution aims to draw attention to the existing gaps in knowledge and co-production, and to encourage discussion on how current urban development programs and instruments can be leveraged to create synergies with the implementation and monitoring of the SDGs. Additionally, it explores how—conversely—urban development programs and instruments could benefit from a stronger alignment with the SDGs. By examining a specific urban development program designed to upgrade disadvantaged neighborhoods through inclusive urban regeneration and by engaging in the participatory process entailed in this program, this contribution seeks to answer the following research questions:

(1) How is the program currently aligned with SDGs?
(2) What modifications to the program's instruments may be necessary to strengthen this alignment?
(3) How can a more participatory and qualitative approach to SDG monitoring be tested, building on the instruments of the program?

The examination of these research questions is based on a study conducted in 2022–23 by the Institute of Urban Planning and Design at the University of Stuttgart, together with representatives of the Office for Urban Planning and Housing of the City of Stuttgart, the city's International Sustainability and Development Coordinator, the head of the district Stuttgart-Münster, and local community actors. For this study, two projects were analyzed that were being carried out in two districts in Stuttgart at the time of the investigation as part of the so-called "Social City" urban regeneration funding program. The analysis was conducted during a transdisciplinary academic course that involved students from the University of Stuttgart, aiming to promote research-based teaching and learning while introducing future urban practitioners to integrative methods of urban regeneration.

The following Section 2 of this contribution offers a brief overview of the Social City program, its instruments, and assessment mechanisms and outlines the potentials of aligning these components with SDG implementation and monitoring processes at the neighborhood level. Section 3 then introduces the framework and methods used during the case study research process. Based on this, Section 4 summarizes and discusses the findings of the study, focusing on (A) exploring the current alignment of the instruments used in the case studies with the SDGs and (B) investigating options for localized, participatory SDG monitoring in Social City projects. The article concludes with recommendations for modifying the Social City instruments to support SDG alignment and for fostering localized SDG monitoring, which are presented in Section 5. This research aims to advance an approach that integrates local implementation strategies with the assessment of sustainable transformation through synergistic methods—an approach that will also be relevant for future policies related to a post-2030 agenda.

## 2. Background—Urban Regeneration and SDGs in the Context of the German Social City Program

The German Social City program (1999–2019), formally referred to as "Soziale Stadt," was initiated with the objective of addressing issues of urban deprivation and promoting social integration (Häussermann, 2011).

This program played a significant role in advancing sustainability goals at the local level, as outlined during the Local Agenda 21 process initiated in the mid-1990s. The program employed a multifaceted approach aimed at revitalizing disadvantaged urban areas by addressing various socio-economic and cultural dimensions. It has been implemented in over 400 municipalities across the country (Güntner, 2022). Since 2020, the Social City program has been transferred into a program called "Social Cohesion" with slight modifications to the previous Social City program.

The focus of the Social City Program and its successor, Social Cohesion, includes physical, economic, social, and cultural improvements, such as renovating buildings and infrastructures and enhancing public spaces. It aims to strengthen local economies and create employment opportunities. Additionally, the program seeks to revitalize local culture, contributing to a vibrant urban environment. By facilitating community engagement through local participation processes, the program aims to address community needs, mobilize community members to become active stakeholders in the urban revitalization processes and combat social isolation (Zabel & Kwon, 2021).

### *2.1. The Social City and Social Cohesion Programs—Processes and Instruments*

At the operational level, the programs are designed as incentive frameworks to promote comprehensive cooperation and networking among various stakeholders across all levels of the political and administrative system (Häussermann, 2011). The goal is to modernize administrative actions and transform governance models towards project-related, transdisciplinary networking that facilitates the involvement of non-public actors (Walther & Güntner, 2007). The program is funded in three equal parts from the federal government, state, and municipal budgets, whereby municipalities apply for urban regeneration projects at the neighborhood level (BMI, 2020). Once a project receives approval, the relevant municipality establishes a working group within the municipal administration. This group oversees the process and supports the implementation of various urban regeneration measures in collaboration with affected stakeholders.

The processes and instruments of the urban regeneration programs consist of several key components.

#### 2.1.1. Strategic Level: Preliminary Study (VU)

To participate in the Social City/Social Cohesion program, the first step for municipalities is to conduct a preliminary study (in German: vorbereitende Untersuchung or VU). This study serves as a foundation for applying for funding for a specific urban regeneration project within the Social City/Social Cohesion program. The VU involves on-site investigations, including resident surveys, expert discussions, and secondary analyses of social data, all aimed at gaining a better understanding of local needs (Friedrich Ebert Stiftung, 2010). The findings from these investigations help outline the spatial scope and necessary measures that the project should address once funding is approved. On a strategic level, the VU serves as a vital strategic instrument that establishes a foundation for the urban regeneration process. However, there are no specific guidelines defining the topics the VU should address or the exact procedures it should follow.

#### 2.1.2. Operational Level: Integrated Urban Development Concepts (IEK)

To participate in the Social City funding program, a municipality must, as a next step, develop an Integrated Urban Development Concept (IEK) that incorporates input from affected citizens. The IEK is a crucial

instrument at the operational level that defines clear targets and measures for the funding area. It is accompanied by an integrated urban development plan that provides guidelines for detailing, decision-making, and implementing measures that are closely tailored to the local context. Both the IEK and its integrated urban development plan must align with or connect to an existing city-wide urban development strategy. By being grounded in this existing strategy and utilizing a high degree of participatory processes, these documents are intended to ensure long-term effectiveness (BMI, 2020).

#### 2.1.3. Governance Level: Interdisciplinary Project Group (IPG) Including Neighborhood Management

The Social City/Social Cohesion program is designed to take a bottom-up approach, emphasizing the need for extensive citizen participation in the implementation and updating of the IEK. This process involves encouraging residents of the district to develop ideas and take responsibility for their community. At the governance level, this approach is supported by an Interdisciplinary Project Group (IPG) made up of municipal employees and an institutionalized neighborhood management. The neighborhood management, which is usually organized by a commissioned external agency that operates an office on site, plays a crucial role by being physically present in the neighborhood and acting as a low-threshold contact point for residents (Friedrich Ebert Stiftung, 2010). The IPG acts as an essential link between the residents, the district management and the municipality in the sense of integrated governance structures. In addition, the IPG ensures the networking of various municipal administrative units and integrates site-specific topics into the local political discourse (BMUB, 2016).

