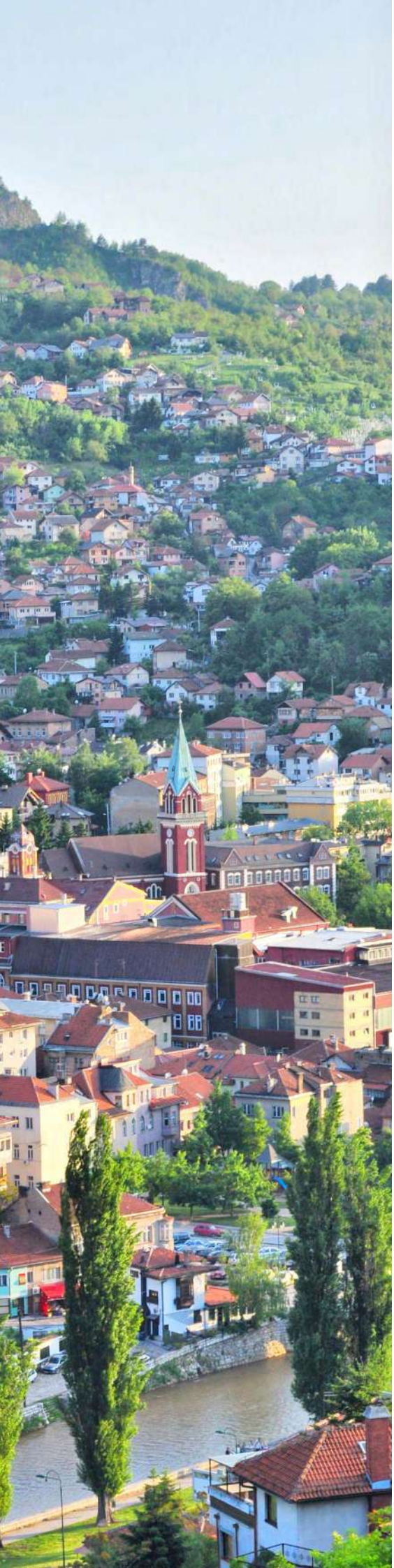

European Bank
for Reconstruction and Development

Effective policy options for green cities

Draft version

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European Bank for Reconstruction and Development

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Contents ↘

Foreword ↘

This report presents impactful urban policy options and case studies that can help cities accelerate their green agendas. A digital tool for specific policies and case studies will accompany the final version of this document – see www.ebrdgreencities.com.

Maintaining economic growth while creating sustainable cities for all is the biggest urban challenge that countries face today. More than half of the world's population lives in cities, and that share is projected to reach 68 per cent by 2050. Cities and metropolitan areas are engines of economic growth, contributing about 80 per cent of global GDP. However, they also account for about 60 per cent of global carbon emissions and more than 70 per cent of energy use.[1,2] Today, many cities struggle with environmental degradation, inadequate urban infrastructure and traffic congestion.[3] These challenges will become only more pressing if the pace and pattern of urbanisation continues.

[1] See United Nations (2018).
[2] See United Nations (n.d.)
[3] See United Nations Environment Programme (2019).

"Today, EBRD Green Cities is our largest investment programme, covering 41 cities in 22 countries, with more than €1.5 billion mobilised by the EBRD and multiple donors for investments and technical support."

Against this backdrop, the EBRD launched its Green Cities Framework in 2016 to systematically promote sustainable urban development across the Bank's regions. Today, EBRD Green Cities is our largest investment programme, covering 41 cities in 22 countries, with more than €1.5 billion committed by the EBRD and multiple donors for investments and technical support. Recently, as cities have been at the forefront of the Covid-19 crisis, the programme has become even more important, supporting our partner cities as they "build back better" from the pandemic.

While investments in sustainable infrastructure are crucial, complementary policy reforms also play a vital role in helping to achieve systemic impact. However, through our work with EBRD Green Cities, we have noticed the lack of a cross-sectoral overview of green urban policy options that could guide municipal authorities and relevant stakeholders in the selection, design and implementation of effective policies. This report aims to develop such an overview and contribute to a shared vision of the role and opportunities of city-led policy initiatives and programmes. It seeks to raise awareness of the potentially impactful role of policy initiatives, of how they interact with other urban policies and, in particular, how policies can enhance and complement the environmental benefits of municipal investment programmes.

While this publication was produced in the context of EBRD Green Cities and all policies and case studies have been selected and presented with the EBRD regions in mind, itis highly relevant for any city seeking green solutions, regardless of its location. The policy options and case studies detailed in this document are structured around seven policy areas, with each policy option and case study presented in a brief and hands-on manner. The content aims to be practical and accessible to a wide range of stakeholders, including those with limited technical or policymaking experience.

The process of drafting this report was complex. The main challenge was the integrated nature of urban policies and the multiple benefits (and costs) that one policy may create directly and indirectly for different stakeholders. In this complex landscape of activities and outcomes, it is sometimes difficult to structure and categorise policies and benefits in a simple way without losing too much of the true picture. Fortunately, we are not the first institution to compile a structured overview of urban policies. In drafting this report we benefited greatly from the support and expertise of a wide range of external partners as well as from the knowledge and help of many teams across the EBRD. A detailed list of contributors is available in the acknowledgement section at the front of this report.

As the content of this report, and its accompanying digital tool, will be shared and explored among policymakers, stakeholders and other interested parties, the EBRD expects to collect a rich set of feedback and suggestions that it will incorporate and build on. We hope that this will be reflected in an even richer set of policy options and case studies in future. In addition, we aim to further emphasise aspects of smart, inclusive and resilient urban development – as well as their interaction with green urban policies – in future updates to the digital tool and this report. We look forward to intensifying our work with partners around urban policies and hope that this report serves as an important step in this direction.

Mattia Romani

Mattia Romani
Managing Director
Economics, Policy and Governance
EBRD

Executive summary ↘

1. Introduction

With the pace of urbanisation accelerating globally, it is almost impossible to discuss the opportunities and challenges of sustainable development without reflecting on the role and impact of cities.

On the one hand, cities are powerhouses of economic growth, generating more than 80 per cent of global GDP. On the other hand, they also account for about 70 per cent of energy use and 60 per cent of greenhouse gas emissions.[4,5]

Given the transformative power of cities – for better or for worse – sustainable urban development has moved to the centre of the global development agenda. This is most prominently reflected in Goal 11 of the United Nations (UN) Sustainable Development Goals (SDGs) which seeks to "make cities and human settlements inclusive, safe, resilient and sustainable" by 2030.[6]

However, not only has more attention been given to cities lately, but the way of looking at cities and urban development has also changed over the years. Whereas the focus was previously on economically efficient cities, often linked to car-based urban planning, today the idea of a green and people-centric urban development dominates.

In this view, residents are seen both as important users of urban spaces and services, and also as important guardians of accountability, ensuring well-governed and inclusive urban development. In addition, there is a growing recognition that cities do not merely provide close proximity between the workforce and fixed places of employment, but also represent dynamic arenas for interaction between the working and resident populations, which are increasingly embedded in a digitalised environment.

Given all of these issues, it is becoming clear that sustainable urban development should be pursued through a systematic and holistic approach. Such an approach must go beyond cross-sectoral planning and coordination, to combine and integrate investment programmes with well-defined policy frameworks and put residents at the centre. An inclusive and participatory approach to sustainable urban development is vital to ensure the participation of residents and guarantee that all interests, including those of marginalised groups, are considered when developing, implementing and maintaining urban solutions.

In response to this awareness, in 2016 the EBRD developed its Green Cities Framework in order to promote sustainable urban development across the Bank's regions in a systematic and holistic manner. EBRD Green Cities is now the largest investment programme of the Bank, with more than €1.5 billion mobilised from the EBRD and external donors for investment and technical support, and more than 40 cities signed up to date. The programme seeks to help cities identify and address their key environmental challenges through evidence-based diagnostics and an inclusive planning process – followed by the preparation and implementation of priority investments and policy initiatives.

2. Content of this report

In light of the importance of well-defined and inclusive policy initiatives as part of any agenda for sustainable urban development, this report presents impactful urban policy options and related case studies relevant to cities pursuing an agenda of this kind.

The report structures these policy options and case studies around seven policy areas – five sector-specific areas (urban transport, land planning, energy efficiency and buildings, water and wastewater, solid waste) and two cross-sectoral or enabling policy areas (governance and financing). Within each policy area, the main five to ten policy options are presented in

[4] See United Nations (n.d.)
[5] See World Bank Group (2020).
[6] See UN (2020).

terms of their resource implications, benefits and risks, necessary conditions, typical implementation challenges or expected opposition, and critical success criteria. The listed policy options are backed by relevant case studies from cities located within and outside the EBRD regions. These case studies have been selected on the basis of a multi-criteria analysis, which ranked them in terms of their characteristics such as replicability, transparency, community buy-in and so on.

This report provides a useful and practical source of references for a wide range of urban stakeholders and interested parties and promotes a shared understanding of the possibilities and likely implications of various policy initiatives. The policy options and case studies are concise.[7] This report does not aim to provide support on how to identify environmental shortcomings in a city. Rather, it assumes that the shortcomings have been identified prior to using this knowledge product. However, readers can use the menu of policy options to guide any form of gap analysis undertaken by cities seeking to accelerate their green agenda.[8]

The report content is oriented towards the cities in the EBRD regions taking part in the Green Cities programme – a practical framework that aims to help cities prioritise and implement investments and urban policies. Hence, for the purposes of this publication, policies are understood as being most non-investment activities that target the 'greening' of cities, that municipal authorities can implement or influence within five years, and that can generate material impact within five to ten years. Consequently, this report does not cover high-level strategic policies or visionary plans more suitable for central governments. Instead, it focuses on tactical and operational policy options that fall within municipal control and influence. Among others, these options include planning, regulation, incentives, funding and financing, skills development, capacity-building and monitoring as well as attitude campaigns, awareness-raising, and information programmes.

3. The main issues in each of the seven policy areas

Urban transport: Cities across the region face high levels of air pollution due to growing car ownership and insufficient vehicle standards, compounded by a lack of attractive public and active modes of transport. Relevant green transport policies include those that aim to restrict car use on the one hand and to promote public and active mobility on the other. Furthermore, cities can promote cleaner vehicles, including through the electrification of urban transport.

Land use and biodiversity: Some cities in the EBRD regions face uncontrolled population growth and urban sprawl. Other cities may be more stagnant while suffering from a legacy of poor availability of recreational and green infrastructure and from limited biodiversity. Potential policies to tackle these challenges include the development of compact cities, the promotion of mixed-use areas and transit-oriented urban development, the promotion of green spaces, and the encouragement of community-based land-use planning.

Energy efficiency and buildings: Many economies in which the EBRD invests share a legacy of buildings characterised by poor energy efficiency and high electricity and heat consumption, commonly linked to fossil fuels. Policies to address these issues cover initiatives that promote energy-efficient buildings, ensure better price signals and more energy-conscious consumption and help decarbonise the provision of heat and electricity.

Water sector: In the EBRD regions, cities experience high levels of "non-revenue" water use, water pollution and the overuse of water resources, as well as significant climatic stresses, which are bound to increase. Policies aimed at the supply side focus on water utilities and include the regulation and contracting of public and private service providers, the reform and strengthening of water utility firms, and the promotion of resource-efficient utilities. Policies that target water users include effective tariff reforms and price signals, as well as awareness campaigns for households and industry.

[7] A digital tool for easy access to specific policies and case studies accompanies this report and is available at www.ebrdgreencities.com.
[8] For guidance on how to identify and map a city's environmental challenges through an evidence-based and holistic process, readers may explore the methodology for a Green City Action Plan as outlined at www.ebrdgreencities.com.

Solid waste sector: Inadequate management of municipal and industrial waste is common among these cities, leading to contamination of land and groundwater as well as failure to support a 'circular economy' model. Policies in this area focus on how cities can ensure more effective governance and buy-in as well as on targeted initiatives to increase recycling and recovery rates. Here, the policy instruments include improved planning, accountability structures, price signals and funding, combined with information strategies for residents and businesses and the formalisation of informal waste-collection services.

Governance: The legacy of poor local governance and low administrative and financial capacity across cities in these regions is detrimental to the implementation of the green urban policies mentioned above. Policies that can be implemented to improve governance among local governments include political and fiscal decentralisation, improved transparency and accountability, enhanced integration and coordination across government bodies, strong stakeholder consultation processes and the building of awareness and engagement among a diversity of interest groups – some of which may face disproportionate barriers to economic opportunities.

Finance: Financial constraints are widespread within cities in the EBRD regions. This is often due to declining populations or a lack of creditworthiness and limited access to financing, which can hinder the delivery of public services. Policies to improve the financial health and autonomy of cities include initiatives to upgrade their financial planning and management, boost revenue collection and enhance accountability and transparency, all of which can help to enhance a city's creditworthiness and financial autonomy.

4. Other key messages

Urbanisation patterns differ significantly across the EBRD regions. The EBRD operates in 38 economies across three continents (see Table 1 for details). Across the EBRD regions, which include economies as far east as Mongolia and as far west as Morocco, population patterns and urban trends differ significantly. Economies in the southern and eastern Mediterranean region, Central Asia and Turkey generally have young and growing populations paired with increasing levels of urbanisation. In contrast, the countries in central, eastern and south-eastern Europe tend to have ageing, stagnating or shrinking populations, with the majority of cities experiencing a decline in population.

The EBRD regions also share a legacy of minimal decentralisation and immature private-sector participation. The centralised top-down structure in many economies has led to inadequate local accountability procedures and hence poor governance. It has also limited capacity and expertise among local authorities and inhibited trust in local administrations and buy-in and engagement among the populace. Among the former socialist economies in the EBRD regions, there is also a legacy of poor price signals and a limited role for commercial solutions, leading to continued resource inefficiencies and an immature involvement of the private sector. As a result, poor operational and environmental performance and a lack of people-centric urban development remains widespread in many of these regions.

Decentralisation is important and should be facilitated by local capacity-building. Cities that want to pursue an ambitious green agenda should be empowered to take initiatives and make their own decisions. Cities must also be able to incorporate feedback from local community representatives and city authorities should be held accountable by the local population. That said, central governments tend to be reluctant to transfer decision-making and financial powers to regional and municipal authorities, in particular where local capacity is weak. Cities should help to encourage and prepare for the decentralisation process by strengthening their procedures, capacity and expertise.

Effective private-sector solutions require mature city administrations. Deeper private-sector involvement can offer innovative solutions, relevant expertise and better contractual arrangements. However, many local authorities in the EBRD regions have limited capacity and experience with effective private sector contracting. Such administrative capacity and experience takes time to acquire. Therefore, in the absence of robust administrative experience, a gradual build-up of capacity is recommended.

Despite their differences, many cities face similar environmental challenges and policy needs. All cities are unique in their economic, social and

political composition and urban policies must be tailored to each case. Nevertheless, cities often face similar environmental challenges and the relevant policy solutions often entail significant similarities. This report appreciates these similarities, while recognising the main differences between the typologies of cities in different regions.

The most successful cities plan a mix of policies and investments. Standalone policies and investments often fail to fully benefit from the synergies of optimal coordination and sequencing of interrelated policies, investments and the involvement of residents. While this may sound obvious, developing a shared vision and a coordinated effort can be difficult in a city where departments work in 'silos'.

Inclusive urban development has numerous critical benefits. The co-development of urban solutions may be difficult where there is a weak culture of active involvement by residents. Nevertheless, (i) many cities have been able to cut costs and improve quality by proactively involving their residents and their varied interest groups – despite the upfront costs linked to such initiatives. This involvement should include marginalised groups and women in particular. Moreover, (ii) inclusive urban development is better at addressing inequality issues experienced by women and marginalised groups and (iii) a broad supporter base for a specific green or inclusive urban agenda makes it more sustainable, as it is harder for new or existing political or administrative authorities to divert from the initial plan.

There are many impactful policy options that have moderate implications for a city budget. However, many of these options, which may include active regulation and pricing of the behaviour of commercial users and residents, can be politically costly and may thus be better introduced as part of a policy mix. Other policy options may not be financially costly but may involve comprehensive private-sector participation and therefore require institutional capacity-building.

Long-term, shared visions are necessary to ensure effective and sustainable urban development. While the policy options presented in this report have a short to medium-term timeframe, a clear long-term political vision, which may seek to pursue gradual change over time, is required as a foundation for sustainable urban development.

