



# Public Regulatory Trends in Sustainable Real Estate

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## I INTRODUCTION

Over half the global population—more than 3.5 billion people—currently live in cities; by 2030, it is anticipated that proportion will grow to almost 60%. Despite occupying just 2% of the Earth’s surface, cities account for 60–80% of the world’s energy consumption, 70% of its waste and 75% of its carbon emissions (UN, 2015; Habitat III, 2017). In 2015, the UN General Assembly adopted the *2030 Agenda for Sustainable Development* and its 17 Sustainable Development Goals (SDGs) (UN, 2015). In total, 195 countries adopted the first ever universal, legally binding, global climate deal to limit global warming to well below 2 °C (UN, 2016), and this commitment was further strengthened at Habitat III in October 2016 with the adoption of the *New Urban Agenda (NUA)* (Habitat III, 2017). The *NUA* recognizes that “given cities’ demographic trends and their

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central role in the global economy in the mitigation and adaptation efforts related to climate change and in the use of resources and ecosystems, the way they are planned, financed, developed, built, governed, and managed has a direct impact on sustainability and resilience well beyond the urban boundaries” (Habitat III, 2017, paragraph 63). To assist with the unprecedented challenges of urbanization, the *NUA* presents standards and principles for the planning, development, construction, management and improvement of urban areas in five main application domains: national urban policies, urban legislation and regulations, urban planning and design, local economy and municipal finance, and local implementation. Some of these are discussed in more detail in the following sections.

Each SDG set out in the *2030 Agenda for Sustainable Development* is supported by specific ‘targets’ to be achieved over the next 15 years, and distinct ‘indicators’ are associated with each target to ensure that all countries measure progress using comparable metrics. The 17 SDGs (Fig. 4.1), 169 targets and 231 indicators have been used as reference points in subsequent UN documents, as well as supporting policy documents issued by governments around the world, to ensure alignment of goals and metrics among the various strategy documents. Altogether, this system delivers a cross-disciplinary response to the rapidly changing features of our global



Fig. 4.1 The UN Sustainable Development Goals include 17 target areas, many of which directly relate to sustainable development

environment. Although the SDGs are not legally binding, signatory governments have committed to developing strategies to achieve each of the 17 SDGs and to monitor progress toward their implementation. However, the SDGs and targets cannot be achieved at the national level without also bringing regional and local policies and systems for planning and investment into line with national strategies. The inclusion of SDG 11 (*Make cities inclusive, safe, resilient and sustainable*) recognizes that cities will play an integral part in achieving national and global SDGs and targets. This is also recognized in the wording of the *NUA*'s acknowledgment that sustainable development must be a coordinated effort at the "global, regional, national, subnational and local levels, with the participation of all relevant actors" (Habitat III, 2017, paragraph 9). Urban areas (and the plans for them) are expected to deal with all the key global issues represented by the SDGs; thus it is assumed that cities are, and will remain, major contributors to the achievement of SDGs.

In this context, it is important to acknowledge the importance of the built environment in facilitating and planning for the adaptation and mitigation strategies which make up the sustainability and resilience strategies of many global cities. Planning and regulatory intervention are the public means of managing property development to ensure that the built environment is developed with the protection and enhancement of the public interest as a core consideration. The alternative would have been to simply allow market forces and private interests to determine how our cities grow. Planning and policy interventions can be created to accelerate or to inhibit property development. To be effective, planners and policymakers must therefore understand the nuances of the property development process, the risks and rewards that drive property developers and investors, and the impact that planning instruments have on the decision-making process of property developers and investors.

Worldwide, changes have been made at each of the power levels of planning to acknowledge and accommodate the need to create more sustainable urban areas. Depending on the jurisdiction, policymaking and practice implementation may be driven at the national, regional or local level, or at a combination of two or more of these tiers of administrative control.

The *NUA* provides a clear directive as to how its principles can assist public authorities in achieving sustainability outcomes:

We will anchor the effective implementation of the *New Urban Agenda* in inclusive, implementable, and participatory urban policies, as appropriate, to mainstream sustainable urban and territorial development as part of integrated development strategies and plans, supported, as appropriate, by national, sub-national, and local, institutional and regulatory frameworks, ensuring that they are adequately linked to transparent and accountable finance mechanisms. (Habitat III, 2017, paragraph 83)

In recent decades, national priorities have been established to combat environmental degradation caused by the depletion of natural resources, pollution, global warming and urban sprawl, each of which is associated with population growth. Businesses are increasingly concerned with the social, environmental and economic impacts of these phenomena and, as a result, corporate social responsibility statements are becoming a major factor in the selection of leased space (Christensen, 2012, 2017). With varying degrees of success, the United Kingdom and China have sought to combat sprawl by implementing green belts as a containment strategy (Amati & Yokohari, 2006; Zhao, 2011), although this process has not been without challenges (Amati, 2008). Smart growth, compact cities, new urbanism and liveable communities have also emerged as potential alternative policy solutions to sprawl.

While many cities are grappling with the challenges associated with population growth, other cities are struggling to resolve the opposite problem. Among the impacts of the 2007–2011 global financial crisis (GFC), urban ‘shrinkage’ has forced some cities to address economic and demographic decline as they struggle to compete for domestic and international capital. Research by Audirac, Fol, and Martinez-Fernandez (2010) discusses the social and economic inefficacy of traditional growth strategies and calls for innovative solutions to address the pressures of depopulation. For some shrinking cities, such solutions have come in the form of increased community engagement and a renewed focus on green buildings and infrastructure (Schilling & Logan, 2008).

Planning strategies to address such urban challenges associated with both under- and overpopulation may take the form of development plans, controls (e.g. form- and performance-based codes) or incentives encouraging sustainable property development (e.g. streamlined approval for ‘green’ property development). Discussions have begun to emerge about how these strategies contribute to a city’s economic viability, level of sustainability and sense of ‘place’. It is important to note that ‘green’,

‘environmental’ and ‘sustainable’ are often used interchangeably within planning strategies and instruments.

Within the SDG framework, *Goal 11* includes the following two targets: (1) to ‘adopt disaster risk and climate change and adaptation measures’ and (2) to ‘minimize environmental impact’. Both of these can be specifically addressed, at least in part, through increased green and sustainable property development. This chapter discusses strategic planning, development controls and incentives utilized by planners to encourage increased sustainable property development, and it offers global examples of how some of these strategies have been implemented. However, it should be noted that the relationship between strategic planning, development controls and incentives on the one hand, and sustainable development on the other, is too broad in scope to be examined in detail in a single chapter. Therefore, this chapter focuses on strategies, policies and incentives that have demonstrated an impact on sustainable property development.

## 2 STRATEGIC PLANNING, DEVELOPMENT CONTROLS AND INCENTIVES

Development planning and control functions of a planning system are empowered via legislation (Gurran, 2011). The power structure in a planning system can be assigned by means of a top-down or bottom-up approach. For example, the United Kingdom outlines planning policy at the national level and then assigns responsibility to the local planning authorities for enforcing the planning itself and for developing assessment policies. In contrast, Australia and the United States both limit federal involvement in planning and policy development. Instead, sub-national states are responsible for enacting legislation related to land-use planning and local governments are responsible for the detailed work related to preparing plans and assessing property developments. Interestingly, the actual development application process varies only slightly between these three countries despite variations in the level at which their planning processes are implemented (Christensen & Sayce, 2015), see Fig. 4.2.

The *NUA* and the *International Guidelines on Urban and Territorial Planning*, adopted by the Governing Council of UN-Habitat in April 2015, suggest that a nested hierarchy of state-led, regulation-driven, spatial plans—that include plans at the national, regional and local scales—

