SUSTAINABLE URBAN ENVIRONMENTS IN EUROPE -

EVALUATION CRITERIA AND PRACTICES

Editor: **Pierre LACONTE**, President, Foundation for the Urban Environment, member of the Lee Kuan Yew World Cities Prize Council (2010, 2012 and 2014), evaluator for the EU Green Capital Award (2011 and 2012).

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Abstract.

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs [WCED 1987]. This requires the reconciliation of the "three pillars" of sustainability: environmental, social and economic. Earth system governance is multi-layered and fragmented. It covers multiple scales of decision-making, ranging from individual buildings to large scale urban environments. How to assess them?

Buildings' sustainability assessment has been the subject of numerous certifications whose criteria, indicators and methodology can be assessed and/or contested (Part 1). The sustainability of neighbourhoods or entire cities has been the subject of comparative assessments, using different methodologies, among others the European Green Capital Award and the Lee Kuan Yew World Cities Prize. A comparison of criteria and results has been attempted (Part 2). However the technicalities of greenhouse gas emissions, measurement of carbon footprint and assessment of biodiversity open new fields of knowledge and uncertainty (Part 3). Case histories illustrate different facets of the urban sustainability and its assessment: water management, urban renewal projects, transportation, urban identity and urban heritage, links between urban heritage and energy savings, etc. (Part 4).

Bio.

Pierre Laconte is President, Foundation for the Urban Environment (www.ffue.org). He was one of the three partners of the Groupe Urbanisme-Architecture (with R. Lemaire, co-founder of ICOMOS, and J.P. Blondel), created in 1968 by the Catholic University of Louvain to produce the Master plan of a new university town, near Brussels, and co-ordinate its implementation. This new university town, called Louvain-la-Neuve, was built along the model of traditional European university towns. It received the Abercrombie Award 1982 of the International Union of Architects (UIA).

Abstract.

In recent years a large number of energy related benchmarks have appeared including BREEAM and LEED. Since 2008 all EU countries have been required to produce Energy Performance Certificates (EPC), and for public buildings, Display Energy Certificates (DEC). The authors surveys theses certificates and suggests there is very little evidence that EPCs have reduced the carbon footprint of cities (lack of transparency, variations on how the certificates are used and inhibition of energy-saving retro-fit investment).

Bio.

Dr Angus McIntosh is Visiting Professor, Oxford Brookes University, Economist & Partner, King Sturge LLP, International Property Consultants. Since 2004 he has produced an annual report under the title of "European Property Sustainability Matters", and in 2007 a report for the European Urban Land Institute identifying "The Key Principle for Sustainable Development" and in 2010 "Built Environment Foresight 2030: the sustainable development imperative, setting out visions for the future direction of the global economy and its property markets".

- Douglas MULHALL & Michael BRAUNGART, EPEA, Hamburg – From cradle to cradle (C2C): "From recycling building components to recycling buildings. Adapting to acceleration of-building life-cycle".

Abstract.

It is about "quality" vs "durability". While the sustainability emphasis today is on "durability" of buildings to make them last longer, the observed trend globally is the opposite, with building cycles accelerating rather than elongating. As costs rise it is more cost-effective to gut older buildings and/or leave only their facades, then completely reconstruct the rest. Is this bad? Technology is providing more diverse services for buildings to perform, just as with other types of products. It adds value for stakeholders. So as technology improves the quality of life it makes sense to recycle buildings to include those quality improvements. But along with that comes a barrage of toxic components because oddly the materials that go into buildings are often not designed for human contact. This in turn affects the quality of air and water and in total the quality of buildings. Minimizing the carbon footprint of buildings often makes quality worse because to conserve energy toxins are kept in and fresh air kept out. So, what quality assurance criteria could be used to make sure buildings are beneficial for human health instead of just less bad or "minimizing" our footprint? The reality is that the footprint of a building will always be big, so the challenge is to make it big and beneficial. The Cradle to Cradle® Design paradigm provides a roadmap for achieving this quality.
There is no Cradle to Cradle® building in the marketplace today but there are examples of Cradle to Cradle elements as first steps. This chapter examines the core principles and application tools associated with those examples. Although C2C certification of products and materials in buildings is done, certification is only a small fraction of the C2C role in buildings. The more important C2C role in buildings is quality elements that add value for stakeholders. One benefit is a new value paradigm where "disassemblable" buildings lead to a new type of value in real estate because buildings become value banks instead of expensive demolition projects at the end of their use period.

Bios.