01

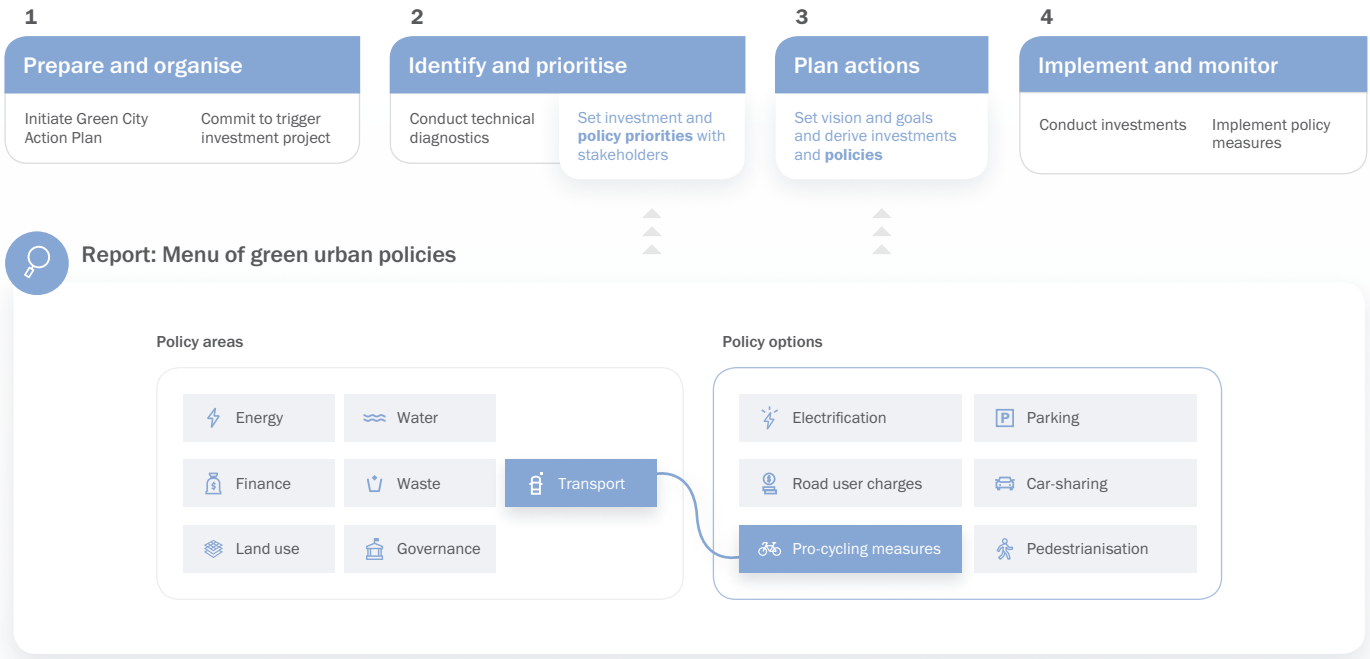
Introduction ↘

Introduction ↘

The European Bank for Reconstruction and Development (the EBRD, or the Bank) has developed a new strategic approach to addressing urban environmental challenges in the economies where it invests: the EBRD Green Cities Framework. With a volume of €1.5 billion, it is one of the Bank's largest investment programmes and a flagship product. EBRD Green Cities seeks to help cities identify and prioritise environmental challenges and address them through targeted investments, services and policy instruments in a strategic and holistic manner. The programme was initiated at the end of 2016 and now covers more than 40 cities in the EBRD regions.

As part of the EBRD Green Cities approach, cities develop a Green City Action Plan (GCAP) – a process initiated by a technical diagnostic study followed by the development and approval of priority investments and policies. The process for preparing a GCAP is defined in further detail in the Green Cities Programme Methodology.[9] The purpose of a GCAP is to apply a systematic, evidence-based approach to prioritising green city projects and to identifying the right enabling framework of policy, regulation and incentives. The initial technical diagnostic is based on a set of indicators to be measured and scored against international standards and benchmarks. These 70 indicators cover: (i) the *quality* of the city's environment, including air quality, pollution levels in water sources, or the quality and stock of other natural resources; (ii) the *sources* of the pollution or other adverse impacts on the environment; and (iii) the *response* indicators – the current municipal activities, institutional arrangements and policy initiatives that set out to improve or protect the environment in the city. Following the technical identification of the city's environmental shortcomings, the relevant stakeholders are consulted and priority investments

Figure 1. Overview of the Green City Action Plan process and the role of this report



Source: EBRD.

[9] See OECD and ICLEI (2016).

and policies are identified and developed to address these challenges.

In order to support the recommendations that emerge from the development of a GCAP and to further strengthen policy discussions in cities participating in the Green Cities programme, the EBRD has developed a knowledge product in the form of this report. It presents policy options and practical case studies that can be effective in mitigating, reducing and addressing the environmental challenges that cities face.

Menu of policy options and case studies

The policy options in this report (see Figure 2) are structured around seven areas – five sector-specific areas (transport, water, solid waste, land use and energy) and two cross-sectoral or 'enabling' areas (governance and finance). Within each policy area, the main five to ten policy options are presented in terms of their resource implications, benefits and risks, and necessary conditions, as well as key implementation challenges and critical success criteria. In line with the market-oriented mandate of the EBRD, the policy descriptions also include ways to unlock or integrate private sector participation. The policy options (or policy instruments) are further backed and illustrated by relevant, practical case studies.[10]

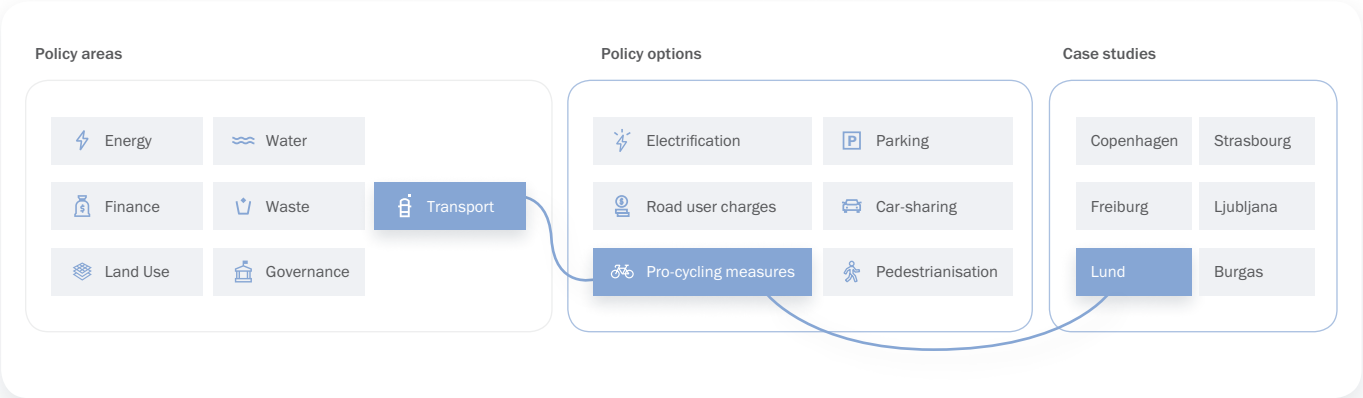
Selection of policy options and case studies: Combining top-down and bottom-up approaches

The policy options and case studies presented in this report were selected through the combination of a bottom-up and a top-down approach. The top-down approach relates to extensive desk research and literature reviews. The structuring of the policy options and case studies derives from the seven policy areas, for each of which the report outlines the most relevant environmental challenges and targets.

The bottom-up approach is based on the development of a long list of potential case studies and the policies they represent. All of the potential case studies were assessed in terms of the kind of policies and cities they covered and through a comprehensive evaluation based on criteria such as impact, effectiveness, political acceptability, transparency or replicability.

To evaluate the relevance of potential policies, necessary metadata about each policy and case study were collected. To enable future users to understand and use them effectively, a number of policy characteristics were drawn up from academic literature and international organisations, for example, from the OECD.[11] Similarly, for the case studies, a list of policy evaluation criteria, such as effectiveness and administrative viability, was developed to assess the

Figure 2. Structure of the policy areas, policy options and case studies



Source: EBRD.

[10] A guided and user-friendly path to the relevant content of this knowledge product is also available through a digital tool at ebrdgreencities.com.
[11] See OECD (n.d.b).

policy delivery, policy outcomes and impacts such that cities can take these examples and apply the policies that have been used most effectively.[12]

This suite of policy options should also relate to the range of characteristics of cities where the EBRD Green Cities programme is being implemented. The assessment of city characteristics provides an insight into whether a city has the right conditions to ensure the success of a specific policy. To some extent, the current GCAP methodology already carries out such an approach through the political framework reports, which include a preliminary review of policy, finance and governance to develop a project-prioritisation matrix.

Objectives and limitations of this report

The objective of this report is to help guide and stimulate the policy discussions taking place in cities – in the EBRD regions and beyond – that are aiming to accelerate their green agenda. The report aims to promote a shared understanding of the possibilities and likely implications of various policy initiatives and provide practical advice on their delivery, in combination with relevant investment programmes. The intention is to create a practical and concise reference point for a wide range of urban stakeholders and interested parties. While this knowledge product does not seek to provide detailed instructions on how to plan and implement specific policies, it aims to offer useful guidance on what to expect and to consider, supported by practical case studies and lessons learned.

The report's content is oriented towards cities in the EBRD regions taking part in the Green Cities programme. As a consequence, the menu of policy options and case studies is limited in the following ways:

- The policy options presented here are primarily relevant to cities and do not cover high-level strategic policies or visionary plans that are more suitable for central governments. Instead, the focus is on tactical and operational policy options that fall within municipal control and influence.
- This report emphasises effective policy options, rather than green investments, to address environmental challenges. It covers options that can be pursued and implemented within a five-year period, in a process that is primarily city-driven. The policy options lead to material impact in the medium term, in other words, five to ten years. For example, a parking policy that may influence the urban transport sector within a few years would be included as a policy option rather than a strategic pursuit of a compact urban design that would take decades to achieve material results.
- This report does not provide support on how to identify environmental shortcomings in a given city. Rather, it assumes that the environmental shortcomings have been identified prior to using this knowledge product. For guidance on how to identify and map a city's environmental challenges through an evidence-based and holistic process, the reader may explore the GCAP methodology outlined at www.ebrdgreencities.com.

Overall, relevant public policies should be understood here as meaning most non-investment activities that target the greening of cities and that municipal authorities can implement or influence and expect to generate impact within three to eight years. Among other activities, these include planning and monitoring, regulation, incentives, funding and financing, skills development and capacity-building, as well as awareness-raising, attitude campaigns and information programmes. This report also presents new technical solutions, but with an emphasis on policies that enable such new solutions to be applied.

[12] Note that quantitative *ex-post* evaluations of individual policies are rarely possible. The causal linking of a policy with an outcome is prevented by the scale and timescale of impact and the presence in a real city of innumerable confounding factors. The exceptions to this occur when a policy of major significance is implemented (for example, the London congestion charge). Nevertheless, policy impact can be judged through a combination of quantitative data, anecdotal information, research across multiple locations, and information from those whom a policy has targeted. This caution should be reflected in the language used to document a policy evaluation.

02

Urban development trends and regional context ↘

Urban development trends and regional context ↘

Policy considerations must recognise the priorities and needs of different types of cities, which can vary considerably in their size, geography and history.

2.1 Transformation in cities

Demographic trends in the EBRD regions

Patterns of population growth and composition differ significantly across the EBRD regions, which include economies as far east as Mongolia and as far west as Morocco (see Table 1 for details). Economies in the southern and eastern Mediterranean region and Central Asia have young and growing populations, while in central, eastern and south-eastern Europe populations are declining.

As documented in the EBRD's *Transition Report 2018-19*, Central Asia, the southern and eastern Mediterranean and Turkey currently find themselves in the early stages of their demographic transition – with large, increasingly young populations.

Table 1. Economies where the EBRD invests

Region	Economies
Central Asia	Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, Turkmenistan, Uzbekistan
Central Europe and the Baltic states	Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia
Eastern Europe and the Caucasus	Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine
South-eastern Europe	Albania, Bosnia and Herzegovina, Bulgaria, Cyprus, Greece, Kosovo, Montenegro, North Macedonia, Romania, Serbia
Southern and eastern Mediterranean	Egypt, Jordan, Lebanon, Morocco, Tunisia, West Bank and Gaza
Other	Russia, Turkey

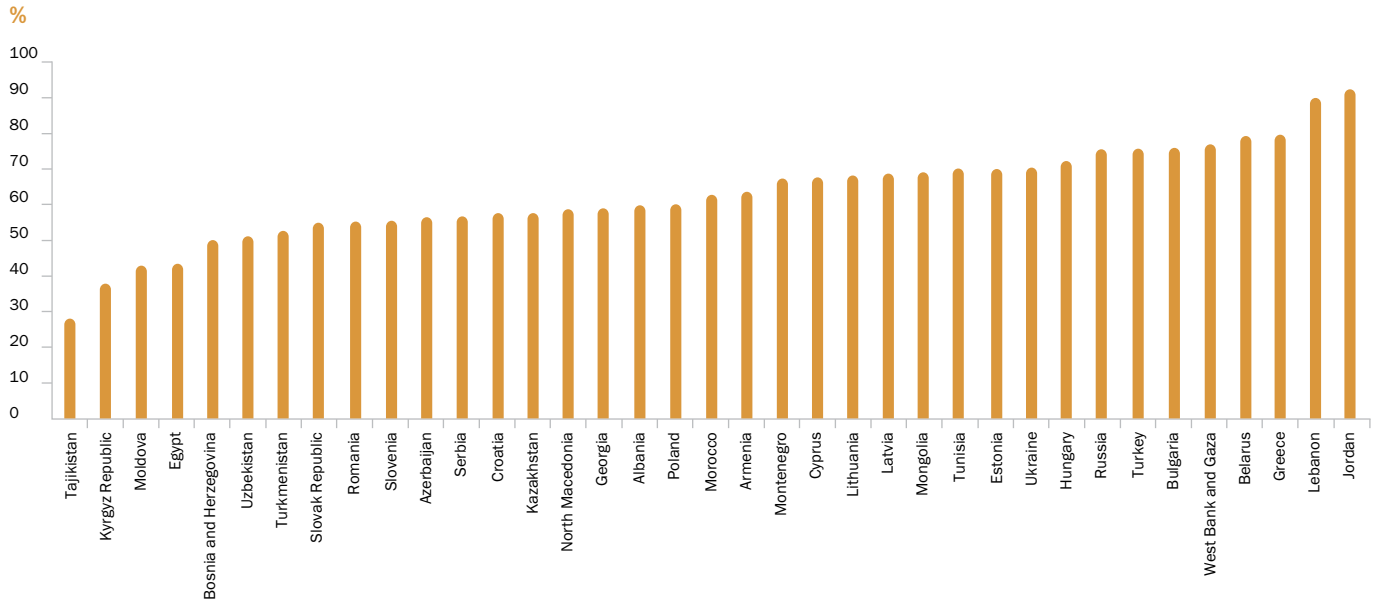
Source: EBRD.

In contrast, the demographic transformation in central, eastern and south-eastern Europe is much more advanced, compared to the emerging markets in Asia, Latin America and parts of the Middle East and Africa. Populations in emerging Europe are growing more slowly, or even shrinking, and ageing at approximately the same rate as the populations of advanced European economies, due to a combination of modest birth rates and continued improvements in life expectancy, often exacerbated by the emigration of young people to other EU countries. For instance, from 1992-2015, the population of eastern Europe shrank by 18 million (around 6 per cent), with the trend accelerating as a number of countries joined the European Union, which gave workers the ability to travel freely to other nations within the bloc.[13] In contrast, southern European countries have observed an increase in emigration, despite high unemployment rates persisting after the 2008 global financial crisis, with net migration up to +0.13 per cent.[14] It is worth noting that this trend of emigration from eastern European countries has slowed in recent years. These countries have experienced the highest levels of return migration in Europe, leading to a stabilisation of net migration at -0.23 per cent of population per year as economic conditions have strengthened.

Urbanisation trends in the EBRD regions

There is a global trend of increasing urbanisation, with 55 per cent of the world's population today living in urban areas and this proportion expected to increase to 68 per cent by 2050.[15] Over the past 25 years, the EBRD regions have experienced on average a steady process of urbanisation, with more than 60 per cent of the population living in urban areas today.[16] However, within the EBRD regions, there are significant variations from country to country, ranging from 27 per cent of the population living in urban areas in Tajikistan to over 90 per cent in Jordan (see Figure 2).