### *2.2. Monitoring the Success of Social City/Social Cohesion Projects*

All municipalities conducting urban regeneration in the context of the Social City/Social Cohesion program are required to assess the progress of their projects using evaluation reports. These assessments of the projects involve evaluating both the intermediate and final results using a set of indicators related to the process and the outcomes of each project (BMI, 2020). Process indicators track the implementation of various program activities and initiatives, providing insights into how effectively the program is being executed and whether it is achieving its intended objectives as defined in the IEK. This includes monitoring the progress of specific projects as well as the involvement of different stakeholders. Outcome indicators, on the other hand, measure the actual impacts of the program on the community. They assess changes in spatial and social conditions, such as reductions in crime rates or improvements in educational outcomes. The ultimate goal is to determine if the program has led to meaningful improvements in the quality of life for residents.

### *2.3. The Social City/Social Cohesion Program and the SDGs—Mutual Objectives, Untapped Opportunities for Collaborative Assessment*

Through the aforementioned instruments and processes, the Social City/Social Cohesion program demonstrates a localized approach to promoting social inclusivity and sustainable urban regeneration, closely aligning—though still implicitly—with the principles of the SDGs. Its primary objectives include reducing urban inequalities, encouraging inclusive participation, and revitalizing disadvantaged neighborhoods (BMUB, 2016), which directly relate to SDG 10 (Reduced Inequalities) and SDG 11 (Sustainable Cities and Communities). The program also emphasizes modernizing urban infrastructure and enhancing energy efficiency, contributing to SDG 9 (Industry, Innovation, and Infrastructure) and SDG 7

(Affordable and Clean Energy). Furthermore, as the program transitions into the Social Cohesion program, it integrates funding mechanisms for climate adaptation measures which align with SDG 13 (Climate Action). Efforts to regenerate green spaces and improve urban biodiversity also address SDG 15 (Life on Land), and by involving stakeholders across various levels of governance and promoting participatory decision-making, the program embodies the essence of SDG 17 (Partnerships for the Goals).

Organizers of Social City projects are often keenly aware of the connections between their program goals and the SDGs, particularly if the city already engages in reporting on sustainable transformation through voluntary local reviews (VLR). The city of Stuttgart serves as a noteworthy example in this context. As early as 2019, Stuttgart piloted a VLR in collaboration with the Bertelsmann Foundation and the German Institute of Urban Affairs (State Capital Stuttgart et al., 2019). Furthermore, Stuttgart's SDG coordinator participated in the working group that developed and tested guidelines for monitoring SDGs at the municipal level, and in 2023, the city released its third VLR, which put forward proposals for improving the monitoring methodology (State Capital Stuttgart et al., 2023).

Both the VLR and the Social City/Social Cohesion projects aim to promote sustainable urban development. They both include monitoring processes designed to collect relevant data and contribute to actionable strategies. However, the potential synergies between these two instruments are yet to be harnessed. Typically, in the context of Social City/Social Cohesion projects, the evaluation of progress toward the targets defined in the IEK focuses on individual measures at the neighborhood level and incorporates qualitative aspects. In contrast, localized SDG monitoring uses aggregated quantitative data collected at the city-wide level. Despite these differences, there is significant potential for these monitoring processes to benefit from one another. By combining qualitative and quantitative measurement approaches, as well as process- and outcome-oriented indicators, a more comprehensive assessment could be created and SDG monitoring could move beyond the municipal level to the smaller scale of a neighborhood.

The IPG staff members at the Office for Urban Planning and Housing in the City of Stuttgart, along with the city's coordinator for SDGs, have been collaborating for some time to highlight the connection between the SDGs and the Social City projects across spatial levels. Their efforts include presenting qualitative case studies in the VLR and labeling existing Social City projects with the corresponding SDGs. Building on this internal municipal cooperation and maintaining close contacts with the Institute of Urban Planning and Design at the University of Stuttgart, a joint study was launched. This study aims to further investigate and explore synergies between these two frameworks, examining how the Social City program can align with and support the localization and monitoring of SDGs at the neighborhood level.

## 3. Research Design—Exploring Synergies Between SDG Monitoring and Social City/Social Cohesion Projects

The present study employs an inductive research approach in conjunction with a case study strategy (e.g., Saunders et al., 2023). In addition to its goal of generating scientific knowledge, the study seeks to provide practical insights that support existing practices. To achieve this, the study concept was developed through a transdisciplinary collaboration between academic and municipal partners, incorporating various forms of knowledge (e.g., Arnold & Piontek, 2018; Regeer et al., 2024) while engaging with the city's existing initiatives related to the SDGs. Throughout the study, both the framing of the research and reflections on

each phase were conducted in partnership with local experts, municipal staff members, and representatives from neighborhood management and civil society.

Two projects were selected as case studies due to the availability of crucial first-hand knowledge and their location in neighboring districts of Stuttgart, which feature comparable governance structures. However, the projects were at different stages of implementation. The first project, situated in Stuttgart-Hallschlag, was an urban regeneration project supported both financially and organizationally by the Social City program. The project's objectives included renovating existing buildings and public spaces, creating new housing, and developing social infrastructure and activities, as well as educational and economic opportunities. Spanning an area of 77 hectares and affecting 3,294 households, the project began in 2006 and was largely completed at the time of this study (2022–2023), providing access to valuable data regarding its main elements and processes. In contrast, the second project, situated in Stuttgart-Münster and launched in 2016, was still in the implementation phase during this study. Similar to the Stuttgart-Hallschlag project, the urban regeneration project in Stuttgart-Münster aimed to enhance social cohesion, improve education, and strengthen the economic foundation while also upgrading the existing buildings and public spaces. However, the project covered a spatial area of only 32 hectares, which is less than half the size of Stuttgart-Hallschlag, resulting in a smaller number of affected households—2,308 in total. The Stuttgart-Münster case study was selected as the focal point of this study and article because it offered opportunities to engage in events that were part of the implementation phase. This was especially relevant for the study's transdisciplinary approach, in which civil society actors collaborate actively with academic and municipal partners to generate knowledge regarding the implementation and monitoring of SDGs.

The study was conducted in the context of a seminar course at the University of Stuttgart titled "Participatory SDG monitoring at the local level," organized from September 2022 to April 2023. The research process during the course was based on three phases (see Figure 1).

