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Urban sustainability and resilience

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1. Introduction

For some 7,000 years, cities have been governed through traditional top-down mandatory regulation and other governance instruments—building codes and zoning legislation, predominantly—implemented and enforced by governments; initially by city governments, later, by national governments. This approach has worked reasonably well to ensure a safe and healthy built environment, but not so well for addressing climate change mitigation (urban sustainability) and adaptation (urban resilience) at city level.

Cities are considered unsustainable sources of resource consumption and waste production, greenhouse gasses included, and are a key contributor to climate change. At the same time, cities are highly vulnerable to climate change risks, such as extreme weather events. Traditional top-down mandatory regulatory interventions are often unable to address these risks. They take a long time to develop, implement and achieve their effects and they require fairly sophisticated regulatory bodies and regulatory capacity (not in place all around the world). An additional complication is that new or amended regulatory interventions apply only to buildings and cities of the future, not to the buildings and cities of today. These are often exempted from regulatory changes—a process known as ‘grandfathering’.

Seeking to respond to these regulatory problems, governments around the world have been experimenting with novel regulatory and governance tools for urban sustainability and resilience; they have been very active in collaborating with firms and citizens in the development and implementation of such tools, and firms and citizens have even developed and implemented such regulatory and governance tools without any governmental involvement at all. These new tools can be considered a continuation of developments mapped, explored and interrogated by Regulatory Institutions Network (RegNet) scholars in the past: the move from prescriptive to performance-based regulation (for example, May 2011), from deterrence-based regulatory enforcement via responsive regulation to smart regulation (Ayres and Braithwaite 1992; Gunningham et al. 1998) and from mandatory regulatory interventions to more voluntary ones (Gunningham 2009).

This chapter seeks to explore and interrogate the range and content of traditional and contemporary regulation and governance for urban sustainability and resilience (to the extent possible in a short contribution; an extensive discussion is available in van der Heijden 2014). In the conclusion, it touches on some important issues that regulatory scholars may wish to take up in future studies, including the changing role of cities in governing urban sustainability and resilience. Throughout the chapter, it becomes clear, also, that cities and the built environment more generally are intriguing areas for regulatory scholarship—yet, they have received strikingly limited attention from regulatory scholars to date.

2. Traditional regulation and governance for urban sustainability and resilience

For a long time, governments have sought to govern urban sustainability and resilience through direct regulatory interventions such as building codes and zoning legislation. These are normally expressed in standards that seek to steer behaviour in such a way that harmful results are prevented or a desired outcome is achieved. Governments have experimented with various types of standards to achieve sustainable and resilient cities, buildings and infrastructure (May 2011). In addition to direct regulatory interventions, governments have sought to govern urban sustainability and resilience through subsidies and (other) economic incentives.

Statutory regulation

Over the past three decades, statutory regulations for urban sustainability and resilience have changed considerably. Traditionally, these were expressed in prescriptive standards that stipulated rather precisely what is expected from regulatees. A hypothetical example is: ‘a wall should have at least 10 cm of insulation.’ Such prescriptive standards often faced criticism: their one-size-fits-all approach often conflicted with particular local circumstances (for example, what to do with a heritage building when adding the 10 cm of insulation means that it loses its characteristic appearance?). They are also critiqued for hampering technological innovation.

Seeking to overcome the straitjacket of prescriptive standards, governments have moved to performance-based standards that specify the performance of a good or service, but do not specify how that performance is to be achieved. In the Netherlands, for example, the building codes set rather ambitious energy requirements (expressed in a numeric energy performance index) for new buildings, but do not stipulate how performance is to be achieved (it is left to builders to choose between highly insulating building materials and low energy-intensive equipment, among other things). Reaching even further are goal-oriented standards that link the behaviour of individuals, goods or services to a regulatory goal. A hypothetical example is: ‘a building should be energy efficient.’ Both types of standards are normally considered to give those regulated an incentive to find a solution that is both effective in terms of meeting the standard and efficient in terms of costs, which, in turn, is expected to stimulate (technological) innovation.