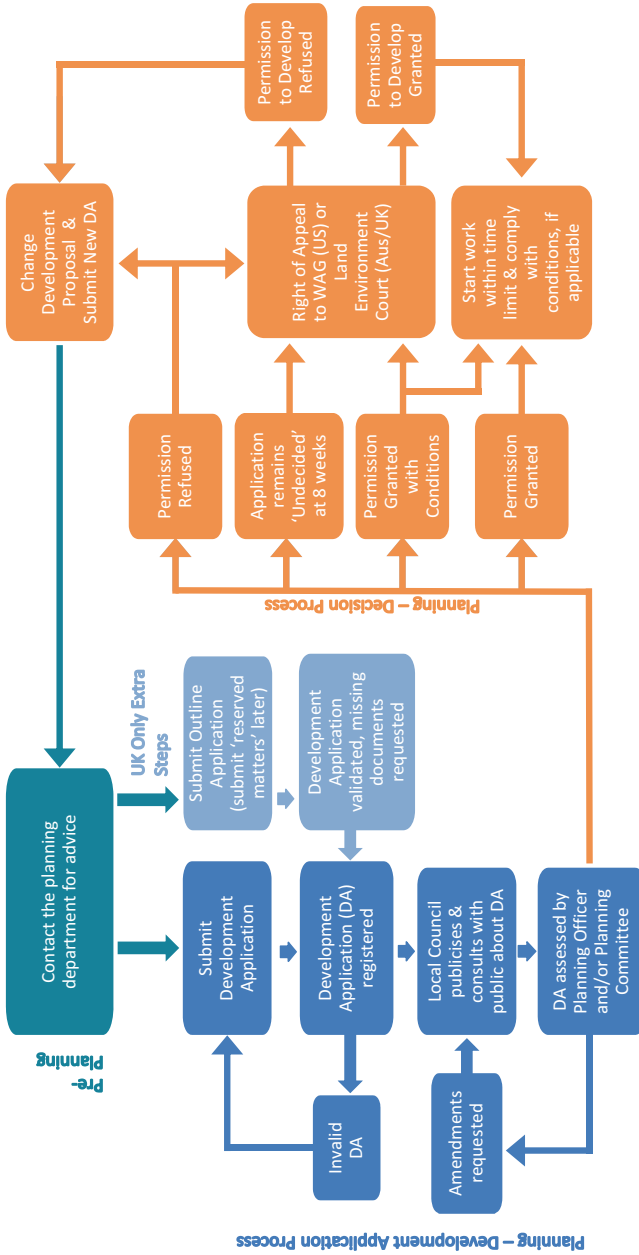


Fig. 4.2 Typical planning process for development applications in the United States, United Kingdom and Australia

should be implemented. Regardless of the power structure, the goal of city and regional planning is to balance the desires of individuals with the best interests of society, not only for the present day but also for future generations. This means that strategic planning and development processes need to control negative externalities (i.e. external costs, management of public/quasi-public goods and distributional injustice) and promote positive externalities (e.g. regenerative development); neither of these is effectively accounted for in inefficient property development markets. The *NUA* suggests that regulatory frameworks should clearly outline and define their expectations for sustainable development:

We will promote the development of adequate and enforceable regulations in the housing sector, including, as applicable, resilient building codes, standards, development permits, land use by-laws and ordinances, and planning regulations ... ensuring sustainability, quality, affordability, health, safety, accessibility, energy and resource efficiency, and resilience. (Habitat III, 2017, paragraph 111)

The very nature of planning means that there will be differences between geographic regions and countries. However, the *NUA* offers direction on the overarching principles, providing common threads among countries. With varying degrees of success, many planning systems have sought to encourage desirable development by offering statute and policy guidance notes to assist local developers in achieving sustainable development outcomes. Three main instruments enable planning authorities to influence the development process are:

1. Forward planning: strategic objectives and policies to achieve them
2. Development control or management: government ordinances, codes and permit requirements that constrain the private use of land and natural resources, so that they conform to public policies
3. Development incentives: an array of benefits designed to encourage sustainable development

Some countries and localities may place greater emphasis on the use of one of these instruments over the use of others. Although strategic planning and development control/management should, in theory, be complementary, in practice there is often a greater emphasis placed on the latter. This may be because many planning authorities have limited

resources or expertise to support effective strategic planning and this, in turn, often results in incomplete policy frameworks. The limited attention to strategic planning may also reflect the fact that final decision-making for development applications is often delegated to elected (and therefore politically driven) lay committee members rather than planning professionals who are more likely to be driven by long-term outcomes. In either case, it could be argued that the lack of emphasis on strategic planning is the cause of some of the urban sustainability challenges that many global cities face today.

A planning system is intended to manage land use in such a way as to protect the public interest. It does this by requiring all developments to obtain development approval before a project can proceed. Ideally, decisions on individual applications should be made in the context of mid- to long-term strategic development plans, development controls, written government policy/advice, previous decisions and the development application itself. However, in an effort to streamline the process, developers often engage planning consultants to advise them on negotiation prior to the application being made. As a result, planning is sometimes referred to as a 'negotiated process' in which the process of consultation, often including both community groups and reports from a wide variety of experts, influences the final decision.

Some planning authorities argue that stringent development plans and controls cannot be justified in areas of economic decline (Hall, 2011). However, Hall suggests that planning authorities in such areas should implement policies that incentivize developers to pursue high design standards because such projects are often more profitable. Without strategic planning and development controls, cities would likely see even more extensive urbanization of the rural/urban edge and there would be less land dedicated to community infrastructure, such as open spaces. Furthermore, high-quality developments can add value by promoting regeneration in the community. Thus, Hall notes that "Reluctance on behalf of both parties to pursue higher standards is more in the mind than in the pocket" (Hall, 2011, pp. 90–91). A regulatory strategy that incorporates a directive and guidance for developers is therefore essential for ensuring sustainable development and high design standards as well as for effectively balancing the resultant externalities.



## 2.1 *Forward Planning Strategies*

Strategic planning provides the context for development control decisions by detailing mid- and long-term guiding principles, most commonly detailed in a comprehensive plan, and the *NUA* framework offers a critical link between global goals (SDGs) and local action. These principles guide local planning authorities in the development of specific controls for land-use management, spatial planning, environmental and other development issues. For example, local planning authorities may use strategic planning to designate (1) areas targeted for development (e.g. allowing some development uses/scales in a central business district (CBD) but not in a residential one), (2) areas where they would like to encourage development (e.g. by identifying land for specific uses in some areas) and (3) areas where development is discouraged (e.g. by identifying park space).

An integrated, long-term approach to addressing development is not new to city and regional strategic planning practice. A successful, comprehensive plan also incorporates strategies for conserving resources, such as energy (e.g. by offering guidance for efficient transportation planning) and water (e.g. by devising efficient flood and storm water management guidelines). It also considers present and future housing needs and protects health and the environment (e.g. through comprehensive planning of utilities). Furthermore, it does all of this while identifying potential areas for future growth and development. In short, strategic planning helps landowners, developers and investors better understand what type of property development is likely to be accepted.

Saha and Paterson (2008) noted that a small number of American cities had made strong commitments to sustainability by integrating sustainability goals into long-term, comprehensive forward planning documents; however, many more cities had adopted only specific aspects of sustainability (e.g. energy conservation measures, green building programs or affordable housing targets). Furthermore, we note that initiatives related to energy use and conservation are not yet being widely incorporated into zoning ordinances even though many cities identify reduction in carbon emissions as one of their main targets. Although some cities have set minimum energy performance targets for buildings in which they are occupants (to be discussed in the procurement section, below), attempts to address energy issues more broadly by adopting green building technology and renewable energy use by city government are yet to gain ground (Jepson Jr. & Haines, 2014; Saha & Paterson, 2008).

### 2.1.1 *Comprehensive Planning*

A comprehensive plan can be considered a ‘blueprint’ for the future. A vision statement should be the foundation of the plan, outlining where the municipality perceives itself to be at present and how it wishes to evolve in the future. This statement should be supported by strategic priorities, objectives, actions and targets, as well as project ideas which translate the vision into reality. It is essential for a city to involve stakeholders (residents, businesses and other government entities) throughout the process to ensure that the comprehensive plan represents the vision of the entire community. Having a system to manage performance data related to various objectives and initiatives to track progress, communicate internally, and maintain alignment between goals, actions and progress is essential for the successful implementation of a strategic plan. The City of Durham, North Carolina, offers an excellent example of how attention to performance measurement and monitoring can help the city align its spending and activities with strategic priorities.<sup>1</sup>

As an example, the *Sustainable Sydney 2030 Plan*<sup>2</sup> outlines the community vision of making Sydney “as green, global and connected as possible by 2030” with the aim of transforming “the way [people] live, work and play”. Ten strategic directions were created to provide a framework for action; two of these directions specifically relate to sustainable development practices and the development of ‘green’ buildings. The first targets sustainable development, renewal and design. The second focuses on becoming a leading environmental performer by striving toward the following six objectives, each of which includes supporting actions, targets and initiatives:

- Increase the capacity for local energy generation and water supply within the boundaries of Sydney.
- Reduce waste generation and stormwater pollutants to the catchment area.
- Improve the environmental performance of existing buildings.
- Demonstrate leadership in environmental performance through City operations and activities.

<sup>1</sup>For more information on the Durham Strategic plan, performance measurement and reporting, see: [www.clearpointstrategy.com/wp-content/uploads/2016/04/City-of-Durham.pdf](http://www.clearpointstrategy.com/wp-content/uploads/2016/04/City-of-Durham.pdf).

<sup>2</sup>For more information about the *Sustainable Sydney 2030 Plan*, see: [www.cityofsydney.nsw.gov.au/vision/towards-2030](http://www.cityofsydney.nsw.gov.au/vision/towards-2030).

- In addition to previous steps focusing on reducing and offsetting City greenhouse gas emissions, the City aims to cut emissions at the source.
- Cut carbon dioxide emissions that come from the City's properties in half.