Figure 2. Share of urban population to total population, 2017 (per cent)

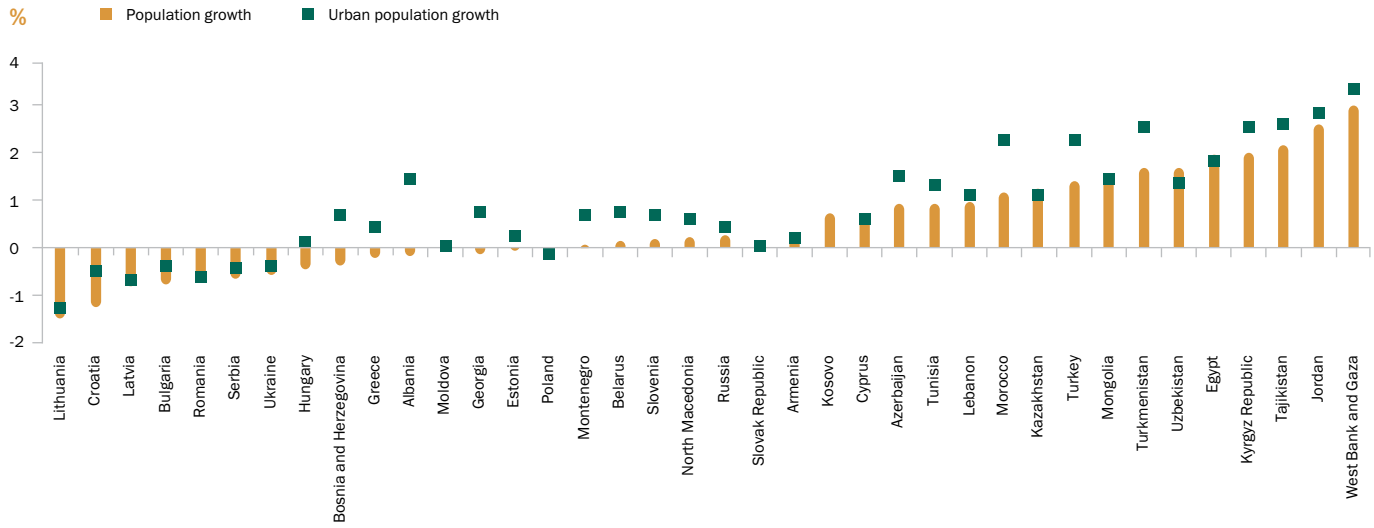


Source: World Development Indicators, urban population (percentage of total population) (https://data.worldbank.org/indicator/sp.urb.totl.in.zs) and EBRD staff calculations, as presented in the report: *Creating Liveable Cities: Regional Perspectives*).[17]

[13] See The Economist (2017).
[14] See Batsaikhan et al. (2018).
[15] See UN (2018a).
[16] Urban areas are often defined as settlements with populations of more than 5,000 inhabitants, although national statistical definitions vary. Other criteria may include population density, type of economic activity, physical characteristics, level of infrastructure or a combination of these and other criteria. See Deuskar (2015).
[17] See AfDB et al. (2019).

Within the EBRD regions there are also significant differences in the levels of urban population growth. The growth pattern of urban populations (urbanisation) follows the demographic trends in which the growing population in Central Asia, the southern and eastern Mediterranean region and Turkey is closely linked to a rapid increase in the urban population while the stagnating, or even declining, population in emerging Europe is matched by a slower process of urbanisation. Figure 3 shows how urban population growth is very slow or even negative in central Europe, the Baltic states, south-eastern and eastern Europe, and the Caucasus, in stark contrast with the patterns observed in most other emerging economies – including those in Central Asia, the southern and eastern Mediterranean, and Turkey, which have seen rapidly growing urban populations. High rates of population growth and urbanisation are particularly strong in Tunis, Cairo, parts of Morocco, the Nile valley and delta and much of Jordan, Lebanon and the West Bank and Gaza.

Figure 3. Population and urban population growth, 2017 (per cent)



Source: World Development Indicators, urban population growth (https://data.worldbank.org/indicator/SP.URB.GROW) and population growth (https://data.worldbank.org/indicator/SP.POP.GROW), and EBRD staff calculations, as presented in the report *Creating Liveable Cities: Regional Perspectives*.[18]

The story of secondary cities in the EBRD region

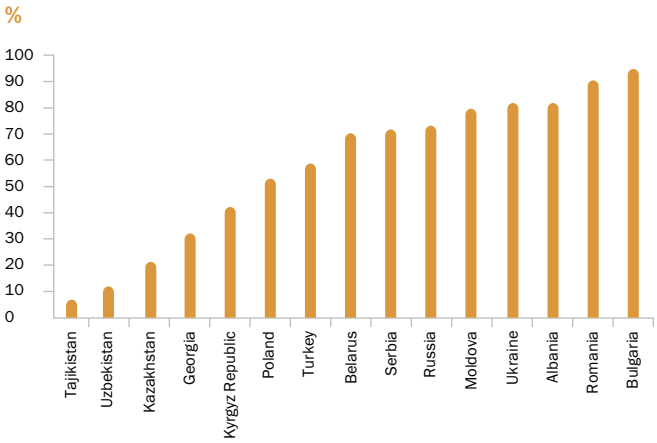
Beyond the general demographic and urban trends in the EBRD regions, there is a noteworthy story about the role and decline of secondary cities in the former centrally planned economies. Populations in the EBRD regions have so far been more concentrated in secondary cities than in large urban agglomerations, as opposed to the pattern seen in many other emerging markets. Within the former socialist economies in the EBRD regions, only Moscow's population exceeds 5 million, which together with Istanbul and Cairo are the only cities with populations above 10 million in all of the EBRD regions.

Historically, secondary cities have played a relatively greater role in the formerly socialist economies, which, under central planning, tended to have high rates of urbanisation relative to their level of development, albeit with more dispersed settlement patterns in secondary cities. Many of these secondary cities were developed around state-owned manufacturing hubs, with little economic diversification and limited alternatives for the local labour force once the manufacturing plants were closed down or relocated as part of the transformation to market-based and more service-oriented economies. As a result, over 80 per cent of cities in some economies of eastern and south-eastern Europe have been

[18] Ibid.

shrinking (see Figure 4). The economic and social consequences of this shift in the urban landscape have been severe. While the growing urban centres benefit from increased productivity and an inflow of capital and skilled labour, the declining secondary cities often experience fiscal constraints due to falling tax revenues, imbalanced and deteriorating infrastructure assets and housing values and a poorly skilled labour force due to selective out-migration. All of this potentially limits the fiscal and administrative capacity of the declining cities to address current and upcoming environmental challenges.

Figure 4. Percentage of cities with falling populations, 2000-12



Source: World Bank City Database and EBRD staff calculations as presented in the report: *Creating Liveable Cities: Regional Perspectives*.[19]

Policy considerations should recognise the priorities and needs of different categories of cities – small, large, growing or declining. For instance, a rapidly growing megacity like Cairo would need significant upgrades of infrastructure services and clear policies to manage an otherwise unregulated urban sprawl associated with poor mobility, economic exclusion, low environmental standards and poor public health. Policymakers in growing cities may also more generally consider the environmental benefits and resource efficiencies of a more compact urban design. However, in shrinking or declining cities, policies should focus on mitigating the negative effects of declining population and capacity, including by helping to diversify the economy, coordinate investments and transfer capacity-building and skills across public, private and academic agencies.

Urbanisation, economic growth and inequality

The shifting landscape of urban centres has created and continues to create 'winners' and 'losers' across different cities. The more productive and dynamic urban centres tend to attract investment, capital and skilled labour and as a result, they represent the majority of the innovation and higher economic growth compared to the rest of their respective countries. In general, gross domestic product (GDP) per capita is significantly higher in large cities than elsewhere in a country and in the EBRD regions such differentials tend to be on a par with or higher than those observed in advanced economies (Figure 5).

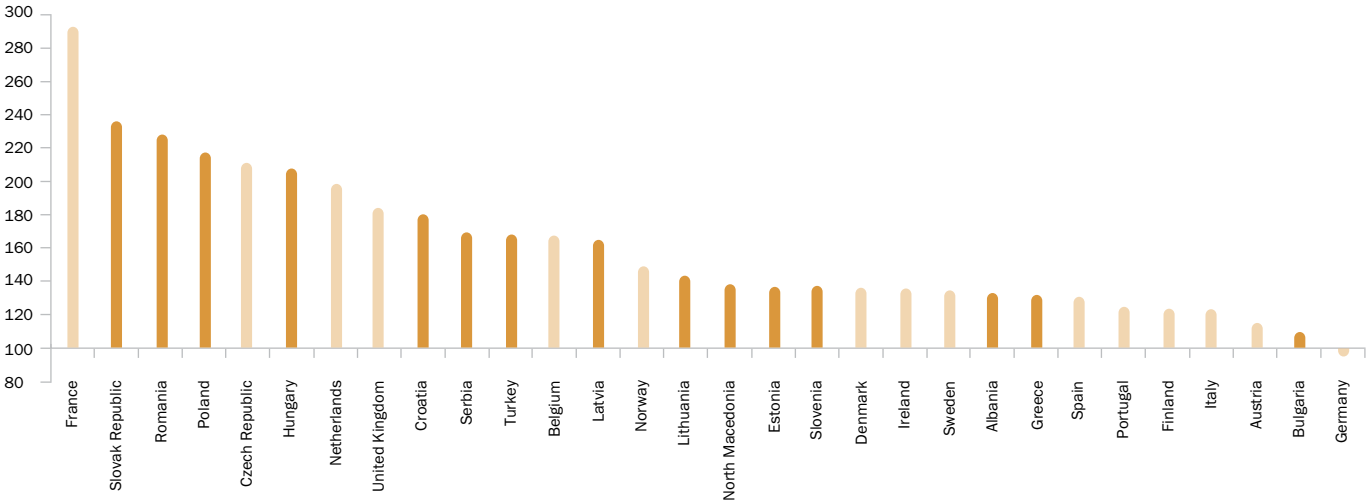
There is also an increasing division between 'winners' and 'losers' within the growing cities as inequality – as measured through the Gini coefficient – is particularly pronounced in fast-growing cites.[20] Policymakers should recognise these patterns and pursue policies that help reallocate wealth and promote equaleconomic opportunities for all, both to help the declining cities and regions left behind and to ensure that growing urban centres are as inclusive as they can be.

Wealth and consumption patterns

In terms of consumption patterns and environmental impact, it is not just absolute population growth that drives consumption, emissions and congestion problems in growing cities. Rather, the interrelationships between wealth and population growth are highly relevant as growing population centres increasingly tend to house wealthier people. Wealthy people consume more and generate more waste. For example, across the EBRD regions, many citizens are craving to spend newly acquired wealth on buying a car and this is reflected in the urban road congestion in the EBRD economies. Road congestion and high pollution levels from traffic are observed in many of the larger cities in the EBRD regions due to a combination of increased car ownership, poor vehicle standards and the absence of pollution control and monitoring.[21] According to the TomTom road congestion

[19] Ibid.
[20] See UN-Habitat (2013).
[21] Poland and Estonia are the countries in the EU with the highest population of cars older than 20 years, making up 33.7 per cent and 27.6 per cent of their car fleets, respectively. See Eurostat (2020)

Figure 5. GDP per capita in the largest city's metropolitan region, 2017 (national average = 100)



Note: Data for Albania, Croatia, France, Ireland, Italy, Latvia, Lithuania, the Netherlands, Norway and North Macedonia are for 2016.
Source: Eurostat, GDP per inhabitant for capital city metropolitan regions (https://ec.europa.eu/eurostat/statistics-explained/index.php/Urban_Europe_%E2%80%94_statistics_on_cities,_towns_and_suburbs_%E2%80%94_the_dominance_of_capital_cities) and EBRD staff calculations as presented in the report *Creating Liveable Cities: Regional Perspectives*.[22]

index for 2019, 16 out of the 18 most congested cities in Europe were located in the EBRD regions.[23] This represents a key challenge for policymakers, who must seek a good balance between regulation, price signals and viable transport alternatives to reduce the need for and attractiveness of private cars.

Decentralisation, governance and regulation in the EBRD regions

The ability of cities to find solutions to economic stagnation, environmental challenges, climate change risks and inequality is highly dependent on the efficiency and effectiveness of their governance structures. For instance, the Urban Governance Survey (developed by LSE Cities, UN-Habitat and United Cities and Local Governments (UCLG)), which interviewed local city government representatives on urban governance, showed that 36 per cent of respondents believed that inflexible bureaucracy and rigid rules were a major factor in reducing the abilities of cities to implement their policies.[24]

Many countries and cities in the EBRD regions have a legacy of poor local governance. The former centrally planned economies do not have a good track record of promoting local capacity and procedures for self-governance or accountability mechanisms and influence through local civil societies. Poor local governance was often exacerbated by inadequately planned and implemented decentralisation processes that followed the collapse of central planning within the EBRD regions.

Empowered local governments have been shown to have a positive impact on the provision of public services and on quality of life.[25] The major benefits of decentralised decisions include (i) a more targeted or tailored supply of public services and infrastructure as a response to local demand, which should lead to (ii) a more cost-efficient use of public expenditures and may lead to (iii) an increase in cost-recovery funding from residents who are more willing to pay for adequate services. Decentralisation can also (iv) promote accountability and reduce corruption, due to a greater proximity to a population that may be more aware of local governments' actions than they are of the actions of central government.

However, if executed poorly, decentralisation may result in inefficiencies and corruption, and further disillusionment with local government. Therefore,

[22] Ibid.
[23] See TomTom (n.d.).
[24] See LSE Cities, UN-Habitat, United Cities and Local Governments (2016).
[25] See Bilbao (2015).

for the abovementioned benefits to materialise, it is important that (a) decisions (and not only operational obligations) are transferred to local authorities; (b) local authorities have sufficient financial and institutional capacity and procedures in place; and (c) the decentralisation promotes engagement and enables residents to hold institutions to account for delivering policies in a transparent manner.

Unfortunately, the decentralisation processes in many of the economies where the EBRD invests are still incomplete, with the capacity, resources, procedures and political autonomy of local authorities remaining inadequate. The process of developing a strong culture and presence of civil society has also proven to be a long and challenging journey in many cities. This, too, has hampered the way local communities are able to influence urban development and hold its local decision-makers accountable.

Conclusion

Urban development and regulation has been reoriented in many parts of the world over the past few decades, from an earlier focus on production and productivity, with less emphasis on environmental and human wellbeing, to a stage where the environment and its residents increasingly take priority. While this reorientation first started among the more advanced OECD economies in the 1970s and 1980s, the centrally planned economies in the EBRD regions began the process later. These economies also had a more rigid approach to management, based on a top-down command structure. As a consequence, many municipalities in the EBRD regions have less experience with rich and complex policy programmes that combine comprehensive stakeholder dialogue processes and the involvement of local community members in urban development. Such programmes encompass effective price signals, economic incentives, strict transparency principles, and information- and trust-building efforts between residents and local authorities.

Taking these observations into account makes it clear that the regions require a combination of green and inclusive urban development. To achieve this, a rich and comprehensive policy mix is needed in many places, where the interdependence of different policies and the synergies between investment programmes and policy initiatives would need to be carefully considered and debated. This report aims to contribute to the debate.

2.2. Beyond green cities: other relevant concepts

Figure 6 captures some of the many terms and concepts being used to refer to programmes and objectives of modern, progressive cities. While this report focuses on green urban policies – targeting environmental and climatic challenges – it touches on these other concepts where relevant.

Smart cities are those that prioritise the development of digital infrastructure connectivity, to facilitate the growth and curation of human capital. The increase in the innovative capacity of smart cities enables them to maintain their industrial competitiveness.[26]

But interconnected digital solutions are not just for the powerhouse cities of the Global North. Santiago's Chilecon Valley, for example, is being heralded as a prime example of an open, smart district in South America.[27] Its growth of digital start-ups can be attributed in part to the country's pro-immigrant policy, designed to welcome innovators from the United States of America. The capital also boasts the most advanced public transit system in South America and is making plans to accommodate rapid growth in the use of electric vehicles charged by the smart grid.[28]

This demonstrates the role that smart cities can also play in driving a green agenda. For instance, data can be used to effectively manage the roll-out of electric vehicles and optimise vehicle-to-grid energy balancing, which can reduce energy consumption as it mitigates against the 'peak-trough' energy-demand profile of cities.

However, these ambitions for technological revolution have not been well received in all cities, with some communities seeing the approach as pandering to outside interests rather than addressing local concerns.[29] For example, international firms that are

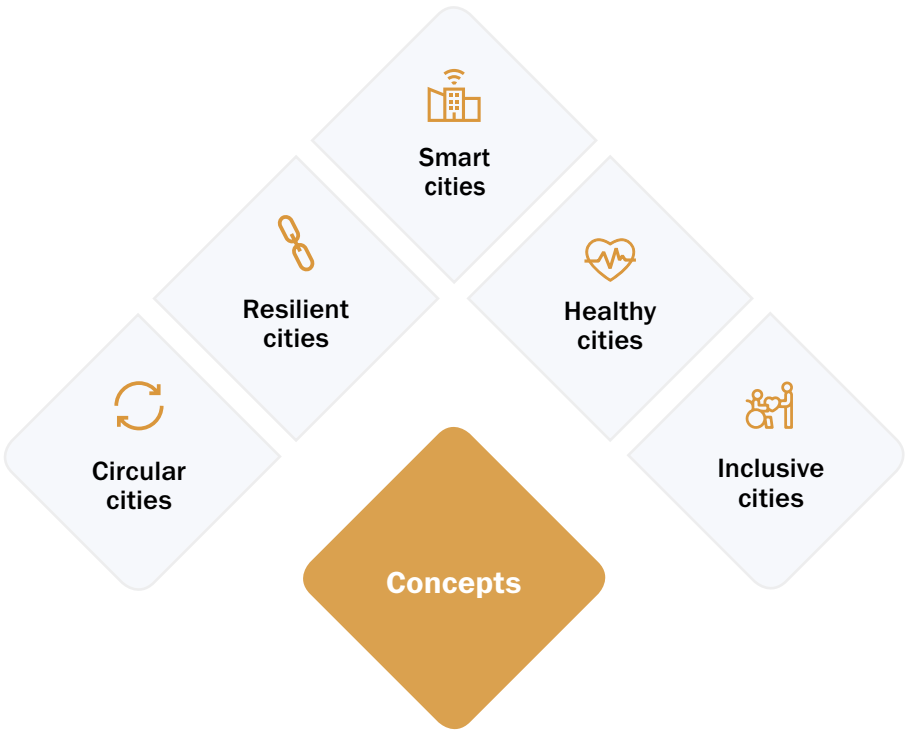
[26] See Trujillo and Parilla (2016).
[27] See The Economist (2012).
[28] See Marshall (2016).
[29] See Wattenbarger (2018).

vocal about the transition to smart cities include the likes of IBM and Siemens. The smart city concept is applied and supported by initiatives such as the Smart Cities Prosperity Fund Programme and the EU's Digital Cities Challenge, and many cities are seeking to pursue a smart urban development agenda.