### *3.1. Phase 1—Exploring Instruments*

During the initial phase, students, along with academic and municipal staff members, explored three key instruments through document analysis:

- In relation to the Social City program, they examined (1) the preparatory studies (VU) and (2) the Integrated Development Concepts (IEK) in the case studies from both Stuttgart-Hallschlag and Stuttgart-Münster to assess their alignment with the SDGs. For the VUs, the team analyzed the existing questionnaires used in the VU's survey processes in terms of their conceptualization and identified how many items in the questionnaires were directly related to SDGs. For the IEKs, the team investigated which SDG targets are reflected in the targets defined in the IEKs.
- In relation to localized SDG monitoring, the team evaluated (3) Stuttgart's VLR focusing specifically on SDGs 7, 11, 13, and 15 in terms of the relevance of the targets addressed in the VLR for the neighborhood level in Stuttgart-Münster. This focus on Stuttgart-Münster is significant because the district is still in the early stages of implementing the Social City program, which presents an opportunity to monitor its progress toward sustainable transformation over the next years. In consultation with the district manager, district representatives and municipal staff members, the team from the University of Stuttgart discussed whether any adjustments to existing targets from the VLR

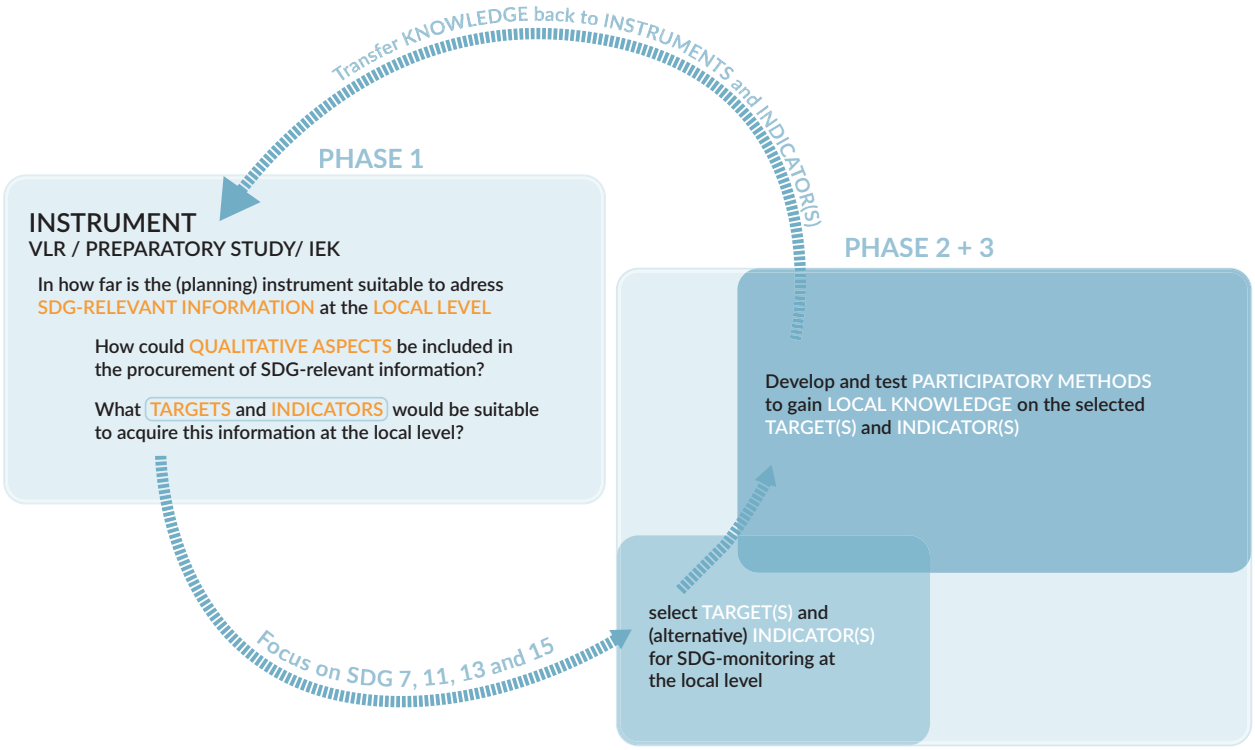


**Figure 1.** Structure of the research process.

or additional targets were necessary to translate the municipal SDG monitoring to the neighborhood level. Exemplified by SDG 13, Figure 2 illustrates how target 13.3, which was not assessed in Stuttgart's VLR, was deemed relevant for the neighborhood. However, in deviation from the guidelines of the SDG indicators for municipalities, which suggest assessing "full-time equivalent positions in municipal climate protection per 1,000 inhabitants" (Bertelsmann Stiftung et al., 2020, p. 135) as a quantitative indicator for target 13.3, the team proposed to develop alternative qualitative indicators at the neighborhood level for this target. These qualitative indicators aim to assess the residents' awareness and knowledge about climate change issues and their local capacities to adapt to and mitigate climate change.

### *3.2. Phase 2—Developing Indicators*

Building on phase one, the second phase of the research process focused on how to increase the proportion of qualitative indicators used to collect information at the neighborhood level for selected targets related to SDGs 7, 11, 13, and 15. The selection of these targets was based on their relevance to the Stuttgart-Münster district, which would facilitate synergies between the SDG monitoring process and the activities of the Social City project. Figure 3 exemplifies the proposed indicators for target 13.3.