Further evidence of Sydney's commitment to sustainable development is the establishment of the Greater Sydney Commission (GSC) in 2016. The purpose of the GSC is to coordinate the planning that will shape the future of Greater Sydney. It should be noted that one of the GSC's priorities is to "consider and integrate the 2015 Sustainable Development Goals (SDGs) recently adopted by Australia as a member of the United Nations (UN)".<sup>3</sup>

Berke and Conroy (2000) set out six principles of operational performance for sustainability by which comprehensive plans can be evaluated to determine how well they support sustainable development. These principles comprise harmony with nature, liveable built environments, place-based economy, equity, polluters pay and responsible regionalism. The first four principles address the long-term ability of a community to sustain healthy local social, economic and ecological systems, while the latter two link local to global concerns and reflect each community's broader obligation to others. A balanced comprehensive plan would have each of the six principles equally represented. In their analysis of 30 comprehensive plans across the United States, the authors found a diversity of approaches to advancing sustainability. Jacksonville, Florida's comprehensive plan received the highest score even though the plan does not specifically address the sustainable development principles. Instead, the six principles are advanced on a piecemeal basis, with separate plan elements each focused on achieving one or two principles. In contrast, another high scoring city—Portland, Oregon—balanced multiple principles by weaving policies from all plan elements and using sustainable development principles to create an overarching, integrated strategy. The authors concluded that whether the sustainable development concept was, or was not, explicitly integrated into the plan had limited impact on how well the plan was judged to promote sustainability. It should be noted, however, that this research was conducted in 2000 and that sustainability has become more mainstream over the last

<sup>3</sup>For more information about the Ministerial Statement of Priorities for the Greater Sydney Commission, January 2016, go to: [https://gsc-public-1.s3.amazonaws.com/s3fs-public/2016\\_-\\_2018\\_ministerial\\_statement\\_of\\_priorities\\_for\\_the\\_greater\\_sydney\\_commission.pdf](https://gsc-public-1.s3.amazonaws.com/s3fs-public/2016_-_2018_ministerial_statement_of_priorities_for_the_greater_sydney_commission.pdf).

decade. As a consequence, sustainability may have become more integrated into comprehensive planning during this time.

The emergence of the 100 Resilient Cities program, created in 2013 by the Rockefeller Foundation to catalyze an urban resilience movement, represents a further evolution of the sustainable development concept. The program sets out seven qualities that will help cities to withstand, respond to and adapt more readily to shock events and long-term stresses. These qualities are:

1. Being reflective and using past experience to inform future decisions.
2. Being resourceful and recognizing alternative ways to use resources.
3. Being robust and using well-conceived, constructed and managed systems.
4. Maintaining redundancy, with spare capacity purposively created to accommodate disruption.
5. Being flexible, with a willingness and ability to adopt alternative strategies in response to changing circumstances.
6. Adopting an inclusive approach, prioritizing broad consultation to create a sense of shared ownership in decision-making.
7. Adopting an integrated approach, bringing together a range of distinct systems and institutions.

The aim of the program is to “ensure cities around the globe are better able to manage disruptions and plan for the future, so that people are safer, healthier, and have increased livelihood options”.<sup>4</sup> 100 Cities around the world are now using this framework to guide their comprehensive planning efforts. In summary, comprehensive plans aimed at sustainable development should create a vision for long-term sustainable growth, prevent future development conflicts and ensure that the social, economic and environmental goals of the city are balanced.

## 2.2 *Development Controls*

Control of land use is necessary because individual land owners may wish to develop their land in a manner that does not align with the needs or aspirations of the broader community as outlined in the comprehensive

<sup>4</sup>For more information about the 100 Resilient Cities program and participating cities, visit: <http://www.100resilientcities.org/>.

plan. Development controls restrict the private use of land and natural resources to conform to public policies. There are several types of land-use regulations including, among others: zoning, building codes, subdivision regulations, curve-cut permit systems, historic preservation laws and tree-cutting laws. Of these, the two primary strategies used to control development are zoning and building codes, which are discussed in more detail below. Controls can be created for (1) multiple locations and scales (e.g. suburb, street or single lot), (2) various types of development (e.g. residential, commercial or industrial), (3) differing purposes of the development (e.g. provision of car parking, stormwater control), (4) diverse building design features (e.g. in terms of scale and appearance) and (5) a range of urban design principles (e.g. setbacks and sidewalks).

Development controls are administrative mechanisms which guide planning authorities in the assessment of development proposals. They can be used by the planning authorities to uphold a development proposal, reject a proposal or allow an exception to the controls if the development offers other tangible or intangible benefits to the community. Landowners, developers and investors may also use local development controls to challenge the strategies and principles of the local development plan in the application of an exception. In some countries, planning agreements can be made to offset the perceived externalities of a development. For example, in the United Kingdom, a community infrastructure levy (a local taxation measure) can be applied to offset a development's perceived negative externalities, such as increased traffic congestion, or to support the creation positive externalities, such as the provision of other community facilities off-site. These agreements can be beneficial to communities with tight public spending budgets because they ensure that the external costs of the development are, at least partly, carried by those who are most likely to benefit financially from the development. In this way, planning authorities can help balance economic gains and the achievement of social goals against the potential environmental costs.

### *2.2.1 Prescriptive Zoning*

Zoning ordinances are the most widely used land-use regulation instrument and serve essentially as a means of implementing an authority's forward planning strategies. They commonly include a written description of requirements and standards related to the use of land, as well as a zoning map (a color-coded diagram of the existing zoning classifications: single-family residential, multiunit, mixed-use, agricultural, commercial and

industrial). The written portion of the zoning ordinance generally includes the classifications of permitted uses for the different geographic ‘zones’ of land. It will also: describe restrictions, such as lot sizes, setbacks, density and height limitations; set style and design requirements for structures; identify requirements related to the protection of natural resources; outline the procedure for allowing nonconforming uses and for granting variances, amendments and hearing appeals; and explain the penalties for zoning violations.

Traditional zoning regulations in the United States focus on land use and development capacity, primarily with the aim of reducing potential adverse impacts of development to an acceptable level. Critics argue that traditional zoning ordinances contribute to sprawl, increase dependence on automobiles and have a limited impact on the achievement of important objectives, such as sustainable design (Ewing, Bartholomew, Winkelman, Walters, & Chen, 2007; Talen, 2013). Jepson and Haines (Jepson Jr. & Haines, 2014) studied 32 zoning ordinances across the United States and concluded that zoning can be an important tool for promoting sustainable development but also noted a substantial variation in the presence of regulatory measures related to sustainability in their sample. Some alternatives to conventional zoning approaches that aim to increase flexibility for developers and promote sustainable property development include cluster zoning, incentive zoning, inclusionary zoning and overlay zoning.

*Cluster zoning* is an example of a prescriptive smart growth code. It can be used to preserve open space while increasing density by reducing minimum lot size requirements (Talen, 2013). Also called conservation-oriented development, this mechanism allows the development of homes to be clustered more densely onto one or more individual lots because the density requirements are applied to a large area rather than on a lot-by-lot basis. As long as the overall density requirements for the entire area are met, the developer has greater flexibility when designing the site and locating structures within it. One advantage of allowing concentrated, higher density development is the ability to include smaller, lower-cost housing units and thereby offer a range of housing choices for the diversity of residents that typically comprise a community. The remaining land can then be preserved for public and community uses such as parks, nature/jogging/walking trails, green space, active recreation and community gardens.

Allen, Moorman, Peterson, Hess, and Moore (2012) found that planners perceived that cluster/conservation-oriented development protects

natural resources, wildlife habitats and farmland to a greater extent than compact development. Through the use of master planning strategies, such as the clustering of residences and infrastructure on the site to minimize the impact of the development, applying best management practices for rainwater capture and stormwater runoff, and requiring energy-efficient building design, developers in cluster-zoned areas can create development projects that have less of an impact on the environment (Dunham-Jones & Williamson, 2011; Randolph, 2011). Göçmen and LaGro (2016) note that planners and decision-makers, particularly those less familiar with sustainable development, may perceive conservation-oriented development to be more tangible than compact development and other smart growth approaches.

*Incentive zoning* is a tool that enables developers to develop land in a manner that would not normally be permitted in exchange for providing a public benefit (e.g. a public square, streetscape or park; senior or affordable housing) that the developer would not otherwise have been required to provide. In exchange for the community benefit, developers may receive greater flexibility in relation to required building setbacks, floor heights, floor area ratio, parking requirements or density. Although incentives vary by city, governments commonly calculate the incentive(s) in such a way as to balance the public benefit with the developer's costs and gains.

