



<http://www.diva-portal.org>

Postprint

This is the accepted version of a paper presented at *World Sustainable Built Environment Conference 2017 Hong Kong*.

Citation for the original published paper:

Lind, J., Malmqvist, T., Wangel, J., Belkert, A-K. (2017)  
Citylab Action: Guiding Sustainable Urban Development  
In: *Conference Proceedings - World Sustainable Built Environment Conference 2017  
Hong Kong Hongkong*

N.B. When citing this work, cite the original published paper.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-235743>

# Citylab Action: Guiding Sustainable Urban Development

Jonas LIND<sup>a</sup>, Josefin WANGEL<sup>b</sup>, Ann-Kristin BELKERT<sup>c</sup>, Tove MALMQVIST<sup>d</sup>

<sup>a</sup> KTH Royal Institute of Technology, Sweden, [jonas.lind@sgbc.se](mailto:jonas.lind@sgbc.se)

<sup>a</sup> Sweden Green Building Council, Sweden, [jonas.lind@sgbc.se](mailto:jonas.lind@sgbc.se)

<sup>b</sup> KTH Royal Institute of Technology, Sweden, [josefin.wangel@abe.kth.se](mailto:josefin.wangel@abe.kth.se)

<sup>c</sup> Sweden Green Building Council, Sweden, [ann-kristin.belkert@sgbc.se](mailto:ann-kristin.belkert@sgbc.se)

<sup>d</sup> KTH Royal Institute of Technology, Sweden, [tove.malmqvist@abe.kth.se](mailto:tove.malmqvist@abe.kth.se)

---

## ABSTRACT

This article reports on the development of the certification scheme Citylab Action. The process of development is described, design considerations for the scheme are accounted for, and results from a pilot study, in which twelve projects are testing the first part of the scheme, are provided. The scheme has been developed through an iterative process, involving more than 400 practitioners and experts. First a draft definition of sustainable urban development was formulated, based on an analysis of how urban development can contribute to national and international goals for sustainable development. The draft was then discussed in a series of workshops, after which the resulting comments and suggestions were used to develop the draft definition into a draft scheme. This resulted in the definition of 17 objectives for sustainable urban development. Moreover, ten effects were defined, clarifying what the scheme ultimately seeks to support.

The first version of the guide was released in October 2015. In essence, the guide defines what is important to consider when planning an urban development project. The guide was also complemented with a program for urban development projects, in which urban development projects that want to focus in sustainability can share knowledge and experiences. A pilot version of the program is running January to December 2016. The next step in developing the scheme is to follow up on the pilot, as well as to complement the scheme with indicators and criteria for certifying the planning process, as well as for ex-post evaluation of the performance of the urban development projects.

*Keywords: sustainable neighbourhood, certification scheme, pilot-study*

---

## 1. INTRODUCTION

Certification schemes for sustainable neighbourhoods work through establishing a number of criteria and related indicators, supporting specific processes (e.g. public consultation) and features (e.g. solar panels) as well as for ex-post performance evaluation (e.g. kWh/m<sup>2</sup> and year). Several studies have dug into these systems, identifying a few re-occurring challenges such as the balance between different dimensions or impact categories/spatiality of sustainability and the balance between mandatory and non-mandatory criteria

Since 2010 there has been an on-going discussion in the Swedish built environment sector about the need for a certification scheme for sustainable urban development, developed for the Swedish context. Within this discussion different international certification schemes were evaluated, showing that while certification schemes are seen as having clear benefits, they need to be complemented with a forum for learning and exchange. This article reports on the development of the certification scheme Citylab Action. The process of development is described, design considerations for the scheme are accounted for, and results from a pilot study, in which twelve projects are using the first part of the scheme, are provided.

