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Fostering interconnectivity dimension of low-carbon cities: The triple bottom line re-interpretation

Wynn Chi Nguyen Cam [a, b, *]

[a] RSP Architects Planners & Engineers (Pte) Ltd, Singapore
[b] International Initiative for a Sustainable Built Environment, Singapore

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A B S T R A C T

In facilitating the progress towards low-carbon cities, there is no lack of available green technologies, planning techniques, economic tools, social development strategies, etc. These technologies, strategies and techniques have, in fact, long been deployed in many cities and communities around the world. However, the outcomes have been somewhat slow and less than expected. This is also manifested in the lower-than-expectation outcomes of the formation of a meaningful global climate change treaty so far. The barriers have clearly been unveiled as disconnection among the triple bottom lines (TBL) in the approach.

By linking the concept of low-carbon cities to sustainable development (informed by the TBL), the paper highlights the implication of misinterpretation of a popular TBL diagram, leading to fragmented, compromised approach to LCC. Cases in point are isolating and excluding social and economic activities that are not environmental friendly, and trading-off environmentally-friendly activities that are not profitable in economic sense. Re-interpretation the popular TBL diagram literally from a three-dimensional lens offers an alternative approach, presented in an integrated framework towards low-carbon cities. The vital factors in the framework are safeguarding the positive dynamic interconnectivities of the three bottom lines, aligning their core values (in contrast to the isolating and excluding exercise), amplifying their common interest (instead of trading-off activities), and deploying strategies from planning, renewable technologies, education and policy making to address multiple and interconnected issues reciprocally.

Introduction

The concept of low-carbon cities derives from the climate change awareness and the urgent quest to reduce, if not neutralise, anthropogenic-induced carbon emission to the atmosphere. There is a closed connection between low-carbon cities (LCC) and formal international climate change programmes and initiatives; in which the concept of the former is often seen as a logical re-action to the awareness of the later in a top-down manner. However, in the wake of the slow progress of the global communities to secure a meaningful treaty to combat climate change to replace the Kyoto Protocol, the urban-related professional would wonder what will happen to LCC development, and what lessons LCC can learn. Answering these questions requires firstly to identify and understand the underlying factors that restraint the efforts to combat climate change, and secondly to ensure LCC being part and parcel of sustainable development.

The paper first highlights the lessons learnt from the sources of the barriers at the global level, in order to make informed analyses/studies at the micro level, such as community scale, of low-carbon city development. The knowledge, approach and principle, gained at micro level of low-carbon city development, are then scaled up, at the conclusion, to inform the policy formation at national and global level.

The issue of disconnection in climate change treaty negotiation

The international climate change negotiation aims to derive a comprehensive framework to enhance actions on climate change after the Kyoto Protocol lapses in 2012. The negotiations have been progressing along two tracks - under the Kyoto Protocol and under the United Nations Framework Convention on Climate Change

* RSP Architects Planners & Engineers (Pte) Ltd, 15 Scotts Road #07-00, Singapore 228218. Tel.: +65 90883182.
E-mail address: cncam@alumni.nus.edu.sg.

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(UNFCCC). However, after years of negotiation and the mega Conference of Parties (COP) 15 in Copenhagen in December 2009 and COP 16 in Cancun, global agreement on addressing climate change falls short of the expectation to deliver a meaningful treaty. There have been many sad stories and negative incidents, such as finger-pointing, accusing, walk-out, defining winners and losers, and so on, during and even long after the event.

The reason for this fall-out may be traced as far back as the differentiation between sustainable development and climate change issue. A general observation shows that climate change is a subset of sustainable development, focussing only on green house gas emission. As such, the main focus on climate change negotiation is to limit (if not halt) fossil fuel consumption. While, Jonas, and Gibbs (2009) observed that "Carbon control would seem to introduce a new set of values into state regulation and this might open up possibilities for challenging mainstream modes of urban and regional development in a manner not possible under sustainable development." Without the overarching sustainable development goal, low-carbon development alone will lose its enthusiasts in long-term development. In fact, the barriers to the new global climate treaty are caused by the conflicts of interest between energy consumption reduction and economic growth, and social aspiration to certain extent. These are, indeed the conflict of interest among three triple bottom lines.