Circular cities are a relatively new phenomenon based on well-established schools of thought around functional service economies and natural capital. These are cities that seek to harmonise economic development with environmental conservation. Some of the key sectors that are thought to benefit most from this approach include waste and textiles, and transport and food production. The principles of a circular economy can be integrated into planning policy, for example, compact city development, as demonstrated by Curitiba, a city in Brazil, which implemented this development strategy 30 years ago. The strategy entailed mixed-use development and densification along five bus rapid transit (BRT) corridors. This has been reported to help improve land-use issues, increase public transport use and reduce congestion.[30]

Strengthening the resilience of a city is a priority for many governments and their citizens, and circular and smart cities can help in this endeavour. A **resilient city** is one that is able to strengthen its response, recovery and adaptive capacity not just to physical, but also to social and economic shocks and stresses. These may include high unemployment, endemic violence or floods. One such global organisation supporting cities to develop resilience strategies is 100 Resilient Cities, which works to enable cities to structure their approach and pathway to a more resilient future. It has outlined seven key qualities that characterise a resilient city: reflective, resourceful, robust, redundant, flexible, inclusive and integrated.[31]

Figure 6. Other concepts used for city programmes and objectives



Source: Arup Group.

[30] See EMF (2019).
[31] See 100 Resilient Cities (n.d.).

Specific actions that cities are taking to become more resilient include the development of green corridors, as promoted in Atlanta, which has dedicated 400 acres of green space along the BeltLine Westside Trail. This master plan has sought to address the racial inequity in access to green space in the area while also seeking to minimise health issues caused by frequent flooding with sewage-contaminated water.[32,33]

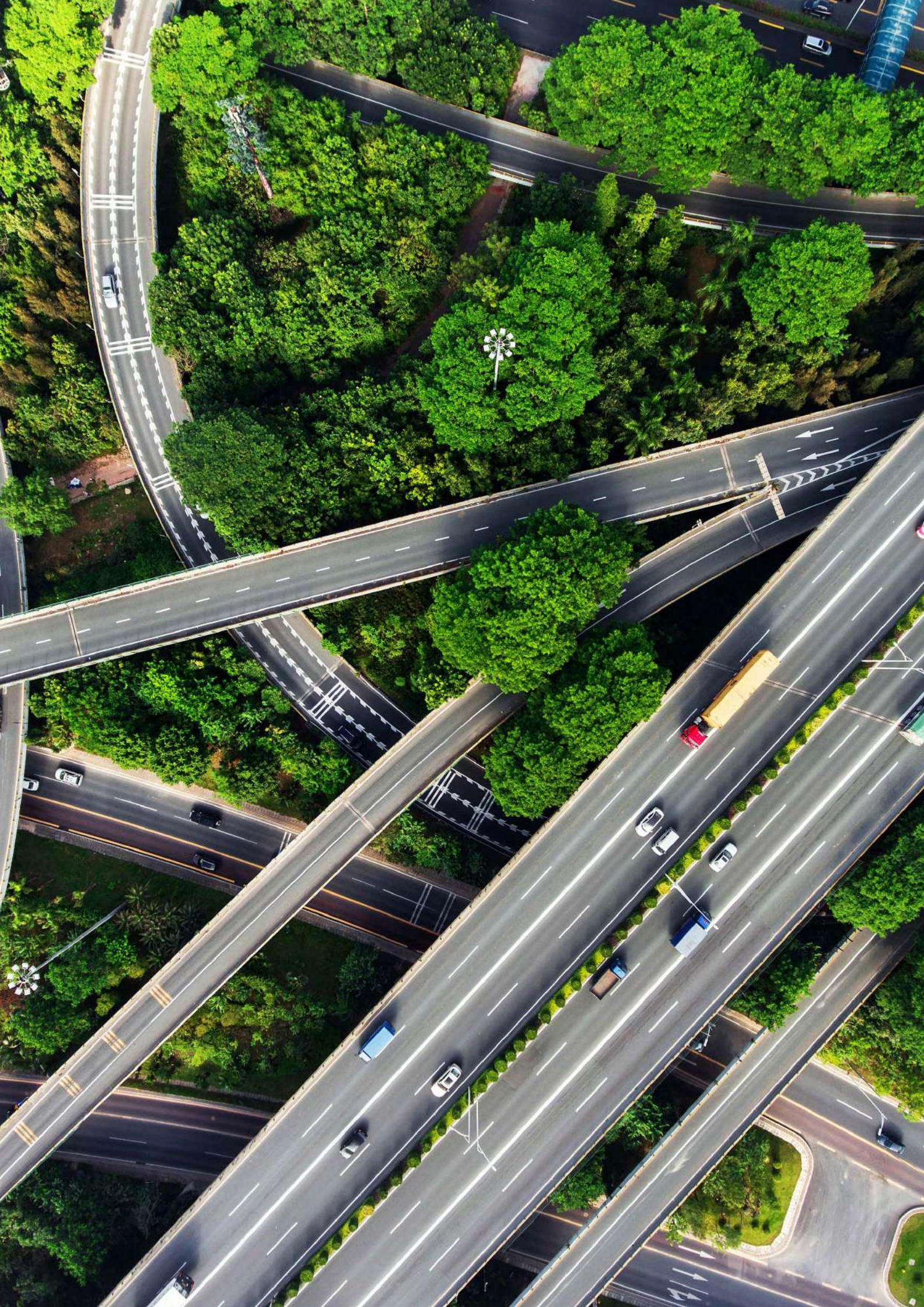
Inclusiveness is a key element of resilient cities, as documented by Jan Gehl in his book *Cities for People*. It is also a focus of work for organisations such as the World Bank and the Asian Development Bank.

The concept of **healthy cities** focuses on promoting health via the political agenda, through institutional change, capacity-building and innovation. Creating healthier urban settings supports the health and wellbeing of the people that use them. The WHO European Healthy Cities Network is a group of European cities that has been working towards this agenda for the past 30 years and forms part of a wider network of 1,400 municipalities.[34] When health is used as a lens through which to examine city sectors it can generate other sustainable urban improvements, for example, shifts towards active mobility that can not only reduce the risk of respiratory disease but also decrease emissions of air pollutants, reduce congestion and injuries and free up green space.[35]

Inclusive cities are those that can provide services, infrastructure and access for all residents, regardless of gender, sexual orientation, race, age or ability.[36] The international community has widely acknowledged the importance of creating inclusive cities to improve people's lives, with Sustainable Development Goal 11 calling for "inclusive, safe, resilient and sustainable" cities.[37] While urbanisation creates the conditions to facilitate opportunities for a better life for residents, for example, through access to larger and more diverse economic markets, the expansion of cities can also increase inequality and exclusion, especially of the poor and vulnerable.[38] Developing inclusive cities is an ongoing and dynamic challenge that requires city governments, businesses and residents to work together. Inclusion encompasses various complex factors, such as economic inclusion, social inclusion and spatial inclusion.[39] Recognising that each of these closely related dimensions need to be addressed will enable cities to break cycles of marginalisation, exclusion and inequality.

"Inclusive cities are those that can provide services, infrastructure and access for all residents, regardless of gender, sexual orientation, race, age or ability."

[32] See Kahn (2017).
[33] See 100 Resilient Cities (2018).
[34] See WHO (n.d.)
[35] See WHO and UN Environment (2017).
[36] See Misra (2016).
[37] See UN (2020).
[38] See Asian Development Bank (2011).
[39] See World Bank (n.d.).



03

Sector-based policy options ↘

Sector-based policy options ↘

Cities can choose from a wide range of policy options to address urban environmental challenges – some options are sector-specific while others cover multiple sectors.

This section discusses the sector-based policy options available to cities to support sustainable urban development and green city investments. It is divided into the sectors of mobility and transport, land use, energy and buildings, water and wastewater, and solid waste.

3.1. Mobility and transport

Transport accounts for a quarter of global carbon dioxide emissions and is responsible for harmful air pollutants that negatively impact the health of city residents. From an environmental perspective, the main policy objective with regard to the transport sector today is to cap or reduce the use of private cars and increase the share of public and active mobility (such as cycling or walking). Policy objectives may further seek to promote cleaner public and private vehicles – ideally with zero emissions. Together with land planning, related policies may also seek to reduce the need for motorised mobility or transport.

Policy measures in the transport sector can be divided roughly into (i) demand-side measures aimed at influencing travel decisions and (ii) supply-side measures seeking to provide a credible alternative to private cars. Among the demand-side measures are policies aimed at making cars – in particular, those that release the most CO_2 and nitrogen monoxide – less attractive (for example, parking policies or road-user charges, but also attitude campaigns and the pedestrianisation of selected streets). Among the supply-side measures are policies and initiatives aimed at providing well-planned, sustainable and attractive public transport services, as well as policies that seek to increase the modal share of active mobility options.

Both demand-side and supply-side measures have been inadequate throughout the EBRD regions partly due to (i) low administrative capacity in cities, (ii) weak enforcement and (iii) a low revenue base. These shortcomings must be addressed as part of an effective policy mix aimed at tackling the main environmental challenges linked to the urban transport sector.

A selection of such urban transport and mobility policies includes the following:

Car-restrictive policies:

1. Parking policies – including pricing, restrictions, information and enforcement
2. Road-user charges – including congestion charges and low emission zones
3. Pedestrian-oriented and car-restrictive policies
4. Car-sharing, car-pooling and ride-sharing

Promotion of public and active mobility:

5. Planning and regulation of public transport services
6. Pro-cycling policies

Promotion of cleaner vehicles:

7. Electrification of urban transport

T1. Parking policies

Summary

The primary environmental objective of parking policies is to make parking, and the use of private cars, less attractive in order to promote a shift towards public and active mobility. Restrictive parking policies cover several types of intervention, including the pricing of parking and the limitation or relocation of available parking spaces. An active use of parking regulation can be an effective deterrent to the use of private cars, with a limited, or even a positive impact on the city budget. Parking policies can also help promote the use of electric or low-emission cars, and effective use of parking facilities may be supported by appropriate information systems. Furthermore, real-estate developers can be obliged to provide off-street parking solutions when needed. However, parking policies only succeed in cities with credible enforcement capacity and good public transport services as a viable alternative to private cars.

Description

Effective parking regulation requires consistent urban coverage, pricing and enforcement. One such approach is the introduction of parking zones, where each zone, often labelled with different colour codes, represents different price levels – from highly priced and often time-limited parking in the centre to cheaper and less restricted parking in zones further from the centre. More sophisticated parking schemes may include parking fees linked to the vehicle emission levels at the time of car registration or dedicated parking and charging facilities for electric cars.

Workplace levies may also be considered as part of a city's parking policies. This measure imposes taxes on companies for each parking space they provide to employees and may also have a significant positive effect on the city's revenue. For example, in Nottingham in the United Kingdom, money raised from the workplace levy has helped fund extensions to the existing tram system and the redevelopment of Nottingham's railway station.

Restrictive parking policies may include the reduction or relocation of available parking spaces, which can be coordinated with other transport solutions. For example, the removal of on-street parking spaces frees up space that can be repurposed for other needs such as dedicated bus lanes, widened pavements or cycle lanes. Hamburg implemented this approach in 1976 and Zürich in 1996.[40] Parking solutions may also be tailored to public transport schemes through parking ('park-and-ride') facilities located next to key transit stations.

Resource implications and key requirements

Introducing regulated parking fees for the first time involves some coordination with land planning and traffic planning. It requires adequate marking of dedicated parking spaces and related signposts. It also requires a reliable and user-friendly payment solution, of the kind that are increasingly based on payments through mobile phones, rather than the more traditional pay-and-display solutions. Operating the system also requires good control and enforcement mechanisms. Lastly, significant legislative changes might be needed in order to regulate private car-parking facilities.

Introducing additional parking fees or time limits on existing parking spaces may require little investment or additional control and enforcement costs for the city. The removal of parking spaces is not financially costly, either. However, the removal of on-street parking may be combined with other arrangements, such as the construction and operation of off-street parking garages or park-and-ride facilities, which may require significant resources and coordination among city designers and planners in relation to other policy areas.

Potential private-sector participation

The private sector can play an effective role in setting up and operating parking payment and control schemes. Here, cities can consider both availability payments (for a system that works) and performance payments (for revenues collected). For example, private contractors can help improve parking control and revenue collection through a well-defined and well-managed parking service contract. At the same time, the private sector can play a constructive role in the financing, construction and operation of off-street parking garages and 'park and ride' facilities.

[40] See Push-Pull Parking (2015).

In addition, real-estate developers can be obliged to provide off-street parking solutions as part of their development permits.

Implementation obstacles and solutions

A radical change to parking fees or parking availability requires a new mindset and acceptance from the public. It also needs adequate control procedures and enforcement capacity. Therefore, recommendations may include the gradual introduction (both in terms of coverage and price levels) of parking fees. This enables a gradual change in people's attitudes and a gradual building of the necessary operational and enforcement capacity. Furthermore, both the pricing and the relocation of parking facilities can play a constructive role in a policy mix together with other 'shift' measures. As car owners see parking fees as a burden, such interventions are more readily accepted when they appear together with improved public transport services as a viable alternative to private cars.

Time-limited parking facilities prevent specific user groups, such as workers or selected residents, from using those facilities. The removal of on-street parking may further upset many potential beneficiaries of such facilities – including business communities, workers and selected residents, and like parking fees, policies that limit parking may face less opposition when combined with improved public transport services or other measures as part of a policy mix.

Parking restrictions that support the general demand for public transport services while also providing carefully planned relocation of parking facilities close to key transit stations (park-and-ride facilities) can have a particularly strong impact on the shift from cars to public urban transport. Removal of parking spaces also provides a great opportunity to reallocate scarce urban space to dedicated bus lanes, bicycle lanes or even trees and green spaces.

Comparison with other policy options

When comparing an active use of parking pricing to road-user charging (see policy option T2), it is worth noting that many of the benefits can be quite similar. Parking policies are often quicker and less complicated to implement and represent lower investment costs compared to the introduction of a new congestion charging solution. Removal of parking facilities may provide good opportunities to reallocate scarce urban space to public and active mobility.

Secondary measures and effects: parking information and guidance

Modern parking facilities equipped with sensors can collect real-time information about parking availability. This information can be communicated to drivers through information boards and mobile apps. It enables drivers to plan and find available parking more easily, reducing search time and traffic and thus minimising congestion and pollution while also helping to enhance the quality of the urban area.

Introducing this parking information, which in a smart city can be combined with pricing, traffic and congestion data in order to propose an optimal parking solution, improves the driver experience rather than promoting a shift away from private cars. It can, however, be viewed as a mitigation of objections by drivers to the relocation of existing on-street parking facilities. Furthermore, these systems can also be economically viable. As an example, within five years the gradual introduction of a Parking Guidance and Information System in Southampton, United Kingdom, proved to have an economic rate of return of 91 per cent, where the cost-benefit calculation took into account the cost of installation and maintenance and the benefits associated with the reduced times spent searching and queuing for parking spaces. Broader benefits included reductions in distance travelled, time spent parking, vehicle operating costs and fuel consumption.[41]

Unintended consequences

Parking policies to deter private cars in urban areas have sometimes accelerated the development of large shopping centres on the outskirts of cities. Such developments should be handled with care, as rather than addressing an urban traffic problem, the parking policies may end up relocating the problem to another part of the city, where public and active transport modal shares are even harder to increase.

T2. Road-user charges

Description

Road-user charging is a transport-demand policy instrument. The primary environmental objective of introducing road-user charges is to discourage the use of certain classes of vehicles, fuel sources or more polluting vehicles.

As an instrument, road pricing can be tailored to specific areas, times, vehicles, emission standards and fuel types. It has the potential to generate substantial revenue, but has high investment and collection costs, for example, in the form of physical road-tolling stations or through an automated charging system that relies on complex information technology (IT) infrastructure and a good vehicle database for effective enforcement procedures. Road charging schemes have often met strong opposition and many plans have been delayed or cancelled due to disapproval from residents.

Urban road-user charging can be arranged in different ways, including through toll booths or through electronic vehicle-recognition infrastructure placed on all entry points to a targeted area of a city. Charging typically requires comprehensive upfront investment, and collection costs are substantial. Road-user charges can be tailored to specific areas of a city and to certain times of the day (for example, more expensive at peak times) and/or vehicle types (for example, fees for heavy goods vehicles). They can

[41] EUROSCOPE (TR1023) (1999).

also be tailored to vehicle emission levels at the time of vehicle registration and are sometimes used to promote low or ultra-low emission zones.