## 2. DEVELOPING CITYLAB ACTION

### 2.1 Beta-testing BREEAM communities

To investigate whether BREEAM-C (BREEAM Communities) would be suitable for a Swedish context Sweden **Green Building Council (SGBC) and the project "Nordic Built - Nordic Urban Development" arranged a series of beta-tests.** The beta-tests were carried out in cooperation with 22 urban development projects in Sweden which tested themselves against the **BREEAM-C's manual to evaluate whether, and for what aspects, compliance with the certification scheme would lead to a more sustainable urban development or not.** In order to collect the different

views and opinions on BREEAM-C all beta tests were thoroughly documented. Moreover, a SWOT-analysis of using BREEAM-C in Sweden was carried out, the contact persons for each of the participating urban development project was interviewed [see 9] and a two-day concluding workshop was held when all beta-tests had been conducted. The concluding two-day workshop gathered partly the same persons as the interviews but also others that had been involved in the beta-tests. These evaluations together with the overall result from the beta-tests were the main basis when deciding whether to develop a Swedish certifications scheme or not. The results from the beta-tests, SWOT-analysis, interviews, and workshop pointed in two main directions. On the one hand, the participants recognised a number of positive effects of using a certification scheme. Certifying an urban development project is an opportunity to promote both the urban area being developed and the municipality as a whole, something that was seen as a way to attract both inhabitants and companies to the municipality. Using a certification scheme was also seen as providing a structure for integrating sustainability considerations into the **development process. This involved both using the certification as a 'checklist' to make sure that all** aspects are considered, but also using the certification scheme as an argument to implement actions which would be difficult to get realised otherwise. On the other hand, the respondents and workshop participants also raised some drawbacks of using BREEAM-C as a certification scheme in Sweden. BREEAM-C is based on a British context that in several ways do not correlate to the Swedish planning context resulting in a need for major adaptations. These differences include legislation, standards, praxis, the organisation of planning etc. An adaptation would also have needed to consider the differences in how different aspects of sustainability is handled in the two countries. Moreover, besides from commenting on the manual as such, several participants also voiced a need for a network for people working with sustainable urban development, to facilitate knowledge sharing between different actors and urban development project, something that BREEAM-C did not support. SGBC could thus conclude that while there was a clear recognised added value of a certification scheme, especially if it was complemented with a networking components, these values were of a general character and not related to BREEAM-C as such. Consequently, instead of adapting BREEAM-C to a Swedish context, SGBC decided to develop a new certification scheme.

## 2.2 Developing a new system – Guide, programme and certification

The creation of a new Swedish certification scheme started with the definition of draft core issues. These were based on the **conclusions of the governmental investigation "The Delegation for Sustainable Cities" [12], national environmental objectives, the beta tests and other workshops from earlier in the project [10] [11] etc.** The draft core issues were then discussed during ten open workshops in 2014-2015, lead by the research project Decode and co-organised with ten municipalities, involving about 400 people from government agencies, municipalities, developers, real estate companies, energy companies, consultants, architects, research institutes, universities, politicians etc. Using the core issues as starting point, the workshops focused on what to include in a certification scheme and transforming the core issue into concrete measures and desired outcomes.

After the workshops the draft core issues were handed to fifty experts on urban development for further **development. SGBC's members (real-estate owners, municipalities, property developing companies, consultant companies etc...) were also involved through monthly web-meetings.** Parallel projects working with sustainable urban development such as C/O City and Södertörnsmodellen also contributed to the development. The expert group handled all comments and suggestions. In June 2015 a demo version was released followed by a five-month referral process to which 18 of SGBCs member-organisations provided feedback. Additional input to the revision came from the UN Sustainable Development Goals (SDG) established in September 2015. In October 2015 the **first version of Citylab Action's "Guide for Sustainable Urban Development" could be released. The Guide is not yet developed for certification but concentrates on what sustainability issues that are important and how to work with these issues to create a more sustainable urban development.**

As concluded in the beta tests of BREEAM Communities, there was a need for something more, which a guide or a certification scheme could not fulfil: a need for knowledge sharing between different actors and urban development projects. The program Citylab Action was thus developed to support public and private stakeholders to develop their project specific sustainability programs and action plans. The aim of the program was also to facilitate a sharing of knowledge, experiences and ideas within the Swedish built environment sector.

### 3 INTRODUCING CITYLAB ACTION

#### 3.1 The guide

The Guide is structured in three main parts: Desired Effects (Table 2) stipulate the intended outcome, and as such work as a definition of a sustainable city; the Sustainability Issues (Table 1) provide a concretization of what issues projects need to work with in order to realise the Desired Effects; and the Working Process (Table 2) which formulates aspects regarding management, participation and innovation throughout the project, which are fundamental to turn visions into reality.

