Creating Methods, Procedures and Tools for a More Sustainable Neighbourhood Development – Experiences from Germany

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ABSTRACT

Cities constitute essential parts of the built environment. Although being crucial "engines" of socio-economic growth, they cause significant environmental loads. Therefore, they have a major role to play in sustainable development. Their design and adaptation to future requirements should always follow the sustainable development principles. This is an ongoing process that must be actively managed. However, which methods and procedures can support such a process? Since cities are complex entities, in urban transformation processes, the district/neighbourhood level has been proved as appropriate for implementing sustainability principles. Thus, the paper focuses on the district-scale sustainable development and deals with issues related to the management of the process, including: a) the identification of local actors having a direct influence on the district's development, the selection of the object of assessment and the determination of the district's current state, followed by b) the formulation of goals and the investigation of possibilities on how to act towards these goals. This also presupposes the analysis of relevant actors regarding their motives, property rights and possibilities for action. Through this analysis, the importance of a flexible indicator system adjustable to the district's local conditions for the definition of goals, indicators and target values and the monitoring of progress based on this system are highlighted. The main result is a detailed analysis of the relevant actors and actor constellations as well as the development and application of indicator systems. The difference between sustainability assessment systems, as a basis for certification, and indicator sets/systems, as "tools" supporting sustainable district development, is also discussed. Specific experiences from Germany are considered in connection with the subject of "living laboratories" and the research project "Urban Transition Lab 131" focusing on a specific city district in Germany.

Keywords: *sustainable neighbourhood, urban transformation, indicator set*

1. INTRODUCTION

The UN predicts that by 2030, almost 60 per cent of the world's population will live in urban areas (UN, 2014a). Given the current urbanisation trends, sustainable development challenges – and therefore, opportunities to be grasped – will be increasingly concentrated in cities. According to the latest progress report of the UN-HABITAT II (UN, 2014b) the current urbanization model is unsustainable in many respects and new conditions need to be defined to achieve inclusive, people-centred and sustainable global development. Cities, although being crucial "engines" of social and economic growth, have not succeeded in suitably addressing emerging and existing challenges, such as urban sprawl, congestion, air pollution, greenhouse gas emissions, social inequalities and poverty. In this sense, sustainability-related efforts in both science and policy arenas are broadening from building level (micro-scale) to neighbourhood and city level (meso- and macro-scale). A number of recent initiatives already attempt to address the common challenges in cities by providing recommendations and global targets for sustainable urban development. For example, "sustainable cities and human settlements" (Goal 11) is one of 17 Global Sustainable Development Goals (SDG) that make up the UN 2030 Agenda for Sustainable Development and it paves the way for fully transformative urban commitments and principles. At the same time, the outcome document of Habitat III (Parnell, 2016) will be the New Urban Agenda (NUA) providing guidelines and policy recommendations for sustainable urban development for the next two decades.

However, accomplishing sustainable urban development is a highly challenging task due to its complex and continuously-evolving nature. Many cities struggle to meet their sustainability commitments and determine detailed targets. Breaking down the "city" into smaller, more manageable urban units (i.e. neighbourhoods), and systematically involving local people and institutions (e.g. homeowner associations, business communities, residents' groups, etc.) in their transformation and improvement process as "co-creators" and "change agents" is

expected to facilitate a transition to urban sustainability. The neighbourhood level, as an intermediate level of analysis and action between the city level and that of individual buildings, has increasingly been proved as a promising level for developing and implementing sustainable urban interventions (Berardi, 2013). Within a neighbourhood, different types of community groups and social networks are formed and maintained providing in principle more opportunities for interaction and active participation in collective decisions and actions. Additionally, compared to the city scale, people residing in the same neighbourhood are more likely to share similar daily living experiences and exhibit a higher level of motivation to influence their immediate living environment.

However, the neighbourhood-scale sustainable development is an ongoing process that requires continual engagement, monitoring, assessment and revision. The paper focuses on issues related to the understanding and management of the process, including: a) the analysis of the current state and problems of neighbourhoods, including the identification of local actors having a direct influence on the their development, b) the creation of an appropriate set of indicators to monitor and assess performances, and finally c) the planning of a future strategy including the formulation of targets and the investigation of possibilities to act towards these targets.