In terms of relevant case studies, Singapore's Electronic Road Pricing scheme was one of the first and most complex. The scheme was launched in 1998 and covers selected expressways, arterial roads and three restricted zones. The toll is applied to all vehicles and varies by time of day and direction of travel.

The London Congestion Charge was introduced in 2003 and works with a flat daily charge for driving a vehicle within the charging zone. The charge helped reduce traffic in London's city centre by 39 per cent between 2002 and 2014. In 2019 the city launched its Ultra-Low Emission Zone, which includes more stringent emissions standards.

Stockholm's congestion charge was introduced in 2006 and is designed as a barrier scheme, in which a payment is required for each entry through the barrier, and is dependent on the time of day. A study of congestion pricing in Stockholm between 2006 and 2010 found that in the absence of congestion pricing, Stockholm's "air would have been five to ten percent more polluted between 2006 and 2010, and young children would have suffered 45 percent more asthma attacks".[42]

Resource implications and key requirements

While there is no clear-cut way of narrowing down the resources needed to introduce a road-pricing measure, it is generally a costly solution that requires strong administrative capacity. It may require complex IT infrastructure, a good vehicle database for enforcement and significant changes to legal and organisational frameworks. For example, in 2015, Transport for London's collection cost was £85 million, representing one-third of total fee collection – with a congestion charge of £11.50 per day.

In cities where no dependable licence plate database exists and there is no legislation enabling congestion charging, this step might be the greatest bottleneck in the entire process. The relationship between the national legislative framework and regional or city legislative structures is also important in that cities or regional areas may be able to enact their own laws, or they may have to rely on national laws being applied in their geographical areas.

Implementation obstacles and solutions

Despite evidence of impact, the public has repeatedly rejected proposed road-user charges. For example, in Manchester and New York in 2008, and Copenhagen in 2012, tolling schemes were rejected by public referendums. Public acceptability requires an incremental introduction of fee levels. It also requires consultation and feedback from the public in designing the policy, and robust awareness campaigns, with evidence of improvement in terms of traffic congestion, public transport and road networks.[43] Furthermore, the vision of the policy should be part of an overall traffic plan, including improvements in public transport funded by the road pricing revenue. In London and Oslo, resistance to congestion and toll charges was partly overcome by transparently linking these fees with public investment.

Comprehensive congestion charging remains suitable for large cities with a congestion problem in their city centres, but is rarely a recommended solution for small to medium-sized cities due to the administrative and financial burden. For small to medium-sized cities, parking measures are much more effective, but may need to be combined with charges for goods vehicles.

Comparison with other policy options

Effective use of restrictive parking policies has many of the same benefits as road-user charges. However, parking policies are often significantly easier to implement and can be introduced in a more gradual fashion.

T3. Pedestrian-friendly policies

Description

Pedestrianising roads or city centres can be seen as a demand-side measure aimed at regulating and influencing travel decisions. When combined with

[42] See Rogers (2017).
[43] See Collier et al. (2019).

good solutions for public and active mobility, it can be an effective policy to reduce traffic and improve local air quality. In addition, car-free roads can promote more vibrant and enjoyable urban spaces. A large number of European towns and cities have made parts of their centres car-free since the early 1960s. This approach is often accompanied by car parking facilities on the edge of the pedestrianised zone and is sometimes combined with park-and-ride schemes or cycle lanes to facilitate public and active transport to the pedestrianised centre. Most pedestrianised zones allow delivery trucks at certain times of the day.

Pedestrian-oriented policies can be more or less restrictive or ambitious in terms of the area, the time and the vehicle classifications that are subject to restricted access. It can involve complete pedestrianisation of a large area or it can be modest in its coverage, or accept motorised vehicles at certain times. There is also the opportunity to exempt certain vehicles from the ban, for example, public transport vehicles or the vehicles of selected residents, business owners or disabled people. The promotion of car-free days is another approach, often aimed at raising awareness as much as regulating travel decisions.

Resource implications and key requirements

Restricting car traffic for a given road has, initially, low financial and administrative implications. However, implementation costs and consequences, with regard to shifts in traffic flow patterns, will need to be considered. Promoting active mobility may also require additional investment, such as better street lighting.

Implementation obstacles and solutions

The main resistance to car restrictions tends to come from local shopkeepers and to some extent from local residents and other businesses. For instance, policymakers should be aware that the pedestrianisation of city centres can cause surrounding property prices to increase significantly. And, while in almost all cases retail businesses also benefit, this can lead to an inexorable rise in commercial rents, too. This means that pedestrianised retail centres risk becoming further homogenised, with only the most high-end independent shops able to operate. The challenge for policymakers, therefore, is to implement pedestrianisation while minimising the negative effects of the gentrification that is likely to accompany it. To this end, the success factors of pedestrianisation schemes include a gradual approach coupled with public consultations. This allows businesses to adapt to and influence the policy. Transparency, regular community engagement, monitoring and evaluation are crucial to measuring the success of the scheme.

The city centre of Nuremberg, Germany, has been gradually pedestrianised since the 1970s, to address the decline in air quality. When heavily congested roads were closed to cars, traffic volumes fell by up to 25 per cent in the historic city centre, while on nearby roads it increased between 4 and 19 per cent. Over the following 10 years, the area was transformed into an attractive pedestrian precinct: buildings were renovated, street furniture upgraded and art works introduced. Public support for the pedestrianisation scheme has proved to be strong. Proposals to reopen the centre to car traffic following a change in political leadership of the city in 1996 were not realised due to public objection.[44]

T4. Planning and regulation of public transport services

Description

The degree of planning and regulation of urban transport services can vary from a liberal approach to a more structured and coordinated approach. A liberal approach, based on largely unregulated private bus and minibus services, requires less administrative and financial capacity within the municipality and is flexible and responsive to most transport demand in cities.

However, a liberal approach tends to face coordination problems. An effective pursuit of environmentally friendly and inclusive mobility requires adequate regulation of transport services on the back of a plan for sustainable urban mobility.

[44] See European Commission (n.d.).

"Effective transport services require professionalism, predictability and accountability. The performance of incumbent operators can be improved by transforming municipal transport operators into separate legal and commercial entities or joint stock companies."

Effective transport services require professionalism, predictability and accountability. Improved performance of incumbent operators can be promoted by transforming municipal transport operators into separate legal and commercial entities or joint stock companies (JSCs). This helps to depoliticise the management of these operators. To further professionalise the relationship between the company management and the city, it is recommended to set up public service contracts (PSCs) between the municipality and the JSC – defining rights, obligations and processes – to ensure predictability and accountability for all. Improved transport services can also be promoted through well-regulated and well-procured private service contracts.

The benefits of a well-planned and regulated transport sector include better resource efficiency through synergies between transport modes, including private cars, bicycles and various public transport services. Better regulation and coordination can further facilitate integrated multi-journey ticketing covering journeys that include a variety of transport modes. It also enables the introduction of an electronic ticketing solution, electronic vehicle monitoring and transport management, which allows for real-time information systems. All this improves user experience and increases the popularity of public transport services.

Resource implications and key requirements

Setting up a strong integrated urban transport regulator takes time. It requires adequate capacity to plan, contract, procure and monitor services. Effective contracting and transparent funding of regulated services also require shifting the control of cash flow from the operators to the transport authority.

Of the different solutions it is worth noting that electronic transport management includes operation of the necessary IT infrastructure and control room. In Moscow, which has a population of 12.3 million, the creation of an intelligent transport system had an overall budget of US$ 1.7 billion from 2012-20.[45] Electronic ticketing and real-time information systems may also require significant investment in ticket machines, validators, information boards and IT infrastructure.

Potential private-sector participation

Increased administrative planning and coordination does not imply a crowding-out of private operators. Regulated bus services can be effectively procured, contracted to private operators and monitored by a dedicated authority. The introduction, operation and maintenance of electronic ticketing systems, electronic vehicle monitoring or real-time information services can also be effectively financed, implemented and operated by private contractors. For example, the city of Belgrade contracted out the supply, financing and operation of an electronic vehicle (bus) monitoring and ticketing solution, including ticket sales and ticket control, in return for 8.3 per cent of the ticket revenues collected. For the city, the outcome was a more than 10 per cent revenue increase in the first year of operation, implying a net rise in municipal revenue, better vehicle monitoring under the PSCs and lower costs of ticket sales, without any material capital expenditure.[46]

Implementation obstacles and solutions

Effective regulation of the urban transport sector may upset public and private operators alike. One challenge is the formalisation of unregulated minibus services, for which moderate adjustments to licencing requirements may be a first step. Effective regulation may involve the unbundling of a transport authority that has in the past provided services and regulated the sector. It may also involve account separation

[45] See Innovative Governance of Large Urban Systems (2017).
[46] See Tica et al. (2012).

and further unbundling of different transport modes or operators to ensure transparency and well-defined service contracts for each mode and operator. A gradual approach may be needed here as both managers and related unions may oppose such moves towards transparency and future competition for related transport markets.

Effective contracting and the transparent funding of regulated services require shifting the control of cash flow from the operators to the transport authority. This implies a change of mindset and may have to be introduced gradually through one transport mode at a time, on the back of a well-defined and well-funded public service contract for the relevant operators.

T5. Electrification of urban transport

Description

Electric vehicles have zero tailpipe emissions and, where renewable electricity generation is on the rise, can be effective in reducing greenhouse gas emissions. Policies promoting the electrification of the transport sector include the introduction of battery-powered electric buses and the promotion of trams and trolleybuses – with or without in-motion charging solutions. This also includes policies promoting individual electric vehicles, including private cars and light commercial vehicles. Key policies promoting private electric vehicles include the use of road-user charges in favour of electric vehicles (see policy option T2), parking policies in favour of electric vehicles (see policy option T1), access to bus lanes for electric vehicles and the roll-out of convenient charging infrastructure.

Resource implications and key requirements

A shift to electric buses brings about fundamental changes to the operating model – and the economics. These changes include significant upfront investment in charging and maintenance facilities and higher costs for the purchase of rolling stock. They also include important negotiations with the energy sector to ensure sufficient capacity on the local grid and optimal electricity prices for overnight or day-time charging. Personnel will also be affected, and many staff will require retraining and redeployment. Drivers will need to adapt to new driving techniques and protocols for recharging and battery management, while the maintenance of buses and charging infrastructure will change to the extent that these may be outsourced as part of supply-operate-maintain contracts.

Overall, lower fuel and maintenance costs are associated with electric buses compared to diesel buses, but as the relevant market segments are less settled the pricing of these activities is subject to some uncertainties. A less radical approach is the expansion of tram or trolleybus networks as this represents less of a change compared to the existing model in operation. Here, one increasingly relevant hybrid solution involves trolleybuses with battery capacity and in-motion charging using existing or new trolley wires for battery charging. This approach, which is mostly relevant for cities with an existing trolleybus service, enables the buses to operate temporarily outside the network of overhead wires, with moderate battery capacity installed.

Policies aimed at the electrification of private vehicles may include revision to a current road-user charge, to parking regulation or the access of electric cars to bus lanes, which may not have huge resource implications. The installation of charging stations at selected parking places, however, represents a significant investment cost. In concrete terms, in 2015 the cost of single-port, non-residential electric-vehicle supply equipment (EVSE) unit ranged from US$ 300-1,500 for Level 1, US$ 400-6,500 for Level 2 and US$ 10,000-40,000 for direct current (DC fast charging, while the installation costs varied greatly from site to site, with a ballpark cost range of US$ 0-3,000 for Level 1, US$ 600-12,700 for Level 2 and US$ 4,000-51,000 for DC fast charging.[47] In light of this, local initiatives aimed at promoting private electric vehicles will only work well when combined with national policies that support the use of electric and low-emission cars.

[47] See Smith and Castellano (2015).

Implementation obstacles and solutions

Electrification of bus services requires considerable investments in fleets, maintenance and charging infrastructure and thus significant capital expenditure. The cost of electric buses can be double the price of their diesel equivalents and charging stations are also expensive – they cost about US$ 50,000 for a standard depot-based version used for overnight charging.[48] Nevertheless, several cities have introduced electrification of bus services on a small scale, on the back of a clear green vision for the relevant city and with some financial support from national or international entities. It has also been suggested that electric buses have lower operating costs in the long term and are easier to maintain. For example, in the case of Stockholm, evidence suggests that lower fuel costs for electric buses can balance the high investment costs incurred in building charging infrastructure, while achieving in the bus fleet a reduction of up to 51 per cent in emissions and up to 34 per cent in energy use.[49] In addition to financial barriers, the current state of technology can be an issue. For instance, during early tests in Belo Horizonte in Brazil, electric buses had trouble getting over steep hills with full passenger loads.[50]

T6. Pro-cycling policies

Description

Cycling generates no emissions or noise, requires less road and parking space compared to cars and is a more economical and healthier form of mobility, compared to motorised transport.[51] Policies to encourage cycling include pro-cycling infrastructure, pro-cycling regulation and pro-cycling subsidies. A modal shift to cycling can be further promoted by awareness and attitude campaigns.

Pro-cycling infrastructure includes the introduction of segregated cycle lanes and the introduction of convenient and theft-preventing parking facilities as well as bike-sharing facilities. Pro-cycling regulation can be seen as an effort to modify road use and traffic patterns in favour of cycling, for example, introducing two-way cycling in one-way streets or introducing advanced-stop boxes in front of cars at traffic lights. Such regulation can also include work towards a reduction or calming of traffic.

Pro-cycling subsidies may fall primarily within the sphere of national policies. However, municipal fiscal measures may include local tax benefits to install cycle-friendly infrastructure, such as bicycle parking at work. Local governments can also demonstrate their support for cycling through cycle-friendly public procurement procedures, which may include purchasing electric bicycles or electric cargo bikes instead of light commercial vehicles for services such as postal deliveries.

Resource implications and key requirements

The design and construction of segregated cycle lanes may be costly, but moderate alterations to existing road infrastructure, such as painted lanes on the side of roads, are more affordable for a city budget. A different issue arises from the potential need to reallocate scarce urban road space to safe cycling infrastructure by removing on-street car parking facilities or by introducing one-way streets. From 2010-14, the city of Copenhagen allocated €80 million to the implementation of its bicycle strategy. The cycling infrastructure in Copenhagen is extensive and includes

[48] See Financial Times (2019).
[49] See Xylia et al. (2017).
[50] See Marshal (2019).
[51] See CIVITAS (2009).

a network of segregated bike paths, bicycle traffic lights, separated coloured bike paths where cars and bikes share road space, and bicycle parking.

Pro-cycling policies can be administratively demanding due to the need to create a cycling code and implement new regulations for non-road infrastructure provision, such as bicycle parking. Policy measures that involve re-regulation of traffic patterns can also be technically demanding and may necessitate new capacities within the local administration. Bike sharing is not cheap, but with good sponsorship arrangements it can represent a minimal burden for the city budget.

Potential private-sector participation

The private sector is involved through the provision and sponsorship of bike-sharing schemes and companies may be further involved in providing bicycle parking facilities and cycling incentives as part of their human resources policies or remuneration policies. Non-governmental organisations (NGOs) can also play an important role in rolling out information about cycling initiatives, such as bike-sharing schemes.

Implementation obstacles and solutions

Reallocation of scarce urban road space away from cars and buses will naturally meet resistance and compromises will have to be made. As in many policy options, a gradual introduction of pilot cases, combined with clear communication and ideas for the city-wide and global benefits of a shift towards active mobility must make up a core part of a pro-cycling strategy. This can include supporting cycling organisations, working with stakeholders, and developing marketing and education programmes – in which NGOs can also play a role.

In many cities, bicycle theft is a growing problem and should be addressed through supportive measures. An important aspect of reducing bicycle theft is to involve multiple actors. Municipalities should make safe parking spaces available and launch campaigns to inform bicycle owners about locks, as well as introduce registration systems for bicycles or more advanced systems, such as chips.

T7. Car-sharing, car-pooling and ride-sharing

Description

Reducing the number of car trips is a way to alleviate traffic, with the aim of reducing pollution and greenhouse gas (GHG) emissions, freeing up space for pedestrians and cyclists, reducing journey times and increasing productivity. Trip reduction may be promoted through several measures, including: (i) car-sharing, which is the practice of renting a car from a prominent service provider and having ownership of the car for a limited time; (ii) car-pooling, in which a group of people travel together using their private vehicles, especially for commuting, taking the trips in turn; and (iii) ride-sharing, a car service in which a person uses a smartphone app to book a ride in a privately owned vehicle.[52] Some cities promote car-sharing services in the form of self-service cars, in a similar form to cycle-sharing schemes (for example, Share Now).

Car-sharing is not a predominantly public-centred policy, but public authority bodies can facilitate or provide incentives for car-sharing programmes, and it can be seen as a phasing policy before the introduction of full congestion charging or pedestrianisation.

Resource implications and key requirements

Car-sharing can have a low administrative and technical burden and, although it could have an associated financial burden if incentives are offered to individuals or companies to operate, there are significant savings to be obtained through reducing the number of cars on the road. Congestion is estimated to cost the EU economy €100 billion annually, with a US study indicating that if car-sharing schemes were widely adopted vehicle numbers could be reduced by one-third in specific scenarios.[53]

Potential private-sector participation

To develop and implement a successful car-sharing programme, local authorities must work with a wide mix of stakeholders, including regional transport authorities, regulatory bodies, businesses and

[52] See Barber (2016).
[53] See Transport and Environment (2017).

multiple local government bodies. Local authorities may have to invest or require businesses to invest in online platforms to facilitate easy connection between users and vehicles. Self-service schemes are normally administrated by the private sector.