On the other hand, sustainable development is a rather established concept with much larger scope of coverage compared to that of climate change issue. It is also generally acknowledged that achieving sustainable development can be made through balancing the three bottom lines (TBL) – society, environment and economy.

Superimposing the issues of climate change to the current TBL understanding, there is a clear imbalance among the core aspects in addressing climate change - i.e. overly focus on environmental and economic issues with social issues insufficiently addressed. Zooming further in to the two focus aspects of climate change negotiation, the economic aspect clearly overpowers the environmental concerns, even though addressing climate change has minor implication to economic performances over short-term period (Stern, 2006). At the third level, within the economic aspect, there are distrust and perceived inequality in terms of economic compensation from developed countries (seen as major polluter in the past leading to current global warming) and developing countries (seen as emerging major polluter at the present and future making worse the climate change issues). As Sawa (2009) observed, "the times have changed since the Kyoto Protocol era, when developed countries represented 60% of global emissions. The problems can no longer be resolved without developing countries sharing the burden."

In brief, at the heart of these climate change negotiation issues lies disconnection, and TBL offers a hint to a meaningful approach to address the deadlock. The next section aims to further unveil this hint by taking a critical view to the interpretation and implementation of TBL.

Re-interpreting the triple bottom line's common interpretation

The concept of TBL links to the definition of sustainable development by the Brundtland Commission of the United Nations in 1987, and was introduced by John Elkington (1994) to expand the conventional business report (that focused only on financial term) to include social and environmental performances. TBL refers to people-planet-profit, and is popularly termed as society-environment-economy, as three realms of sustainable development. It has been ratified by the United Nations in 2007 and applied as criteria for businesses and organisations, including the public sector, to measure and report their performances and full cost accounting. Thanks to its widely practical application and backed by governments, TBL has become mainstream, the most dominant catchphrase, and even been applied as tool to address sustainable development by a wide range of professionals, including businessmen, policy makers, educators, architects, engineers, property developers, investors and many more.

The common interpretation of TBL can be seen literarily from its popular diagram in Fig. 1, in which sustainability - the triple overlapping area of the three realms (economic, social and environmental) - is just a small portion located at the peripheral of each realm. This implies that the process of identifying sustainable goals/practices has to count heavily on isolating, excluding and trading-off exercises. Cases in point are isolating and excluding social and economic activities that are not environmental friendly, and trading-off environmentally-friendly activities that are not profitable in economic sense. Such practices have resulted in fragmentary, compromising and tensioned inter-relationship among the three TBL realms, as the core values and objectives of each realm are challenged and clearly seen as unsustainable ones. This obviously coincides with the core reasons leading to the undesirable outcomes from the climate meetings. At this juncture, there is an urgent need to understand how we should interpret and implement the TBL to put sustainable development, climate change mitigation and sustainable built environment back to the right orbit.

Viewing the TBL diagram, literally from a three-dimensional lens, reveals an alternative perspective. The first step is to make the third dimension of the TBL visible. From this angle, the tasks are obviously not about to selectively identify the overlapping bits and pieces, of social, economic and environmental realms, leading to trading-off actions. The tasks are rather to align the core objectives of each of the three realms so that all the three address sustainable development (represented by the dotted horizontal line) at their cores. Here lies the fundamental difference between the two interpretations of the TBL.

The second step is to understand the implications of the alternative interpretation. As illustrated in Fig. 2, the attempt to align the core objectives creates pressures along the connecting line among the three realms, particularly the connection of social and environmental realms, and the connection of environmental and

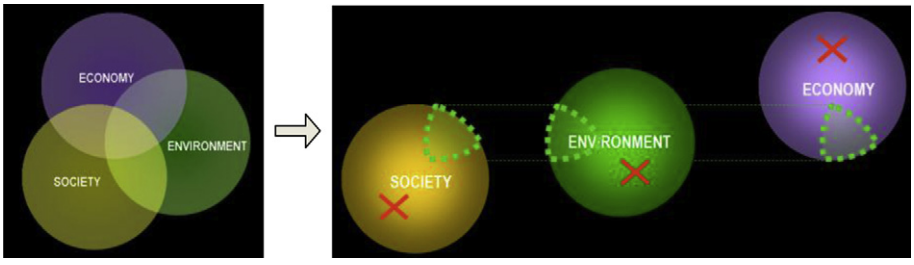

Fig. 1. The implication of the 2-dimensional interpretation of TBL.