2. SWIFTING TOWARDS A PROCESS-BASED APPROACH

Over the last decades, several sustainability assessment systems and tools have been developed for urban districts and neighbourhoods, mostly as a result of an attempt to expand and adapt already established sustainability assessment and certification systems of buildings, in order to better address the complexities of the urban scale (Sharifi and Murayama, 2013). This involves moving beyond dealing solely with issues related to the performance of single buildings and incorporating issues related to e.g. the quality of urban design and environment (e.g. design of public spaces, etc.) as well as to the way how people move, work and live within a place. However, these systems and tools are usually suited for assessing districts that are newly designed or in a planning phase, and thus mainly support planners and developers to consider the sustainability model at the master planning stage. Most of them are based on a performance- or outcome-oriented approach (absolute assessment of the performance), providing rating and/or certification based on the assessment result (level of sustainability at a particular point in time), but failing to reflect the dynamic and constantly changing nature of an existing neighbourhood. Therefore, they are still too inflexible to fully support the sustainability transformation and improvement processes of existing districts (Lützkendorf and Balouktsi, 2016a). In this case, it makes more sense to shift towards a more process-oriented approach and conduct “distance to target” assessments, namely measure the distance(s) between the current and the desired status (both short-term and long-term target).

Often, local authorities are not willing to support/allow for an absolute sustainability assessment for the area they represent to avoid the risk of stigmatisation and other substantial disadvantages a poor performance/score may cause. A neighbourhood of bad reputation may discourage potential investors and developers from engaging in its improvement processes and from covering (part of) the occurring development costs. However, there are cases where the developers or investors are the ones initiating the development process of an existing neighbourhood seeking to make profits through e.g. higher property values and higher market demand. In this context, receiving a sustainability certificate can be a long-term sub-target for an improvement process to attract more renters and homeowners. Hence, as a compromise, the two approaches can be combined to maximize the benefits. Another reason why most of today’s sustainability assessment systems can be considered as inflexible is that they usually use a “fixed” set of indicators. However, the sustainable development of an existing neighbourhood is a process driven by various types of stakeholders with different ambitions and interests, as well as different possibilities and capacities to act, compared to the planning of a new neighbourhood, where the main decision-maker is the developer. Having a “flexible” indicator set, capable of reflecting and adapting to the varying and time-evolving local interests/needs within the area and responding to emerging issues, would be an advantage – mainly because different perspectives can be considered within one system. In this case, different indicators can be used for assessing the same issue as a way to map the perspectives of different actors and to identify causes and/or effects of this (Lützkendorf and Balouktsi, 2016b). In process-oriented approaches, contrary to certification systems providing a fully aggregated version of the assessment result, the risk of double-counting is not present.

3. BASIC STEPS FOR SUPPORTING SUSTAINABLE NEIGHBOURHOOD DEVELOPMENT

3.1 Initiation phase

Initiation of a development process can occur in one of two ways (or their combination): top-down or bottom-up. Top-down initiation results from decisions made at the highest level, e.g. by local authorities as a response to specific problems or a hotspot of problems, or by researchers in collaboration with local authorities as a way of testing new approaches (e.g. urban living laboratories – see 4.2). On the other hand, bottom-up initiation usually begins as an attempt of a local interest group (e.g. property owners association) to harness a specific opportunity serving their interests (e.g. urban improvement districts – see 4.1). This is identified as Step 0 in Figure 1. To adequately manage the process, the composition of a committed "core team" (CT) is required, mainly consisting of a coordinator and key prime consultants/experts. The CT has usually a facilitating and steering role. As the responsibilities increase along the process, the CT evolves to engage a broader variety of local skills and experience (local stakeholders/representatives) and build the "overall team" (OT). Involving local actors as active consultants in the process empowers them to enjoy greater influence over what happens in the neighbourhood and generates a sense of ownership of the goals and long-term commitment to their implementation. A number of action steps are suggested in the following to help understanding and improving the organisation and planning of the development process itself.