Implementation obstacles and solutions

The first barriers to car-sharing are the reluctance of potential users to adopt car-sharing services and a strong desire for car ownership and use. In order to overcome these barriers, it is important to generate awareness and change aspirations from single car ownership to the use of connected transport modes, through robust awareness campaigns and user behaviours.

There is a risk that car-sharing may have a limited impact on reducing car use in a city, and further infrastructure for cars may have to be provided that is specific to self-service sharing schemes. Moreover, the effect of ride-hailing apps on congestion is contested. They could reduce traffic by encouraging people to leave their cars at home, or they could increase the number of vehicles on the road if people switch away from public transport or forms of active mobility.

In the case of sharing schemes, it is also important to provide procedures for checking driving licences and to have appropriate insurance procedures in place to ensure safety, for women in particular.

A further challenge relates to private vehicle restrictions that pose a threat to car-sharing. Exemptions from such policies could be a solution to promote car-sharing.

It is difficult to generate a large user base to reach a certain operational scale for self-service car-sharing schemes and it has been found that competition from taxis that are competitively priced can reduce the use of car-sharing services.[54] Paris is an example of a city with an electric scheme, Autolib, which closed in 2018 and offers some lessons to other cities. The service had to compete with a minicab service, suffered from poor maintenance by users and the vehicles became places of shelter for drug users. Due to decreasing use of the service the operating company went into debt.

In order to be successful, it is important that the operators of car-sharing schemes understand the context and regulation of the cities in which they plan to launch. DriveNow, an alternative car-sharing scheme, has seen significantly more uptake, with one million registered users across multiple cities.[55] However, the firm has had to abandon business in Stockholm due to high congestion charging and parking costs.[56]

Ride-sharing apps such as Uber have encountered resistance from the public due to their employment practices, leading to bans on taxi and ridesharing apps in some countries and cities. Solutions to this issue can include labour law reforms for self-employed workers and the enactment of regulation on installing mandatory meters. Furthermore, such apps require a strong and reliable mobile network, with reasonable cost for data use. Economies in the southern and eastern Mediterranean region have particularly weak data networks, with Jordan, Lebanon, Morocco and Tunisia all in the lowest third of countries globally for overall data speeds.[57]

Elsewhere, the Los Angeles Metro is working alongside car-sharing company Getaround to provide an affordable and “hassle-free” car-sharing service at more than 25 Metro transit park-and-ride lots.[58]

Comparison with other policy options

Car-sharing does not yield the same benefits of transitioning to active or public transport but can still be successful in reducing congestion and air pollution and can lessen the risk of low public acceptability that can be associated with car-free zones or congestion charging. Car-sharing is not intended to replace other traffic management policies but rather to complement them.

[54] See ITDP (2015).
[55] See Holder (2018).
[56] See Rolander (2018).
[57] See Opensignal (2017).
[58] See Metro (2019).

3.2. Land planning, green space and biodiversity

Land planning should sit at the centre of any urban development programme. From an environmental perspective, land planning seeks to protect and promote green and liveable spaces, promote resource efficiency and minimise any conflicts linked to the use of scarce urban space. It also seeks to regulate the development and use of buildings and infrastructure. Effective land planning is a necessity for the development of other infrastructure services in a city. Therefore, one should normally see close coordination between land planning and sector-specific developments – including infrastructure services linked to transport, water, energy and waste.

Over the past decades, urban design and planning have in many places shifted away from a car-enabling development that focused primarily on productivity, to a more people-oriented development with greater emphasis on environmental aspects and the wellbeing of the population. As a consequence, there has also been a shift to a more community-based planning process in which active participation by residents increasingly influences the land-use priorities of a city.

From an environmental and wellbeing perspective, some key strategic principles for land use include the following:

1. Development of compact cities
2. Promotion of mixed-use areas and transit-oriented development
3. Promotion of green spaces and biodiversity
4. Promotion of community-based land-use planning.

These strategic principles or policy options are described in further detail in Sections L1-L4.

L1. Development of compact cities

Description

Compact cities have many environmental benefits when compared to sprawling areas of low density. The benefits include a reduced dependence on cars (hence lowering emissions), a smaller energy consumption due to dense development, better and more cost-efficient public transport services and increased overall accessibility through public and active mobility. Resource efficiency is further promoted through the reuse of infrastructure and previously developed land on the back of regeneration of urban areas.

Policies of urban compaction involve the promotion of urban regeneration, the revitalisation of town

centres, restraint on development in rural areas, and higher-density real-estate development. The promotion of compact cities is further linked to mixed-use development and the concentration of urban development at public transport connection points (see policy option L2).

One way of promoting more compact urban development is to restrain development in rural or peripheral areas of the city. Such development can be controlled through the approval process of planning applications and through effective control and enforcement of any illegal developments.

Other ways of promoting compact urban development include support for urban regeneration and higher-density real-estate development. Urban regeneration would normally involve private developers getting involved in brownfield redevelopment projects. This would normally work best when there is a clear partnership between private developers and the municipal authorities and where the municipality, among others, commits to providing strategic visions, adequate infrastructure and transport services. Private developers tend to welcome higher-density real-estate development, and building permits can include obligations to undertake additional investments linked to the decontamination of brownfield sites or to the construction of green or public spaces for the benefit of the wider area.

Resource implications and key requirements

Building restrictions at the periphery of a city require effective control and enforcement of building permits. In cities where illegal construction activities are widespread, significant resources and effort must be put in place to regulate the informal sector. However, building restrictions offer revenue-generation opportunities for city authorities. For example, Toronto has secured over US$ 350 million through its density-bonusing policies, and in-kind benefits seem likely to have doubled the total value of revenues.[59] Normally, restraining urban sprawl would not require significant capital investments by a city. On the contrary, the containment of urban sprawl should lead to less demand for expanded infrastructure networks and related services.

Urban regeneration and the construction of high-density real estate require massive investment programmes. However, such investments are primarily provided by private developers, and city authorities may only be obliged to finance-related infrastructure upgrades. Nevertheless, the necessary municipal investments may not be trivial and should be carefully considered before embarking on a large-scale urban regeneration programme. City authorities must also be ready to provide comprehensive planning documents and feasibility studies as well as carrying parts of the site preparation costs and development risks linked to issues such as requirements to decontaminate sites prior to their development.

Potential private sector participation

While the city authority may sit in the driving seat in terms of restraining urban sprawl, the private sector will normally be financing and – to a large extent – driving any urban regeneration efforts and real-estate development.

Implementation obstacles and possible solutions

Controlling urban sprawl may meet substantial resistance from developers and local residents. One way to help build a public consensus and clarify the regulation can be to build a greenbelt around the city. This, however, may require the city to acquire land, to relocate people and to manage the landscaping and maintenance of the greenbelt. In Tirana, Albania's capital, the Donate a Tree initiative has surpassed its target and triggered donations by residents, companies and international organisations.[60]

[59] See Institute on Municipal Finance and Governance (2013).
[60] See Sustainable Cities Platform (n.d.).

Urban regeneration projects require substantial buy-in from local residents and private developers, who may have differing interests. For example, the city of Roubaix in France has followed a market-led approach to urban renewal while integrating the issues of social exclusion, housing renewal and economic and cultural development into its regeneration policies.[61] Comprehensive stakeholder engagement is therefore crucial, and to incentivise private-sector participation the municipal authorities must be able to provide strategic visions and comprehensive planning documents. This provision needs to be combined with a clear commitment to providing the necessary transport solutions and perhaps risk-sharing arrangements linked to issues such as requirements to decontaminate sites prior to their development.

L2. Promotion of mixed-use areas and transit-oriented development

Description

Mixed-use development, where housing, jobs, commerce and leisure are in close proximity, is considered to yield significant economic and social benefits, compared to more traditional separately zoned cities, in other words, those in which residential areas sit adrift from commercial areas. First, mixed-use areas require less transport for their inhabitants, who will travel shorter distances between private and public activities. In addition, the shorter transport distances within a mixed-use area may also help promote active mobility rather than motorised transport. As a consequence, significant time-saving and environmental benefits are expected to follow a shift towards mixed-use urban development – time saving that can be used for leisure or for productive work. For example, a doubling of job and living density has been shown to increase economic productivity by 2 to 4 per cent.[62] Economies that are less transport-dependent can also be more inclusive for individuals who otherwise would not be able to afford the transport cost required to access job markets, education or other services.

The environmental benefits can be further enhanced if mixed-use areas are developed in line with transit- oriented urban development, which refers to centres of social and commercial activities that are located at public transport connection points. Such a combination of mixed-use areas and transit-oriented development can accelerate the use of clean transport systems and further rebalance the use of the streets in favour of pedestrianisation and active mobility, where cars are prevented from undermining communal life.

Land-use zoning is a concept used to support transit-oriented and mixed-use development. In this context, zoning policies are those that designate an area to a certain use and are often supported by a regulatory framework to ensure that developers abide by the recommendations, and future developments do not threaten the ambitions set out in the policy. They are particularly successful where there are areas of vacant land, for example, brownfield areas, like old industrial sites, or other areas where the policy is not in direct contradiction to existing developments.

Resource implications and key requirements

Shifting to mixed-use and transit-oriented urban development requires significant resources in terms of planning and regulation, and it has to be pursued in close coordination with various city departments, including the city's transport planners. It takes many years and requires close cooperation with multiple stakeholders and a constructive partnership with private developers. In Clerkenwell in London, mixed-use areas have been developed as a consistent policy for more than 20 years, after the concept of mixed-use development emerged in national planning policy guidance.[63]

Potential private-sector participation

In general, the associated real-estate development will be financed and constructed by private developers. Good planning, coordination and contracting with private developers and businesses is therefore important.

[61] See URBED and the Joseph Rowntree Foundation (2006).
[62] See Bloomberg Citylab (2012b).
[63] See VivaCity2020, Cities Institute, LondonMet (n.d.).

Implementation obstacles and solutions

Like other forms of urban regeneration projects, promoting mixed-use areas on the back of a transit-oriented development will require coordination among several city departments as well as the buy-in of local residents and private developers, who may have differing interests. Such multi-stakeholder complexity may prevent or delay the implementation of mixed-use strategies. Comprehensive stakeholder engagement will be crucial and clear municipal commitments to strategic visions, together with improved infrastructure and public transport services, may be needed.

L3. Promotion of green spaces

Description

A wide range of benefits are associated with the provision of accessible urban green spaces and waterways. First, access to green spaces and waterways has a positive impact on the mental wellbeing of the population. Second, green spaces have direct environmental benefits. They can help improve air quality and even regulate the air temperature of a city. Furthermore, they can reduce flood risks as vegetated surfaces are well equipped to absorb and store water. Lastly, green spaces can help boost biodiversity. In order to promote the benefits of green spaces, policies and initiatives should aim (i) to promote more green space, (ii) to improve the value of the green spaces and (iii) to facilitate better accessibility for all to green spaces, infrastructure and waterways.

It may be necessary to extend the amount of green space through a combination of protective measures for existing green spaces and a proactive conversion or restoration of urban space and building surfaces into new vegetated areas. Protective regulation includes rules, monitoring and enforcement to protect green spaces from being lost to new built structures. For example, in Stuttgart, Germany, green areas are protected by local urban zoning and planning regulations. These are supported by a Climate Atlas created to guide the location of green spaces to facilitate cooling and airing of the city.[64] These protective measures would normally be carried out by municipal authorities although local communities and NGOs may undertake some of the monitoring functions.

Transformation of urban brownfield areas and building surfaces into vegetated land will, however, require close cooperation with private developers and landlords. Opportunities here include ways to integrate green or blue urban space development, such as the obligation to develop pocket parks or to clean up waterways, as part of brownfield redevelopment projects. Other measures aimed at increasing the amount of green space include community-based initiatives to increase the development of pocket parks, gardens and farming activities on available urban land. For example, urban agriculture policies in Amman, Jordan, have initiated the greening of more than 300 rooftops and of around 4,000 school and home gardens.[65]

An increase in the number of green urban spaces can also be achieved through the promotion of green roofs. Green roofs (or walls) have many of the same environmental benefits as traditional parks and gardens, including decreased surface-water run-off preventing flooding during heavy rainfall, improved local air quality, decreased local air temperature and the promotion of local biodiversity. Green roofs can be introduced on public buildings. They can also be introduced on private buildings through subsidies or through planning approvals for new construction or renovation. In addition, green roofs can be promoted through better information and awareness campaigns. For example, Toronto in Canada has introduced an ambitious green roof policy requiring

[64] See European Environment Agency (2014).
[65] See ICLEI (2014).

buildings above a certain height to have a certain percentage of green roofs.[66]

Beyond the amount of vegetated land, the quality and the value of green infrastructure also matter. Green spaces can increase their value through proper landscaping and maintenance. Turning green spaces into multifunctional areas is another way of increasing their value, which again can generate new revenue streams to fund landscaping and maintenance. For example, urban green spaces can be rented out for specific events, and parks can be designed as flood barriers, reducing flood risks or the need to spend resources on alternative flood-protection measures. Examples of this are the jointly funded flood alleviation schemes on parks in London, UK. For example, through joint funding from Southwark Council, the Environment Agency and Thames Water, schemes delivered surface-water flood protection for over 100 homes at risk and brought investment and improvements to several parks and sports grounds.[67]

Improved accessibility is another way to ensure the benefits of green spaces in a city. Therefore, urban planning should always consider how new or amended network infrastructure and built environment can improve current or restored green or blue infrastructure.

"Beyond the amount of vegetated land, the quality and the value of green infrastructure also matter. Green spaces can increase their value through proper landscaping and maintenance. Turning green spaces into multifunctional areas is another way of increasing their value."

Resource implication and key requirements

It requires a significant number of resources to construct, improve and maintain green spaces and urban waterways. For example, in Hamburg, Germany, the estimated costs for the installation of 300 square metres of green roofs is estimated at €9,500 compared to €3,000 for grey roofs.[68] Green roofs have higher maintenance costs, but reduced rainwater fees and a longer roof lifetime led to similar overall costs over 40 years. Therefore, recognising the multifunctional potential and additional revenue streams for urban green spaces can help mobilise significant funds to the sector. With an adequate mix of incentives, regulation and information campaigns, private developers and property owners can be encouraged to contribute to the greening of cities.

Implementation obstacles and solutions

Acquiring resources may be the biggest obstacle to an effective urban green space policy. Therefore, professional management of green and blue assets is important, with visions and skills to mobilise funding and contributions from private sector and voluntary organisations. To address this issue, a number of local authorities in the UK are considering transferring their management of green spaces from the public sector to private and charitable sectors.[69] It has been argued here that one single charitable body at arm's length from the government can present a more compelling case for support to corporate sponsors, private donors and charitable trusts, as well as attracting new volunteers. In terms of the untapped opportunity to benefit from volunteering, a UK survey found that nearly 70 per cent of young people wanted to volunteer to help create better green spaces in their community, but only 7 per cent said they currently do.[70]

L4. Promotion of participatory land-use planning

Description

Community-based land planning and participatory design for public urban spaces refer to a collaborative

[66] See Bloomberg Citylab (2012a).
[67] See Herne Hill (2015).
[68] See Climate ADAPT (2019).
[69] See National Lottery Heritage Fund (2014).
[70] See BBC News (2016).

approach to planning and design between urban planners, government authorities, businesses and the local community. This approach goes beyond traditional stakeholder consultation and instead invites members of the local community to propose solutions and new ideas. It may relate to a specific project, but can also be used for the development and testing of a wider strategic plan. Such approaches are becoming increasingly popular as authorities recognise the diverse natures of the communities they govern, and that traditional fixed standards and design criteria do not take into account the varying needs of residents.[71]

The use of participatory land planning and design is expected to ensure the improved liveability of city areas, and it is likely to improve the public acceptability of development proposals by demonstrating transparency in the design approach, ensuring greater inclusivity and community ownership of the final design.[72]

Resource implications and key requirements

A number of frameworks for public co-design have been developed by academic and research institutions. These can be replicated across cities with a variety of contexts and characteristics. For example, the Adaptive Governance Lab at the School of Architecture at University of Limerick has developed a 'Designing with Communities' framework, which emerged after five years of practice.[73]

The existence of already well-designed approaches can reduce the administrative burden on cities, although participation in design of this nature requires multidisciplinary teams to facilitate the process.[74] Such teams must be appropriately trained in this type of engagement as the use of appropriate language in a specific context and with specific groups is key to successful communication with stakeholders. Therefore, local government authorities may require capacity-building or working alongside external experts. In Barcelona, such a community-based approach to urban planning and design is being pursued to promote "Superblocks", whose overall programme has a budget of US$ 12.4 million from 2014-19. This shows that it is not necessary to invest in large infrastructure solutions to improve the lives of city residents.[75]

Implementation obstacles and solutions

Co-design of urban spaces can be a slower and more time-consuming process than other stakeholder engagement processes, but if considered early on in the design approach, it can be significantly rewarding.