Yet, these types of standards come with their own complications. Where prescriptive standards are fairly clear on what complies and what does not, performance-based and goal-oriented standards allow a lot of leeway. Regulatees and regulatory authorities may differ in their interpretation of standards. Also, not all regulatees may desire to innovate and use the latest technologies. Further, they may not wish to indicate how they comply (as is normally done with performance-based and goal-oriented standards) but prefer to submit to inspection as to whether they do comply (as is normally done with prescriptive standards). Responding to such issues, governments have begun to introduce standards that combine goal-oriented, performance-based and prescriptive standards. The Australian building codes are a typical

example. These state the regulatory goals that buildings and building parts are expected to meet, but also provide accepted solutions on how to meet these goals in prescriptive terms.

Subsidies

Governments have also been active in seeking to steer urban sustainability and resilience through subsidies. Subsidies are often a form of financial support aiming to promote beneficial economic or social outcomes. Subsidies may be introduced for various reasons. Take the example of subsidising the instalment of solar panels by households, as is done in a wide range of countries around the globe. Such subsidies may serve different goals: supporting the market for solar panels by increasing household demand; addressing the negative consequences of using fossil fuels by supporting a transition to renewable energy; and changing households' attitude towards solar panels by making them a more normal aspect of daily life as more and more people install them on their houses.

Yet, while subsidies are, at first glance, an easy tool for governments to steer urban sustainability and resilience, they are also the topic of some controversy. There is a risk that subsidies will not achieve their goals: what can governments do if the money is spent, but the regulatory outcome is not achieved? Subsidies are also critiqued for making the already well-positioned in society even better off. In the example of subsidies for solar panels, such subsidies are available only to those who can afford the upfront costs of solar panels.

Subsidies are sometimes even considered harmful. In this case, a typical example comes from the state of New York, USA. In the late 1960s, more and more people were moving to the state and wanted to live in scenic locations near rivers on floodplains. While planning legislation allowed for the development of floodplains, there was an issue. Private insurers provided flood insurance at market rates (read: high rates because of high risks), but homeowners were not willing to pay the premium for this insurance at market rates. In response, the federal government introduced the National Flood Insurance Program to provide homeowners with low-cost flood insurance. For decades, the program worked well, but the insurance program has experienced a major blow from the various hurricanes that have plagued the state of New York since 2005. Before Hurricane Sandy hit in 2012, the program was already US\$17 billion (AU\$22.5 billion) in debt from payouts resulting from earlier hurricanes

(Katrina, Rita and Wilma), and it is expected that this debt will grow to an astonishing US\$30 billion (AU\$40 billion) due to payouts resulting from Sandy. To recover from this debt and to mitigate future financial risks, the program's rate will go up 25 per cent a year until it reaches levels that actually reflect the risk from flooding. Instead of paying about US\$500 (AU\$660) a year for flood insurance, homeowners are more likely to face fees that reach into thousands of dollars yearly. It goes without saying that this has resulted in considerable civil unrest (this example, and the others in this chapter, are discussed in greater depth in van der Heijden 2014).

Economic incentives

As well as direct regulatory interventions and subsidies, governments apply a range of other economic instruments to steer urban sustainability and resilience. The two best known are taxes and tradable permits. Such taxes seek to correct the prices of production and consumption by including the costs of negative externalities. For instance, in a number of European countries, taxes apply to the extraction of sand, gravel and rock for the cement industry. The environmental costs of these activities would not normally be included in the price of cement and the taxes seek to address this particular issue. The critique of such taxes, however, is that they give the illusion that harmful behaviour is accepted because the behaviour is paid for; (large) firms may consider such taxes as just one of the costs of doing business.