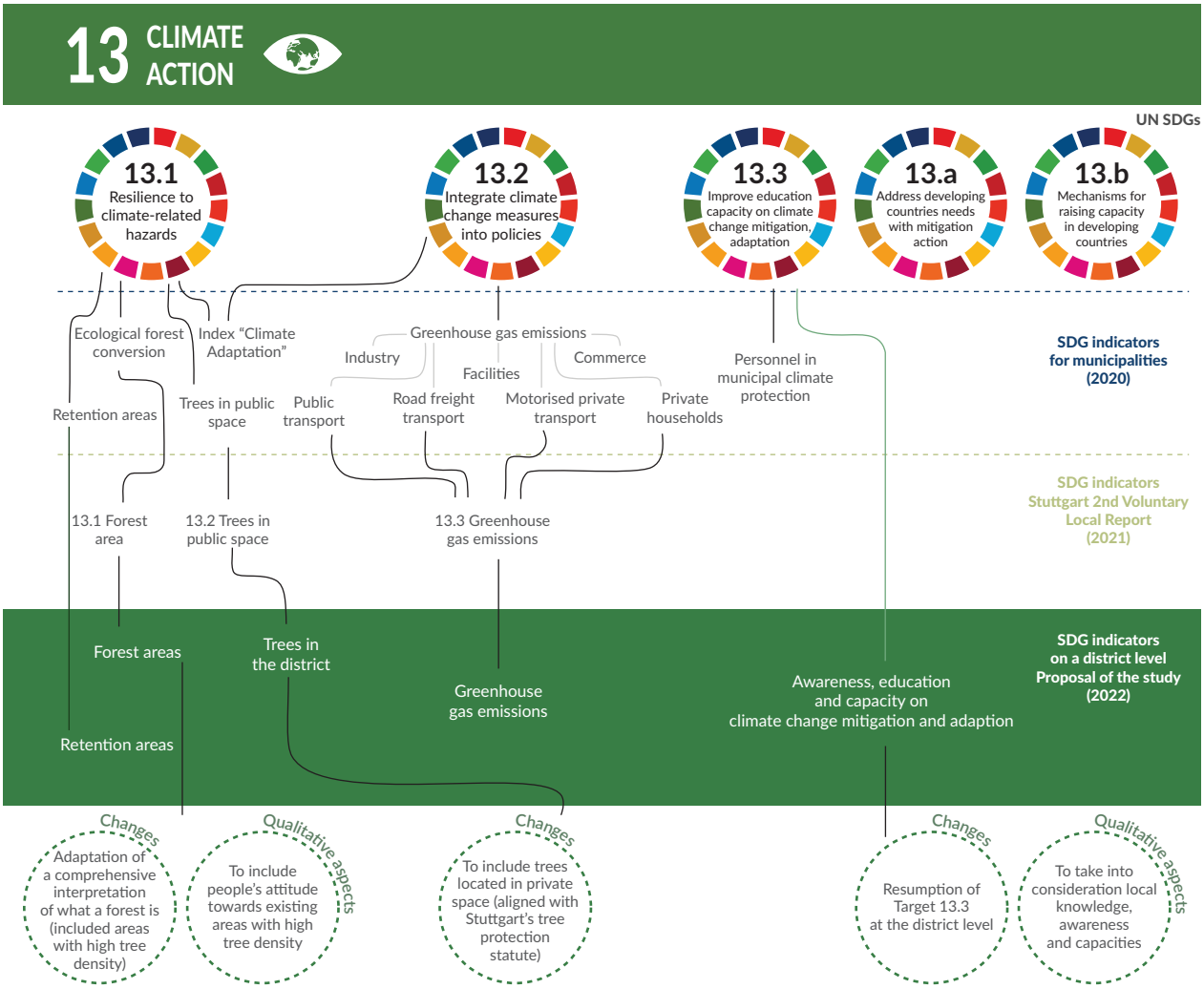


**Figure 2.** Proposed translation of SDG targets and indicators to the district level of Stuttgart-Münster.

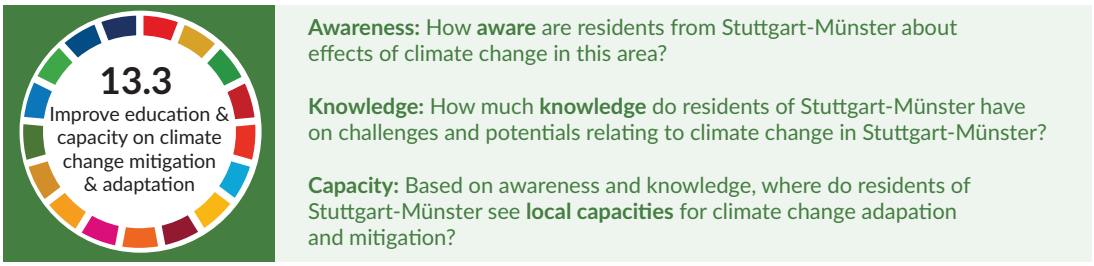


**Figure 3.** Proposed qualitative indicators for target 13.3 at the district level of Stuttgart-Münster.

### *3.3. Phase 3—Testing Participatory Data Collection*

In the third phase of the research process, students developed and tested low-threshold participatory formats to gather information on the selected and locally adapted SDG targets and indicators. This experimental phase was conducted as part of the Social City citizen involvement strategy in Stuttgart-Münster during December 2022. The theme of the citizen involvement strategy "Lebendiger

Adventskalender" (Living Advent Calendar) makes use of the German tradition of counting down the 24 days of Advent until Christmas by giving associations, local businesses or private households from the district the opportunity to create a sociable evening for each day. The hosts can introduce themselves and their offerings, organize a small cultural program or simply invite people to exchange ideas and enjoy a relaxed get-together in the neighborhood. In line with this participatory event, the students explored various methods, combining qualitative interviews, open-ended questionnaires, mapping techniques and photo voices through playful events.

Participants for the events were selected using a non-probability, convenience sampling method (Rivera, 2019), which included all residents who accepted the publicly distributed invitation to attend. Additionally, passers-by were invited to participate. This non-selective approach was chosen because the main objective was not to obtain generalizable results regarding the content of the questions, but rather to test the data collection methods during the participatory formats. Figure 4 exemplifies three of the participatory formats implemented during one of these events, presenting data collection for target 13.3 and its proposed indicators.

In this example, each of the three indicators proposed for target 13.3 was connected to one method of qualitative data collection. For the indicator "awareness about climate change in Stuttgart-Münster," residents were asked to participate in a photo voice contest, documenting evidence of climate change in Stuttgart-Münster. For the indicator "knowledge on challenges and potentials relating to climate change in Stuttgart-Münster," people were asked to note down climate resolutions for their neighborhood based on open-ended questions, which were then analyzed through thematic analyzes. The same participants were

