PLANLÆGNINGSVERKTØJER FOR BÆREKRAFTIGE BYOMRÅDER – ET INTERNATIONALT PERSPEKTIV PÅ BRUG AF VÆRKTØJER

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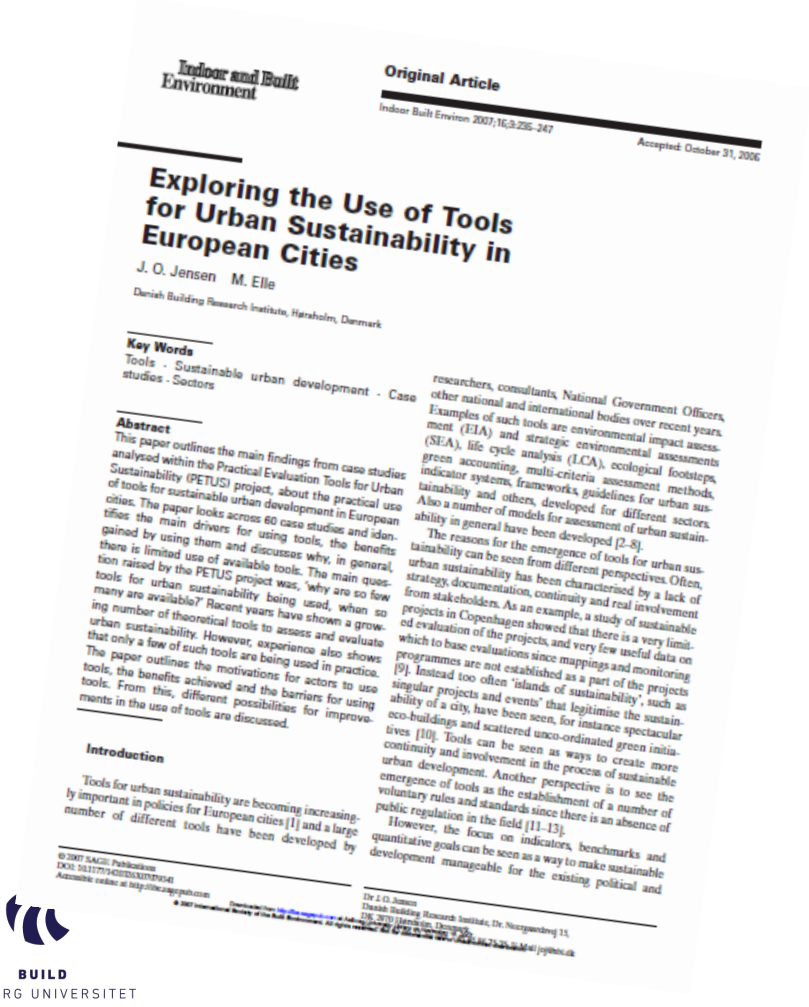
Findings from an EU-project on tools for urban sustainability

- Practical Evaluation Tools for Urban Sustainability (PETUS)
- Case-studies of 60 projects across EU including use of tools
- Background: Many tools developed, but very few being used in practice
- Why is that?



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Exploring the Use of Tools for Urban Sustainability in European Cities

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Key Words

Tools · Sustainable urban development · Case studies · Sectors

Abstract

This paper outlines the main findings from case studies analysed within the Practical Evaluation Tools for Urban Sustainability (PETUS) project, about the practical use of tools for sustainable urban development in European cities. The paper looks across 60 case studies and identifies the main drivers for using tools, the benefits gained by using them and discusses why, in general, there is limited use of available tools. The main question raised by the PETUS project was, 'why are so few tools for urban sustainability being used, when so many are available?' Recent years have shown a growing number of theoretical tools to assess and evaluate urban sustainability. However, experience also shows that only a few of such tools are being used in practice. The paper outlines the motivations for actors to use tools, the benefits achieved and the barriers for using tools. From this, different possibilities for improvements in the use of tools are discussed.