In line with environmental taxes, tradable permits seek to overcome market failures. However, they not only correct the price of production and consumption, they also often seek to put a limit on the amount of negative externalities. Carbon emission trading is a typical example. The cities of Tokyo and Beijing, for example, introduced city-wide carbon trading schemes in 2014, and other cities in China and elsewhere are experimenting with similar schemes. Under such city-wide carbon emission trading schemes, a city government may set a maximum (a 'cap') to the carbon emissions it expects to be produced. It can then issue permits that allow the holder to produce a certain amount of carbon emissions. For instance, the city's major commercial property owners receive a permit that stipulates how much carbon their buildings are allowed to emit. If a holder produces less than it is allowed, it can trade its permit with a producer that seeks a quota of carbon emissions larger than it holds under its own permits. It is then expected that a price

will be achieved that expresses the market costs of carbon emissions. Further, under a tradable permit scheme, it is expected that producers will seek modes of production that (cost-)effectively reduce their carbon emissions below the cost of buying permits—for instance, by owning or occupying energy-efficient buildings.

The application of city-wide carbon trading schemes is a rather novel approach and it remains to be seen whether it will achieve the desired outcomes. Such schemes can, again, be critiqued for providing the illusion that undesired behaviour is allowed—because one pays for it. The ‘cap’ may prevent actors in the construction industry from reducing their carbon emissions to zero as long as the costs for emissions are lower than the cost of preventing them. Neil Gunningham and Peter Grabosky identified such issues in their highly influential *Smart Regulation* (Gunningham et al. 1998).

3. Novel regulation and governance for urban sustainability and resilience

Aiming to overcome problems with direct regulatory interventions, governments have begun to seek new regulatory and governance systems, processes and tools. In particular, insights into the causes and consequences of (anthropogenic) climate change, specifically at the city level, have spurred national and city governments around the globe to trial such novel systems, processes and tools. What is of interest is that city governments often collaborate with each other in international city-to-city collaborations in such trials; governance for urban sustainability and resilience has become both more local and more global. Governments are, further, actively involving firms and citizens in their trials and experiments. Experimentation, the involvement of citizens and firms in development and implementation and localisation are all characteristics of a larger trend of collaborative governance that RegNet scholars and others have been writing about for some time now (Gunningham 2009).

At the same time, firms and citizens have been very active in the development of voluntary programs that seek to improve the performance of their participants, but without the force of law (Potoski and Prakash 2009). Often governments are involved in their development and

implementation at some distance. Again, a variety of (collaborative and voluntary) regulatory and governance systems, processes and tools for urban sustainability and resilience is in place.

Government-to-government collaborations

While government-to-government collaboration can be found at the local, regional and national levels, the most well-known and best-documented examples are the international Local Governments for Sustainability (ICLEI), a network of more than 1,000 cities and local governments working together to achieve urban sustainability and resilience, and the C40 Cities Climate Leadership Group, a network of the world's largest cities that collaborate to reduce greenhouse gas emissions through increased urban sustainability. Through such networks, cities work together in the development and implementation of novel governance tools for urban sustainability and resilience. The scale of such networks implies that experiments with similar tools can be carried out in different cities, but overseen by a similar group of actors. Together, the cities may even have sufficient funds available to involve professional researchers and communication support. This has resulted in high-quality research results that are communicated in a highly accessible manner. Further, the sheer size and global coverage of these two networks make them highly visible, and, particularly through their involvement of the mayors of the world's largest cities, these networks have a considerable voice.

But there are some downsides to this type of collaboration. They run the risk of becoming elite networks that exclude non-members from lessons learned and other advantages. The highly accessible websites of such networks often provide a wealth of case studies, best practices and lessons learnt, but they all have members-only sections that provide more information or information well before it is made public. Also, it remains to be seen whether lessons from the major cities that are often active and leading in these networks reach smaller cities within these networks and, more importantly, those outside these networks. The majority of cities around the world have a population of less than 100,000 inhabitants and it appears that these are somewhat underrepresented in the currently dominant international government-to-government collaborations.