Local governments have used incentive zoning to accomplish a wide range of goals, including historic preservation, economic development and conservation. Chicago first used incentive zoning in 1957 to stimulate skyscraper construction in its downtown area (Costonis, 1972; Schwieterman & Caspall, 2006). More recently, the City of Seattle offered increased floor area for projects that either (1) include affordable housing or other public amenities (such as a daycare center, open space, green street improvements or on-site amenities) or (2) use a transfer of development rights (TDR) to protect historic structures, create open space or protect regional farms and forests. To receive the incentive, developers must also meet certain minimum requirements. Although these requirements vary by zoning classification, they generally include a green building certification (e.g. Leadership in Energy and Environmental Design (LEED)) and the creation of a Transportation Management Plan.<sup>5</sup> New York City offers height density bonuses (a greater number of floors

<sup>5</sup> More information can be found at: [www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web\\_informational/s048509.pdf](http://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/s048509.pdf).

in a high-rise building) in exchange for the provision of public plazas (privately-owned public spaces), visual or performing arts spaces, subway improvements, theater preservation, FRESH food stores and affordable housing.<sup>6</sup> The American Planning Association notes that communities with a high demand for land and well-established planning regulations that are in need of specific public amenities or types of development are in the best position to benefit from incentive zoning. They warn, however, that communities considering incentive zoning need also to consider the potential hidden costs associated with every project, including long-term costs such as infrastructure challenges and congestion.<sup>7</sup>

*Inclusionary zoning* is similar to incentive zoning, but this strategy focuses more on generating social benefits, such as creating greater housing options for specified categories of residents within the community. In contrast to incentive zoning, inclusionary zoning *requires* developers to generate the required social benefit, but many cities also offer offsets to balance the generation of the positive externality. Offsets for including a certain percentage of affordable family housing units, senior housing units and/or multiunit housing within a particular development project or land area vary by city, but they may include expedited granting of permits, fee waivers, tax abatements, modified development standards, density bonuses (typically height increases) or reduced parking requirements. As of January 2018, nearly 500 municipalities in the United States have adopted inclusionary zoning regulations, with California and New Jersey accounting for almost two-thirds of the programs.

The requirements of inclusionary zoning programs vary. For example, in Boston, 13% of the units in new buildings must be offered at rents which are affordable to a household earning 70% of the median income in the area.<sup>8</sup> New York City requires 20% of the units to be affordable to families on 80% of the area's median income.<sup>9</sup> Some cities allow developers to pay a comparable fee in lieu of providing subsidized units in their

<sup>6</sup>More information can be found at: <https://www1.nyc.gov/site/planning/zoning/glossary.page>.

<sup>7</sup>More information can be found at: [www.planning.org/divisions/planningandlaw/propertytopics.htm](http://www.planning.org/divisions/planningandlaw/propertytopics.htm).

<sup>8</sup>The Executive Order by Mayor Martin J. Walsh on December 9, 2015 can be found at: [https://www.cityofboston.gov/news/uploads/2868\\_55\\_10\\_12.pdf](https://www.cityofboston.gov/news/uploads/2868_55_10_12.pdf). Additional explanation can be found at: <https://www.cityofboston.gov/news/Default.aspx?id=20463>.

<sup>9</sup>More information about the New York City's Inclusionary Housing Program can be found at: [http://www.nyc.gov/html/ia/gprb/downloads/pdf/NYC\\_Planning\\_InclusionaryZoning](http://www.nyc.gov/html/ia/gprb/downloads/pdf/NYC_Planning_InclusionaryZoning).



buildings (Porter & Davison, 2009) with the money used to fund affordable housing projects elsewhere in the city. Lens and Monkkonen (2015) note that inclusionary zoning is more likely to reduce income segregation than strategies that aim to bring higher-income households into lower-income parts of the city. This view is supported by Jacobus (2015) who argues that inclusionary zoning is one of the few proven regulatory strategies resulting in affordable housing being integrated into higher-income neighborhoods—and he notes that it has additional positive benefits such as access to quality schools, public services and better jobs. If the development incentive is offered in the form of extra density, inclusionary zoning can also contribute to creating more sustainable urban development that is compact and walkable. However, critics of inclusionary zoning argue that it imposes costs that are not sufficiently offset and can therefore suppress homebuilding. This in turn has the potential to limit housing choices, inflate home prices, accelerate the displacement of working families, erect walls to opportunity and inclusion, and forestall both density and affordability. Jacobus (2015) offers an excellent discussion of the benefits and challenges of implementing successful inclusionary zoning programs.

*Overlay zoning* (also known as overlay districts) is applied over one or more previously established zoning districts to establish additional requirements to those currently in place in the district(s). Regulations or incentives are often attached to the overlay district to protect unique features in the community (e.g. historic buildings, wetlands, steep slopes and waterfronts) or to promote stricter standards and criteria for specific types of development project, such as mixed-used developments, waterfront developments, housing along transit corridors or affordable housing. Overlay districts can be very effective, politically viable regulatory tools because they are created specifically for a given district to meet its unique community goals. For example, Cleveland, Ohio, created a Live-Work Overlay District to encourage the re-use of older, underutilized industrial buildings for a combination of living and working space, even in industrial districts that otherwise prohibit residential use. In addition to revitalizing an underused area of town, the overlay district contributes to the City's goal of reducing carbon emissions by encouraging the re-use of existing buildings; this strategy requires less energy and resource usage than new con-

struction.<sup>10</sup> The Town of Empire, Wisconsin, created a Critical Areas Overlay (CAO) District to preserve the unique and valuable geologic and natural resources in the area and to minimize development in other areas that were difficult to develop safely or that were prone to unwanted soil erosion or groundwater contamination.<sup>11</sup>

### 2.2.2 *Performance-Based Zoning*

As an alternative to the conventional (prescriptive) zoning methods, performance standards regulate development by establishing goals for the *outcome* of the development rather than regulating how those goals are achieved. For example, rather than restricting a property's specific uses, the regulator allows any use, provided the development achieves a defined set of performance requirements. These requirements relate to the same outcomes as traditional zoning ordinances (e.g. environmental protection, neighborhood character, traffic control). The difference is that the developer has greater flexibility in deciding how those goals are to be met and can develop the property in any way that meets the set standard. Cities adopting this strategy argue that it enables them to codify values and goals without restricting *how* those goals are achieved, which can in turn create neighborhoods with a richer and more diverse character. Critics of performance-based zoning argue that its flexibility makes it challenging and expensive to enforce, which could result in substandard design or permit uses that are incompatible with surrounding structures. Although performance-based zoning (and other regulations) can be politically difficult to adopt for this reason, an increasing number of cities in the United States and internationally are integrating this particular type of zoning system into their regulatory processes. They do this because performance-based systems encourage more innovative solutions and enable developers to meet the goals of the city while achieving higher levels of sustainability than conventional zoning would have allowed. Prescriptive and performance-based zoning and other supporting ordinances typically exist simultaneously, allowing designers to choose a preferred compliance pathway. One example is Queensland's

<sup>10</sup> A more in-depth discussion of Cleveland's efforts related to amending their zoning code to promote sustainable development can be found at: [http://planning.city.cleveland.oh.us/cvp/sus\\_oview.php](http://planning.city.cleveland.oh.us/cvp/sus_oview.php).

<sup>11</sup> The Town of Empire, Wisconsin Zoning Ordinance can be reviewed at: <http://www.fdlco.wi.gov/home/showdocument?id=6525>.

*Sustainable Planning Act 2009*,<sup>12</sup> which allows developers to choose between a traditional ‘code assessable’ track or an alternative ‘impact assessable’ option. The latter is a potentially more flexible approach requiring more interpretive, performance-based criteria to be met.

An example of how flexibility in performance-based zoning can inspire green building is the collaboration between the Bullitt Center and the City of Seattle. During the pre-construction planning stages, concern arose about whether the owner’s building performance goals were feasible. Many of the proposed design and sustainability features had legal or code-related hurdles that needed to be overcome; these included the legality of solar panels that overhang public sidewalks, the consumption of rainwater, graywater infiltration in an urban bioswale, and the use of composting toilets in commercial buildings.<sup>13</sup> The Bullitt Foundation worked with the City of Seattle’s Planning Department and other agencies to relax some of the prescriptive standards in exchange for meeting negotiated performance-based standards. Through this collaboration, the Bullitt Center was able to achieve a full Living Building Challenge certification in 2015 and has been regarded as the ‘world’s greenest commercial’ building.<sup>14</sup> This achievement was only possible because the City of Seattle created an alternative compliance pathway, the Living Building and 2030 Challenge pilot programs, which allowed for specific departures from code requirements to encourage the development of more sustainable buildings. The pilot programs have now been fully integrated into Seattle’s Design Guidelines, which state that “in contrast to the very specific regulations of the City’s Land Use Code (Title 23 Seattle Municipal Code), the Seattle Design Guidelines set the stage for flexibility and dialogue during project review. An applicant may be granted a departure from the Land Use Code by demonstrating that the alternate design solution better meets the intent of the design guidelines” (City of Seattle, 2013, p. iv).