Introduction

Tools for urban sustainability are becoming increasingly important in policies for European cities [1] and a large number of different tools have been developed by researchers, consultants, National Government Officers, other national and international bodies over recent years. Examples of such tools are environmental impact assessment (EIA) and strategic environmental assessments (SEA), life cycle analysis (LCA), ecological footsteps, green accounting, multi-criteria assessment methods, indicator systems, frameworks, guidelines for urban sustainability and others, developed for different sectors. Also a number of models for assessment of urban sustainability in general have been developed [2–8].

The reasons for the emergence of tools for urban sustainability can be seen from different perspectives. Often, urban sustainability has been characterised by a lack of strategy, documentation, continuity and real involvement from stakeholders. As an example, a study of sustainable projects in Copenhagen showed that there is a very limited evaluation of the projects, and very few useful data on which to base evaluations since mappings and monitoring programmes are not established as a part of the projects [9]. Instead too often 'islands of sustainability', such as singular projects and events' that legitimise the sustainability of a city, have been seen, for instance spectacular eco-buildings and scattered unco-ordinated green initiatives [10]. Tools can be seen as ways to create more continuity and involvement in the process of sustainable urban development. Another perspective is to see the emergence of tools as the establishment of a number of voluntary rules and standards since there is an absence of public regulation in the field [11–13].

However, the focus on indicators, benchmarks and quantitative goals can be seen as a way to make sustainable development manageable for the existing political and

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Many different types of tools

Process tools: Tools on how to manage a project or policy on sustainability; which phases to go through, how to involve stakeholders, types of tools to be used, how to analyse the situation, etc. This type includes frameworks, environmental assessments, policies, strategies, programs and checklists

Calculation tools: Tools for calculating the environmental outcome from different types of solutions, products or procedures, in different sectors. Calculation tools include Life Cycle Analysis, economic and social evaluation tools etc.

Assessment tools: Tools to weight different aspect of sustainability (environmental, economic, social), in order to illustrate differences or prioritise between different solutions. This group includes multi-criteria assessment tools, evaluation procedures, surveys and public discussions.

Monitoring tools: Indicators and benchmarks for monitoring and policy formulation on sustainability. This type also includes green accounts.

Modelling tools: Computer modelling that allows prediction of how systems will react under different conditions. Used for prediction of consequences from different solutions

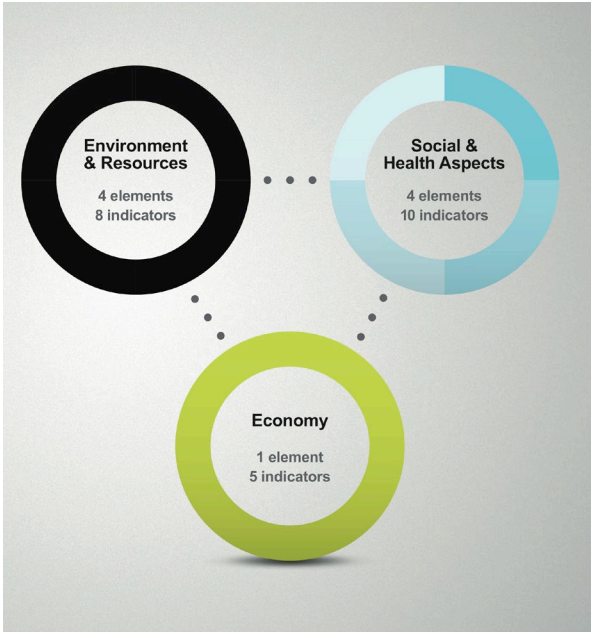
What characterizes the use of tools in practice?