Prof. Dr. Michael Braungart is co-founder of the award-winning Cradle to Cradle Design Protocol® and holds the Cradle to Cradle Chair at Erasmus University as well as a Chair at Twente University, and a visiting professorship at TU Delft, each in The Netherlands. He is founder and owner of EPEA Umweltforschung GmbH based in Hamburg since 1987 and co-founder of McDonough Braungart Design Chemistry in Charlottesville Virginia. He is a recipient of the USEPA Presidential Green Chemistry Challenge award.

Douglas Mulhall is Senior Researcher at the Cradle to Cradle Chair Erasmus University and project manager and principal trainer for EPEA Umweltforschung GmbH based in Hamburg as well as co-founder of The Environmental Institute in Brazil. With Prof. Braungart he is co- author of the Cradle to Cradle® Criteria for the Built Environment. He designed and developed thousands of units of residential urban housing in Canada as well as water recycling systems in China and Brazil.

- Elke PAHL-WEBER & Sebastian SEELIG, TU Berlin: Assessment and certification of sustainable neighbourhood developments. The Current Debate on Neighbourhood Certification in Germany.

Abstract.

The certification of buildings and neighborhoods is discussed with growing interest among Germany's scientific and professional community. Since 2009 a number of conferences and scientific publications have dealt with this approach, the growing number of neighborhood certifications in Germany underlines this trend. However one can notice a lack of a systematic scientific discourse on methodologies, indicators and processes of neighborhood certification. To date there is no generally accepted certification system for neighborhoods in Germany, which is established and commonly agreed on by the federal government, the 16 federal counties, the municipalities and the stakeholders of the civil society. Therefore in Germany neighbourhood certification has not such relevance in urban development, in planning or in issuing building permissions as the established systems for individual buildings such as BREEAM and LEED.

Bios.

Elke Pahl-Weber is Professor at the Technical University of Berlin (TU Berlin) and Head of the Department of Urban Renewal and Urban Development. She is appointed Head of the Working Group of Urban Development in the German Association for Urban Affairs, Housing and Regional Development. She has been Head of the Federal Institute for Research on Building, Uban Affairs and Spatial Development between 2009 and 2011 and has been CEO of an Urban Planning and Consultancy Studio before.

Sebastian Seelig is a research assistant and PhD candidate at the Chair for Urban Renewal at the Technical University of Berlin (TU Berlin), researching and lecturing on the impacts of climate change on cities and on related concepts of mitigation and adaptation. In late 2012 he joined the integrated development planning team of Happold Consulting, the strategic department of Buro Happold.

2. ASSESSING GREEN CITIES AND BUILT ENVIRONMENTS.

- Gabriel EPSTEIN, architect & planner, Paris: "Notes on sustainable urban growth".

Abstract.

Plans for urban developments could be assessed for low energy, economy, public transport, etc. and cities to be sustainable for generations, must be places of an easy pendulum between private and social life.

Bio.

Prof. Gabriel Epstein (Shepherd Epstein and Hunter) designed public housing projects in London and university projects in the U.K., Belgium, Ghana and Algeria. He was president of the Architectural Association (London) and later professor at the University of Stuttgart.

- Birgit Georgi, European Environment Agency, Copenhagen : "Criteria & methods for assessing "green cities" – the experience of the EU Green Capital Award – Correlation with the Siemens / Economist Intelligence Unit European Green City Index".

Abstract.

In line with an increasing awareness of Europe's urban dimension, several initiatives aim to measure the environmental performance of cities, to benchmark them and to evaluate good practice. This led to a multitude of different data sets, indicators and indices. However the apparently simple question - what the

best European city is - cannot be answered yet; cities range differently on the various lists. The article will shed some light on the reasons for this dilemma, the difficulties to assess the performance of cities and ideas to overcome the obstacles, and possible gains of such assessment activity.

Bio.

Birgit Georgy is project manager regional vulnerability and adaptation, European Environment Agency (EEA), Copenhagen. At the EEA worked on assessments regarding the European dimension of urban development, their impacts on the environment and the effectiveness of European policy on the local level. From 2011 focus is on resilient cities and regions.

- Mark DWYER, Fundacion Metropoli, Madrid – Assessing the Lee Kuan Yew World-Cities Prize 2010 and 2012 (Prize winners Bilbao and New York City).

Abstract.

The paper examines the criteria, indicators and methodologies for the attribution of the LKY World-Cities Prize and what led to the choice of Bilbao in 2010 and New York City in 2012.

Bio.

Mark Dwyer (Director of the Fundación Metrópoli) is a licensed Architect and Urban Designer from the United States and holds a Masters of Architecture in Urban Design from the Graduate School of Design at Harvard University. He has taught Urban Design and Architecture courses at Harvard´s GSD, University of Pennsylvania School of Design and IE University in Spain. Prior to joining the Fundacion Metropoli in January of 2009, Mark was an Associate in the New York office of Enrique Norten (TEN Arquitectos), managing architectural and urban design projects for the firm.
Fundación Metrópoli is an international organization, at the forefront of a new generation of “intellectual capital institutions” that aspires to contribute to the innovation and development of cities and regions through the research, sharing and implementation of knowledge, and with the objective of building a sustainable future. The aim of the Fundación is to be a catalyst for the positive transformation of cities and landscapes in the 21st century.