Other collaborations and networks

Besides such government-to-government collaborations and networks, others have also been introduced. Governments actively collaborate with firms and citizens seeking to overcome barriers faced by traditional regulatory interventions. A typical example is CitySwitch Green Office in Australia. Under this nationwide program, city governments work together with tenants to improve the energy efficiency of offices. By participating in the network, office tenants come to agreements with city governments about their future environmental performance, and the city governments then provide support to help them meet these goals. Certain city governments provide financial support to tenants, while others facilitate meetings and ensure an ongoing supply and distribution of information. On a national level, the program helps to share best practices and lessons through a website, workshops and seminars; in addition, a yearly awards ceremony showcases top-performing participants and attracts media attention for the program as a whole.

Not all such collaborations, however, are government led. In 2006, Cisco, an international developer of networking equipment, initiated a collaboration with the cities of Amsterdam, San Francisco, Seoul, Hamburg, Lisbon and Madrid—the SMART 2020: Cities and Regions Initiative. The initiative seeks to understand whether and how urban carbon emissions can be reduced through innovative computer and information technology, and how current regulatory and other barriers may be overcome. Another example is the Australian Resilience Taskforce, a collaboration of a number of key players in the Australian insurance and construction industries and government. The taskforce argues that current Australian building regulation does not set adequate requirements to ensure the resilience of, particularly, existing buildings to extreme weather events. It has developed a rating tool that allows it to rate the resilience of buildings to extreme weather events. When linked to insurance policies, the rating tool may provide considerable incentives for building owners to improve their buildings: a building with a high rating may face reduced insurance premiums, while a building with a low rating may face increased premiums.

Again, such collaborations and networks come with advantages and disadvantages. Through collaboration with regulated (local) actors, city governments have an opportunity to build on the experiences and expertise of these actors. This may result in more effective governance tools than those developed by somewhat distant bureaucrats.

In addition, regulatees may consider tools that have been developed in collaboration with them as more legitimate. Yet, the often voluntary nature of such collaborations comes at a cost. There is only so much that can be asked of participants as they may decide to step out of the collaboration when the cost or effort of participation outweighs the rewards for doing so. One may also question why regulatees seek to become involved in such collaborations. In the case of Cisco and the Australian insurance industry, there are clear rewards for these actors for collaborating with governments: once the solutions developed in these collaborations are implemented, they will be at the forefront to provide products and services. Here, the dividing line between self-interested lobbying and collaboration in the interest of the ‘greater good’ becomes quite thin.

Negotiated agreements and covenants

Specific forms of collaboration are negotiated agreements and covenants. These partly address the problems with collaborations flagged above. Under a negotiated agreement or covenant, an individual, a firm or a group of firms pledges to achieve a particular goal and the government, in return, commits itself to a related objective—for instance, supporting private sector actors in achieving their goal or not introducing regulation during the span of the agreement or covenant. Typical illustrations of these are the Climate Change Sector Agreements between the State Government of South Australia and business entities, industry sectors, community groups and regions. The state of South Australia aims to significantly reduce carbon emissions, well beyond goals set by the federal government. To achieve these goals, it needs its large firms and most-polluting sectors to take action voluntarily, and it understands that it needs to offer something in return for such action. In an agreement with the commercial property sector association, for instance, the state government seeks reduced carbon emissions from commercial properties. It has agreed with the association that it will promote the benchmarking of the energy performance of existing buildings and will develop and implement educational and promotional strategies to encourage property owners and tenants to improve their buildings’ environmental performance. In return, the Government of South Australia will financially and administratively support the actions undertaken by the commercial property sector, publicly acknowledge the achievements of

the sector association and its participants and has committed to realign various government policies and programs that are of interest to the property sector.

Such negotiated agreements are a popular tool applied throughout the world. Yet, empirical evidence on their performance is currently lacking. Additional research is needed to understand whether negotiated agreements and covenants for improved urban sustainability and resilience face similar constraints as those reported in other areas—partly resulting from the high private interests on the side of firms participating in such agreements and the risk of regulatory capture—or whether more positive outcomes may be expected.