- Limited knowledge about tools amongst planners and decision-makers
- Uncertainty about outcome
- When existing tools are used: Strong adaptation to the specific case and context
- Many locally developed tools: Often used by the ones having developed the tools, and often used only once or few times
- Tools often used *project-specific* and not as a part of a *policy*
- Tools often used in projects where sustainability goals and means are prioritised and largely defined already

Examples on locally developed assessment tools

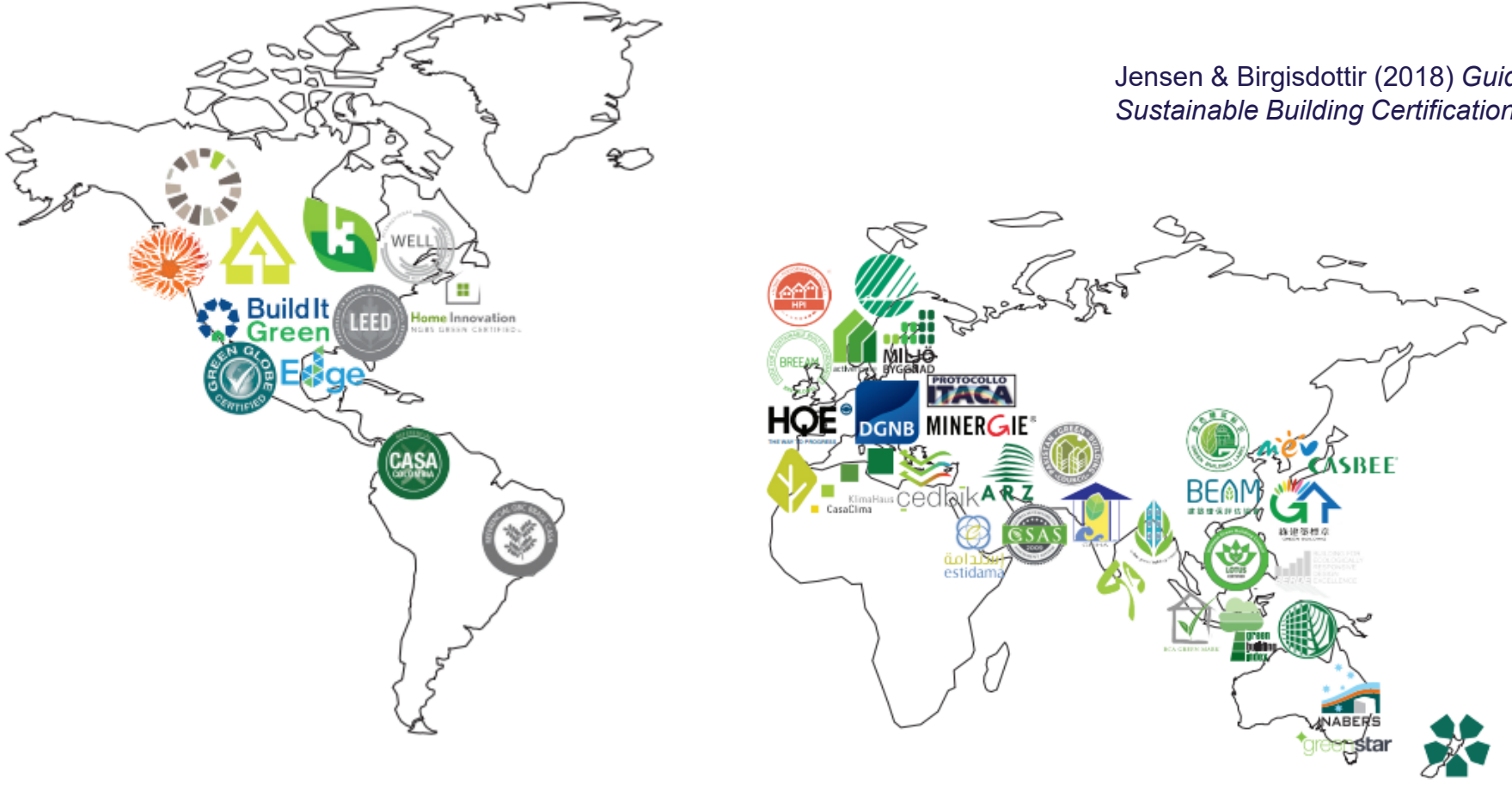
Copenhagen Municipality
Urban Sustainability Tool
”Rosetten”

Aalborg Municipality
Sustainability Tool
”Blomsten”



Realdania tool for Sustainable Urban Development

Increasing number of international standards for Building Certification and Neighborhood Sustainability Assessment Tools



Jensen & Birgisdottir (2018) *Guide to Sustainable Building Certifications*

Sharifi et al (2021) Neighborhood sustainability assessment tools: A review of success factors. *Journal of Cleaner production 293(2021)*

- 105 Research studies of NSA tools published
- 40 NSA tools identified worldwide

Table 1
Tools studied in the literature.