3.2 Moving along the process

The spatial boundaries of a neighbourhood cannot always be defined in a consistent way; they must be adapted to the issues investigated and the indicators applied. It may be a territorially defined administrative unit of a city, an area of study/application whose demarcation is made from a contextual perspective, or an area the residents identify themselves with, and thus develop a higher sense of responsibility. A different boundary line can be drawn for each specific topic. Therefore, the initial selection of the boundaries of the area of intervention should be rough (not specified in an exact/fixed way based only on the administrative geography) to permit layering and overlapping, so as to adapt to the different goals and issues under examination (Step 1 – Figure 1). Having selected the location and an approximate area of intervention, it is important to describe and analyse its profile including basic statistics and background information about the residents, places, services, infrastructures and activities which make up the area (Step 2 – Figure 1). At this point, appropriate profile indicators (a term also used in ISO 37120:2014) should be selected for describing essential characteristics of the area investigated. No targets can be defined as reference lines for these indicators on the district level, as they "cannot be influenced" (at least not directly) by interventions of local actors and serve only information purposes (e.g. total number of households, percentage of unemployed people, etc.). However, some of them may give "early warnings" of problems to occur in future. In this case, strategies can be developed for fighting the consequences of these developments observed with the help of profile indicators. As part of the neighbourhood profile, it is also important to identify the main local actors operating or living in the area (i.e. homeowners, business owners, lobbies, associations and unions, local institutions), as well as their interrelationships.

The next step would be to develop a flexible indicator set to reflect the goals and aspirations for the neighbourhood improvement project and support the assessment of the progress towards sustainable development. The third step in the system's development is an extensive review of other relevant indicator sets and systems to obtain an insight into what has already been put into practice and will best suit the special characteristics of the neighbourhood under investigation. This is the so-called "top-down" or "expert-led" approach that is mainly driven by expert knowledge (Step 3 – Figure 1). Achieving compliance with national or international standards is also critical (e.g. with ISO 37120:2014). Furthermore, it is essential that existing national or regional sustainability strategies are taken into account if available.