Category	Issues	Issues elaborated
<i>Spatial and integrated urban qualities</i>	1 Built environment	Resource-efficient use of land to create a physically connected and socially integrated city.
	2 Cultural values	Preservation and use of existing cultural values and heritage.
	3 Functions	Diversity in design and functions (housing, service, culture, work-places).
	4 People	A good living environment with a minimized environmental footprint for residents, visitors and workers.
<i>Proximity and accessibility to functions</i>	5 Transport	Proximity and accessibility to urban functions and support sustainable transport (walking, biking, public transport, and delivery).
	6 ICT	Development and provision of information and communication technologies and data to support sustainability.
	7 Places	Access to safe and secure public and semi-public places in built and natural environments for people no matter ethnicity, gender, disabilities or age.
	8 Schools	Good indoor and outdoor environment in schools and preschools.
<i>Air, light and soundscape</i>	9 Air	Good air quality.
	10 Light	Good lighting conditions in support of orientation, road safety, security and aesthetics.
	11 Soundscape	Noise management so as to avoid negative health effects such as stress, hypertension, sleeping and concentration difficulties or general discomfort.
<i>Multifunctional green areas and climate adaptation</i>	12 Green areas	Multifunctional green areas and ecosystem services providing good quality of air, soundscape, and microclimate, supporting physical, psychological and social wellbeing.
	13 Climate adaptation	Increased robustness and decreased vulnerability for future extreme weather events, sea level rise and increase in temperature.
<i>Sustainable resource use</i>	14 Material flows	Low resource use and the establishment of circular flows of biological renewable and technical non-renewable resources.
	15 Products	Choice of products and materials that minimize emissions of hazardous substances to air, water and soil, and that creates possibilities for good working conditions.
	16 Water	A reliable and efficient water supply system, and a sustainable management of storm and sewage water.
	17 Energy	Minimized use of energy, coming from renewable energy sources with delimited impact on health and environment, and with close to zero GHG emissions.
	Synergies and conflicts	Conflicts between project targets and local, regional, national or international targets; Synergies and conflicts between project targets; Risk analysis for not reaching the targets; Identification of success factors

Table 1: Sustainability issues in Citylab action

Desired effects	Working process
1 Health and wellbeing	<i>Organisation</i> Management, skills staffing and coordination of sustainability.
2 Equality and social cohesion	
3 Participation and influence	
4 Safe living environment	<i>Collaboration</i> Strategies, processes, tools and methods for coordination of the different actors involved in the project.
5 Good livelihoods	
6 Attractive city-life	
7 Resource management	<i>Participation</i> Strategies for participation of inhabitants and local actors, and for how to handle conflicts of interest.
8 No negative climate impact	
9 No negative environmental impact	
10 Resilience and flexibility	<i>Innovation</i> Strategies to promote innovation.

Table 2: Desired effects and working process

Citylab Action's "Guide for sustainable urban development" looks quite different from other certification schemes. The Guide is not a "technical manual", stating how many points or what grade a certain action is worth or equal to and there are just a few issues that are formulated in quantitative terms. Instead the idea of the guide is to be a structure for the collaboration between the actors involved in an urban development project and support the process of transforming visions about sustainable urban development into concrete action. It should also be adaptable to different projects of different sizes and with different sustainability challenges. Indeed, this flexibility also brings about with challenges when it comes to certification, for which assessment criteria and indicators will need to be established.

### 3.2 The Program

As previously mentioned, one important part of the idea of Citylab Action is also to facilitate a sharing culture so **that different actors within the Swedish built environment sector learn from each other's mistakes and successes.** In order to do that a Program was developed, based on the Guide, to support urban development projects with sustainability ambitions. The Program builds on the pedagogical concepts of the flipped classroom and peer learning. During a 12-month period, participating projects meet at six two-day meetings. At every meeting one process theme and several sustainability issues from the Guide is discussed (see Table 3). Also, external experts are invited to speak and different exercises are arranged to make it possible to try new methods or to get new perspectives. The participating projects then starts their internal discussions about how they work with the issues and themes in their respectively projects and how to develop that work. After the meeting the work continues at home, where every project formulates their own targets, action plans and strategies to follow up the targets and actions. At the next meeting the participating projects presents their targets, action plan and strategies for follow-up for each other in so called peer-groups, letting individuals from the projects sit down and discuss the different **projects' respective difficulties and share ideas for the development. At the sixth and final meeting the projects present their final results: a sustainability program for the project and a plan for implementation and follow-up.**