Tool	Main developer (s)	Origin	Year	Latest version	Count
LEED-ND	US Green Building Council (USGBC)	US	2009	2018	88
BREEAM Communities	Building Research Establishment (BRE Global)	UK	2009	2012	40
CASBEE-UD	The Institute for Building Environment and Energy Conservation (IBEC)	Japan	2007	2014	30
Green Star Communities	Green Building Council Australia (GBCA)	Australia	2012	2016	11
HQE2R	Scientific and Technical Center for Building (CSTB)	France	2001	-	8
Pearl Community Rating System	Abu Dhabi Urban Planning Council	UAE	2010	-	8
IGBC Green Townships	Indian Green Building Council	India	2008	-	6
Global Sustainability Assessment System	Gulf Organization for Research and Development	Qatar	2007	-	6
DGNB for Districts	German Sustainable Building Council	Germany	2012	-	5
GBI Township	Greenbuildingindex Sdn Bhd (GSB)	Malaysia	2011	-	5
BCA Green Mark for districts	Building and Construction Authority (BCA)	Singapore	2009	2017	5
EnviroDevelopment	Urban Development Institute of Australia (UDIA)	Australia	2006	-	4
STAR Communities	STAR Communities (now merged with the USGBC)	US	2012	2016	4
Neighborhood Sustainability Framework (NSF)	Beacon Pathway	New Zealand	2005	2014	4
EarthCraft Communities	Greater Atlanta Home Builders Association, the Atlanta Regional Commission, the Urban Land Institute, etc.	US	2005	2014	3
Ecocity	EU research project	EU	2002	-	3
One Planet Communities	BioRegional Development Group	UK	2004	-	3
AQUA Bairro e loteamento label	Fundação Vanzolini	Brazil	2011	-	2
EcoDistricts	EcoDistricts	US	2012	-	2
Green Township Index	Siew (2018)	Malaysia	No data	-	2
Green Rating for Integrated Habitat Assessment (GRIHA LD)	GRIHA Council and The Energy and Resources Institute	India	2015	-	2
Sustainable Building Tool (SBTool)	International Initiative for a Sustainable Built Environment (iiSBE)	Canada	2007	2020	2
Sustainable Community Rating (SCR)	VicUrban, the Victorian Government's land development agency	Australia	2007	-	2
EcoQuartier	Ministères Transition écologique Cohésion des territoires	France	2012	2020	1
2030 Districts	Architecture 2030	US	2010	-	1
Assessment Standard for Green Eco-districts (ASGE)	Ministry of Housing and Urban-Rural Development of the People's Republic of China	China	2018	-	1
Building Environmental Assessment Method (BEAM) Plus Neighborhood Assessment Tool	Hong Kong Green Building Council	Hong Kong (China)	2016	-	1
Comprehensive Assessment Method for Sustainable Urban Development (CAMSUD)	Ali-Toudert et al. (2019)	Germany	2019	-	1
Circles of Sustainability	UN Global Compact Cities Programme	Australia	2014	-	1
Conavi CEV Mexican Code	National Housing Commission	Mexico	2015	-	1
EEWH Assessment System for Eco-community	Architecture and Building Research Institute	Taiwan	2010	-	1
Enterprise Green Communities	Enterprise Community Partners	US	2004	2020	1
Green Star SA (South Africa)	Green Building Council South Africa	South Africa	2017	-	1
GreenTRIP	TransForm	US	2008	-	1
Living Community Challenge	International Living Future Institute	US	2014	2017	1
SNM (Successful Neighborhood Model)	author of the paper	South Africa	2019	-	1
SPeAR (Sustainable Project Appraisal Routine)	ARUP	UK	2000	2017	1
Sustainable Sites Initiative (SITES)	American Society of Landscape Architects	US	2009	2015	1
VicUrban Sustainability Charter (Master Planned Community Assessment Tool)	Government of Victoria	Australia	2006	-	1
Wulvern Indicators of Neighborhood Sustainability (WINS)	Wulvern	UK	2006	-	1

Uptake and location of NSA tools

Table 4
Frequently used NSA tools.