Certification and classification

Aside from such collaborations, negotiated agreements and covenants, a wide range of voluntary programs (Potoski and Prakash 2009) has been implemented, seeking to improve urban sustainability and resilience. Space limits the discussion to one example here. Perhaps the best-known and most widely applied voluntary and market-driven tools for urban sustainability and resilience are certification and classification. These tools normally allow for the assessment of the particular performance of buildings, infrastructure or cities (for example, energy performance, carbon emission) and their ranking into a particular class. A particular identifier is given that can be used to market this performance. To illustrate, for developers, investors, property owners and occupants alike, it is easy to understand that on a scale that ranges from poor performance to high performance—say, one to five stars or bronze to gold—a five-star or gold-class building is better than a one-star or bronze-class building. Certification and classification form an information-based regulatory tool.

Since the early 1990s, hundreds of such certification and classification tools have been introduced around the world. The best known is the Leadership in Energy and Environmental Design (LEED), which is often considered the world's most positive example of what can be achieved in terms of urban sustainability and resilience through voluntary programs. LEED was implemented in the United States in 1993, and is now applied in 135 countries and territories. It boasts billions of square metres of built space certified as having high levels of environmental performance in the United States alone. Municipalities in the United

States are widely adopting the voluntary LEED standards as mandatory requirements in their own jurisdictions. But if things sound so good at the outset, there likely is a flipside as well.

Some questions arise, for instance, when looking at the actual transformative impact of LEED since it was introduced some 20 years ago. While LEED boasts high absolute numbers, its relative impact is marginal: at best, 3 per cent of all built space in the United States is currently LEED certified, and most of this has only a moderate LEED certification, which implies that it performs barely better than non-LEED-certified built space. The highest LEED certification possible has been applied to less than 0.2 per cent of all built space in the United States over the course of 20 years—yet, policymakers, practitioners and academics alike still consider LEED the prime example of what voluntary and market-driven tools can achieve at the city level. Further, there is criticism regarding the adaptation of the tool by municipalities: the rules underlying LEED certification lack the kinds of accountability structures of rules developed by governments. Thus, while it can be a shortcut for municipalities that lack funds or staff to develop their own sustainable building codes, the adaptation of privately developed regulation brings considerable risks.

4. Conclusion

Urban sustainability and resilience are an intriguing area for empirical and theory-driven regulation and governance research. The use of both traditional and novel regulatory and governance tools, processes and systems to govern urban sustainability and resilience, the wide variety of actors and (vested) interests involved in cities, the wide range of contexts that cities provide and the rapid growth of city networks that seek to bypass national regulatory standards are but a few aspects that should inspire scholars to explore regulation and governance questions in this setting. Strikingly, however, cities and the built environment more generally have to date received little attention from regulatory scholars.

In this chapter, I have briefly discussed a range of traditional and novel governance interventions that seek to achieve urban sustainability and resilience. The discussion of direct regulatory interventions for urban sustainability and resilience largely confirm and contribute to existing regulatory theories developed by RegNet scholars and others

(see various discussion in this book; Baldwin et al. 2011). It goes without saying that these traditional regulatory and governance interventions for urban sustainability and resilience come with pros and cons. In terms of pros, it could be argued that such interventions provide governments with a means to be deeply involved in governing urban sustainability and resilience. With the wide range of actors involved in city, building and infrastructure developments, the technical complexities of such developments, the large economic interests involved and the wide range of negative externalities of such developments, it almost goes without saying that it is unreasonable to expect that 'the market' will come up with effective solutions to achieve urban sustainability and resilience. Governments may be in the right position to set long-term and large-scale goals and seek to realise these through direct regulatory interventions.

However, the wide range of actors, technical complexities and large economic interests involved in city, building and infrastructure developments are exactly what make it difficult for governments to introduce effective direct regulatory interventions. The development of these often takes a lot of time, which means this type of governance tool often cannot keep up with technological innovation. The vast economic interests involved mean that governments often face resistance when they propose regulatory change. Such resistance comes from firms with considerable vested interests, but also from households that do not want to see new regulation that requires them to upgrade their existing homes.