	Meeting 1	Meeting 2	Meeting 3	Meeting 4	Meeting 5	Meeting 6
	2016:01	2016:03	2016:05	2016:08	2016:10	2016:12
	Uppsala	Göteborg	Eskilstuna	Norrköping	Helsingborg	Malmö
Process theme	Organisation	Participation	Collaboration	Innovation	Implementation	
Sustainability Part 1	Conditions for sust. development	Place and connectivity	Mixed, heterogeneous city	Energy use and renew-able energy	Social life and sustainable behaviour	
Issues	1-17	1-4	3, 5-8	17	4, 7-8	Presenting sustainability program
Sustainability Part 2	Sustainable opportunities and life quality	Ecosystem services and green structures	Sustainable transport, mobility and ICT	Resource management	Sustainable quality of life	
Issues	1-17	12-13	9-11	14-16	4, 7-8	

Table 3: Structure and content of Citylab action programme

To promote the sharing culture of Citylab Action, only projects that have been participating in the Program can be certified. However, a project does not have to certify or try to certify according to Citylab Action to participate in the program.

#### 4. PILOTING CITYLAB ACTION

In January 2016 a pilot-version of the program was launched. Twelve different urban development projects (Table 4) participate in six two-day meetings, running January to December 2016.

Participating projects	New development	Retrofitting with new development	Mostly housing	Mixed use	Mostly business	Municipality
Barkarbystaden TRE	x			x		Järfälla
Campus Albano	x			x		Stockholm
Drottning H		x	x			Helsingborg
Falsterbokanalen	x			x		Vellinge
Lommarstranden	x		x			Norrälje
Masthuggskajen	x			x		Göteborg
Norrälje Hamn	x			x		Norrälje
Rosendal	x			x		Uppsala
Skeppsbron	x			x		Jönköping
Solna Business Park		x			x	Solna
Stadsläkning Lagersdal		x	x			Eskilstuna
Täby Park	x			x		Täby

Table 4 Overview of projects participating in the pilot version of the program

At the time of writing this paper 4 out of 6 meetings have taken place, implying that all findings must be treated as preliminary. The findings presented here are mainly based on the evaluations that participants have been asked to fill in after each meeting. With a response rate of around 50 %, a vast majority (95 %) have found the program valuable and would recommend others to participate. All parts of the program; lectures, exercises, working within the project group, discussing issues in mixed groups; are popular with 85-98 % saying it was valuable for the project. Several of the contact persons for the participating projects have also expressed their satisfaction about the program, pointing to that it gives a needed structure to the sustainability work, that it gives the project an otherwise missing forum for discussions between the involved actors, and that it makes it possible to ensure that **sustainability is integrated in the project and does not become "bolt on" project.**

Since the Program is based on the Guide, the pilot version of the program is also a test of the first version of the Guide. The Guide has not yet been evaluated in any structured manner apart from that the participants in the Program has been encourage to give comments by post-it notes during the meetings as well as in a digital platform between the meetings. The comments have so far been focused on formulations of specific sentences, aspects missing among the issues and questions about what, more specifically, is meant with certain formulations.

Participants in the Program express that they find the Guide useful (also see [19]) as a checklist to ensure that they do not miss any important issues. The desired effects are here crucial and used at every meeting and by the projects back home to evaluate objectives and planned actions to see whether the project as a whole steer towards all desired effects or just some of them. Finding ways to optimise the actions to steer towards more than one of the desired effects at a time. One of the urban development projects even reorganised their organisation after the first meeting in the program. The new organisation was based on the recognition that to ensure that sustainability not becomes a special interest guarded by a certain group, it must be integrated into the entire organisation.

#### 5. CONCLUDING DISCUSSION

Looking at the preliminary results of the evaluation of the pilot version of the Program, the participants seem satisfied with how the Guide and the Program helps them with formulating their own objectives, action plans and strategies for follow-up. Based on the evaluation we can also draw the preliminary conclusion that the Guide and the Program together seem to cater for the two key functions of a certification scheme requested by the participants in the beta-tests and workshops: a structure and a checklist for action, and a forum for sharing of knowledge, ideas and experiences. This shows that involving the target group early in the process of creating Citylab was important in order to create something that suited the needs of both private and public stakeholders.