<sup>12</sup> More information can be found at: [www.dilgp.qld.gov.au/planning/framework/previous/sustainable-planning-act-2009.html](http://www.dilgp.qld.gov.au/planning/framework/previous/sustainable-planning-act-2009.html).

<sup>13</sup> An Urban Land Institute (ULI) case study with additional details can be found at: [casestudies.uli.org/bullitt-center/#planning](http://casestudies.uli.org/bullitt-center/#planning).

<sup>14</sup> The Bullitt Center Achieves Full Living Building Challenge Petal Certification! Published June 26, 2015 at: <http://www.bullitt.org/2015/06/26/the-bullitt-center-achieves-full-living-building-challenge-petal-certification/>.

### 2.2.3 *Prescriptive Versus Performance-Based Building Codes*

In this chapter, the discussion up until this point has been primarily focused on the task of planning at a neighborhood, city or regional level. This section focuses on the importance of regulations at the level of the building, explaining how these are important to achieving larger scale outcomes.

Building codes, which may refer to prescriptive specification criteria or to performance outcomes required of all new construction or major renovations, traditionally served to regulate structural safety and fire safety. From a planning perspective, building codes also mitigate negative external costs. This is particularly evident with fire safety, as fires commonly spread and thus affect outcomes at larger scales. However, from a more modern perspective, building codes may also contribute to the achievement of social and environmental objectives. The most common example of this in the sustainability context is the use of ‘energy codes’, which are building codes designed to influence the energy efficiency of a building (Jacobsen & Kotchen, 2013). The *NUA* offers a guiding principle to ensure that public authorities focus on the performance of assets to promote sustainable development in their community:

We recognize that urban form, infrastructure, and building design are among the greatest drivers of cost and resource efficiencies, through the benefits of economy of scale and agglomeration, and fostering energy efficiency, renewable energy, resilience, productivity, environmental protection, and sustainable growth in the urban economy. (Habitat III, 2017, paragraph 44)

In common with planning instruments such as zoning regulations, building codes take two forms: prescriptive and performance based. Prescriptive codes mandate a design specification. For example, in an energy efficiency-seeking building code, this could be a minimum insulation rating for a floor, wall or ceiling construction. Performance-based building codes attempt to specify the outcome rather than a particular design or technique. In this scenario, an energy efficiency-seeking performance code could require a maximum energy-use intensity for space heating. As noted with zoning ordinances, prescriptive and performance-based building codes typically exist simultaneously and permit designers to choose their preferred compliance pathway.

This choice is ultimately a trade-off between expediency and flexibility. Because they are easy to audit, prescriptive pathways reduce regulatory risk and are preferred by those wishing to build as quickly as possible, such as speculative or residential developers. Performance-based building codes

allow designers to bypass the rigidity inherent in a prescriptive solution and are preferred by those engaging in innovative or bespoke designs. But the cost of bypassing the rigidity is additional time and costs associated with proving to an assessor that the design meets the required performance outcome.

Armstrong, Wright, Ashea, and Nielsen (2017) note that although Australia has had compliance choice for 20 years, prescriptive compliance is a more popular choice than performance-based compliance. The authors argue that this preference leads to societal losses through stifled innovation and they criticize industry ‘mind-sets’ for failing to use performance-based pathways. Furthermore, they explain that energy codes present a uniquely quantifiable outcome, and thus are best suited to performance-based compliance. The increased voluntary use of NABERS<sup>15</sup> energy ratings in the market over the past decade and adoption of recent NABERS disclosure requirements indicates that the industry and government have finally begun to make this shift. Indeed, for nearly half a century, most US states have used energy codes that rely exclusively on performance-based compliance pathways (Jacobsen & Kotchen, 2013).

However, innovation is also needed in the standards themselves. Energy is easily codified because it is easy to measure, but other dimensions of the SDGs such as health and well-being or biodiversity are more difficult to associate with building design choices or measurable performance requirements. Chapter 6 discusses the development of private green building codes such as LEED, BREEAM and Green Star, which are used around the world to label buildings as environmentally efficient. Since many environmental outcomes are not easily measured or simulated pre-occupancy at the building scale, private green building codes often rely on *prescriptive* design requirements for these dimensions. For example, alternative transportation requirements often involve specifying the location and number of bicycle parking facilities, while material sustainability requires specification of listed products. Nevertheless, most private green building codes adopt *performance*-based compliance where possible, such as specifying maximum water or energy consumption intensities.

The California Green Building Standards Code (2016) is one of the world’s most progressive statutory building codes regarding sustainability

<sup>15</sup>NABERS (National Australian Built Environment Rating System) is a national rating system that measures the environmental performance of Australian buildings, tenancies, and homes in the areas of energy efficiency, water usage, waste management, and indoor environment quality to rate its impact on the environment.

objectives—and its design is strongly influenced by the private LEED building code. Early attempts at integrating LEED and other private sustainable building codes into statutory building codes simply involved equating the statutory code with a requirement to comply with a particular private label and labeling threshold (e.g. LEED Silver). However, legal experts argued that such practice amounted to an outsourcing of democratic governance to private industry (Schindler, 2010). In response, the State of California wrote the California Green Building Standards Code, which includes mandatory code requirements associated with the traditional scope of LEED (see Chap. 6), except for the energy efficiency category which was already regulated in the existing state energy code. Specifically, the state developed prescriptive code requirements for indoor air quality, stormwater management, alternative transport facilities, light pollution, waste management and commissioning of mechanical services. Interestingly, even in this progressive public green building code, most of the requirements are prescriptive, such as specifying the number and location of bicycle parking facilities. This reflects the argument of Armstrong et al. (2017) that it is challenging to measure most performance outcomes, such as the desired mode share of bicycle transport, particularly before a building is constructed. The California Green Building Standards Code also includes ‘voluntary requirements’—these are more stringent prescriptive measures that local governments may opt to mandate within their jurisdiction.

The National Construction Code (NCC) of Australia has been a performance-based code since 1996. Similarly, the Building Code of Australia (BCA) shifted from a prescriptive- to a performance-based code in 1996. However, difficulties in quantifying performance requirements resulted in designers and practitioners lacking confidence in using some of the performance criteria (e.g. energy efficiency) and led to continued heavy reliance on prescriptive solutions (Armstrong et al., 2017). Although the uptake of a performance-based culture has seemed slow, even at times regressing to a prescriptive mind-set, a 2012 report by the Australian Building Codes Board estimated that the shift toward a performance-based approach has resulted a significant benefit to the economy. The report estimated that the economic benefit ranged between US\$ 280 million–US\$ 1.54 billion annually (giving a mid-point estimate of US\$ 770 million) from the implementation of performance-based codes. The report also identified the potential for similar productivity gains through further increases in the use of performance solutions (CIE, 2012). Many local and state governments in Australia have also

integrated environmental performance standards into local ordinances to encourage sustainable development in their regions. Rose and Manley note that “recent reforms in environmental standards/benchmarks have helped to encourage the uptake of innovative sustainable products, yet greater emphasis on environmental performance, mandatory sustainability standards, and performance-based regulations, is encouraged” (Rose & Manley, 2011, p. 9).

In addition to these reports and articles suggesting that performance-based regulations enable higher levels of sustainability to be achieved, a compelling argument in their favor is that the prescriptive requirements in existing codes have, to date, failed to deliver the building outcomes required by the UN SDGs. This implies that the innovation and flexibility allowed by performance-based compliance is required. Many local, state and federal governments, such as the City of Seattle (2013), the State of California (2016) and Australia (Armstrong et al., 2017) concur with this view and are seeking to expand the scope of current zoning and building codes to allow increased performance flexibility across the entire code. Jacobsen and Kotchen (2013) compiled empirical evidence that increasing the stringency of performance-based energy codes in Florida, while still allowing developers the flexibility of developing innovative solutions, resulted in homes with a statistically significant reduction in energy consumption. These examples of statutory integration of performance-based sustainable building codes could be forerunners of a future trend. As public and private green building codes grow in popularity and more clearly align themselves with strategic governance objectives, such as the UN SDGs reflected in local planning regulations, property developers will have ample guidance to achieve sustainable development outcomes.

### 2.3 *Development Incentives*

Development incentives may be the most effective tools that planning authorities can use to stimulate sustainable property development and investment within their communities. Incentives (such as the reduction in development contributions, tax giveaways, financial subsidies and the streamlining of approval processes) can be used to encourage development in certain areas within a city.