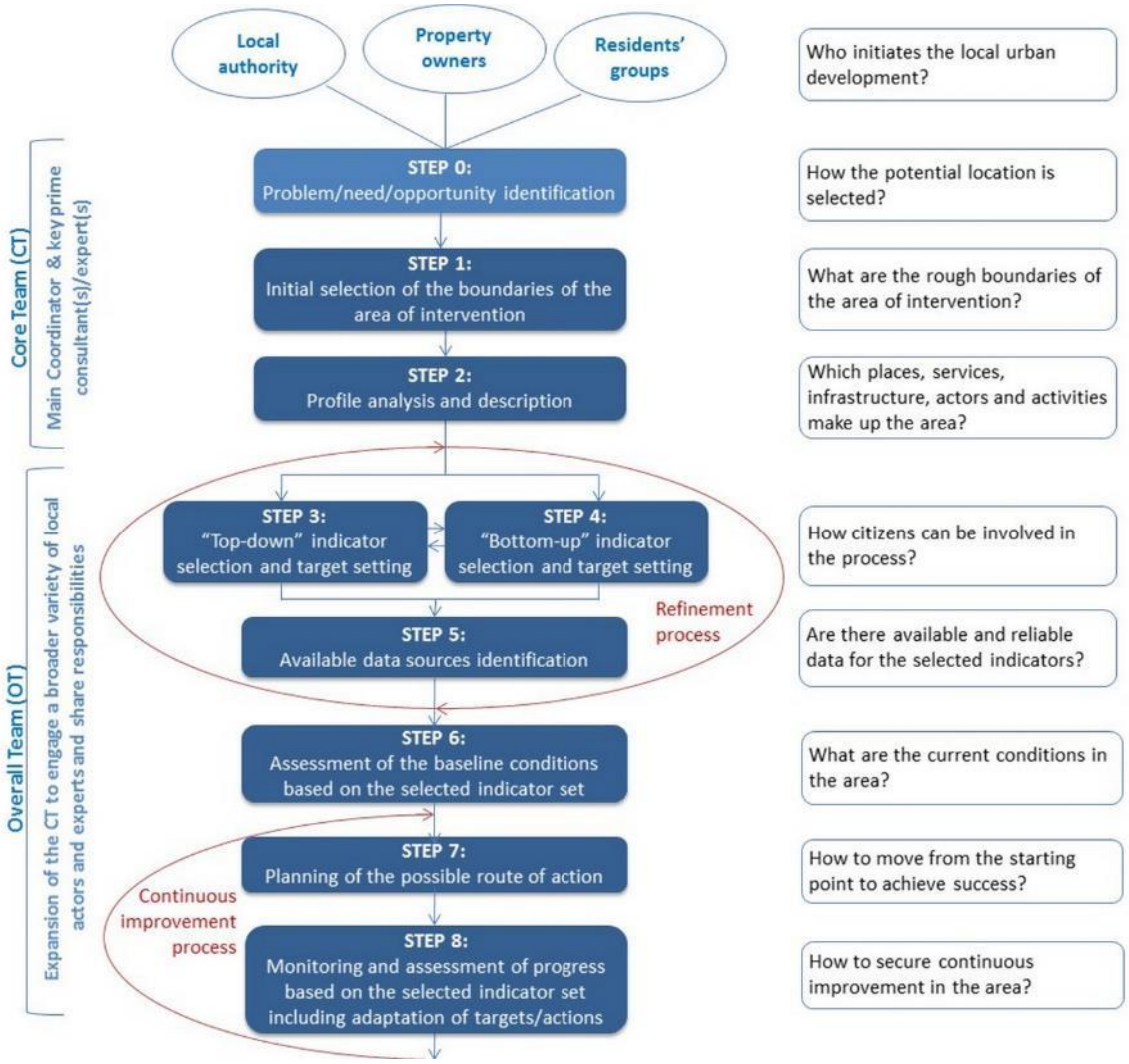

Figure 1: Basic steps for supporting sustainable neighbourhood development process

After utilising a top-down approach to select core problem areas and an initial set of core indicators, the needs and desires of stakeholders should be identified and accommodated through a bottom-up approach (Step 4 – Figure 1). To trigger and extract these, multiple interactive work sessions with local actors and residents should be organized, with experienced facilitators (e.g. researchers who have a good knowledge of both environmental and social sciences) guiding them through a "vision" process. Some of the specific issues and concerns of the people may already be reflected in the list of the selected core indicators. The rest should then be translated into context-specific indicators and targets. The iterative nature of the community-science interaction in the form of different participatory processes allows for a more diversified understanding that combines scientific and local knowledge. Finally, available data sources should be identified for the assessment of the selected indicators (Step 5 – Figure 1). In cases where data are not available in sufficient quality, the indicator set should be refined and supplemented with consequential indicators (alternative indicators to be used instead of a core or context-specific indicator) or new mechanisms for data generation should be suggested. This is possible only in cases where several indicators exist that can be used to assess the same criterion/thematic area. For example, the energetic quality of residential buildings (criterion) can be described and assessed in several ways; e.g. in terms of the energy demand, energy consumption, specifications for envelope and building services, etc. Therefore, it is possible to adapt the selection of the indicators to the available data and information.

Before starting the planning of a future improvement strategy, the baseline performance of each of the selected indicators should be identified through a first assessment (Step 6 – Figure 1). This will form the basis for setting specific short-term and long-term targets (intended result) per indicator taking into account, among others, current political and scientific debates, regional and national action plans and existing targets in other comparable areas/regions. Once the targets have been set, the next step is to identify the measures of intervention needed to

meet them and the stakeholders able to act related to each specific problem, thus to plan the possible route of action by assigning specific responsibilities and tasks to specific stakeholders (Step 7 – Figure 1) This should result in a clear road map. It is also important to convince "passive" actors to accept the planned changes, as well as to consider any risks that might jeopardize the plans (e.g. target conflicts, unwillingness to cooperate, etc.). For example, a tenant can be considered as a passive actor in the case of an energy modernization of a residential building. In any case, the possible measures of intervention should be made transparent, as far as possible, regarding their specific advantages and disadvantages for each affected party. Last but not least, establishing suitable mechanisms for monitoring and assessing the progress regarding the extent to which the various targets (short-, medium or long-term) are achieved is essential for securing continuous improvement in the area (Step 8 – Figure 1). In this way, an understanding can be gained on how effective the plans are and what adaptations of targets and actions are required for progress towards sustainable development.

4. INSTRUMENTS

A broad range of instruments is imaginable, currently under discussion or even tested, that may help to implement the process described above or particular steps of it. In the following, two examples are outlined addressing different facets of urban district development.