Frequently used tools	
Tool	Count
EcoQuartier	486
LEED-ND	473
Environdevelopment	140
Star Communities	75
Green Star communities	70
DGNB for Districts	65
SITES	62
BREEAM Communities	57
GREENTRIP	51
2030 Districts	22
Living Community Challenge	20
EcoDistricts	17
One Planet Communities	16
HQE2R	14
Earthcraft Communities	11
GBI Township	11
NSF	10
GRIHA LD	8
BEAM	8
Circles of sustainability	6
BCA Green Mark	6
CASBEE-UD	5
Ecocity	4
Green Star SA	2

Table 5
Location of certified projects.

Location of certified projects	
Country	Count
United States	626
France	500
Australia	215
China	53
Germany	48
Canada	45
United Kingdom	42
Malaysia	19
Japan	11
New Zealand	10
Turkey	9
India	9
Denmark	8
Brazil	7
Singapore	6
Spain	5
Norway	5
Italy	4
Sweden	4
Finland	4
South Africa	4
Iceland	3
Poland	3
Luxembourg	3

Lessons from NSA studies

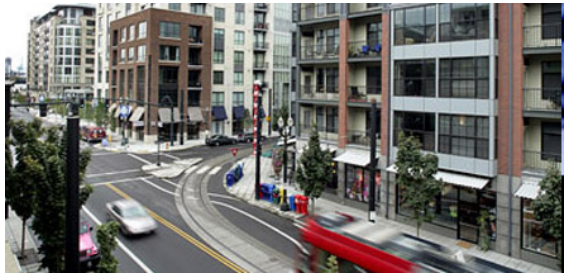
Benefits:

- Some evidence (mainly LEED ND) that NSA tools increase the environmental performance of the areas (e.g. energy efficiency improvements, reduced travel, walkability enhancement, more physical activity amongst children
- Using NSA standards implies co-benefits
- Better project management

Challenges:

- Little evidence on socio-economic performance, e.g. difficulties in delivering affordable housing
- Limited market uptake

NSA tools in action



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*

- Hoyt Yards, Portland (US)
- Media City, Manchester (UK)
- Koshigaya Lake Town (Jap)

“The results show that social, economic, and institutional aspects are not adequately accounted for in theory and practice. Practice of neighborhood sustainability assessment is, to a large extent, market-driven and characterized by the dominance of the environmental aspects of sustainability. Also, results indicate that assessment tools can co-evolve through learning from their successes and failures. Results of this study can be used for optimizing the assessment tools”.

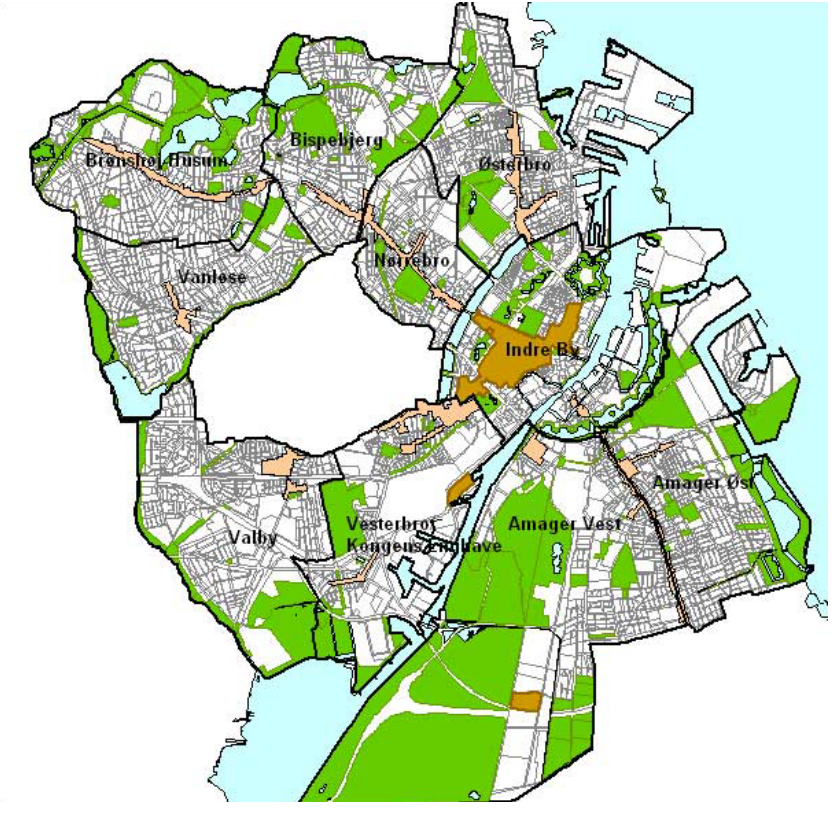
Many tools are good in theory – but they need to work in practice! Which qualities should a tool have?