Despite the proven value of incentive schemes, local governments around the world have experienced cutbacks from federal governments and this has limited their ability to use federal aid to incentivize sustainable

property development. Cities and councils have therefore had to develop alternative innovative strategies and incentives to attract and support sustainable development projects in their communities. Local incentive schemes are heavily relied upon; these may include tax increment financing, special assessment districts, tax abatements, land swaps, lease/purchase agreements, capital improvements and value-creating trade-offs based on zoning bonuses. There is also increasing use of public-private partnership agreements, where the local government absorbs some of the development risk in exchange for a direct financial stake in the project through participatory leases and/or profit-sharing agreements. Although profit-sharing revenues deliver only modest profits to the local community during the initial years, they can provide other non-financial benefits, such as political protection to city councils vulnerable to charges that they are giving away too much; by creating an agreement to share financial returns the city is signaling to stakeholders that it is acting responsibly and effectively (Christensen & Sayce, 2015).

There are two primary methods by which regulatory and financial incentives can promote sustainable property development: carrots and sticks. ‘Carrots’ are positive financial incentives to encourage positive externalities by the developer, that is, ‘doing the right thing’ and may include rebates and grants (e.g. the Photovoltaic Rebate Program and the Greenhouse Gas Abatement Grant, both in Australia), carbon credit trading (allowed by the Kyoto Protocol) or streamlining of the development application process (which generally results in quicker completion time and reduced holding costs) (Christensen & Sayce, 2015). Clark (2003) offers a thorough discussion of the various incentive programs available in Australia.

In contrast, ‘sticks’ are a means of imposing a penalty or constraint on the developer to prevent negative externalities and thereby promote sustainable property development. These may include local zoning and building codes, taxes and levies (e.g. landfill levies), mandated renewable energy certificates (e.g. the Australian *Renewable Energy Act 2000*) and/or slower processing times for development applications if projects do not include the desired sustainability outcomes.

Denis Hayes, President and CEO of the Bullitt Foundation, noted<sup>16</sup> that one of the primary concerns for property developers is time. Most speculative property developers aim to sell the property upon completion

<sup>16</sup>In a personal phone interview with the author on May 5, 2014.



and therefore do not have the benefit of the holding period to recoup additional costs associated with sustainable development through green lease agreements and capital gains. Furthermore, although market demands drive sustainable property development in some markets, this is not yet the case in all cities (and certainly not in rural areas). Hayes notes that ‘time = money’ for most developers, and that being able to process the development application more quickly is a significant incentive for many developers in Seattle.<sup>17</sup> He suggests that local planning authorities should focus on incentives that positively, or negatively, impact a developer’s bottom line to promote more sustainable development. In addition to working with the City of Seattle to develop the Living Building Pilot program, the Bullitt Foundation also inspired two permit-based incentives to promote green property development:

- *Priority Green Expedited*: Available for all new construction projects, this scheme gives the developer faster building permit review and processing for projects that meet green building standards.
- *Priority Green Facilitated*: A streamlined permitting process for master use permits in exchange for meeting green building standards.<sup>18</sup>

Sayce, Ellison, and Parnell (2007) surveyed institutional investors, valuation surveyors, property developers and property-investing banks in the United Kingdom to gain a better understanding of the drivers of, and barriers to sustainable development, including the potential of financial incentives to stimulate market activity. Exemption from stamp duty land tax was the most popular incentive and was identified as easy to implement and potentially capable of having a significant impact on capital and rental values. Provision of a discount on non-domestic rates for sustainable buildings was also identified as a popular incentive with the potential to affect both capital and rental values; however, it was also seen as the most difficult to implement. Of all the incentive schemes, widening the scope of

<sup>17</sup>For information about other state and local government green building incentives and a discussion on how to determine which incentives best meet the needs of both local governments and property developers, see American Institute of Architects (AIA) and the National Association of Counties (NACo). *Local leaders in sustainability: Green building incentive trends—strengthening communities, building green economies*. The American Institute of Architects, 2012, at: [www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab093472.pdf](http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab093472.pdf).

<sup>18</sup>For more information go to: [www.seattle.gov/dpd/permits/greenbuildingincentives/default.htm](http://www.seattle.gov/dpd/permits/greenbuildingincentives/default.htm).

the capital allowance on energy-efficient plant and machinery was identified as the easiest to implement considered highly likely to be effective at encouraging change within the construction sector. However, its impact on capital and rental values was seen as minimal. Rose and Manley (2011) found that Australian local governments—in their various roles as clients, regulators and funders of education, training and research and development—have played a key role in increasing the adoption of sustainable products. However, the authors also noted that although the combination of regulatory and financial incentives was having a positive effect, there was scope for innovative financial incentives to promote sustainable development even further. Furthermore, additional investment into educational programs for project-based firms and client/end users about the benefits of innovative sustainability solutions could further improve the uptake of sustainable products.

### 3 MANDATORY DISCLOSURE AND INTEGRATED REPORTING

As climate change has become an increasing concern for governments across the world, multiple studies have investigated how and where investment into carbon emission reduction can be optimized. The building and construction industry has emerged as a key sector which local governments have targeted for significant reductions in emissions. However, progress toward reduction targets using voluntary participation in control schemes has proven too slow in many countries. As a result, an increasing number of governments have developed mandatory certification and reporting schemes, which require either a certificate to be obtained or a standard to be met.

The United Kingdom is a good example of this trend. The United Kingdom has set legislative targets stating that CO<sub>2</sub> emissions from all buildings must be ‘close to zero’ by 2050. Since 2008, all buildings have been required to have an Energy Performance Certificate (EPC) issued prior to sale. Unfortunately, there has been no mandate as to the level that has to be achieved, as this is initially an awareness-raising exercise; hence, the impact of the EPC scheme has been minimal. However, beginning in 2018, changes in EPC regulation will focus on more stringent minimum energy efficiency standards (MEES) and it will become illegal to let or lease a residential or commercial property with a poor EPC rating. New MEES

regulations will require all buildings to achieve an EPC rating of at least E (corresponding to at least 39 points on a scale extending to 100 = maximum energy efficiency) before granting a lease; this extends to both new leases and lease renewals and will apply to all privately rented non-domestic properties. The MEES regulation has the potential to significantly impact landlords who may find that some properties are no longer marketable without upgrading to meet the minimum standards (20–35% of existing properties are estimated to be in the F & G rating brackets and may be negatively impacted by the new regulation). The affected properties are also likely to suffer a reduction in their value. The government has indicated that the ‘Green Deal’ policy may offer a financial solution to assist with energy efficiency refurbishment and retrofit projects. A recent Colliers International report noted that one of the aims of the new regulation is to help overcome the traditional ‘split incentive’ barrier which applies to buildings where the landlord foots the bill for energy efficiency improvements that benefit the tenant.<sup>19</sup>

Another strategy that is increasingly being employed by local governments is the process of transforming a voluntary scheme (e.g. LEED or BREEAM) into a mandated requirement and integrating the requirement into the local planning controls. In the United Kingdom and the United States, it is an increasingly common condition of a planning consent that a development achieves some level of green certification. Many UK Councils require a BREEAM ‘Very Good’ rating as a minimum, and many local planning authorities increase this requirement to ‘Excellent’ for all new developments of government buildings. Similarly, many local governments in the United States require EnergyStar or LEED ratings for all new developments. As schemes become increasingly mandated and integrated with regulatory codes, it is likely that buildings previously seen as ‘sustainable’ when compared to other stock will become regarded as the norm.

Sustainability reporting (SR) is another strategy used by public-sector agencies to track and disclose progress toward sustainability targets. Guthrie and Farneti (2008) investigated which aspects of ‘sustainability’ were disclosed in annual reports and found that public-sector reporting is heavily influenced by the Global Reporting Initiatives (GRI). Although early GRI research (2010) reveals that the uptake of the GRI framework

<sup>19</sup>More information about MEES regulations can be found at: [www.colliers.com/-/media/files/emea/uk/research/speciality/15047-a-meessummary-flyer-v9-web.pdf?la=en-gb](http://www.colliers.com/-/media/files/emea/uk/research/speciality/15047-a-meessummary-flyer-v9-web.pdf?la=en-gb).

in the public-sector was slow, more recent examination of its Sustainability Disclosure Database indicates a 218% growth in public-sector reporting using the GRI framework between 2007 and 2011 (GRI, 2013). Farneti and Guthrie (2009) found that most public-sector organizations began reporting using a triple bottom line (TBL) or balanced scorecard (BSC) strategy and only recently transitioned to the GRI framework. However, the application of GRI is often fragmentary, with many organizations selecting only the particular GRI indicators that they wish to disclose. The indicators are often chosen based on the underlying reason the public-sector organization has decided to report. The GRI Sector Supplement for Public Agencies 2 (GRI, 2005, p. 8) states that a public agency may decide to conduct SR in order to:

- Promote transparency and accountability
- Reinforce organizational commitments and demonstrate progress
- Serve as a role model for the private-sector
- Improve internal governance
- Highlight the significance of its role as a consumer and employer in various economies
- Meet disclosure expectations and make information available to facilitate dialogue and effective engagement with stakeholders

There is a supporting body of literature on sustainability benchmarking, balanced scorecards and new public management which stresses the need to manage performance toward the achievement of specified outcomes. This literature reveals that the public-sector's growing interest in the use of performance measures is driven by both internal and external reporting expectations. Adams, Muir, and Hoque (2014) note that the increased emphasis on performance assessment by the public-sector in Australia is reflective of the increased pressure on organizations to continually improve performance across a variety of metrics. However, they note that sustainability, environmental and social responsibility measures were the least used performance measures. The authors conclude that "the comprehensive implementation of sustainability reporting and use of environmental and social performance measures are unlikely to be adopted in the public-sector while they remain voluntary and there is no competitive advantage in the adoption of such measures. Either the reporting needs to be made mandatory or the non-competitive nature of their operations needs to

change, even if this is just by tying resources competitively to performance measurement across all sustainability indicators” (ibid., 2014, p. 58).