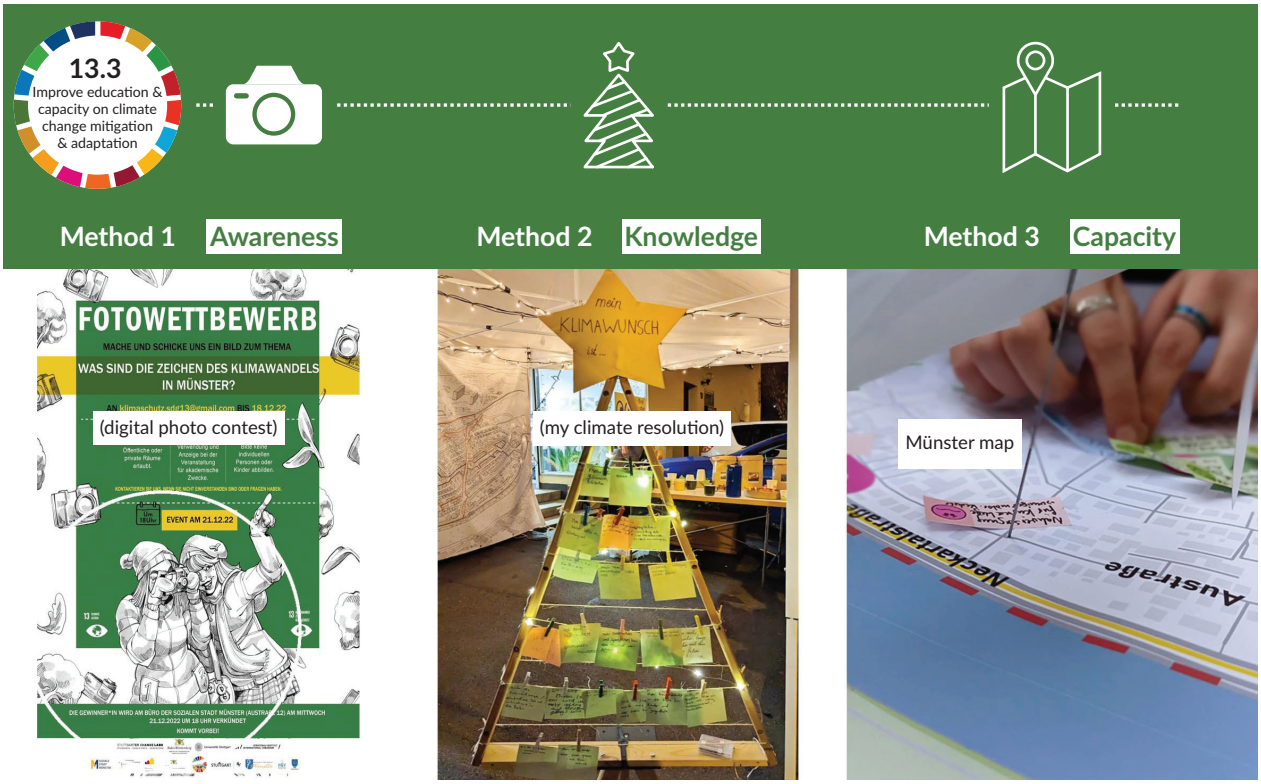


**Figure 4.** Participatory events for data collection related to target 13.3 at the neighborhood level of Stuttgart-Münster.

asked to contribute to a method for collecting information on the third indicator, which focuses on "local capacities for climate change adaptation and mitigation." In this context, they created a map-based inventory of locations in Stuttgart-Münster that could support climate adaptation efforts. Additionally, participants were invited to suggest ways to implement these contributions, considering both individual and collective capacities.

Following the development and testing of indicators and participatory data collection methods, the team collaborated with the district manager, district representatives, and municipal staff to assess the suitability and feasibility of the proposed indicators and data collection methods. These action learning spirals (Betten et al., 2013) are fundamental for further knowledge production and the applicability of gained results (Regeer et al., 2024).

In a last step of the research process, the knowledge gained during phase 1–3 was linked back to the municipal SDG indicator system and the instruments of the Social City program. This feedback loop, conducted through transdisciplinary reflection rounds, resulted in final conclusions and recommendations for the further development of participatory SDG monitoring at the neighborhood level, with the aim of complementing and optimizing the indicator system and enhancing the instruments of the Social City program.

## 4. Research Findings—Alignment of SDG Monitoring and Social City/Social Cohesion Projects

The study's three-phase research design has produced findings that explore the synergies between SDG monitoring and the Social City approach from various perspectives. In Phase 1, the focus was on the alignment between the components of the Social City (VU and IEK) and SDG monitoring from an instrumental standpoint. Phases 2 and 3 then examined alignment options concerning the methods used. Following the structure of the research design, the findings are presented and discussed for each of the subsequent phases, focusing on the case study of Stuttgart-Münster.

### *4.1. Findings From Phase 1—Alignment of the Instruments*

During the VU of Stuttgart-Münster, surveys were conducted to collect information on the need for redevelopment, as well as the socio-economic, structural, and environmental conditions and contexts. These surveys also aimed to identify the key objectives that should be pursued during the redevelopment. A retrospective comparison of survey questions for Stuttgart-Münster with SDGs revealed a strong connection, with over 40% of the questions relating to information relevant to the SDGs, particularly concerning SDG 11 (Sustainable Cities and Communities). This is significant because the survey questions were not designed with explicit consideration of SDGs or linkages to SDGs. Some of the questions in the Stuttgart-Münster survey were open-ended qualitative inquiries, making it difficult to define exact SDG references with certainty. However, these open-ended questions allowed for a deeper understanding of the diverse perspectives and development needs within the population, enabling respondents to address relevant concerns in a more flexible manner. As a result, the analysis of the VU surveys revealed that, although there are significant quantitative overlaps of the survey questions with SDGs, *the VU surveys did not sufficiently address key thematic sustainability objectives*. For instance, SDG 13 and 15 were not explicitly

included; instead, these goals could only be indirectly addressed through open-ended questions in the VU surveys for Stuttgart-Münster.

Regarding the instrument of the IEK, a detailed analysis of the Stuttgart-Münster case study reveals that many SDGs are reflected within the IEK targets, which is significant because the development of these targets was based only on the VU, with no direct reference to SDGs. However, upon reviewing the alignment between these targets and the SDGs, it becomes clear that not all SDGs are equally represented. Similar to the VU, this analysis highlights the *underrepresentation of certain SDGs within the IEK* (see Figure 5).


IEK STUTTGART-MÜNSTER

**Figure 5.** Alignment of targets mentioned in the IEK of Stuttgart-Münster with SDGs. The numbers above the bars indicate how many SDG targets are reflected in the IEK targets.

An in-depth examination of the content of the IEK targets for Stuttgart-Münster reveals that all qualitatively described targets in the IEK relate to multiple SDG targets, demonstrating a highly multidimensional approach. This multidimensional approach illustrates an integrated perspective on sustainable transformation and offers a valuable alternative to the frequently criticized isolated assessment of SDGs (e.g., Biermann et al., 2022; Lyytimäki et al., 2023).