4.1 "Urban improvement districts" as a new financial framework

The process of sustainable neighbourhood development is usually associated with substantial financial expenditure and cannot be supported by a top-down strategy alone. Therefore, it is essential to ensure the necessary financial resources for the implementation of the concept by creating incentives for local actors and mobilizing private capital to complement public funds. State and private actors have the common goal to stabilize or revitalize neighbourhoods. One stimulus for the land and property owners can be that an improvement in the quality of the site/location can have a direct and positive effect on the real estate value of their properties through improved performance. Therefore, the traditional methods of urban development (government-driven action) and private-driven initiatives in this field can be seen as two sides of the same coin – there is a place for public–private partnerships, like "Urban Improvement Districts" (UID), in neighbourhood transformation processes. UIDs, e.g. in form of business, housing and neighbourhood improvement districts (BID, HID, NID) (Kreutz, 2009), offer a framework for pooling initiatives to support sustainable neighbourhood development and mark an "in-between position" between the private and public domains. UID's are legally defined areas in which the improvement processes are realised on the basis of private initiative, including the participation and self-organisation of local stakeholders to implement the necessary measures, and the use of financial resources of private stakeholders, e.g. landowners in the case of HID's. To this end, in many of these models a task manager is assigned, who cooperates with both the (local) private stakeholders and the municipal authority. UID's are financed by a tax which is levied by the municipality and collected from all land owners in the area. The authors believe that a process-based sustainability assessment can be effectively combined with the UID's framework. UID can provide the organizational and financial framework for the implementation of sustainability measures identified as a result of an analysis of the present situation.

4.2 "Living labs" as a new form of collaboration and co-creation

There is a basket of living labs around the world focusing on sustainable urban development and including actors from all sectors of society, academia, government and industry, in combination with the community (Salter and White, 2014). Many of them have universities as the driving force for their development and implementation. Living labs distinguish themselves from other innovation approaches in development processes by supporting the participation of multiple stakeholders beyond consultation and towards joint decision-making, focusing on the idea of empowerment and co-creation. Such a process is now being supported and moderated in the research project "Urban Transition Lab 131" by a scientific team appointed by "KIT Centre Humans and Technology" of the Karlsruhe Institute of Technology (KIT), in collaboration with the city of Karlsruhe and many other parties at urban district level. The development of a methodological, transdisciplinary basis and the selection of indicators by the KIT project team are still on-going. Bottom-up indicators will be further developed and agreed on, together with the actors involved in the urban transition lab. This will be achieved by carrying out specific surveys of certain groups of actors in the district. In this context, the residents' general understanding of sustainability has to be investigated. In addition, "fact sheets" will be created for the description and communication of appropriate bottom-up and top-

down indicators, while, in consultation with the municipal administration and other influential stakeholders, the data collection for each individual indicator will be pushed forward. An initial presentation of such "fact sheets" has already been provided (Lützkendorf et al., 2016). Here, the problem of data protection has been proved to be a challenge. One approach is the active provision and release of data through the residents and businesses in the neighbourhood on a voluntary basis - as a form of participation.

5 CONCLUSIONS AND OUTLOOK

Sustainable development of a neighbourhood is a long-term, ongoing process. It is possible and advisable to carry out this process in close interaction with local actors. It is necessary to develop mechanisms that bring together experts and community members to develop indicators that stimulate and measure the progress towards sustainability. In this case, the instrument of "living labs" supports the process by fostering collaboration and co-creation (co-design). Such collaborative actions can provide a flexible indicator set that reflects local values, necessary actions and possibilities to act. The current discussions about the further development of ISO 37120 also point in this direction. Once the final list of indicators best suiting the characteristics of the neighbourhood is acknowledged and widely accepted, the indicators need to be clearly and precisely described and documented. The development of a "factsheet" for each indicator that contains all necessary information is necessary. Within the context of the further development of such factsheets, their purpose should not only be to identify and list all possible data sources and alternative calculation procedures for each indicator, but also to identify the acting stakeholders and their options/opportunities for action to implement specific measures to achieve progress. Besides the growing political commitment worldwide towards the inclusion of local actors in the sustainable neighbourhood development process, it is also important to find solutions to better mobilise capital required for investments in the process. One approach, among others, for this, is the model of Housing Improvement Districts (HID). In the near future, more new models of public-private partnerships should be tested in the context of neighborhood sustainability transformation processes, as a precondition to become more familiar with the new roles and tasks that are associated with it.

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