Delivering workshops or interactions with community members that facilitate co-design requires trained professionals who understand the complexities, risks and potential conflicts arising through such intense involvement of local groups who may not have an in-depth knowledge of planning approaches. Using the co-design of urban spaces as a tool for stakeholder engagement can also build up the expectations of stakeholders as to their influence or impact on the project, which can be particularly challenging to manage for groups that have a high level of interest in the project. Therefore, at the beginning of any session or period of engagement, it is important to lay out the expectations and potential outcomes to the groups being engaged. This is where a pre-prepared engagement plan can assist in identifying the opportunities, outcomes and risks ahead of time.

3.3. Energy and buildings

In the EBRD regions, there is a legacy of buildings with poor energy efficiency, and high electricity and heat consumption, as well as widespread use of fossil fuels for electricity and heat generation. For instance, nearly half of the housing stock in central and eastern European countries was constructed between 1960 and 1990. During this time, new housing construction was primarily pre-fabricated, large-scale, multi-family housing blocks built with little or no consideration of energy efficiency.[76] Furthermore, the use of solid fuels

[71] See Inclusive Design Research Centre (n.d.).
[72] See David et al. (2012).
[73] See Webb et al. (2018).
[74] See Aguilar (2015).
[75] See C40 Cities (2018).
[76] See UN-Habitat (2017).

for heating remains common in some cities in the EBRD regions and this has also been a major source of local air pollution.

These environmental challenges are linked to several structural problems and shortcomings. Partly, these challenges are linked to the legacy of low electricity and heat prices and the lack of consumption-based billing, all of which limit incentives to reduce heat consumption or to invest in energy-efficient buildings. They are also partly linked to low administrative and financial capacity in the cities, which hampers the ability to invest in, regulate and promote energy efficiency measures or renewable energy generation at the city level. The financial constraints are often further increased by a lack of creditworthiness and by limited access to financing for local public and private entities in the EBRD regions.

There is an increasing awareness of and a growing effort to achieve an energy-efficient building stock and a decarbonised energy sector following both national and local commitments to the Sustainable Development Goals and the Paris Agreement. Among the policy efforts to reduce GHGs and pollution from urban electricity and heating consumption are (i) ways to encourage investment in energy-efficient buildings, (ii) ways to ensure more energy-conscious consumption patterns, and (iii) ways to decarbonise the provision of heat and electricity. Key policy options can be presented according to the following list.

Policies to encourage energy-efficient buildings:

1. Improved energy performance for public buildings
2. Improved energy codes and labelling for buildings
3. Policies and support for energy performance contracts
4. Financial incentives and access to capital for energy-efficient renovation

Policies to ensure more energy-conscious consumption:

5. Pricing, metering and billing of heat and electricity

Policies to decarbonise heat and electricity provision:

6. Decarbonisation of district heating supply
7. Renewable electricity generation

E1. Improved energy performance for public buildings

Description

Increased energy efficiency of municipal buildings can have a direct and significant effect on the energy consumption and the related emissions and expenditures of a city. It can also have an indirect impact through the demonstration effect and potential for raising awareness of energy efficiency benefits among the wider public.

One way to encourage improved energy performance of municipal buildings is to require higher energy standards for new public buildings. For example, for countries subject to the EU's Energy Efficiency Directive, all new buildings occupied and owned by public authorities must now be "nearly zero-energy buildings".[77] This EU Directive also sets mandatory requirements for municipal purchases and new rental agreements. Public procurement of low-energy buildings, however, can only address some of the problems as long as the main energy efficiency challenges derive from the existing building stock. In such cases, improved energy performance should also be pursued through effective refurbishment of the municipal building stock.

Setting up a municipal energy agency has proven to be a cost-effective way to identify and refurbish public buildings. For example, the Berlin Energy Agency,

[77] See European Commission (2020).

a public-private partnership, was founded in 1992 and has since launched energy efficiency retrofits in more than 1,300 public buildings and 500 private properties.[78] The size of a municipal energy agency can be scaled from a one-officer position to a larger unit with extended expertise. Similarly, the role of an energy agency can be scaled from only assessing and ranking the public buildings with the greatest energy-saving potential, to also cover extensive procurement and implementation support together with training and awareness-raising activities among decision-makers and occupants of public buildings.

Resource implications and key requirements

Public procurement of low-energy buildings will typically imply higher investment costs and lower operating costs and can be economically justified in the long term. For cities with a population larger than 50,000, setting up an energy agency has proven to pay for itself through the energy and cost savings the agency helps to achieve. However, highly subsidised energy prices would not favour energy-efficient constructions or refurbishments and it is important that countries with large energy subsidies seek to reduce them.

Implementation obstacles and solutions

Complacency among city officials and limited financial capacity may prevent an effective pursuit of energy-efficient public buildings. Increased public disclosure of the energy performance of different city departments, combined with the inclusion of energy consumption in key performance indicators (KPIs) for various city managers, may provide good incentives and raise awareness of the benefits of improved energy efficiency. Private-sector involvement through PPP-style energy performance contracts (see policy option E3) has also proven to be an effective way to finance and implement energy efficiency measures. This approach has, for instance, been deployed in Berlin under the Energy Saving Partnerships using energy performance contracting.

E2. Improved energy building codes and labelling

Description

A building code sets out minimum requirements and standards for buildings and covers various aspects of health, safety and welfare – including energy performance. Relevant building energy codes typically consider lighting, walls and roofs, glazing, heating, ventilation and air conditioning. Building energy codes can vary in their degree of ambition and for nearly zero-energy buildings, one would typically incorporate sensors to automatically control lighting and water use, as well as centralised energy control systems to monitor and dynamically minimise energy use.[79] Effective implementation of building codes requires adequate approval and verification procedures, where the construction or major alteration of buildings must

[78] See Berliner Energie Agentur (2006).
[79] See Coins Global (2015).

conform to the code to obtain planning permission, usually from a local council.

Building energy codes are often supplemented with building certification, labelling or information disclosure programmes. An energy certification and labelling process helps to ensure that the energy performance of a building is above a certain threshold and communicated to customers in an effective way. Certifications and labelling can be mandatory or voluntary. Mandatory certification can be used to ensure compliance with building codes and enable better enforcement. Energy certificates can further inform prospective owners and tenants about the performance of specific buildings and systems, and may offer recommendations on how to improve energy performance. Certification further raises awareness about energy efficiency and energy expenditures, with the potential to gradually ensure that a more efficient building stock is being demanded and subsequently supplied. Voluntary certification can be used if sellers or landlords want to distinguish themselves from their competitors. This allows them to inform consumers and help prospective purchasers to anticipate energy costs, and therefore increase the demand for energy-efficient buildings.[80]

While building energy codes may be driven by national authorities, local authorities have significant influence over implementation by means of the planning permission stage. Local authorities can also help promote energy efficiency standards through local requirements for information-sharing and through mandatory energy labelling of private and public buildings. Furthermore, municipal authorities can also facilitate information-sharing platforms and standards for voluntary energy-labelling schemes.

Resource implication and key requirements

As building energy codes become more sophisticated, they require additional expertise and continued efforts to develop and apply them as part of building permitting. Developing or revising a building energy code for local use may not require an excessive amount of resources. National templates can also be developed for more easy application at the local level.

However, effective implementation and enforcement of a building energy code requires city officials or accredited professionals to sign off on plans and the finalisation of building works – and this requires significant resources. The costs of verification and reporting can be passed on to private building sellers and buyers.

Due to the substantial upfront costs, it may be a solution to combine tighter building energy codes with financial incentives, as well as certification and labelling to improve consumer awareness and support enforcement. Tighter building codes may also be combined with expedited review of the permitting process and density or height bonuses if buildings meet particular sustainability criteria. For example, Mexico City's Sustainable Buildings Certification Programme, a voluntary programme reflecting various levels of sustainability performance, offers a number of incentives, including property tax reduction and attractive financial schemes, to cover the cost of building upgrades, as well as expedited processing of construction permitting.[81] And lastly, in countries or cities with a flawed construction permit system and a large informal construction sector, it is important to dedicate resources to effectively manage the construction sector.

Potential private-sector participation

Building-code verification tasks can be carried out by accredited private professionals (who should lose their accreditation in cases of misconduct). They do, however, require careful consideration regarding which bodies can provide accreditation, in order to avoid one or more business associations managing this process in a monopolistic and non-transparent manner.

Local governments can work with commercial banks to provide financial incentives, therefore shifting the financial burden from the public to the private sector. One example is Frederikshavn in Denmark, which developed specific soft loans for the energy renovation of housing to meet its climate change targets. A new product was developed by the municipality in agreement with local banks, featuring a longer maturity period and lower interest rates, relative to typical market conditions.

[80] See Broekhoff et al. (2018).
[81] See C40 Cities (2017).

Implementation obstacles and solutions

A tightened building energy code represents increased investment costs for owners of existing and new property. An extended information disclosure and labelling programme for existing buildings also requires more involvement and buy-in from property owners. Under such scenarios, it is natural that many stakeholders either oppose compliance or fail to contribute to the necessary arrangements. It should also be noted that a large number of stakeholders will need to develop adequate understanding and capacity – including stakeholders such as real-estate developers, architects, engineers, interior designers, regulators, inspectors, subcontractors, manufacturers of building materials and others.

Given these challenges, a gradual introduction of tighter building energy codes is recommended, along with a gradual rollout of extended labelling and information disclosure programmes. These should be combined with effective enforcement. A gradual approach can be pursued through a step-by-step increase in the required standards and required activities – which should be announced years ahead of implementation. A gradual approach can also be pursued by introducing higher energy-performance and reporting standards first as voluntary measures before making them mandatory. Successful implementation of building energy efficiency codes can take many years to achieve.

Denmark was one of the first countries to introduce nationwide energy efficiency standards for buildings. The energy requirements in the Danish Building Regulations for new buildings have been tightened, using a step-by-step approach, preparing the Danish industry for future requirements almost 10 years in advance. Moreover, the new requirements are introduced as voluntary energy classes before they become mandatory.

E3. Policies and support for energy performance contracting

Description

Energy performance contracting (EPC) is a form of packaged financing and capital works, where financial savings from energy conservation measures are used to fund the cost of the measures.[82] EPC involves an energy service company (ESCO) that provides various services, including finances and guaranteed energy savings. The ESCO has a stake in energy savings for the client, which leads to accountable energy and carbon savings. The ESCO may be required to absorb some of the lost savings if savings do not materialise as expected, which commercially incentivises ESCOs to complete optimal investments.[83]

The attraction of EPC is that it enables end-users to secure energy-saving investments without drawing on capital or balance sheet payments. The private ESCO companies provide the financing, and so reduce the debt burden of the municipal authorities. Eurostat confirmed that EPC investments are off balance sheet for public clients and provided a related guide for practitioners.[84] There are some examples of policymakers embracing this opportunity for public-sector energy efficiency investments, having obtained Eurostat's clarification, for example, in the Slovak Republic.[85] There is also evidence that specific investment costs are lower, while energy savings are higher, when applying EPC rather than regular public procurement of projects.[86]

[82] See World Energy Council and Arup (2016).
[83] See Institute for Building Efficiency (2010b).
[84] See Eurostat and EIB (2018).
[85] See Ministry of Finance of the Slovak Republic (n.d.).
[86] See Staničić (2018).

The ESCO is the economic owner of the asset and bears most of the risks and rewards of the investment. The ESCO is also responsible for the proper operation of the installed equipment and bears the maintenance and refurbishment risks.[87] It stays involved in the measurement and verification process for the energy savings during the repayment period. ESCOs and energy performance contracting are mostly found in the public sector and to a lesser extent in the industrial and commercial building sectors.

EPC policy instruments can include (i) the promotion of energy performance contracting through awareness-raising, (ii) the removal of legal barriers to the use of innovative financial instruments, (iii) the preparation of sample contracts and procedures, (iv) the provision of expert support, primarily to the public sector for preparing energy performance and supply projects, contracts and evaluating the projects results and (v) the establishment of a qualified energy services provider scheme.

Resource implications and key requirements

EPC requires sufficient technical capacity and often necessitates capacity-building due to the extent to which it differs from traditional public procurement processes. Additional efforts will be needed in market sounding and preparation of EPC. To enable EPC to take place, it is important that the municipal budget law allows city authorities to sign medium-term to long-term service contracts. Depending on the length of the EPC contract duration, a stable, reliable economic and political system and rule of law are prerequisites. For instance, in Slovenia, contract durations of up to 20 years are common.

Potential private-sector participation

EPC involves the private sector directly through the creation of a market for ESCOs, including a wide range of possible contractors, such as engineering companies, utility firms and equipment providers. Furthermore, ESCO structures are, alongside PPPs, one of the few financial structures that would allow the introduction of more private-sector finance into energy efficiency investments than the mere debt capacity of ESCO clients would allow, thereby helping to bridge the existing finance gap.[88]

Implementation obstacles and solutions

A lack of awareness in both the private and public sectors is often the first barrier to EPC. This can be tackled through capacity-building. A lack of resources to prepare related EPC tenders in the public sector is another barrier. This can be improved through information provision and through providing technical support in procuring EPC projects.

Prohibitive public budget and procurement regulations are another barrier. For example, in many European countries, budgetary restrictions imposing lending limits on local governments leave capital-strapped administrations little room to pay for the upfront costs of performance contracting.[89] Regulatory reforms can be used to treat EPC investments as off-balance-sheet (no new public debt) and the aforementioned Eurostat clarification should give EU member states and accession candidates sufficient confidence. Furthermore, extending the contract duration is required, too, with deep building-retrofit projects in Slovenia, for example, having EPC contract durations of 20 years. Public procurement regulation may also need to be reformed to include lifecycle cost analysis and functional tenders that use energy efficiency criteria as selection criteria in public procurement contracts and leave the technical solutions up to the contractor.

Financing constraints are yet another barrier. Credit markets remain constrained and lending institutions

[87] See Šerić (2017).
[88] See European Commission (2018).
[89] See Institute for Building Efficiency (2010a).

may be unwilling to offer energy performance contract financing despite provisions to guarantee ESCO performance. Smaller ESCOs that are new on the market lack the creditworthiness required by banks. As a response, governments can provide guarantee schemes for energy efficiency loans provided to ESCOs. An alternative solution is to create a project pipeline, which investment banks such as the EBRD can then fund.

However, it is more than the availability of debt that prevents ESCO market development: it is the limited borrowing capacity of ESCOs that limit the capacity to finance many deep-retrofit EPC projects with 20-year contract durations. The solution to this is the sale of receivables of ESCOs to financiers that can understand, price and accept the 20-year limited-recourse finance risk. Supporting the development of such innovative financial (forfeiting) instruments through risk-sharing or other support mechanisms could be part of the policy mix backed by local authorities.

The Czech Republic provides a good example of the development of a market for EPCs. There, facilitating has become an indispensable part of EPC projects in the public sector. In addition, competitive bidding has been developed into a standardised procedure, which increases the quality of EPC projects for clients. The European Code of Conduct for Energy Performance Contracting has been widely used and complies with the actual practice in the country.

E4. Financial incentives and access to capital for energy-efficient renovation

Description

Central and local governments can provide financial incentives, such as green mortgages and tax exemptions, to developers or new building owners in order to encourage energy-efficient design and construction. This can be used in parallel to certification and labelling.

Financial incentives can be provided to encourage 'able to pay' households to retrofit their homes. Some of the measures that governments can deploy include supplier obligations, grants and tax incentives. Energy efficiency programmes can also be designed to leverage private capital, for example, through revolving loan funds or other financing structures, in order to enable and incentivise green renovation of residential and commercial buildings.

For instance, Frederikshavn in Denmark developed specific soft loans for the energy renovation of housing to meet its climate change targets.[90] A new product was created by the municipality in agreement with local banks, featuring a longer maturity period and lower interest rates, relative to typical market conditions. No funds are assigned to the financing schemes by the municipality. Rather, soft loans are provided by the partner banks that bear all the risk. The partner banks run a creditworthiness check of homeowners, decide who gets a loan and under which conditions. In other cases, public funds can be set up to provide favourable funding for energy renovation of private buildings through direct loans or through risk-sharing facilities for private banks.

Resource implications and key requirements

Providing financial incentives will require budgetary commitments and may be administratively demanding for the local government. Significant technical capacity will also be required to identify how incentives should be configured and applied. Incentives can be targeted at lower income brackets of the population to address social equity concerns associated with energy poverty.

Potential private-sector participation

Local governments can work with commercial banks to provide financial incentives, thereby shifting the financial burden from the public to the private sector.