Table 1 illustrates this multidimensional relationship in detail and exemplifies how the IEK targets align with several SDG targets. The first target under the action field "Habitation, Residential Environment, and Public Space," for instance, focuses on transforming underutilized areas in Stuttgart-Münster to benefit the community. This goal is closely aligned with SDG target 11.7, which aims to ensure universal access to safe, inclusive, and accessible green and public spaces, as well as SDG target 8.9, which seeks to promote local culture.

With reference to the SDG monitoring instrument of the VLR, findings of the study demonstrate that *municipal SDG targets can be effectively adapted to the local level of a neighborhood*. This supports the argument made by various scholars, such as Mair et al. (2018), Valencia et al. (2019), and Jossin and Peters (2022), for the need to advance localized SDG monitoring. Using SDG 13 as an example, the study provides initial insights into how this adaptation can be achieved. Focusing on Target 13.3, it was demonstrated that an indicator based on numerical data—personnel in municipal climate adaptation—can be altered to indicators that have transformative potential at the neighborhood level and resonate with local people. This people-centered approach was also central to Phase 2 and 3 of the research process, the findings of which are presented in the following section.

**Table 1.** Relation between the IEK Stuttgart-Münster and SDG targets.

| SDG-Targets | Field of action 1: Habitation, residential environment, and public space |
|---|---|
| 8.9/11.7 | Spaces in Stuttgart-Münster are transformed for use for the common good of the community |
| 11.3/11.7/12.8/15.5/15.8/15.9 | Public space in Stuttgart-Münster appears welcoming and invites people |
| 2.3/2.4/2.5/8.3/8.a/9.3/11.3/11.7 | Retail and gastronomy in Stuttgart-Münster are being secured and strengthened |
| 3.8/7.1/11.1/11.2/12.1/12.7 | Housing in Stuttgart-Münster is attractive for people of all life situations |
| 1.4/3.8/6.1/6.3/6.4/9.c/11.1/11.2/ 11.4/11.6/12.4/17.1 | Environment and infrastructure in Münster contribute to livability |
| | Field of action 2: Cohabitation of generations |
| 4.2/4.5/5.c/8.5/10.3/10.4 | Stuttgart-Münster offers cross-generational activities |
| 4.2/4.5/11.2 | Stuttgart-Münster offers age group-specific activities |
| | Field of action 3: Mobility for everyone |
| 9.1/9.4/11.2/11.6 | Stuttgart-Münster has an improved network of pedestrian paths |
| 9.1/11.2 | Stuttgart-Münster receives safe infrastructure for motorized individual transport |
| 9.1/9.4/11.2/11.6 | Stuttgart-Münster is well-connected to public transportation |
| 9.1/9.4/11.2 | Stuttgart-Münster enables mobility by bike |
| 9.1/9.4/11.2 | Infrastructure in Stuttgart-Münster is safe for all traffic participants |
| 7.1/7.2/7.3/9.1/9.4/11.2 | E-mobility in Stuttgart-Münster is strengthened |
| | Field of action 4: Education, culture, and health |
| 8.3/8.6/8.9/10.2/12.b | In Stuttgart-Münster offers educational activities for all population groups |
| 3.7/4.1/4.2/4.3/4.4/4.a/4.6/4.7 | Stuttgart-Münster offers a diverse cultural program |
| 3.4/3.a/3.c/3.d/3.7/3.8/5.4/ 5.6 | Stuttgart-Münster supports health offers |

### *4.2. Findings From Phase 2 and 3—Alignment of Methods*

The experiences gained from Phases 2 and 3 highlighted *methodological opportunities to link localized SDG monitoring with transdisciplinary and participatory elements of the Social City projects*.

The development of localized, neighborhood-level indicators using a qualitative approach was facilitated through transdisciplinary reflection rounds within the context of the Social City project in Stuttgart-Münster. For example, the replacement of the indicator for Target 13.3 with qualitative indicators measuring awareness, knowledge, and capacity (as shown in Figure 3) was discussed and refined in collaboration with three IPG representatives from Stuttgart-Münster, the head of the district, one representatives of the district council, three representatives from the City of Stuttgart, two external experts, and three employees from the Institute of Urban Planning and Design at the University of Stuttgart, together with the student group. This process aimed to address the gap identified in the analysis of the VU and IEK concerning

SDG 13, as well as to gather suggestions for incorporating urban climate aspects into future implementations of the Social City project.

However, it is important to note that the indicators developed in this study were proposed and tested only within the framework of four participatory events in Stuttgart-Münster. Each event had between 25 and 38 active participants, totaling 127 individuals across all four events. Consequently, extending implementation beyond this limited testing environment and the non-representative sample of participants is still pending, and the indicators cannot be used to draw generalizable conclusions. Furthermore, it has to be acknowledged that the information collected with these types of qualitative indicators have limited utility for comparative assessments, as they are highly context-specific. Nonetheless, if this information is used thoughtfully by interpreters, it can help incorporate local knowledge into processes for sustainable transformation and ensure that affected communities are not marginalized (see e.g., Goonesekera & Olazabal, 2022).

The development of participatory methods for SDG monitoring also benefited from the transdisciplinary reflection sessions within the context of the Social City project, in which interim results of student ideas were critically discussed. Conversely, there is a chance that the Social City project will benefit from the SDG monitoring tests conducted at the neighborhood level. For instance, two of the participatory methods employed in relation to SDG 13.3 (an open-ended questionnaire related to climate resolutions and participative mapping) proved that climate change adaptation was considered relevant for the district, and the inventory of locations for climate adaptation efforts, collaboratively created through participative mapping, might inform future IEK measures.

However, it has to be mentioned that not all participatory formats employed during this study were equally successful. Formats which did not engage residents through direct, face-to-face interaction were particularly prone to failure. This was, for instance, noted with the photo voice contest, aimed at collecting data for the indicator on awareness of climate change effects, which ultimately failed to gain traction. Furthermore, it is important to note that the participatory methods tested in this study were limited to single events conducted in a small area of Stuttgart-Münster. Additionally, the application of these methods did not involve a well-balanced population sample. If these methods were to be applied at the neighborhood level on a larger scale, it would be essential to ensure balanced participation over extended periods in order to achieve meaningful results for SDG monitoring. Given the study's research design, which was not intended to produce generalizable results regarding the indicators, but rather to test the feasibility of incorporating qualitative elements into SDG monitoring at the neighborhood level, this lack of generalizability was considered acceptable.

