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ScienceDirect

Procedia Environmental Sciences 38 (2017) 546 – 553

Procedia Environmental Sciences

International Conference on Sustainable Synergies from Buildings to the Urban Scale, SBE16

Assessing a Sustainable Urban Development: Typology of Indicators and Sources of Information

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Abstract

In the field of sustainability assessment of built environment, the focus has started shifting from buildings to neighbourhoods and cities. As a result, numerous assessment systems have emerged to support investors in the design and development of sustainable neighbourhoods. Such approaches, however, can hardly be applied to existing neighbourhoods. The paper explores how "flexible" indicator systems can support the process of sustainable development of existing neighbourhoods. It also deals with issues related to the selection of indicators, identification of data sources and data protection. It is recommended to use such indicators systems to support housing improvement districts (HID) among others.

Peer-review under responsibility of the organizing committee of SBE16.

Keywords: sustainability assessment; urban districts; indicators; indicator-system; typology; housing improvement district; sources of information; stakeholder involvement

1. Introduction

When it comes to the implementation of the principles of sustainable development in the construction sector and their translation into practical actions, the focus has started shifting from single buildings (micro-scale) to entire neighbourhoods and cities (meso- and macro-scale). The recognition of the necessity to start "thinking bigger" comes as a response to the growing concerns over the increase of the total population and environmental impact that has recently reached critical levels in numerous cities and urban areas worldwide. Additionally, the idea of shifting scales stems from a realisation that the sustainability challenge has to do with more than just buildings, but includes numerous complex interrelationships between buildings, open spaces, and transport networks, among others.

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Peer-review under responsibility of the organizing committee of SBE16.
doi:10.1016/j.proenv.2017.03.122

According to the latest progress report of the UN-HABITAT II [1] the urbanization model in place is unsustainable and new conditions need to be defined to achieve inclusive, people-centred and sustainable global development. While cities are crucial "engines" of social and economic growth, they have not succeeded in addressing emerging and existing challenges, such as urban sprawl, congestion, air pollution, poverty, greenhouse gas emissions, etc.

2. Neighbourhood as an object of assessment and scale for intervention

Achieving sustainable urban development is a hugely difficult task to accomplish due to its complex and continuously-evolving nature. Many cities struggle to achieve their commitments to sustainability. Subdividing the "city" system into smaller units and involving "local stakeholders" (i.e. homeowners, business owners, lobbies, associations and unions, local institutions) in the development process and improvement of these units would facilitate such transformations. In this case, local stakeholders are involved not only as people affected by the current urban processes and their socio-economic impacts, but also as co-creators and co-implementers of the final decisions.

The neighbourhood level has increasingly been proved as an appropriate level to implement sustainability principles in urban transformation processes [2]. The terms "district", "neighbourhood" and "community" are used interchangeably throughout the paper. The neighbourhood or district represents a "meso" level of analysis and action between the city and single buildings. Within the boundaries of neighbourhoods, different types of community institutions and social networks are formed, functioning as intermediaries between local individuals, and offering in principle more opportunities for active participation in collective decisions and their implementation. Compared with the city scale, the level of involvement, engagement and motivation of different actors to participate in decisions influencing their living environment and conditions is higher in individual neighbourhoods, as residents are involved more directly and rather share the same living experiences. Hence, implementing interventions at a neighbourhood level often appears to be a more promising option for a transition to urban sustainability. While at the city and building level both conceptual and analytical considerations have been dealt with since many years, neighbourhoods are increasingly moving into the focus of research and policy [3, 4]. However, the spatial boundaries of a neighbourhood cannot always be clearly defined. 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 within which the residents identify themselves and they develop a higher sense of responsibility. A current topic of discussion is how to demarcate a spatial boundary that would be suitable for each specific topic, such as mobility, energy supply or quality of the local supply chains.

Sustainability assessment systems are instruments that allow urban planners, local authorities and other key stakeholders to support an analysis of new developments, as well as of existing districts, from an environmental, social and economic point of view. Particularly, in the case of existing urban districts, they can assist in the identification of problem areas, the development of strategies for improvement and the ongoing monitoring of the success and impact of the adopted sustainability interventions and measures. However, decision-makers are today faced with a great diversity of available indicators and indicator systems. "Fixed" indicator sets are usually found in the already existing neighbourhood sustainability and certification systems and can be effectively used for the comparison of new neighbourhood developments. However, "flexible" indicator sets allowing "context-specific" indicators and being more adjustable to local conditions are more appropriate for measuring the sustainable development of existing neighbourhoods. The last category is the main focus of this paper.

Additionally, it is essential to understand the various purposes, scopes, scales for which each indicator is used, as well as to identify the stakeholders, scope of influence and their possibilities of action that can result in a positive progress in the area to which each indicator is assigned. In this context, the authors explore key issues related to the development of an indicator system (top-down versus bottom-up), a systematic way of classifying and describing the selected indicators taking into account *multiple effects* that indicators may have upon one another and the *impact chains* and interactions that can take place. Finally, considering the different potential forms of co-creation to mobilise local stakeholders and the necessary funding at a district level, the authors discuss in what context and by whom indicator systems to support sustainable neighbourhood development could be used.