Beare, Buslovich, and Searcy (2014) found that the federal government in Canada has been happy to allow businesses to lead the way in formulating their SR. They identified a perceived need for the government to provide guidance on linking corporate SR to public policy. Ball, Grubnic, and Birchall (2014) argue that the public-sector has assumed a greater share of the responsibility for sustainability in cities than the for-profit commercial sector, and they highlight the need for a distinct agenda for sustainability disclosure and reporting in the public-sector. Based on examples from the United Kingdom and New Zealand, they note that SR for public-sector organizations should include a sustainability policy and strategy, as well as sustainability programs, outcomes and operational impacts (such as procurement, management of assets and performance efficiencies). Ball et al. (2014) also discuss strategies that can help develop multilevel, multiagency thinking about sustainability—thinking that can in turn transform public-sector sustainability practice. These strategies include disclosures about policy outcomes and inclusiveness in policymaking, carbon accounting, use of quality of life indicators and improved accounting for natural and social capital. With the broad adoption of the *2030 Agenda for Sustainable Development* and the *NUA*, it will be interesting to see how benchmarking, monitoring and reporting of progress toward the SDGs will begin to influence public-sector sustainability disclosure and reporting practices.

#### 4 PUBLIC PROCUREMENT STANDARDS

As an increasing number of cities set goals of carbon neutrality or significant emissions reduction, many are looking to optimize every stage of delivering a built environment asset, including the procurement stage. Many governments have created frameworks for enabling low-carbon supply chains for infrastructure procurement (e.g. in the United Kingdom [BSI, 2016] and in Australia [Hargroves, 2015]), but research indicates that uptake is slow. This may be partly because tracking carbon flows in local and global supply chains and in emission trading schemes is still an emerging area of research (e.g. Chen, Wiedmann, Wang, & Hadjikakou, 2016; Teh, Wiedmann, Schinabeck, Rowley, & Moore, 2015). All materials used in construction have an environmental signature linked with their manufacture, assembly, transport and service life (e.g. energy, water, emis-

sions, waste, etc.). In addition to the operational carbon emissions over the life of a building, one of the most significant components of built environment performance relates to a building's embodied carbon, which refers to carbon dioxide emitted during the manufacture, transport and construction of building materials, as well as the end of life emissions. However, many governments have avoided the challenging task of calculating and reducing embodied carbon and have instead focused on improving operational efficiency in buildings. Newton, Pears, Whiteman, and Astle (2012) suggest that we are approaching a juncture where the operational energy efficiency of buildings is beginning to equate with embodied energy over the life-cycle of the building.

Testa, Annunziata, Iraldo, and Frey (2016) discuss the critical role of the public-sector, at both global and local levels, in creating and building the 'virtuous cycle'. The authors examine three mutually reinforcing actions necessary for the 'virtuous cycle' to stimulate the green economy: (1) improving the environmental performance of products throughout their life-cycle; (2) promoting and stimulating the demand for better products and production technologies on behalf of the markets; and (3) helping consumers to make better informed choices (p. 1893; referring to European Commission, 2013). The *NUA* addresses the challenges of creating the 'virtuous cycle', as well as the role of regional and local government efforts in supporting initiatives to decrease the impact of economic activity on the environment:

We will ensure universal access to affordable, reliable and modern energy services by promoting energy efficiency and sustainable renewable energy, and supporting sub-national and local efforts; **to apply them in public buildings, infrastructure and facilities**, as well as in taking advantage of their direct control, where applicable, of local infrastructure and codes, to foster uptake in end-use sectors, such as residential, commercial, and industrial buildings, industry, transport, waste, and sanitation. We also encourage the adoption of building performance codes and standards, renewable portfolio targets, energy efficiency labelling, retrofitting of existing buildings and public procurement policies on energy, among other modalities as appropriate, to achieve energy efficiency targets. We will also prioritize smart grid, district energy systems, and community energy plans to improve synergies between renewable energy and energy efficiency. (Habitat III, 2017, paragraph 121)

In addition to their role in creating guidelines, incentives and regulatory instruments, public organizations can also participate in the green economy as consumers of products through the adoption of green procurement practice (GPP). GPP has been defined as “a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life-cycle when compared to goods, services and works with the same primary function that would otherwise be procured” (European Commission, 2008, p. 4). Public authorities are major consumers in Europe, spending an estimated €1.8 trillion annually, representing around 14% of the EU’s gross domestic product (GDP). By using that purchasing power to support goods and services which have less of an impact on the environment, they can have a significant impact on sustainable consumption and production (European Commission, 2008). Similarly, from a more global perspective, because the sums spent by national governments are so large,<sup>20</sup> those governments have the greatest potential to influence sustainable procurement. The magnitude of their impact is followed by that of corporate occupiers, local government, public opinion, and developers and architects (Hartwell, 2013; ISEAL, 2013).

Traditional procurement methods are influenced by three interdependent criteria: time, cost and quality. Time relates to the speed of a development and/or the priority placed on completing it by a set date. This is a commonly occurring factor in procurement for major sporting venues such as those for the Olympics and Soccer World Cup. Cost prioritizes cost certainty to help minimize the risk exposure of a project. Quality focuses on performance and functionality. The person commissioning the public tender or contract must decide whether the project’s highest priority is time, cost management or quality because each priority supports different procurement choices. Hartwell (2013) notes that whenever one of these criteria is emphasized more heavily, it may be at the expense of another. All too often, cost is the driving criterion at the expense of quality; as a consequence, sustainability performance, which is not even considered in the traditional framework, also suffers (Robichaud & Anantatmula, 2011).

Hartwell (2013) recommends a modification to the conventional procurement framework whereby sustainability considerations are embedded into the assessment of time, cost and quality, and suggests that this will

<sup>20</sup>For example, according to Testa et al. (2016), public procurement accounts for an estimated 17% of Organisation for Economic Co-operation and Development (OECD) countries’ gross domestic product (GDP).

enable developers and their teams to more easily balance environmental and social impacts and to reconcile them with economic costs. In public-sector developments, the commissioning agents are able to consider 'big picture' impacts, thus enabling some sustainability criteria to be embedded within the core decision criteria used in the procurement process. However, many key sustainability factors are generally neglected in the public procurement process and it should be noted that there is significant variation in the extent and type of sustainability factors considered by governments (Brammer & Walker, 2011).

The public-sector is generally able to take a long-term view of payback periods and life-cycle costing. This enables them to avoid product specifications for less durable, but often cheaper, materials which can cost more to maintain and operate over time. Because economic costs in the public-sector are considered in terms of 'best value' rather than lowest cost, they are able to thoroughly consider challenging social and environmental issues associated with a development project.

The public-sector and government agencies are the most important developers in many countries. Indeed, after the global financial crises, it was often public-sector-led construction activity that was instrumental in stimulating local economies. Since local authorities are often owners, they tend to maintain a long-term interest in their buildings and typically develop them for occupancy by their own departments, for community use (e.g. housing) or to provide local infrastructure. Furthermore, their limited financial resources, together with their legal status and obligations tend to make them accountable to their communities.

However, although many governments (e.g. European Union, United States, Canada, Australia, Japan and South Africa) have committed themselves to sustainable procurement of services and buildings (through a mix of legislation, operational incentives and education), they have found it challenging to convert their ambitions into practice. Brammer and Walker (2011) suggest four factors that may influence how well Green Public Purchasing (GPP) policies get translated into practice: (1) perceived costs and benefits of GPP policies; (2) familiarity with policies; (3) the availability of sustainably produced services and goods; and (4) organizational incentives and pressures for GPP. The authors note that public procurement staff sometimes lack awareness of GPP techniques and may also lack the necessary technical expertise to fully include environmental criteria in public tenders. Ultimately, this lack of expert knowledge combined with resource constraints and underdeveloped frameworks are the



key barriers to the successful implementation of GPP in the public-sector (ISEAL, 2013).