A key finding from these tests was that residents were open to sharing information about the qualitative aspects related to the selected SDGs. Furthermore, the discussions facilitated by the *participatory methods effectively promoted knowledge dissemination concerning the SDGs and helped address the knowledge gaps* that many residents still had regarding SDGs. The willingness to participate in localized SDG monitoring, as demonstrated during the tests, can be attributed to the active support of the IPG team from the Social City Stuttgart-Münster. The members of the IPG team, who are locally known to serve as intermediaries between the community and the municipal administration, effectively facilitated participatory actions. The IPG team was therefore essential in managing participatory methods, and they also played a significant role in raising awareness of SDGs, also outside of the scope of the participatory events of this study.

Right from the start of the Soziale Stadt Stuttgart-Münster project, the IPG team emphasized the connection between the targets of the IEK and the SDGs through various projects, and they effectively leveraged these projects and their participatory events to advocate for SDGs. The immersive experience with *the Social City neighborhood management* in Stuttgart-Münster has shown that it *is a powerful tool for promoting SDGs, serving as a catalyst for progress in achieving SDGs at the neighborhood level*. Additionally, it acts as a testing ground for innovative participatory practices designed to capture citizens' perceptions and preferences on sustainable transformation. During the VU, all residents, home and property owners and business people in the neighborhood were included in surveys, and the objectives of the IEK were developed through procedures that were open to all stakeholders. In this respect, the Social City project is in line with the call for greater inclusion of residents' local realities and agency into sustainable development efforts (Bonsu et al., 2020). Furthermore, the practices aimed at implementing IEK targets significantly benefit from the inclusive governance framework established by the IPG team, which is essential for making progress toward achieving localized SDGs.

## 5. Key Insights and Recommendations—Leveraging Synergies Between SDG Monitoring and Social City/Social Cohesion Projects

The translation of SDGs and their monitoring practice to the local level requires the allocation of additional resources and innovative practices. Such resources and practices can only be secured through the meaningful integration of the SDG implementation and monitoring process into existing urban development and regeneration activities and programs. The primary objective should be to foster maximum synergies. This can be achieved by leveraging existing procedures, frameworks, and participatory activities, as well as by identifying suitable modifications in existing urban development instruments to support SDG implementation and monitoring. The study shows that—regarding the instruments of the Social City/Social Cohesion program—there is significant potential to integrate SDGs. Based on this premise, the study offers the following recommendations:

(1) Explicit inclusion of SDGs in Social Cohesion projects, and extending this requirement to all Urban Development Support programs, to encourage local authorities to take meaningful actions toward achieving SDGs at the local level.

(2) Integrating SDGs into both project proposals and evaluations of Social Cohesion projects. For project proposals, developing a guide would be highly beneficial. This guide could outline SDG-relevant aspects for preparatory studies and assist in interim and final evaluations to track progress toward SDG achievement.

(3) Ensuring comprehensive representation of all SDGs relevant to the local context, thereby supporting a balanced approach and avoiding an overemphasis on—or a neglect of—individual SDGs. This balanced approach will enhance the effectiveness and impact of municipal urban development activities.

(4) Incorporating innovative methods from monitoring practices of urban regeneration projects, such as the assessment of qualitative data and data relating to process achievements, into localized SDG monitoring. This integration will enhance the methodological diversity of SDG monitoring at the local level and significantly improve the overall quality and relevance of the data.

These recommendations are further detailed in two strands: First, detailed recommendations focused on modifying the instruments of the Social Cohesion Program to improve alignment with SDGs, and second, recommendations aimed at supporting the localization of SDG monitoring beyond the scope of the Social Cohesion program.

### *5.1. Recommendations for Modifying the Social Cohesion Instruments to Support SDG Alignment*

#### 5.1.1. Integrating SDGs Into VU Surveys

The VU is designed to gather extensive foundational information for future urban renewal areas, shaping the future development of the involved neighborhoods. However, there are currently no binding standards for these preparatory studies, nor is there an assessment of whether relevant SDGs are adequately represented in the surveys. Therefore, the establishment of a framework—perhaps in the form of a matrix—is recommended that incorporates the SDGs in VU surveys and ensures their balanced consideration from the outset of a Social City/Social Cohesion project. This framework could also work as a blueprint for other urban redevelopment programs and instruments, promoting the consideration of SDGs at the local level.

#### 5.1.2. Making SDG Relation Transparent in the IEK

The comparison of the IEK targets with SDG targets in the case of the IEK Stuttgart-Münster has highlighted the potential for synergies between the two concepts. Understanding these synergies is essential for effectively leveraging them. For instance, analyzing how SDGs are represented in the IEK can help identify strategic gaps. In the cases of the IEK in Stuttgart-Münster, it is evident that SDG 13—climate action—although relevant to the district, is not prominently featured in the explicit formulation of the IEK goals. This retrospective analysis can help inform recommendations for addressing strategic gaps, such as the underrepresentation of SDG 13, and support necessary corrections while the IEK is still being implemented. Therefore, it is advisable to conduct and present a comparison between IEK targets and SDG targets in future Social Cohesion projects at regular intervals. To facilitate this process, providing clear instructions and documented examples will assist the relevant IPG teams in the planning offices with this task.

#### 5.1.3. Enhancing SDG Communication Through Neighborhood Management's Participatory Formats

The activities in Stuttgart-Münster, which were designed to raise awareness of the SDGs, were driven by the personal commitment of the IPG coordinators involved. In order to harness the significant potential to make the SDGs more tangible through citizen engagement in neighborhood management in upcoming Social Cohesion projects, it is recommended to develop and implement guidelines for a communication strategy that incorporates the SDGs. Simultaneously, it is advised to maintain the district management even after the funding project has concluded, with a view to ensuring the ongoing sustainability of the initiated change processes and preserving their impact. To achieve this, formats would need to be developed that are firmly anchored in the commitment of civil society yet are also recognized by public institutions.

