Exploring the Evolution and Impact of Building Environment Assessment Methods in Achieving Green Building

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Abstract

Purpose – The paper aims to investigate the emergence the Hong Kong Building Environmental Assessment Methods (HK BEAM) certification scheme and starts to explore the impact of BEAMs on the building industry and the potential emergence and stabilisation of a green building field.

Design/Methodology/Approach – The research presented draws upon content analysis of all 19 versions of the HK BEAM scheme(s) as well as 94 policy reports. This is complemented by an investigation and collation of the participating companies in 100 HK BEAM certified projects. The theoretical framework of Strategic Action Fields is applied to explore the emergence of a potential green building field.

Findings – The findings are tentative, but they point out that a green building field is yet to emerge in Hong Kong.

Research Limitations/Implications – The research is still ongoing and parts of the analysis are yet to be finalised. Therefore, only tentative conclusions are drawn.

Practical implications: – From a practical perspective, the findings point towards a correlation between the memberships in the working committees charged with deciding on the content of the BEAMs and their content.

Originality/Value – So far, very little is known about how exactly BEAMs have come into being. Furthermore, their impact on working practices outside of "certified" projects has received little research attention. This research project is an attempt to rectify this.

Keywords Sustainability, Green building, Strategic action fields, Certification, Building environmental assessment methods, Hong Kong

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1. Introduction

Around the world, governments are setting out ambitious environmental targets and endorsing ever more comprehensive visions of sustainable development, including environmental, social and economic goals coupled with new legislation and regulations. This has led to increased emphasis on the importance of buildings for national carbon reduction and energy efficiency targets, and for sustainable development more generally. As such, a variety of institutional drivers for firm and industry-level change have emerged for the actors in the building industry. As a result, a variety of new or improved technologies, materials, processes and management tools have been developed and introduced into firm and project settings. In broad terms, these attempts have led to advances in some areas, but have had little impact in many others. Overall progress has been repeatedly criticised for being slow, patchy and failing to have a significant impact, with a chasm existing between practice and what is technically possible (e.g. IPCC, 2007). A variety of factors seemingly hinder any significant change in practice(s) taking place, e.g. the institutional climate is highly uncertain, clients tend to privilege short term price over whole life value and existing market structures and practices reinforce the *status quo*. Put somewhat differently, the construction sector has the technical know-how to build sustainable buildings (e.g. Häkkinen and Belloni 2011); what it chooses not to or does not know how to do, is to incorporate that know-how into standard practice. There is, therefore, a need to broaden the scope of research on sustainable construction from focusing solely on technical aspects to also recognise and reflect on the "taken-for-granted" assumptions around technology, sustainability and dominant practice. This means moving away from the dominant technologically driven research agenda and opening research to a broader range of understandings of how the building industry is configured, and the formal and informal rules and structures that govern firm behaviour.

The building industry can, as alluded to above, be held accountable for major sources of environmental damage as buildings are commonly held to be responsible for more than 40 per cent of overall carbon emissions. However, much of this can be attributed to the use of the building. The building process is by itself a relatively low emitter, and firms involved in the building process, therefore, commonly fall under the radar of most fiscal and market-based policy instruments, such as emissions and carbon trading. This has led to a situation where many of the mechanisms put in place to achieve sustainable building follow what can best be described as a neoliberal preference for voluntary self-regulation (Schweber, 2014). Of these voluntary mechanisms "Building Environmental Assessment Methods" (BEAMs) are considered among the most effective in terms of "transforming building markets" (*cf.* Cole and Valdebenito, 2013). The appeal of BEAMs is in no small way built on how they can be used to operationalise the rather elusive concept of "green building", both as a noun and a verb. They provide a degree of objectivity in classifying practices as "sustainable" or "unsustainable" and render visible a myriad of design issues which standard practice has long ignored (Schweber, 2014).

Much has been written on the formal features of BEAMs and comparable methods. There is also initial research that has begun to explore their effect on market prices and buildings (Lützkendorf and Lorenz, 2011), and on the business case for sustainability (Revell and Blackburn, 2007). However, despite claims of BEAMs having "played a significant role in mainstreaming green building practices. . ." (Cole and and Valdebenito, 2013:663) remarkably little attention has, with a few notable exceptions (e.g. Schweber, 2014; Yudelson, 2017), been given to the effect that they have at the firm and industry levels and if practices are being adopted outside of dedicated BEAM projects. This paper is an initial output from a research project that explores the impact of BEAMs on the Hong Kong

building industry. The research challenge that has been set is to establish whether these voluntary self-regulatory mechanisms have led to a "transformation of the building market", and if their implementation has led to new dominant "green building" practices emerging in the building industry, or parts of the industry. To do so, the emergence and development of BEAMs in Hong Kong has first to be established, which is the focus of this paper.