Even though participants express a satisfaction of the Guide and the Program there are work left to do. First of all, the Guide needs to be developed with assessment criteria for both the planning phase and to evaluate ex post performance. Moreover there is a need to establish routines for continuous evaluation and development of the Guide and the Program in order to keep it up to date with how technology and society develop. Finally, given that it is the Program that is the most innovative part of Citylab Action, the knowledge sharing and learning aspect of the system would benefit from deeper theorizing.

## REFERENCES

- [1] Wangel, J., Wallhagen, M., Malmqvist, T., Finnveden, G., 2016. Certification systems for sustainable neighbourhoods: What do they really certify? *Environ. Impact Assess. Rev.*, 56, pp. 200-213.
- [2] Sharifi, A., Murayama, A., 2013. A critical review of seven selected neighborhood sustainability assessment tools. *Environ. Impact Assess. Rev.*, 38, pp. 73–87.
- [3] Berardi, U., 2013. Clarifying the new interpretation of the concept of sustainable building. *Sustainable Cities and Society*, 8, pp. 72–78.
- [4] Zhou, C., Dai, X., Wang, R., Huang, J., 2011. Indicators for Evaluating Sustainable Communities: A Review. *Shengtai Xuebao/Acta Ecologica Sinica*, 31, pp. 4750–4759
- [5] Haapio, A., 2012. Towards sustainable urban communities. *Environ. Impact Assess. Rev.*, 32 (1), pp. 165–169.
- [6] Sharifi, A., Murayama, A., 2014. Neighborhood sustainability assessment in action: cross-evaluation of three assessment systems and their cases from the US, the UK, and Japan. *Build. Environ.*, 72, pp. 243–258.
- [7] Garde, A., 2009. Sustainable by design?: insights from U.S. LEED-ND pilot projects. *J. Am. Plan. Assoc.*, 75 (4), pp. 424–440.
- [8] Kyrkou, D., Karthaus, R., 2011. Urban sustainability standards: predetermined checklists or adaptable frameworks? *Procedia Engineering*, 21, pp. 204–211.
- [9] Lind, J., 2014. BREEAM Communities – Dyra prestigeprojekt för internationell marknadsföring eller smidigt verktyg som standard för stadsplanering?, Stockholm: Degree project at KTH Royal Institute of Technology.
- [10] Sweden Green Building Council, 2014. Slutrapport Betatester Resultat från stadsutvecklingsprojekt som har testat och utvärderat BREEAM Communities, Sundbyberg: SGBC.
- [11] Björk Jónsdóttir, S. et al., 2016. Nordic Built - Nordic Urban Development, u.o.: NORDIC INNOVATION PUBLICATION.
- [12] Delegationen för hållbara städer, 2012. Femton hinder för hållbar, Statens offentliga utredningar: (english version available at: <http://www.boverket.se/contentassets/b70dc5ef8b9f456fac54ad82fc135448/barriers-to-sustainable-urban-development.pdf> )
- [13] Decode, 2016. DECODE – Community Design for Conflicting Desires, u.o.: Final Report Vinnova Challenge-driven Innovation.
- [14] UN, 2015. Sustainable Development Goals. [Online] Available at: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- [15] C/O City, 2015. C/O City, Urbana ekosystemtjänster, Stockholm: Final Report Vinnova Challenge-driven Innovation.
- [16] Södertörnsmodellen, 2016. Södertörnsmodellen, Stockholm: Final Report Vinnova Challenge-driven Innovation.
- [17] Strayer, J. F., 2012. How Learning In An Inverted Classroom Influences Cooperation, Innovation And Task Orientation. *Learning Environ Res*, 15(2), pp. 171-193.
- [18] Mazur, E., 1997. **Peer Instruction: A User's Manual**. Upper Saddle River, N.J.: Prentice Hall.
- [19] Liljefors, P., 2016. Social sustainability in Swedish urban development – what does it mean? A case study of three Citylab Action pilot projects. Degree project at KTH Royal Institute of Technology.