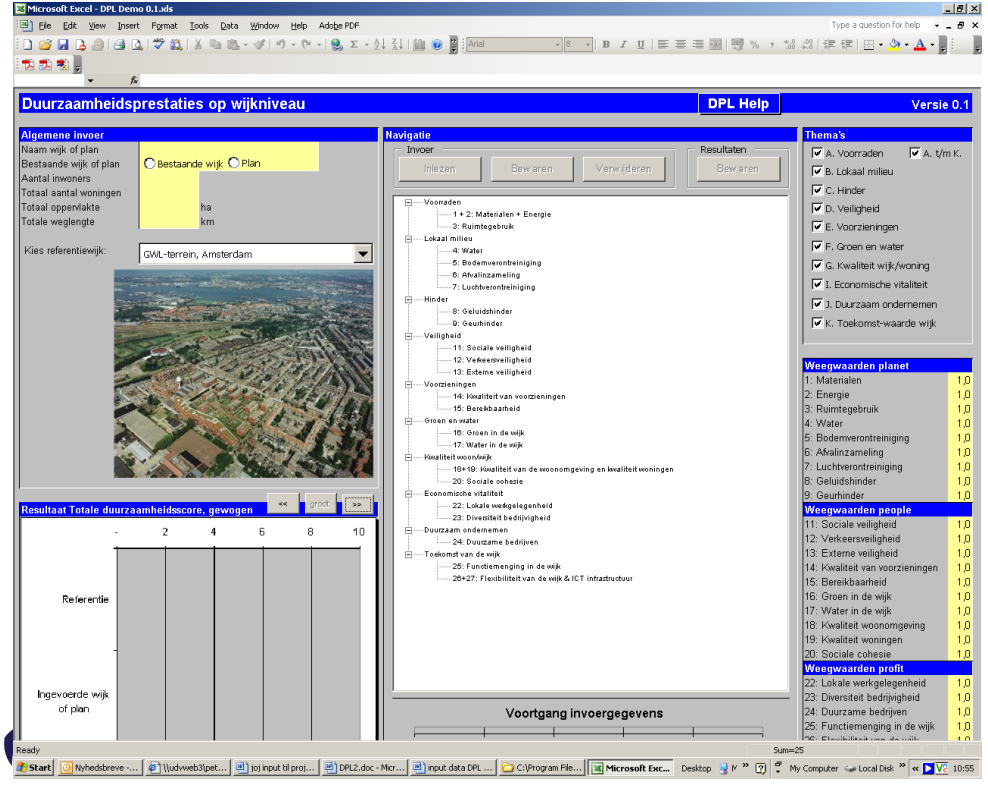
- Local adaptation possible
- Credibility (scientific legitimacy, 3rd party assessment)
- Transparency
- User-friendliness
- Give clear message (indicators)
- Involve stakeholders
- Demonstrate alternatives
- Based on accessible data
- Visibility to other actors (profiling and PR)
- Correspondance with overall strategic plans
- Recognisable, i.e. other actors use the tool as well
- Regular updates of the tool