Governments are, in many respects, leading the way, with legislation and minimum quality requirements for buildings in which they procure occupancy and/or commission for new development. For example, in Australia, the government requires that a building achieve a minimum of a four-star NABERS rating in order to lease space in the building. This has driven the owners in some sectors of the commercial market to redevelop and/or retrofit buildings to attract government tenants (considered quality tenants due to lease length and low-risk of payment default). Although such government tenancy requirements are driving change in the market, there is still a perception that it costs significantly more to increase the sustainability performance of buildings than it does. Furthermore, research findings indicate that cost premia are declining (World Green Building Council, 2013), so the challenge now is to change the industry perception of costs associated with creating sustainable buildings.

Governments, the public-sector and policy agencies require both good advice and deep internal knowledge to act as effective drivers of sustainable development, particularly with regard to the procurement process. Although this level of expertise already exists in some localities, governments worldwide are currently investing heavily in knowledge creation to increase the capacity and capability of their staff. While policy and legislation were identified as the primary determinants of the degree to which public-sector organizations engage in GPP, the leadership of senior managers (who may influence whether GPP is incorporated into planning, strategies and goal setting) was also found to be a crucial factor. In summary, clear legislative and regulatory direction should be provided along with sufficient budgetary flexibility to allow the necessary investment in GPP, recognizing that the exercise might only be financially efficient when viewed from a long-term perspective (Brammer & Walker, 2011).

## 5 DISCUSSION AND RECOMMENDATIONS

Looking to the future, what can be learned from our review of the public regulatory trends? And how can sustainability considerations be better integrated into development, reporting and procurement policies? In this concluding section, we discuss three recommendations to improve the

power of public policy to increase the uptake of sustainable development practices across both private and public-sectors, and to better integrate design with operation. There is a general theme in these proposals: the need for an explorative and collaborative approach to establishing stakeholder buy-in. Standing in the way of this future is the public-sector's hesitancy to mandate the application of SDGs at all levels of government and the lack of resources for implementation.

### *5.1 Application of the UN SDGs to Improve Sustainability Outcomes in Strategic Planning*

Although the SDG goals and targets have been criticized for a wide range of reasons (e.g. the goals are too broad; the targets are too aspirational and pose challenges in relation to measurement and implementation [ICSU, 2015, p. 6]), they do, at least, identify the multifaceted, structural problems which need to be addressed at the global level. We propose that the SDGs offer three benefits which can improve strategic planning for cities.

First, the SDGs provide a common framework and language across government levels and offer public-sector leaders a common stretch agenda<sup>21</sup> to encourage them to think creatively about how to scope policy. Strategies should be based on an integrated and multi-dimensional approach to inclusive and sustainable development. For example, in Valencia, Spain, they have used the SDG framework to promote consistency of policy among the different government departments by adopting a law requiring them to include the SDGs in their development cooperation strategy by adopting a new policy that requires the entire government to get involved. It should be noted that not all 17 SDGs will be equally important or applicable across all jurisdictions; therefore, an important initial step in localizing the global goals is to assess the alignment between local issues and the regional, national and global targets (Global Taskforce of Local and Regional Governments, 2016). Local priorities should be developed, implemented and monitored with the involvement of the major territorial stakeholders in the context of broad participatory governance.

<sup>21</sup> A detailed discussion of the Stretch Agenda concept can be found at: [www.interfacecut-thefluff.com/wp-content/uploads/2012/09/The-Stretch-Agenda-Breakthrough-in-the-Boardroom.pdf](http://www.interfacecut-thefluff.com/wp-content/uploads/2012/09/The-Stretch-Agenda-Breakthrough-in-the-Boardroom.pdf).

Second, in the context of increasingly scarce resources, the SDGs can offer guidance to help governments more efficiently align their budgets with the priorities identified in local, regional and national strategic planning policies.

Third, the SDGs provide clear measures and a framework for monitoring and review. Having consistency of measurement across government levels may offer greater accountability in relation to spending and it may support increased implementation of sustainable development policies. Research in the private-sector indicates that performance monitoring can improve the connection between actions and outcomes. A clear monitoring and review framework for the public-sector could therefore have a big impact on the alignment of local priorities with the allocation of resources.

Ji and Darnall's (2017) discussion of local governments' strategies for addressing sustainability issues highlights the variations in approach. They note that some local governments take an 'exploitation approach', focusing on fewer sustainability issues with more reliable short-term economic benefits and employing more first-generation policy instruments to address them. Other local governments take an 'exploration approach', tackling a broader array of sustainability issues and using a variety of policy instruments to address them. The authors posit that the latter's more comprehensive focus and use of experimental and innovative policy instruments enables these governments to tackle more complex sustainability issues—and to be more effective in influencing the behavior of individual organizations in relation to those issues. We posit that the SDG structure can assist local governments by providing a framework for applying an explorative strategy to enhance sustainable development in their communities.

### *5.2 Increasing the Impact of Mandatory Disclosure and Integrated Reporting Requirements*

To increase the development of 'green' and sustainable building, the public-sector can play a critical role in driving integration of sustainability considerations by requiring mandatory disclosure of energy, waste, water and carbon emissions. The life-cycle for all developments begins when the project is conceived and the desired performance levels are specified. These levels should be specified for all stages of a building's life-

cycle from planning, design, construction, operation, including how the building performance is monitored and managed until the building's end of life (this should include consideration of deconstruction, re-use, retrofit, recycle of materials, disposal options). Among industry leaders, carbon footprint is considered one of the most important metrics they monitor, as it represents a proxy for the overall performance of the building. Despite the importance of this metric, policies and practices directed toward minimizing an asset's carbon emissions (as well as its cost) over a building's life-cycle are not yet mainstream nor are the requirements for benchmarking, monitoring, commissioning and disclosing performance. There is a still significant room for improvement in this area and the public-sector has an opportunity to lead the industry toward standardization and transparency through mandatory disclosure and integrated reporting requirements.

### *5.3 Incentives that More Accurately Reflect the Value-Add of Sustainable Development*

Sayce et al. (2007) question how far fiscal incentives can drive market transformation. They note that although the private-sector has moved rapidly toward the mainstreaming of sustainability issues in their strategic positioning and reporting approaches, the impact of sustainability policies on private-sector decision-making related to real estate has proved more tenuous. The authors note that fiscal incentives would be welcomed in the private-sector, although they acknowledge that challenges to implementation still need to be resolved. Brain argues that policymakers strive to "... achieve an end with means that are never neutral in themselves. In the context of the urban landscape, every design and planning decision is a value proposition, and a proposition that has to do with social and political relationships" (Brain, 2005, p. 233). His contention is that value propositions and value positions cannot be ignored when considering the relationship between the means (policy instruments) and ends (sustainable property development). If we truly aim to develop property in a more sustainable manner, we must begin to assert these values in the property development process.

Financial and planning incentives (e.g. tax abatement and relaxations in zoning), if they strategically negotiate this value proposition, can encourage positive development outcomes. All property development projects

interact with the planning system as soon as the development application is submitted to the local planning authority; the project must proceed within the confines of the applicable planning controls and regulations. Creating planning incentives that have the potential to directly impact a developer's bottom line, such as streamlining the approval process and reducing the review period, are likely to be the most influential in promoting sustainable development.

Current planning practice often rewards non-innovative, code-compliant development, that is, pre-approved solutions that save time and hence save money (since time = money to developers). This approach encourages the use of geared buy-develop-sell strategies by developers because they maximize capital gain. In contrast, development projects that incorporate innovative sustainable solutions commonly invest significant effort into 'proving' to the planning authority that they will generate improved building performance before the developer can obtain approval.

We need a paradigm shift. Planning authorities must base their decisions on the proposition that increased sustainability performance offers value to their communities beyond simply reducing negative externalities—it also has the potential to reduce the long-term planning and regulatory costs associated with those externalities. Rose and Manley (2011) note that many planning authorities lack adequate understanding of the net benefits associated with particular sustainable product innovations. Developing and regulating the use of scientifically validated, government-endorsed instruments (data and tools) that are able to more accurately assess the life-cycle and eco-efficiency impacts of materials and products is the first step toward shifting the paradigm. This must be done at building, precinct and urban levels. In addition, we recommend increasing education and training programs to enable public-sector staff in planning departments to make more informed decisions based on the robust assessment of long-term value, whole life-cycle costs and benefits, and wider environmental benefits. Finally, governments now have the opportunity to positively influence industry practice by (1) systematically and progressively aligning incentives with the SDG principles embedded in a given policy instrument and (2) evaluating both the tangible and intangible benefits of sustainable development using integrated valuation models. In this way, they can promote development that is better aligned with their community vision and sustainability goals.

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