3. ESTIMATING GEENHOUSE GAS (GHG) EMISSIONS, ENERGY EFFICIENCY AND BIODIVERSITY OF CITIES.

- Peter MARCOTULLIO, Hunter College NY, et al.: “Assessing urban GHG emissions in the EU medium and large cities - methodological issues and results”.

Abstract.

This paper describes the differences between the general techniques used to calculate the urban GHG emissions. We examine "bottom up" and "top down" approaches and identify the strengths and weaknesses of each. We then provide a brief "top down" analysis of emissions from European cities larger than 50,000 population and compare these results with examples of those performed from the "bottom up." Our results suggest that both techniques are valid, and could be used together to develop a more complete picture of urban carbon signatures than from either method alone.

Bios.

Peter J. Marcotullio: Associate Professor of Geography at Hunter College, City University of New York (CUNY) and Deputy Director of the CUNY Institute for Sustainable Cities (CISC), New York City, New York.

Niels Schulz: Research analyst for the German Advisory Council on Global Change (WBGU) at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria. Worked as Research Fellow and Team Leader of the Urban Energy Systems Project at Imperial College (IC) London, Energy Futures Lab.

Jochen Albrecht: Professor for computational and theoretical geography at Hunter College, City University of New York. His recent work deals with the elucidation of geographic information from very large datasets. His published work covers application areas from storm surge and biological invasions to transportation, crime analysis and aging populations

Andrea Sarzynski: Assistant research professor at the George Washington Institute of Public Policy. Previously worked for the Brookings Institution, the White House Council on Environmental Quality, the environmental law practice at Sidley Austin, and the Rochester Institute of Technology. Published reports for Brookings and academic journals.

- William REES, UBC, Vancouver: "The carbon footprint as a tool for urban sustainability assessment"

Abstract.

This paper suggests a framework to examine prospects for urban sustainability. In particular, I explore ecological footprint analysis as an essential tool for assessing the sustainability of cities. My main focus is unapologetically on the biophysical dimensions of urban futures for two reasons: first, until relatively recently, most urban scholarship dealt with cities as solely as cultural, social, economic or engineered environments. The fact that cities are also complex biophysical systems subject to natural laws has been all but ignored. Second, despite this scholarly vacuum, biophysical sustainability is essential for, and arguably prerequisite to, social, cultural and economic sustainability. It is possible to envisage fully functional ecosystems without cities but there can be no cities in the absence of functional ecosystems.

Bio.

William Rees, FRSC, is Professor Emeritus at the University of British Columbia and former director of UBC's School of Community and Regional Planning (SCARP). Rees taught at the University of British Columbia from 1969 until 2011. His primary research interest is in public policy and planning relating to global environmental trends and the ecological conditions for sustainable socioeconomic development. He is the originator of the "ecological footprint" concept and co-developer of the method. He was awarded the 2012 Boulding Award in Ecological Economics and the 2012 Blue Planet Prize (jointly with his former PhD student, Dr Mathis Wackernagel) for the role of eco-footprint analysis in reopening the debate on human carrying capacity.

- Ulrich HEINK, Helmholtz-Zentrum für Umweltforschung, Leipzig: « Assessing urban biodiversity ».

Abstract.

The evaluation of urban biodiversity has often been a focus of dogged discussions in nature conservation. This is mainly because there are wide differences in perception of and conservation goals for urban biodiversity. In this contribution we present an approach for the evaluation of urban biodiversity and relate this approach to different conservation goals. Further we outline how our evaluation approach can be applied for examples of biodiversity in Berlin.

Bio.

Ulrich Heink is scientific assistant at the Helmholtz Centre for Environmental Research in Leipzig and the Institute of Ecology, Technical University of Berlin. His recent work deals with the development of the

Biodiversity Strategy for Berlin, database concepts for urban species conservation, approaches for the evaluation of environmental damages, investigation of science-policy-interfaces and analysis of the effectiveness of arguments for the conservation of biodiversity and ecosystem services.

4. URBAN SUSTAINABILITY BEST PRACTICES – CRITERIA AND CASE HISTORIES.

- Ian DOUGLAS, University of Manchester, Society of Human Ecology: "Water and the city - Canals and waterfronts development as tools for a sustainable post-industrial City - Assessing best practices".

Abstract.

