



An indicator system for the assessment of sustainability integrated into the project dynamics of regeneration of disused urban areas



Martine Laprise*, Sophie Lufkin, Emmanuel Rey

Laboratory of Architecture and Sustainable Technologies (LAST), Institute of Architecture and the City (IA), School of Architecture, Civil and Environmental Engineering (ENAC), Ecole polytechnique fédérale de Lausanne (EPFL), BP 2225/Station 16, CH-1015 Lausanne, Switzerland

ARTICLE INFO

Article history:

Received 2 October 2014
Received in revised form
1 December 2014
Accepted 3 December 2014
Available online 12 December 2014

Keywords:

Disused urban areas
Urban regeneration
Sustainability assessment
Indicator system
Integrated assessment
Decision-making

ABSTRACT

In the context of sustainable densification of post-industrial European cities, regeneration of disused urban areas offer an important potential of surfaces to recapture. Indeed, these projects can contribute concurrently to densify and revitalize existing built fabrics. Although numerous initiatives of this type can be observed, the integration of sustainability issues is in most cases partial or superficial. As a matter of fact, achieving the goals of sustainable development is not a spontaneous process. It depends upon a proactive search of global quality, integrated into the project dynamics, and a continuous assessment of the environmental, social and economic dimensions of sustainability adapted to the specificities of such projects.

Based on these considerations, this paper introduces the indicator system entitled SIPRIUS, designed for the assessment of sustainability integrated into the project dynamics of regeneration of disused urban areas. First, the methodology that stands behind the development of SIPRIUS is exposed. Then, the paper presents the potential of SIPRIUS and its adequacy with concrete situations through a test application performed on a project underway in Neuchâtel (Switzerland). It reveals that an adapted and structured assessment approach truly contributes to integrating sustainability into regeneration of disused urban areas. Furthermore, future work will include the adaptation of SIPRIUS into a digital monitoring tool in order to make it accessible to key stakeholders involved in this type of operations.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

It is now common knowledge, post-industrial European cities are challenged by urban sprawl, leading not only to an irrational use of the territory but also to negative impacts on the environment, the society and the economy [1,2]. To cope with those consequences in contradiction with the concept of sustainability, a consensus gradually emerges in order to reorient the development of the city inward [3]. The goal is to foster both increased density and improved accessibility, while reducing spatial dissociation of functions. This implies that urban densification is preferred close to public transport services, by promoting untapped potential in the built environment and strengthening secondary mixed-use urban centers. It refers to the compact and polycentric city model [4–6].

Following this model, regeneration of disused urban areas (RDU) can contribute to the densification of the existing built

fabric and to the revitalization of some portions of cities and metropolitan areas [7]. However, although increasing the number of regeneration of disused areas is generally seen as a sustainable land take solution, these projects are not in themselves inherently sustainable [8]. In this regard, achieving sustainability objectives requires a search for global quality, integrated on a voluntary basis into the project dynamics, as well as a constant follow-up of environmental, economic and social dimensions tailored to the specificities of RDU.

Few studies have developed methodologies to assess the sustainability of the regeneration of disused areas, each with different scopes. In all cases, our analysis reveals that these methods are dissociated from the overall project dynamics: they cannot be applied on a regular basis or do not address all the phases of a project.

In order to fill this gap, the present paper introduces the work of Rey entitled SIPRIUS [9] which consist of an indicator system specifically developed for the assessment of sustainability integrated into the project dynamics of RDU. It describes the methodology that stands behind its development. Thereafter, a test application

* Corresponding author. EPFL, ENAC, IA, LAST, LE 1 112/Station 16, CH-1015 Lausanne, Switzerland. Tel.: +41 21 693 08 75; fax: +41 21 693 08 85.

E-mail address: martine.laprise@epfl.ch (M. Laprise).

conducted on a case study in Neuchâtel (Switzerland) is presented. It demonstrates the relevance and applicability of the indicator system to concrete projects of RDUA and to professional practice.

2. Regeneration of disused urban areas (RDUA)

2.1. Specificities

At the outset, disused urban areas have a strong and unique identity, whether positive or negative (real or perceived contamination, economic and social stigma, cultural symbol, sense of insecurity, etc.). Projects on these sites are not restricted to a single building. Quite the contrary, the scale of intervention is rather between local urban planning and architectural project. Hence, the neighborhood scale seems the most appropriate to encompass the full implications of these projects [10,11]. As opposed to new neighborhoods development, RDUA are already transformed and yet abandoned. Economic and ecological potential of existing buildings – and by extension the management of an architectural heritage – implies to take a stance on what needs to be preserved, converted or demolished [12–14]. Moreover, because they are disconnected from their urban context and emptied from a permanent population, projects on disused urban areas cannot either be considered as neighborhood renewals.

