

2. Objectives and Methodology

2.1 Objectives

Large cities play an increasingly important role in addressing climate change in general, and in tackling building energy efficiency in particular. The aim of this research is to document city building energy efficiency programmes in order to produce a useful resource for officials in other cities, whether they are planning for new initiatives or considering enhancing current ones.

The *Urban Efficiency* report's specific objectives are:

- to begin to capture the range of different policies being implemented in cities around the world;
- to obtain detailed information on the necessary conditions, opportunities and potential challenges when introducing and implementing such initiatives; and
- to analyse what approaches have been successful in which context and why.

The scope of the research includes:

- new and existing buildings;
- non-residential and multi-family residential buildings (i.e. excluding single-family housing);
- privately and municipally owned buildings; and
- energy efficiency policies and programmes (i.e. excluding renewable energy policies).

2.2 Outputs

The outputs of the research include:

- '**policy maps**', which provide a high-level overview of the different policies being employed by cities around the world for promoting energy efficiency in (1) new buildings and (2) existing buildings, accompanied by the description of the different types of policy instruments; and
- a series of **case studies** which provide detailed information about city experiences of implementing a specific programme to promote building energy efficiency of private sector buildings, accompanied by analysis of the key characteristics, trends, success factors and challenges.

2.3 Methods

Data sampling

The surveyed cities were chosen from amongst the active members of the C40 Private Building Efficiency Network. C40 is a unique coalition of global megacities committed to tackling climate change, and within it are smaller working groups – or Networks – of cities focused on specific aspects of climate change. The members of the Private Building Efficiency Network focus on energy efficiency in existing commercial and residential buildings and they collaborate through knowledge sharing and joint projects. These cities, as members of this C40 Network, have consciously chosen to prioritise energy efficiency to tackle climate change. Therefore, studying cities from this Network is an effective way of identifying pioneering cities. Although the C40 Private Building Efficiency Network focuses on existing private buildings, most of the cities have chosen to prioritise building energy efficiency in general. Therefore, programmes for municipal buildings and new buildings are also covered in the scope of this research.

Data collection: policy maps

To complete the policy maps, all active member cities of the C40 Private Building Efficiency Network, namely Chicago, Hong Kong, Houston, Johannesburg, London, Melbourne, New York, Philadelphia, Portland, San Francisco, Seattle, Singapore, Stockholm, Sydney, Tokyo and Toronto, were surveyed. As such, the resulting policy maps largely reflect the experiences of Asia-Pacific and North American cities and advanced economies.

A **literature review** was the chosen method because it allowed for a wide (across all sectors) and deep (covering the detail of policy documents) scope of research. This review was conducted from January to September 2014, being subsequently updated in May 2015. It is based on a range of online resources, such as official websites for city/state/national governments, news articles and electronic databases (see **Appendix 1**, 'List of web-based databases on energy efficiency policies worldwide').

After the initial step of listing programmes for each city, a categorisation method was developed to identify 12 policy elements (see in **Table 3.1** for details). A **mapping exercise** was then conducted for city-led programmes to create **Appendix 2** ('Policy map - City-led programmes'), accompanied by efforts to classify the programmes as relevant for: new or existing buildings; residential or non-residential sectors. The policy maps were then divided into separate documents, with one for new buildings and the other for existing buildings. In those cases where no specific city government programmes were identified, national or state government programmes or collaborative initiatives with industry associations, private

coalitions and utilities, were featured if they were complementary to city efforts. *Information contained in the policy maps was collected solely through desk research and has not been verified by surveyed cities.*

Data collection: case studies

The active members of C40 Private Building Efficiency Network were contacted and invited to participate in the research, resulting in 10 contributors: Hong Kong, Houston, Melbourne, New York City, Philadelphia, San Francisco, Seattle, Singapore, Sydney and Tokyo. The case studies that resulted are not, therefore, a representative selection of global cities. Nonetheless, they do represent some of the most advanced city programmes around the world and provide lessons for other cities wishing to follow their example. Moreover, the level of detail offered by these case studies allows for new insights into their specific programmes and for meaningful comparisons to be made amongst the programmes highlighted in the report.

A combination of methods was used to create a comprehensive account of the city programme based on published material (document analysis) and on personal accounts of city officials (through questionnaires and interviews).

A **written questionnaire** (see **Appendix 3**) was sent electronically to the active Network member cities in March 2014. Respondents were invited to choose one key programme dealing with existing private sector building energy efficiency and enter detailed written information on the following points:

- (1) *Background information*: Including target sector (e.g. commercial, residential etc.), scope (building sizes), objectives and progress or impacts attained so far;
- (2) *Inputs during design phase*: Including timeframes, resources (staffing and budgets), research commissioned/used, stakeholder engagement or consultation process, and links to other city policies or programmes;
- (3) *Inputs during implementation phase*: Including timeframes, resources (staffing and both overall and marketing/communications budgets), monitoring/reporting/verification procedures, partner support and tenant engagement;
- (4) *Data collection*: Procedures and key metrics used;
- (5) *Small to medium buildings*: Other policies or a part of the highlighted programme aimed at promoting energy efficiency in small to medium sized buildings;
- (6) *Outcomes*: Effects on the building and retrofitting market and demand for energy efficient buildings;
- (7) *Drivers of success; and*
- (8) *Key challenges.*

Data from these questionnaires was supplemented by **semi-structured telephone interviews** with each city. Conducted between March and April 2014, these interviews consisted of a 90-minute teleconference between one or two government representatives from the city concerned, the CSR Design Green Investment Advisory research team in Tokyo, officials from Tokyo Metropolitan Government, and C40. Interviewees were invited to elaborate on key success drivers and challenges encountered, programme impacts, and respond to various questions emerging throughout the interview. The interviews were recorded, transcribed into minutes and then analysed.

The third process used to obtain information on each city programme was the **collection and analysis of key documents**, including those accessed via official websites, such as programme reports, policy documents and press releases from each city. Third-party research such as reports and press materials was also reviewed where relevant.

Using the data and information obtained via the methods outlined above, preliminary case study drafts were developed during May and June 2014. The drafts were sent for approval to interviewees in each city to ensure the accuracy of information and obtain additional details as needed. Attendees of the Private Building Efficiency Network workshop in Tokyo in June 2014 provided feedback on the first draft of the case studies and analysis. Some case studies were subsequently updated in July and August 2014.