At first glance, novel governance systems, processes and tools such as collaborative governance and voluntary programs come with many pros. They bring together relevant stakeholders to work, in collaboration, towards governance interventions that are tailored to a specific local context. This is expected to result in increased effectiveness, efficiency, accountability and legitimacy of governance tools. But when scratching a little deeper under the surface of collaborative governance and voluntary programs some questions arise. Who should be involved in the development and implementation of novel governance tools for urban sustainability and resilience: all actors affected by a future governance intervention? In a city context, 'all' actors quickly add up to hundreds or thousands of people and organisations. It goes without saying that such large collaborations will face collective action problems (for example, they will find it difficult to reach consensus on a governance intervention that is supported by everyone involved). However, not including all

the people and organisations affected means that some get a say over what others will have to do. This raises questions about the democratic accountability of collaborations in general and of voluntary programs when governments adapt these as public regulation.

While collaborative governance is widely pursued and preferred by governments, businesses, civil society groups and individuals, the question remains how this governance ideology can be translated into governance processes that indeed live up to these promises. The examples discussed in this chapter have flagged a range of (potential) problems with collaborative governance for urban sustainability and resilience (for example, collaborations may become elite groups, participants may seek to pursue only their own interests and there is a risk of regulatory capture). Scholars interested in collaborative governance may wish to look at the wide range of examples available in the area of urban sustainability and resilience to better understand what conditions and what types of collaborations are in fact promising alternatives for traditional direct regulatory interventions. Similar concerns hold true for the application of voluntary programs that seek increased urban sustainability and resilience. The questions remain why individuals and organisations would want to participate in such programs, under what conditions these programs can achieve their intended goals and how such programs can have a transformative effect. The wide range of voluntary programs that has been introduced in the area of urban sustainability and resilience should give scholars enough insight to answer such questions.

Of course, it is unlikely that a single governance system, process or tool will be sufficient to achieve improved urban sustainability and resilience. It is likely that various systems, processes and tools will need to interact—and, in cities, often a wide variety of systems, processes and tools are implemented. Such governance mixes, and the wide range of traditional and novel governance systems, processes and tools that operate side by side in various contextual settings, should allow for empirically rich studies that can help to strengthen, refine and even develop new theories on regulation and governance; again, Neil Gunningham and Peter Grabosky's *Smart Regulation* (Gunningham et al. 1998) is a typical example from RegNet scholarship that is interested in such policy mixes.

It seems therefore that urban sustainability and resilience, and cities and the built environment more generally, make for ideal areas in which to study governance systems, processes and tools. They have remained, however, largely outside the scope of regulation and governance scholars

to date. In this chapter, I have only scratched the surface of a range of traditional and novel governance tools (see further van der Heijden 2014). I hope that future regulation and governance scholarship will have a stronger focus on this area of significant importance.

That leaves me to raise a final issue that strikes me as odd when looking at urban sustainability and resilience in particular, and cities more generally, through a regulation and governance lens: there is no strong theorising on urban governance. There is a strong literature on urban politics and urban studies, but not a similarly well-developed urban regulation and governance literature (a similar argument is made by some of the authors referred to in the Additional Reading list). This is odd for many reasons, and many interesting regulation and governance questions beg to be answered. To name a few:

- Cities are extremely complex arenas with many actors and interests involved: how is it that anything gets regulated, governed and realised at all at city level?
- Cities also appear to become more important as non-state actors in international negotiations and governance processes: how do cities combine this role as (often very strong) non-state actors in the international sphere with their fairly weak administrative roles (such as the enforcement of building codes) under regional or national governments?
- Some cities rival in size the output of multinational companies or even countries (London, for example, produces more carbon emissions and consumes more resources than some small nation-states): what does this imply for the governing of global common goods and societal problems?
- Finally, the trend of city-to-city collaborations such as those described in this chapter indicates the emergence of a new (non-state) economic and governing (super)power: why do cities seek to participate in such networks, and do such networks hold more potential to address pressing global risks than international state-to-state negotiations and agreements do currently?

In sum, the city as an actor and area of regulation and governance (and institutions and networks) provides scholars of regulation and governance with many promising research avenues to explore.

Further reading

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