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Review

The French eco-neighbourhood evaluation model: Contributions to sustainable city making and to the evolution of urban practices

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ABSTRACT

In this article we discuss whether the French eco-neighbourhood policy tool may be considered as an original experimentation in sustainable urban planning. From scientific literature across a number of countries and especially in European context, we present what kind of policies may achieve eco-neighbourhoods. Then we present what the French framework is, and what tools to promote and elaborate eco-neighbourhoods there are in France. Thirdly, in fact, both French policies, national and local, concerning eco-neighbourhood projects, seem to integrate means of assessing urban projects and this assessment achieves a kind of certification. While the Ministry in charge of Urban Planning has developed the national EcoQuartier ("EcoNeighbourhood" in English) certification, the City of Paris and other local authorities have designed similar tools, which integrate a large number of parameters dealing with urban sustainability and which are designed to evolve over time. Finally, we discuss whether the French tool is really original and whether it prefigures new practices in the field of sustainable urban development.

Contents

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1. What policies achieve eco-neighbourhoods? Eco-neighbouring, what tools, what aims?

1.1. Varied eco-neighbourhood conceptions or a global framework?

Across a number of countries and especially in European context, the whole approach of urban planning is changing with sustainable development principles (Table 1). More especially, the framework of the eco-neighbourhood or eco-city is growing in importance because it seems to be the most complete and holistic integration of the urban sustainable principle (Boutaud, 2009; Holman, 2009; Jégou, 2011; Pickett et al., 2011; Wang et al., 2011; Douglas, 2014; Joss, 2015). In Asia or other emergent countries, sustainable city guiding principles are controlling these new city developments, primarily for the design of the eco-district/neighbourhood or the eco-city (Andersson, 2006, Holden, 2006; Grimm et al., 2008; Wang et al., 2011; Li et al., 2011; Xiaosai et al., 2013; Joss, 2015).

Although the first eco-neighbourhood developments can be traced back to the 1960s, (Boutaud, 2009; Joss, 2015), it is only those completed in the early 2000s and afterwards which have really established themselves as urban planning frameworks of inclusive neighbourhoods and sustainable city building (Boutaud, 2009; Jégou, 2011; Li et al., 2011; Pandis and Brandt, 2011; Joss, 2015). In every part of the world, from Moscow (Paiho et al., 2014), to Tianjin near Beijing (Zhao et al., 2009; Caprotti, 2014), and even in Masdar, in the desert near Abu Dhabi (Premalatha et al., 2013), these frameworks of urban development have become global. The terms of the concept concern at least two levels of scale: the neighbourhood, so called eco-district or eco-neighbourhood, and the level of a whole city, so called eco-city (Boutaud, 2009; Jégou, 2011; Wang et al., 2011; Douglas, 2014; Joss, 2015). Some make a distinction between eco-neighbourhood and eco-district, the former being smaller. In the same way, some integrate eco-city into smart city, the latter also known as the digital city. In this paper, our survey concerns the level of neighbourhoods and we will not distinguish between eco-district and eco-neighbourhood, so the only concept used will be eco-neighbourhood (Komeily and Srinivasan, 2015; Wangel et al., 2016). This definition may seem broad, but scientists and urban managers and planners investigate means or criteria and indicators for assessing the sustainability of neighbourhoods.

Is there a single global framework for eco-neighbourhoods?

1.2. Varied policies, varied aims and varied rating methods

Rating systems are often the best way to assess the objectivity of sustainable scopes of urban projects and policies. Most frequently, evaluation and certification procedures accompanying the construction of buildings are codified, particularly in the area of energy efficiency but also in that of eco-efficiency such as life-cycle and ecological footprints (Cole, 1998; Gonzalez and Zamarreno, 2005; Ding, 2008; Utama and Gheewala, 2008; Korolijaa et al., 2011; Burdova and Vilcekova, 2012; Ewing et al., 2012; Teng and Wu, 2014). Actually, important developments concern these procedures in the field of urban planning (Smyth et al., 2007; Chelzen and Pech, 2011; Caprotti, 2014; Joss, 2015). The evaluation of urban projects and the production of indicators have thus proven to be a challenge in both technical and scientific terms (Boulanger and Bréchet, 2005; Boulanger and Lazzeri, 2006; Smyth et al., 2007; Caprotti, 2014) due to the complexity of the approach employed, which is based on differing types of data and predefined criteria. A

Table 1
Theme distribution covered by eco-neighbourhoods in international publications.

Kind of tool	Domains	Evaluators	References
Indicators or index	Life cycle assessment	Independant or academic or official experts	Forsberg and Von Malmborg, 2004; Erlandson and Levin, 2005; Bin and Parker, 2012; Teng and Wu, 2014;
	Energy consumption	Independant or academic or official experts	Forsberg and Von Malmborg, 2004; Erlandson and Levin, 2005; Malmqvist and Glaumann, 2009; Weber and Shah, 2011; Teng and Wu, 2014;
	Carbon consumption	Independant or academic or official experts	Gonzalez and Navarro, 2006; Junnila et al., 2006; Gustavsson et al., 2010; Kneifel, 2010; Monahan and Powell, 2011; Ouyang et al., 2011; Hong et al., 2012; Rinne and Syri, 2013; Li et al., 2013
	Waste recycling	Independant or academic or official experts	Erlandson and Levin, 2005;
	Ecological footprints	Independant or academic or official experts	Chambers et al., 2004; Li et al., 2010; Wang et al., 2011; Bin and Parker, 2012; Solís-Guzmán et al., 2013
	Water resources management	Independant or academic or official experts	Forsberg and Von Malmborg, 2004; Bai et al., 2011
	Economic development	Independant or academic or official experts	Mascarenhas et al., 2010; Wang et al., 2011; Bulkeley and Castan-Broto, 2012
	Social indicators	Independant or academic or official experts	Mascarenhas et al., 2010; Wang et al., 2011; Bulkeley and Castan-Broto, 2012
	Quality life	Independant or academic or official experts	McMahon, 2002
	General data	Independant or academic or official experts	Forsberg and Von Malmborg, 2004; Holden, 2006; Mascarenhas et al., 2010; Tanguay et al., 2010; Wang et al., 2011; Bulkeley and Castan-Broto, 2012; Moreno Pires et al., 2014
	Ecological efficiency	Independant or academic or official experts	Erlandson and Levin, 2005; Li et al., 2010; Solís-Guzmán et al., 2013
Specific assessment	Ecoservices	Independant or academic or official experts	Bai et al., 2011; Wang et al., 2011
	Cost benefit evaluation	Independant or academic or official experts	Bai et al., 2011
	Models	Independant or academic or official experts	Erlandson and Levin, 2005; Bai et al., 2011; Xuan et al., 2012; Douglas, 2014; Moreno Pires et al., 2014; Neirotti et al., 2014
General tool	Integrative system	Independant or academic or official experts	Pickett et al., 2001; Wang et al., 2011; Riera Pérez and Rey, 2013; Caprotti, 2014; Moreno Pires et al., 2014; Neirotti et al., 2014
		Local deliberations	Mascarenhas et al., 2010; Holden, 2013; Douglas, 2014