In addition, the process of RDUA is highly complex due in part to its long duration. Maintaining consistency throughout the project process involves dealing both with uncertainties and the variation of several elements: conditions, needs, changes in project leaders and actors, modification of general terms, clarification related to the project's evolution, potential contamination, etc. [15–17]. Furthermore, RDUA are characterized by the abundance of private and public involved stakeholders, which tends to add complexity to the process. Indeed, each actor generally focuses on a single aspect or a single phase of the project with varying degrees of influence and interest [18,19].

2.2. Non-automatic sustainability

As a densification strategy, RDUA are likely to contribute to the sustainable development of the city. However, the regeneration of disused areas is unduly praised by public authorities as intrinsically sustainable [20]. Indeed, it is even widely used as a direct indicator of sustainability throughout the European community [21]. Nevertheless, this correlation is not automatically valid: densification must be understood as “a necessary but not sufficient condition” to build on the sustainable development of cities [22,23].

The principle of long term equilibrium of the environmental, social and economic dimensions intrinsic to the concept of sustainable development – known as the three pillars – is nowadays widely accepted and central to its definition. Despite this, RDUA refer often partially to sustainability, in general in favor of environmental considerations [24,25]. This is essentially explained by the availability of concrete ways to measure this dimension and their ease of use [26]. There is also a lack of consensus on what are the significant social and economic impacts of those projects [27,28]. Yet, without taking account of the two latter dimensions, RDUA that appear successful in the short term might be the blighted areas of tomorrow [29]. Above all, integration of sustainability issues into highly complex RDUA asks for the consideration of parameters going far beyond the limits of intuition.

2.3. Need for assessment method integrated in the project dynamics

To facilitate a linkage and complement the three pillars of sustainability, it is essential to act on the basis of sound information

and to put systems in place to collect it as appropriate [20]. Since RDUA are not spontaneously sustainable, assessment of environmental, sociocultural and economic criteria becomes a necessity. To adequately address its role, the assessment must take into account the specificities of RDUA [30–32]. The accuracy of the assessment as to the type and context of the project is required to ensure rigor and credibility of the results [16,24,33]. A “tailor-made” assessment is the only way to provide decision makers with a real account of a given situation [10,34].

Furthermore, optimal integration of sustainability issues cannot be limited to one-off assessment. It must be part of the overall dynamics of the project by allowing a continuous and iterative setting of sustainability objectives. In other words, an integrated assessment provides decision support by establishing a balance between the complexity of information and transparency of results [35]. Early integration of assessment is particularly important because decisions taken at this stage will affect the sustainability of RDUA during their entire life cycle [36]. Since RDUA have a tendency to change over time and require flexibility because of all those involved, having a clear idea of where the project is heading in terms of sustainability is crucial to build a solid foundation for their future [37]. Finally when applied to all phases of the project, integrated assessment supports the communication between the various stakeholders [38].

2.4. Requirements for an adapted and integrated assessment of sustainability

These considerations call for the development of an evaluative approach of sustainability issues tailored to the needs of RDUA and integrated into their project dynamics. This objective can be reached with an indicator system that basically meets the following specifications:

2.4.1. Search for a global quality

Involves a wide and holistic view of sustainable development. It must cover a relatively broad range of parameters to address the environmental, social and economic sustainability, equally and concurrently.

2.4.2. Appropriateness to RDUA

Covers the inherent specificities of RDUA. In particular, adaptation to the scale and complexity of the project and consideration of a site already built.

2.4.3. Inclusion of the principles of monitoring

Ensures an operational assessment that provides a visualization of the various phases of the project and the establishment of reference values in order to follow and act on performance trends.

3. Limits of existing assessment

There are numerous methods for the assessment of sustainability in the field of the built environment. Nevertheless, very few relate specifically to regeneration projects of disused areas, and the analysis of their performance highlights their limits. Indeed, these methods do not take into account the overall dynamics of the project and are not adapted to a structured and continuous follow-up in order to make informed choices and communicate on the results. For the purpose of this paper, two broad categories of methods can be defined:

Download English Version:

<https://daneshyari.com/en/article/248049>

Download Persian Version:

<https://daneshyari.com/article/248049>

[Daneshyari.com](https://daneshyari.com)