Throughout the UK urban land along old industrial canals and rivers is enjoying a renaissance through the conversion of old warehouses to apartments, restaurants and tourist facilities together with newly built waterfront housing and offices. Old docks are becoming new foci of urban leisure and retailing. Many bring residential life back to city centres, but others are pockets of glitter and conspicuous wealth adjacent to run-down housing and social deprivation. Some have excellent examples of resolving pollution problems left by 200 years of industrial and domestic waste; others create problems for the development of green infrastructure and wildlife corridors. The best practices offer many opportunities for greater sustainability.

Bio.

Ian Douglas, Emeritus Professor, School of Environment and Development, University of Manchester; Chairman, UK UNESCO Man and Biosphere Urban Forum; President, International Council for Ecopolis Development; President (until April 2011), Society for Human Ecology. Lead Editor of "The Routledge Handbook of Urban Ecology" (2011).

- Peter HALL (Sir), UCL, London: "Assessing sustainable urban transport. The case of France and the UK".

Abstract.

Despite half a century of evolution in the way that nations and cities assess their urban transport investments, the remarkable fact is that they go about the process in very different ways, with very different outcomes – which are evident, even to the casual observer, in the contrast between the scale of investment in every French major city and now in smaller cities too, and the relative paucity of such investments in the United Kingdom. All this might have been different if in any country there had been an effective way of capturing land and property value rises, following transport investment, and appropriating them for future investment. But, with the rare exceptions of countries with a tradition of public land ownership (Sweden, the Netherlands, Hong Kong, Singapore), this so far is an aspiration for the future. Perhaps the innovations now taking place in collecting Community Infrastructure Levy, in London and other British cities, may at last provide the long-sought breakthrough.

Bio.

Peter Hall is Professor of Planning and Regeneration at the Bartlett School of Architecture and Planning, University College London and President of the Town and Country Planning Association.
He is author, co-author or editor of over 35 books on urban and regional planning and related topics. He is also the author of Cities in Civilization: Culture, Technology, and Urban Order (London, Weidenfeld & Nicolson, 1998).

- Pierre LACONTE: "Assessing the Amsterdam "Singel" canal area for the UNESCO World Heritage listing (2010). The heritage of sustainability".

Abstract.

The Amsterdam 17th century canal ring's lay-out (residential canals and service streets), its land subdivision in small plots and its implementation framework and control have proven both their robustness and their sustainability, along several centuries. Its integrity and authenticity have been preserved**.** It has been able to accommodate changes in functions as well as changes in building styles and building techniques. This adaptability, including adaptive reuse, makes the Singel canal area a prime example of sustainable urban environments in Europe.

- Chris GOSSOP, UK Planning Inspectorate & NEA: "Assessing neighbourhood urban redevelopments - the case of the on-going London St-Pancras redevelopment".

Abstract.

London's has experienced a renaissance over the last ten to 15 years as it seeks to become an 'exemplary, sustainable world city'. Under its spatial development strategy, The London Plan, the aim for London is to grow without expanding its boundaries, concentrating much of that new development within its 'opportunity areas' of which the King's Cross Central is a prime example. The long term vision there is of a fine urban quarter at the heart of an unparalleled network of transport communications, focussed upon the railway termini of Kings Cross and St Pancras International and six underground lines. Can the new development match the architectural quality of its Victorian predecessors to create new buildings and a public realm that will set new standards for urban areas everywhere? And to what extent can King's Cross Central advance current practices in the overlapping fields of sustainable design and low carbon development?

Bio.

Chris Gossop, Chartered Town Planner (MRTPI) and environmentalist, is Vice President of The International Society of City and Regional Planners (ISOCARP) - General Rapporteur and book editor for the 2009 ISOCARP Congress on Low Carbon Cities - Editor of the Routledge/ISOCARP publication Sustainable City - Developing World. He is Trustee of the Milton Keynes based National Energy Foundation.

- Michael KRAUTZBERGER, President DASL, Berlin: "European policies and practices in energy saving for existing cities – including energy-saving in shrinking cities and architectural heritage conservation – assessment issues".

Abstract.

In regard to buildings the climate protection policy is focussed primarily on new developments. In order to make current building stock and historical buildings sustainable, comprehensive strategies and planning towards a climate-friendly city are needed. This article discusses the overall concept of a "compact city" and shall go into greater detail on the questions which a "new" urban development policy for historical buildings and monuments needs to answer in times of climate protection.

Bio.

Prof. Dr. Michael Krautzberger is the President of the German Academy for Urban Development and National Planning (Deutsche Akademie für Städtebau und Landesplanung). He is the vice-chairman of the German Foundation for Monument Protection (Deutsche Stiftung Denkmalschutz).

5. PIERRE LACONTE – CONCLUSIONS.