2. Building Environmental Assessment Methods as facilitators of change?

From a policy perspective the appeal of BEAMs is in no small way built on how they can be used to operationalise the rather elusive concept of "green building". Much has been claimed in regards to how their increased use can transform building markets and mainstream green building practices. However, it is also clear that their increased use pose challenges for the building industry. There are significant management costs involved and firms might be called upon to adopt new practices, as well as adjusting existing practices. These demands take place in a highly fluid, uncertain institutional environment, without most of the usual economic drivers for change.

The term "Building Environmental Assessment Method" – sometimes referred to as "green building guidelines" – can be conceptualised as a technique with assessment as one of its core functions, which is accompanied by some form of third-party registration or certification. BEAMs invariably consist of a framework of categories corresponding to different aspects of green building. Each category is, in turn, typically broken down into a variety of performance criteria and other measures, all of which are assigned a certain number of credits. Many of these criteria are in the form of meeting building regulations and specify what could be considered to be well established standard practices. However, other criteria might call upon design and construction teams to adopt new practices (including a wide range of new materials, technologies and processes), as well as adjusting existing practices. To complete an assessment, the project team produce evidence to establish their compliance with the set criteria. The evidence is compiled by an assessor and sent off to a certifying body, which evaluates the application and comes back with a score. The certifications indicate the extended outputs from the assessment process and typically take the form of a singular, easily recognisable designation, e.g. "Gold" and "Excellent". In terms of their application BEAMs are either voluntary, partially voluntary or in a few cases (e.g. Green Mark in Singapore) mandatory. Commonly they are owned by a non-state scientific organisation that oversees its implementation such as training, certification, information handling infrastructure, etc. Many countries have their own "domestic" BEAM, which has been developed with the particular national context in mind. These tend to enjoy informal state support. However, some BEAMs have been imported into other contexts and are widely used in many countries, e.g. UK-BREEAM and US-LEED. It is also common with new BEAMs being developed to replace old ones, usually referred to as "first" and "second" generation.

3. Theoretical frame: Strategic Action Fields

To study the emergence, development and impact of BEAMs, we draw on the theoretical lens of Strategic Action Fields (SAFs), as put forward by Fligstein and McAdam (2011, 2012). While many theories are appropriate for telling us why things are unlikely to change, e.g. new institutional theory and population ecology theory, SAF theory instead provides a framework to understand how change takes place, i.e. both continuous (yet stable) and radical change. SAFs are conceptualised as the fundamental units of collective action in society. They are social arenas, of all sizes, in which individual and collective actors, such as groups, firms and organisations contend for resources, privileges and gains. Fligstein and

McAdam (2011:3) define a strategic action field as "a meso-level social order where actors (who can be individual or collective) interact with knowledge of another under a set of common understandings about the purposes of the field, the relationships in the field (including who has power and why) and the field's rules". In other words, the membership of a SAF comprises actors who routinely take each other into account in their action. Four key features govern the SAF. Firstly, a general shared understanding of what is going on in the field, i.e. what is at stake. Secondly, actors understand their roles and position in the field, i.e. how power is distributed. Thirdly, shared understandings regarding the nature of the formal and informal "rules" in the field, i.e. what tactics are possible, legitimate and interpretable for the different roles in the field? Fourthly, broad interpretive "cultural" frames that actors use to make sense of what others are doing.

SAFs can be emergent, stable (reached settlement) or in transformation and consist of incumbents, challengers and internal governance units (Fligstein and McAdam, 2011; 2012). The "incumbents" wield a large degree of power and have a disproportional influence over the field. Their interests and views are reflected in the dominant organisation of the field. Established rules tend to favour them and the dominant shared meanings tend to legitimise and support their privileged position. "Challengers" occupy less privileged niches within the field and they wield little influence over its operation. Thus, they conform to the prevailing order but seek ways to challenge the *status quo*. The "internal governance units" (IGUs) oversee compliance with field rules and facilitate the smooth functioning of the system and the reproduction of the field. IGUs are internal to the field and should be distinguished from external state structures that hold jurisdiction over it (such as laws and regulations). The IGU ensures the routine stability, or order, of the SAF and mainly serves five functions: administration, information, regulation, enforcement and certification. That is, they serve to reinforce the dominant logic(s) in the field.