Data-dilemma: Simplicity versus credibility

	Simple tools: Labels, indicators	Complex tools: LCA, cost-benefit
Benefits	Clear guidelines, visible message, easy to use => many users	Scientific and environmental credibility
Risk	Little credibility	Many data, little transparency, difficult to use => few users

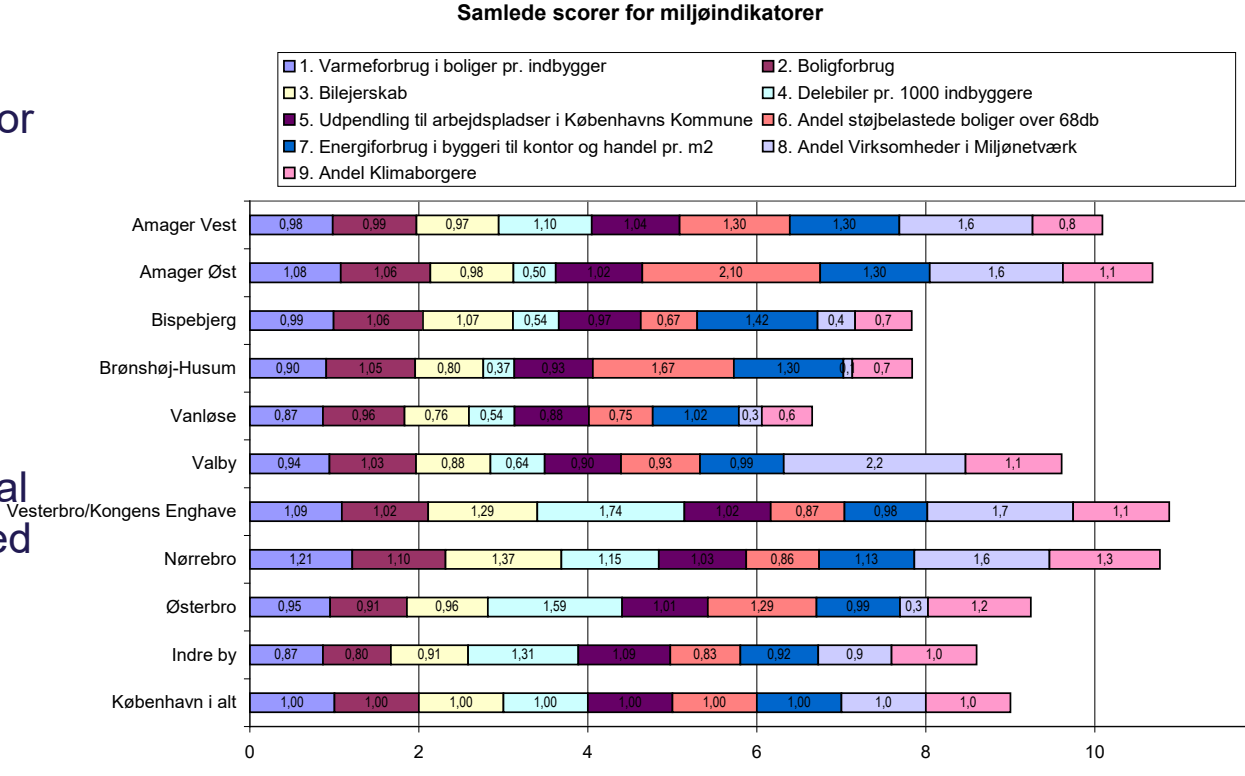
Example: Method for sustainability assessment of 10 districts in Copenhagen, following the Dutch DPL- model





Lessons

- The idea of the tool was that available data should be used for regular updates and measurements, to enable monitoring of the districts in the city
- But the tool failed to create ownership in the municipal department, and in the municipal administration, and was not used as intended
- Competition on political level between ”broad sustainability” and the climate agenda?



Lessons

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Competition on political level between ”broad sustainability” and the climate agenda?