

Progressive perspectives

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Arup’s Russell Cole, Tan Yoong Heng, Mimi Foreman and Peter Stones identify best practice in benchmarking building control regulations from 5 cities worldwide

Building control regulations typically seek to manage the safety and sustainability of buildings from the planning stage through design, construction and operation to occupation and beyond.

These regulations have a huge impact on the safety of the buildings in which we live and work, the materials with which we come into contact and the energy we consume.

In making our built environments safe, it is critical to ensure that regulations are fit for purpose, up to date and progressive enough both to enable and to encourage innovation. Doing so can promote greater investment from key stakeholders such as private-sector developers, resulting in a more sustainable and innovative construction industry.

This article sets out to further the understanding of what defines a progressive regulatory framework for building control, and of the hallmarks of a successful system, by reviewing an Arup project. Commissioned by the [Building and Construction Authority in Singapore](#) and identifying key learning and action points, this study is possibly the 1st aimed at improving understanding of progressive building regulation.

Benchmarking exercise

To gain a deeper understanding of building regulation frameworks around the world, Arup undertook a benchmarking exercise to identify best practice at 5 locations around the world: Frankfurt in Germany, Hong Kong, New York city in the USA, Singapore, and Sydney in Australia.

Arup’s specialists in these locations shared their knowledge, experience and opinions on the strengths and weaknesses of their respective cities’ regulatory frameworks. Along with the authors and reviewers, these specialists have extensive experience as practising engineers in these locations.

The study used a framework with a total of 88 criteria: 4 primary, 12 secondary and 72 tertiary. The 1st 2 levels of these are shown in Table 1; the 72 tertiary criteria were case-specific for the cities reviewed and for simplicity’s sake are not listed here.

Table 1. Criteria breakdown

Primary criteria	Secondary criteria
Safety	Regulation to achieve quality assurance and control
	Relevance
	Adaptability
Effectiveness	Clarity and transparency
	Consultative
	Submissions process
Sustainability	Futureproofed
	Materials
	Productive
Capability development	Enabling procurement team
	Enabling technologies
	Personnel capacity

When assessing the effectiveness of each action, the study considered the impact that the regulations have on the following outcomes:

- saving time for industry;
- improving safety;
- encouraging innovation;
- saving resources;
- reducing cost for industry.

Through this exercise, 72 best-practice actions were identified across the 5 locations. These were specific to each of the tertiary criteria identified, so to distil particular learning points they were categorised into 3 hallmarks of successful progressive building regulation frameworks: local industry knowledge, regulatory knowledge and market facilitation.

Local industry knowledge

This component of a regulator's role is essential to ensure that regulation is progressive, which is achieved by focusing on knowing the local industry's needs and regulating accordingly. Examples of essential local knowledge include industry capability along with market economies and drivers.

The capability of the industry must be clearly understood and managed through regulation to ensure that the aims of the regulators are met. In Singapore and Frankfurt, emphasis is placed on the designer's responsibility for safety through design sign-off by a suitably qualified and registered person. Additionally, detailed scrutiny of the design is undertaken by accredited checker companies or individuals.

Regulators must understand the drivers and appetites of their local market

In Sydney, on the other hand, much greater responsibility is placed on contractors than on the designer; it is the former's job to ensure the safe construction of developments. The differing approaches reflect the relative strengths of the respective industries in these locations.

Similarly, regulators must understand the drivers and appetites of their market. This is particularly the case when promoting the innovation or adoption of new systems. For instance, sustainability and green development is a focus for each of the cities studied, but how this agenda is encouraged differs from location to location between being market-driven and mandated by regulation.

In the former case, the market decides to adopt a specific measure despite its potentially higher cost. This typically occurs where there is a financial benefit to the change.

For example, as sustainability has become a focus for many corporations, a market has been created for sustainable buildings and developments. Where the added value of undertaking a sustainable development outweighs its added cost, industry will then opt for this approach.

In this situation, regulators can also help industry and influence existing commercial drivers with incentives such as the introduction of green building rating systems. However, not all locations will develop such a market naturally, so regulators may need to resort to a mandatory approach.

Regulatory knowledge

To create a progressive framework, regulators must have a detailed understanding of the wider governance system. They should also conduct scheduled reviews to avoid possible conflict between regulatory requirements.

Building regulation does not operate in isolation. Many associated regulations can also affect the construction industry, including those relating to environmental protection, fire and life safety, and health and safety. Regulatory impact assessments should be performed alongside routine reviews involving key stakeholders such as statutory boards and industry practitioners.

Some of the benchmarked locations were seen to be very proactive in this area and that should be promoted. These reviews should also aim to keep regulation relevant and up to date.

New York city has, for instance, recently completed an extensive review of its building regulation framework and begun to make dramatic changes to improve it. Singapore adopts a more structured approach, with reviews of regulation every 3 years. In Singapore, there are also dedicated panels and committees such as the Inter-agency Coordinating Committee to deal with conflicting regulatory requirements, and the International Panel of Experts to provide advice on technical advances affecting regulation.

Equally important to understanding the market is an appreciation of the regulator's internal capabilities, such as staff competencies and resourcing. These need to be in line with the regulatory framework to ensure procedures run safely and smoothly.

As a result, regulations may need to be revised to make good any gaps. For instance, where the building regulator reviews and approves designs, materials or construction methods, there must be an appropriate number of skilled staff to support this, as is the case in Hong Kong and New York city.

Alternatively, industry can perform these reviews and approvals, as happens in Frankfurt and Singapore, or self-certify, as in Sydney; these require different skill sets and levels of resourcing for the regulatory body. Key to success, however, is understanding the implication of regulation on resources and maintaining these resources to fulfil those responsibilities adequately.

Industry facilitation

Most progressive approaches to building regulation place emphasis on supporting the construction industry. This can be done by helping it to work efficiently and removing unnecessary obstacles. Regulators could also aim to improve the way in which they collaborate with and disseminate data to industry.

Such industry collaboration and efficiency can be promoted by implementing detailed procedural guidelines, by making individuals available for face-to-face or digital consultation and, potentially, by training, seminars and online videos. The regulator can also proactively make information available to industry to streamline the design and construction process.

Indeed, Hong Kong has decided to collate geological information and building records into consolidated data sets. These are easily available to the industry either online or via print libraries. Regulators can also directly influence industry efficiency by streamlining submission proposals, as is the case in Singapore, where submissions can be made around the clock and review periods are as short as 2 weeks. This proactive approach can be summarised as a time-efficient one-stop shop for regulatory approvals.

Summary

The findings suggest that there is significant variation between regulatory practices around the world but there are some broad commonalities that can form the foundation of progressive building regulation, as follows.

- **Know your market:** a skilled regulator has a detailed understanding of the local construction industry and applies tailored regulation in their own jurisdiction.
- **Know your regulatory field:** a regulator has an holistic view of their own and of wider governance practices, aims to undertake periodic regulatory reviews and impact assessments, and has a broader understanding of how building control regulation interacts with other governance approaches.
- **Support your industry:** a regulator adopts a collaborative approach to the industry and its key stakeholders, with the common goal of achieving efficiencies of time and cost, adopting new practices and making best use of technology.

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Further information

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