4. Research design

The first phase of the research has focused on the possible emergence of a "green building" field in Hong Kong. Key guiding theoretical questions (*cf.* Fligstein and McAdam, 2012:165) have been: who are the principal incumbents and challengers; who are the key actors who vied for control of the emerging field; who prevailed in the struggle; what role, if any, did external actors – especially state actors – play; what IGUs were established; what are the shared understandings of green building? To answer these questions, the research has drawn upon historical case analysis and event structure analysis techniques. In particular, four separate, but highly interrelated, steps have been undertaken: (i) Establish incumbents and challengers over time. At the time of writing over 100 certified projects have been examined in terms of companies involved; (ii) map the development of HK BEAM. Content analysis has been conducted on all versions of the HK BEAM schemes. Documenting all changes in content over time; (iii) map the establishment and development of relevant IGUs. A time line of the emergence of governing bodies has been established together with the details of individuals involved at the working commission level for each version of the scheme; (iv) explore the emergence of an industry understanding of green building. Content analysis of 78 environmental/sustainability reports published by Government departments, 7 Government Policy Addresses, 6 policy reports issues by the construction industry council; and 4 policy reports issues by the Hong Kong Construction Association.

5. Brief discussion

This is work in progress and, therefore, only preliminary and partial findings are presented here. Furthermore, the conference word limit does not allow for lengthy analysis/exploration

of issues. However, a number of brief observations can be made. To start, sustainability is currently high on the political agenda. This is evidenced by the establishment of "The Steering Committee on the Promotion of Green Building" in 2013, and that the term "Green Building" has featured in all Government Policy addresses since 2010. It is noticeable, however, that BEAMs are not explicitly mentioned in this context. Further to this, it is also worth noting that the interest in green building across the broader policy discourse is relatively new and with the exception of reports issued by the Buildings department there are very few examples of mentions prior to 2009.

Hong Kong at present has a dominant domestic BEAM and a relatively strong imported BEAM. The dominant domestic BEAM "Hong Kong Building Environmental Assessment Method" (HK-BEAM) was launched in 1996 by the Real Estate Developers Association of Hong Kong (REDAS). Ownership has since been transferred to the BEAM steering Committee and later the BEAM Society, which is closely linked to the HK Green Building Council. So far, 454 projects have been completed and another 524 have been registered (HK-GBC, 2018). The strong imported BEAM is US-LEED, and following the first certification in Hong Kong in 2008, over 160 projects have been LEED-certified. In terms of first and second generation BEAMs, there was an attempt by a large consultancy firm together with the Hong Kong Buildings Department to introduce an alternative BEAM, CEPAS, in 2005. This ultimately failed and no project was ever certified and CEPAS was consequently integrated into HK-BEAM. Looking at the membership in the governing committees that decide on the contents of the scheme(s) it is notable that the number of academic members have decreased over the years and that the number of industrialists and government representatives have noticeably increased since 2010. Many of the most prominent players on the Hong Kong construction market are now represented in the working committees. Noticeable changes in the actual contents of the scheme(s) and the weightings applied have occurred in 2003 and 2010. The latter coincide with significant changes in the membership of the committees.

6. Conclusions

At the heart of the research project reported here lies the realisation that despite many firms in the building industry claiming to be actively striving for sustainability, the uniformity of this discourse does not mean that there is uniformity in the practice related to sustainable development (*cf.* Roehracher, 2001). From an SAF theory perspective, the introduction of HK BEAM can be viewed as an explicit attempt to affect the HK building industry and induce changes in established understandings and practices, as well as in the actual outputs (buildings). As such, its introduction can be conceptualised as an attempt to provide a "shock" that temporarily unsettled the wider building field by providing new "rules". In theory, this opens up for the forming, and potential settlement, of a new SAF with associated common sets of understandings, practices, governing mechanisms and firms. Our initial findings point towards that this has yet to happen.

This research project has started to map the evolution of HK BEAM and if a new "Green Building" field has formed. From a theoretical perspective the development of an IGU, in the sense of the BEAM Society, is clear as it today serves all the five functions set out in the theory. It is also notable that there is a clear trend of the inclusion of industrial representatives from the dominant firms on the HK building market in the governing committees. However, in terms of how this translates to participation on projects it is not quite so straightforward. While it is clear that more and more projects are seeking certification, the distribution of companies involved is fairly similar to what might be expected in house building in general. However, the complete set of projects has yet to be analysed and it is possible that the distribution of the complete sample will be different.

Moving forward a key objective is to determine if the implementation of BEAMs, and the associated new requirements, has led to changes in rules and understandings governing the industry regarding what sustainable practices are possible, legitimate and interpretable in terms of individual firms and the industry as a whole. Ultimately, the question is how effective BEAMs are in impacting on building practice outside of the dedicated projects. Therefore, in Phase 2, the focus of the research has moved to the organisational level. Key guiding theoretical questions (*cf.* Fligstein and McAdam, 2012:166) include the following: What are the shared understandings regarding membership, acceptable forms of action and other rules that structure the everyday life of the field; how strong is the consensus in regards to the settlement of the field; what are the collective action frames employed by incumbents and challengers? Particular importance is given to identifying rules and understandings governing "green building". This means investigating employee perceptions of sustainability and green building, and if new or adjusted practices brought on by engaging in BEAM individual projects have permeated onto other projects and become part of routine procedures in the organisation.

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