#### 5.1.4. Creating Synergies Between SDG Monitoring and Social Cohesion Project Assessment

To effectively use the instruments of the Social City/Social Cohesion program for sustainability monitoring, it is crucial to consider not only the progress towards project's specific targets, but also assess how these

targets contribute to SDGs at the level of the affected neighborhood. A key requirement for this is to establish an alignment between SDG monitoring and IEK monitoring in advance. This alignment would facilitate to track progress toward IEK targets while also contributing to monitoring achievements related to SDGs. This alignment would also offer a key benefit: Monitoring progress towards SDGs would closely follow the framework of IEK monitoring, during which both process and outcome indicators are collected. This could improve the methodological diversity of localized SDG monitoring, which—until now—primarily focuses on output-oriented metrics at the municipal scale. At the local level, particularly the level of neighborhoods, SDG monitoring has the opportunity to expand beyond established metrics by adjusting indicator types to the context. Connecting SDG indicators with IEK targets could thereby catalyze the advancement and testing of specific district-related indicators.

## *5.2. Recommendations for Supporting Localized SDG Monitoring*

### 5.2.1. Fostering Political Commitment for Integrating the SDGs Into Urban Renewal Practices

Integrating the SDGs into urban regeneration programs and instruments requires strong political commitment at the city-wide level. This commitment should also extend to higher levels of governance to ensure a cohesive overall vision and strategic plan for the city, aligned with working towards SDG achievements. Such an approach will subsequently filter down and influence district and neighborhood levels as well. An example of this in practice is Mannheim, Germany, which has developed a guiding framework ("Leitbild") that incorporates SDGs (Stadt Mannheim, 2022). In Stuttgart, current initiatives to update the existing strategic development plan ("Perspektive Stuttgart") would have significant potential for ensuring alignment with SDGs.

### 5.2.2. Enhancing Coordination Among Municipal Departments

To effectively support this political commitment, strong coordination among various municipal departments is essential. This requires fostering cross-departmental cooperation and communication to break down the sectoral silos often present in larger municipalities. Furthermore, it is important for politics and administration to work closely together, ensuring that their coordination efforts extend to municipal budgeting that aligns with the achievement of SDGs (e.g., Manes-Rossi, 2024). An example of this approach is the City of Malmö, Sweden, which has taken the lead in aligning its budget with coordinated efforts aimed at achieving SDGs (City of Malmö, 2021).

### 5.2.3. Improving Communication of SDG Progress and Shortcomings

Additionally, ensuring information and transparency is crucial for communicating both the existing progress and shortcomings in achieving SDGs. To support targeted actions for localizing SDGs, digital tools like municipal SDG dashboards are essential (German Council for Sustainable Development & Deutsche Gesellschaft für Internationale Zusammenarbeit, 2023). For instance, the City of Stuttgart has initiated efforts through digital scorecards available on its web-based SDG portal. This platform allows local politicians, municipal staff members, and citizens to stay informed about the city's performance concerning its municipal SDG indicators. The next step should be to adapt this information to smaller scales, such as districts and neighborhoods. This would create a knowledge base that residents can relate to in their

immediate living environments. Engaging with the SDGs at the neighborhood level also enhances awareness and empowerment, particularly if it includes the co-production of knowledge. Incorporating this collaboration as a key aspect of SDG initiatives will not only foster stronger community buy-in but also foster other participatory processes essential for SDG implementation, particularly in areas facing significant social and spatial disadvantages, like those targeted by the Social City/Social Cohesion program.

## 6. Conclusion and Outlook to a Post-2030 Agenda

Our research highlights the significant need to translate global sustainability agendas into actionable initiatives at the neighborhood level. Cities and communities are essential catalysts for meaningful, real-world change. When global agendas are aligned with the lived experiences of local populations, they can transition from a perspective sometimes criticized as abstract and primarily discourse-oriented (see e.g., Biermann et al., 2022) to one that effectively addresses the actual needs of communities. Establishing this connection to individuals' living environments—specifically, neighborhoods—and to the administrative entities that facilitate transformation in daily life, such as cities and their neighborhood-level projects, may serve as a catalyst for achieving sustainability goals. Consequently, it is imperative that the post-2030 agenda prioritizes the applicability of development practices at the local scales of cities as well as neighborhoods and supports synergies with existing programs and processes to ensure impactful results.

Equally important at these local levels is the provision of reliable, context-specific data and information, which is crucial for informed decision-making, monitoring progress and adapting strategies to local realities. In this context, a post-2030 agenda should provide even greater support for the collection of local data and its transparent communication. In this regard, the siloed approach of the current SDG assessment, which has been widely criticized, should evolve towards an integrated assessment of interconnected sustainability aspects (see also Bai, 2024; Cernev & Fenner, 2024). Beyond this, it is imperative that the quantitative assessment of sustainability aspects is integrated with qualitative information derived from the relevant context (Yamin, 2019). This integration helps mitigate the risk of neglecting complex structural causes, which are often difficult to assess, by focusing solely on selected measurable indicators. An integrated monitoring framework for the post-2030 agenda should also consider what puts sustainability at risk and what actors and processes contribute to the root causes of that risk (Kaika, 2017). In this regard, the neighborhood level provides a concise framework for an in-depth exploration of the causes that drive the need for change. At this level, it should be possible to assess not only progress towards more sustainable conditions, but also monitor local practices that actively address deviations from sustainable conditions through "dissensus practices" (Kaika, 2017, p. 89), and to recognize their transformative and indicative potential.

Furthermore, it is imperative for a post-2030 agenda to consider financing and budgeting mechanisms tailored to facilitating SDG implementation at multiple scales, including the local scales of cities and communities (see also Cernev & Fenner, 2024). These mechanisms, which are currently still in their early stages, need to be expanded to support needs and capacities of local projects. Without adequate and sustained financial support, even the most aligned sustainability initiatives risk falling short of their potential.

Moreover, capitalizing on multi-level governance structures and promoting active stakeholder involvement can significantly enhance sustainability efforts in a post-2030 agenda. Engaging a broad spectrum of actors at the local level—including local governments, civil society, private sector entities, and citizens—could foster shared

ownership, agency, and accountability, while also enabling the alignment of objectives across governance levels (see also Bonsu et al., 2020).

Finally, the neighborhood level might be conducive to balance the technical aspect of selecting suitable indicators and matching data with the more overall need to open SDG knowledge production to citizens as part of a "democratic governance of SDG indicators" (Fukuda-Parr & McNeill, 2019, p. 5). In this context, introducing options for co-producing knowledge about transformation needs, co-decision making with regard to development goals, and co-creation of on-site transformation could help bridge the often-cited gap between assessment and implementation (Jossin & Peters, 2022).

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## Conflict of Interests

The authors declare no conflict of interests.

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