Implementation challenges and possible solutions

The provision of direct financial support is financially demanding on local governments and can be targeted at fuel-poor homes. It is good practice to undertake a comprehensive cost and benefit analysis of retrofitting to zero carbon for all households that are in fuel poverty and to provide targeted funding to

[90] See Energy Cities (2016).

these homes.[91] One of the first programmes to tackle energy poverty was the Warm Front programme in the United Kingdom; 2.3 million households received assistance from the scheme. Grants were on offer for improvements such as loft insulation, cavity wall insulation and heating system improvements.[92]

It is important to address market failures that prevent potentially cost-effective investments in buildings. One such problem is the split incentives between owners and tenants where property owners may be reluctant to invest in energy efficiency if the main beneficiary is a non-contributing tenant. The EURONET 50/50 MAX project is an example of how this challenge can be successfully addressed for public buildings.[93]

The success factors associated with energy efficiency measures include gaining and maintaining consumer trust, an effective communication and marketing strategy, training and qualification schemes to ensure that worker qualifications keep pace with the technical complexity of buildings and the targeting of trigger points, such as household renovations or sales.[94] The provision of financial incentives and favourable financing should only come after energy efficiency building codes have been enacted and adequate enforcement and compliance mechanisms are in place for building construction and retrofits.

E5. Pricing, metering and billing of heat and electricity

Description

The EBRD regions have a legacy of subsidised electricity and heat tariffs, along with normative billing rather than consumption-based billing. Normative billing occurs when, for example, monthly heating bills are based on the size of an apartment rather than on the actual heating consumed. However, correct price signals are necessary to promote prudent energy consumption and to incentivise energy efficiency investments. Today, tariff reforms remain a key challenge in many of the economies where the EBRD invests.

Good price signals depend on decent price-setting as well as good metering and billing mechanisms. Price-setting should reflect all costs, including environmental or climate-related costs. In addition to an adequate price level, it is also important that tariffs are set and adjusted in a predictable manner so that related investments can be undertaken without unnecessary risks of price volatility. To ensure this, the heat and electricity tariffs should be devised using a formula-based methodology and approved by an independent and capable regulator. To this end, the city authorities could help to set up or improve both the relevant methodology and the regulatory authorities. While electricity tariffs often fall outside municipal control, district heating (DH) and cooling tariffs are normally under the control or influence of local authorities.

Effective metering, billing and bill collection are also important to ensure correct price signals for electricity and heat consumption. Electricity metering and billing can have different degrees of sophistication – from plain mechanical readers to digital meters with real-time information on consumption and expenditures combined with differentiated tariffs for day- and night-time consumption. More sophisticated metering and tariff structures can help promote a more prudent and cost-efficient consumption pattern, for example, running washing machines at night when electricity tariffs and grid capacity are more favourable. An even higher degree of 'smartness' includes metering and tariff arrangements that record reversed energy flow back to the grid. This form of smart metering can help promote the installation of renewable energy solutions – such as solar panels on buildings, as surplus energy production can then be sold back to the grid and further reduce the energy bill for the relevant buildings.

District heating metering generally lags behind electricity metering in accuracy and sophistication and normative billing is widespread. The technical challenges associated with DH metering are often largely due to old infrastructure that was not intended for individual metering. However, as new generations of heat allocators can be used as an alternative to heat meters, the opportunity to achieve accurate

[91] See National Assembly for Wales (2018).
[92] See UK Parliament (2013).
[93] See EURONET 50/50 MAX (2020).
[94] See Committee on Climate Change (2016).

consumption-based billing of DH use is there. This will have significant impacts on consumption patterns and incentives to invest in energy-efficient refurbishment of buildings.

Utility sector pricing reforms are needed to accompany the installation of apartment-level metering technologies. Kazakhstan is currently undergoing a smart heat-meter programme,[95] while a number of cities in Europe, such as Tartu, Estonia, and Copenhagen, Denmark, have installed these systems.

Resource implications and key requirements

There are significant investment costs linked to the installation and upgrading of meters. For example, fourth-generation apartment-level heat-cost allocators for metering with remote reading and control, needed to introduce consumption-based heat billing, cost around €40 per allocator. One allocator is needed for each radiator in an apartment.[96] The costs of a smart metering roll-out are largely borne by energy suppliers, predominantly through funding the installation and purchase cost of meters (about €110 per household) and through funding the national smart metering communications infrastructure. Installation of meters in private properties also requires access to the properties. Here, cooperation with the property owners may require significant resources for the relevant implementation agencies. Introducing smart meters that enable bidirectional energy flows would further require the development of a smart grid and necessary capacity within energy distribution companies that are able to implement such net metering arrangements. To encourage the buy-in and cooperation of private companies and property owners, some subsidy schemes may be needed, which again represents additional resource requirements for the city or the authorities promoting this policy.

A cost-benefit analysis by the UK government found that costs related to smart meters are expected to be around £670 million per year, whereas the benefits are calculated at £1.9 billion per year on average. Overall, the UK government estimates that from 2028, the programme will be delivering net benefits of around £1.2 billion per year.[97]

Implementation obstacles and solutions

Increased electricity and heat tariffs often imply affordability constraints for low-income households. It has been argued that this problem can be addressed most effectively through targeted support for the poor rather than by providing universal energy or heat subsidies to the population. Installation of meters in private properties also requires access to the properties and necessary cooperation with the property owners. To support this process, a combination of information campaigns, stakeholder consultation and price incentives to change metering arrangements has proven effective.

E6. Decarbonisation of district heating supply

Description

District heating (DH) systems can reduce their carbon emissions through improving efficiency in the system or by switching to new fuel sources or new heat sources. Efficiency in the DH system may be achieved by rescaling the size of the DH network, as some DH systems are oversized, or by upgrading old boilers and leaking heat pipes. District heating systems can be further decarbonised by switching away from fossil fuels to renewable sources and by capturing new sources of surplus heat.

Whenever DH systems are based on carbon-intensive fuel sources, such as coal or heavy fuel oil, the potential carbon reduction is significant. For example, in Bosnia and Herzegovina, several district heating operators have replaced heavy fuel oil heat boilers with biomass boilers. This has not only reduced carbon emissions, it has also reduced fuel expenditure and helped generate local jobs by developing local markets for the supply of sustainably sourced biomass.[98]

[95] See EBRD (2017).
[96] See EBRD (2018b).
[97] See UK Department for Business, Energy and Industrial Strategy (2019).
[98] See UN Environment Programme (2017).

Actively capturing the heat surplus from other economic activities is another way to decarbonise the district heating sector. Historically, heating systems have often been fuelled by surplus heat or heat waste from industrial processes or from electricity generation. However, as some manufacturing industries close down and new technologies and new industries emerge, new opportunities for potential heat sources may appear. Some of these heat sources may need a 'top-up' to bring the final temperature in line with a commercially required heat supply, but such heat sources may include surplus heat from data centres, shopping malls or wastewater treatment plants.

Resource implications and requirements

All the abovementioned ways to decarbonise the DH supply require significant upfront investment. However, these measures are expected to considerably reduce operating costs and can therefore be economically justified in the long term. For example, the city of Banja Luka in Bosnia and Herzegovina has developed a feasibility study to improve its district heating system, which has attracted interest from the EBRD in providing an investment package of €15 million for new biomass boilers, network upgrades and other efficiency measures. These are expected to reconnect 80 per cent of disconnected users to the district heating network within four years and reduce fuel consumption by 27 per cent, thus reducing emissions by 20,000 tonnes of CO_2 per year and leading to €4.5 million in fuel savings.[99,100]

Potential private-sector participation

Many of the proposed investments and solutions can be provided through PPP-style contracts or energy performance contracts. Under these contracts, private energy servicing companies (ESCOs) make the necessary investments, which they also finance, while being remunerated based on the energy efficiency achieved during a fixed operating period. Energy performance contracts have been demonstrated to be an efficient way of addressing investment needs, providing operational efficiency without adding an additional debt burden to municipal accounts (see policy option E3).

Implementation obstacles and possible solutions

High upfront investment costs and a potential reluctance of some decision-makers to change may hamper support for the proposed decarbonisation measures. One possible solution is the use of private-sector contracting or energy performance contracting where the debt burden and performance risks are allocated to private contractors.

E7. Promotion of renewable electricity generation

Description

Public and private actors can help increase the local production of renewable energy and thus help reduce the carbon footprint of a city. The public sector can lead the way by seeking to install and apply renewable energy solutions wherever economically justified. This can include (i) the introduction of solar/photovoltaic panels for existing and new public buildings or other built structures, (ii) the use of solar panels to fuel public installations such as street lights or ticketing machines, and (iii) an active use of biomass or biogas solutions for energy purposes. For example, this can include gas capture from solid waste or wastewater facilities. The benefits of such installations are not only their reduction of energy consumption and the related carbon emissions and energy expenditure, but also that they raise awareness and underpin other initiatives aimed at encouraging private actors to install renewable energy solutions.

Another possible policy instrument to encourage private actors to install renewable energy solutions is the city's control over planning permits for new buildings and for large building alterations. For example, a city can insist on specific renewable energy components being included as a condition of obtaining building works permits. Alternatively, the city can, as a minimum, require that renewable energy alternatives are analysed when project proposals are being developed. Another measure could be to include solar panel mandates for certain parts of the building stock. For example, Seoul has introduced solar mandates for

[99] See CTCN (2015).
[100] See EBRD (2018a).

new multiple-unit dwellings and commercial buildings to accelerate the deployment of solar panels.[101]

While solar panels can be introduced for self-consumption purposes, this can be further incentivised if it is combined with smart meters or net metering mechanisms. This approach could include further incentives through favourable feed-in tariffs for the energy sold back to the grid by private households or private companies.

Setting up a municipal energy agency has also proven to be a cost-effective way to promote renewable energy in a city. For example, the city of Barcelona has set up the Barcelona Energy Agency to meet its environmental and energy commitments. The agency currently supplies 20,000 users in public and private buildings with renewable energy.[102]

Resource implications and key requirements

Even though the costs of solar technology have been falling rapidly, financing often remains the biggest challenge to implementing a municipal solar plan. Cities have a range of business model options to overcome this barrier, distinguished by who owns the asset: the city itself or a third-party investor.[103] Cities must weigh up these financing and ownership options, taking into account upfront capital costs and expected payback over the lifetime of the installation. National and local regulations, including on whether third-party ownership is permissible at all, will determine the type of possible financing structures. Similarly, there are significant investment costs linked to the installation and upgrading of meters (see policy option E5).

Implementation challenges and possible solutions

As outlined above, significant investment costs are often the biggest barrier to cities embracing solar solutions. To overcome these barriers, cities can either pursue a direct or a third-party ownership strategy with regard to the solar assets. In the direct ownership model, the city purchases the solar system using its own funds, grants from national or regional government, or by borrowing money using municipal bonds. The benefits of such a model are that direct ownership allows the city to have full control over the benefits of solar. However, the city is dependent on the upfront capital being available, or the financial, legal and political ability to issue bonds. In most cases, the city also shoulders the full risk of constructing and operating the solar system. Direct ownership can be a city's only option if the regulatory framework necessary to enable more elaborate business models is not in place.

In the third-party ownership model, the city government enters into a contractual agreement with a private developer, who provides the upfront investment for the solar system. These models can allow the city to install solar power with no upfront capital costs and no impact on their balance sheets. Third-party ownership models are better suited to larger scale projects because the legal and due diligence costs for investors can be high. The two core models of third-party ownership are power purchase agreements or lease arrangements.[104]

Upgrading electricity meters also requires significant investment costs as well as widespread cooperation from private property owners, who may be unwilling to cooperate. Therefore, these policy measures may be most successful when combined with subsidy schemes and favourable price signals such as subsidised feed-in tariffs for electricity, thus channelling electricity back to the grid from private businesses and private property owners. Predictability is very important in order to encourage private actors to invest in renewable energy solutions. Hence, city authorities should consider ways to increase predictability through risk-sharing arrangements or guarantee mechanisms. The city should also clearly define its commitment to the renewable energy agenda as part of its stakeholder consultation process and public awareness campaigns.

[101] See Seoul Metropolitan Government (2017).
[102] See Barcelona Energia (2019).
[103] See C40 Cities (2019).
[104] Ibid.

3.4. Water and wastewater

From an environmental perspective, the main objectives of water sector policies are to prevent pollution and to encourage resource efficiency in the sector. Furthermore, water policies should also enable quality water services to be provided in a sustainable manner. Pollution generated in the water sector primarily derives from untreated wastewater and to some extent from emissions related to energy use in the sector. Resource efficiency can therefore be related to water efficiency, including reuse of wastewater, as well as energy efficiency in the sector.

Water utilities sit at the centre of this, but industries, businesses and residents also play important roles, as do water users and producers of wastewater. Starting with the water utility, the relevant policies are to ensure that the utility firm has enough resources and the capacity to make necessary investments as well as to provide good services in a sustainable manner. It is also important to ensure a predictable institutional framework with clear rules and incentives for the water utilities to make the right decisions. Therefore, policy reforms should aim to ensure that the utility firm is well regulated and controlled on the back of robust institutional capacity and adequate information.

Regarding water users, such as industries, businesses and households, an effective control of water use and wastewater pollution is critical. Policies should also provide price signals, incentives and support for water-efficient behaviour and awareness among the different user groups. Sustainable supply and use of water and wastewater services must be built on the back of a sector plan that carefully assesses future water sources and water needs as well as investment needs. Such a plan should also carefully consider the sequence of reforms and investment programmes. In particular, tariff reforms should be introduced at an early stage to detect any reduced demand and to better scale the necessary investments in water and wastewater treatment capacity.

Potential water policy options relevant for green cities include the following.

Policies targeting water and wastewater utilities:

1. Regulation and contracting of public and private service providers
2. Reform and strengthening of water utilities
3. Promotion of resource-efficient utilities

Policies targeting water users:

4. Effective tariff reforms and price signals
5. Awareness campaigns for households and industry

W1. Regulation and contracting of public and private service providers

Description

While municipal water utilities are subject to national rules and regulation, the governance of the water sector also relies on municipal authorities playing an active role. On the one hand, city authorities are needed to ensure proper supervision and enforcement of national rules – for example, through local monitoring, control and enforcement. On the other hand, city authorities should also play an important role as the owners of the municipal water utilities. This governance function can be supported by a well-defined public service contract (PSC) specifying the rights and obligations of the city and the water utility firm. Furthermore, in the case of extended private-sector involvement, the city should play an important role in procuring and supervising any private-service providers.

A well-defined PSC between the city and the water utility can help ensure clear and transparent governance of that utility when it is owned by a municipality – the utility should have been converted into a separate legal and commercial entity. Such contracts should clearly define the rights and obligations of both the water utility and the respective city authorities. It should also specify procedures and methodologies for business planning and approvals, for budget- and tariff-setting and for performance assessment and reporting. The aim is that

a well-defined service contract will provide predictability and clear accountability for both the water utility and for its municipal owner.

Resource implications and key requirements

Efforts and additional capacity may be needed to design and supervise a well-defined service contract between city authorities and the water operators. Drafting a PSC can sometimes benefit from contract templates or examples from other cities or international institutions. With some external support and technical assistance, a service contract can in many cases be concluded within six to nine months. For example, in Bucharest, the concession contract between the municipality and Vivendi Universal was signed in March 2000 and became effective in November 2000. But effective application of the service contract requires more time as there may be a need for a change of mindset among the city authorities and the utility management.

Potential private-sector participation

Water and wastewater services can be provided through different forms of private-sector participation – from the outsourcing of non-core activities to management contracts or full-scale concession contracts.

Outsourcing contracts may cover a targeted area of activities, such as meter reading and bill collection. More comprehensive private-sector involvement can come in the form of a management contract under which a private contractor works alongside, or fully replaces, the existing utility management. The benefit of a management contract is that a private contractor brings in expertise and may also be less subject to politicised pressure once a contract, with clearly defined objectives and performance-based remuneration, has been signed. Even more comprehensive private-sector involvement could come in the form of a concession contract, often referred to as a PPP contract, which transfers funding, construction and operational obligations to the private contractor. It can also transfer the full operational and revenue collection risks to the private sector.

The preparation and monitoring of a concession contract requires significant resources and administrative capacity within the respective city authorities. It also requires a robust legal framework. A full-scale concession contract for a water utility should thus only be recommended in cities that benefit from good information about current operations and infrastructure assets, and that further benefit from a well-developed legal framework and a strong administrative and procurement capacity.

Implementation obstacles and possible solutions

The introduction of a public service contract implies a more formalised relationship between the city authority or administration and the water utility management. This requires a change of mindset and more transparent processes, which some stakeholders may find unnecessary.

The introduction of deeper private-sector participation, in the form of comprehensive management contracts or a full-scale concession contract, requires significant preparation and institutional capacity within the city administration. Therefore, for cities with limited experience of private-sector contracting, it may be beneficial to pursue a step-by-step approach where smaller and less complex contracts are introduced first, followed gradually by deeper private-sector involvement. For instance, the Armenian water authority has introduced the private sector in a gradual manner over more than 10 years, by first introducing management contracts

and then transferring revenue risks and later investment obligations to the private sector.[105]

W2. Reform and strengthening of water utilities

Description

Converting a municipal water utility from an administrative unit into a separate legal entity with clearly defined objectives and targets can help make the utility and its management focus on its operational and financial deliverables – and thereby help to depoliticise and professionalise the planning and management of the utility. Such corporatisation into a joint stock company (JSC) may also enable better and more transparent governance of the water services following the introduction of an arms-length distance between the utility management and its municipal owner.

The operational and financial performance of a water utility can be further improved through targeted capacity-building and restructuring of their utility. Such efforts typically involve the development and implementation of a corporate development programme (CDP). A CDP would typically start off with a diagnostic, followed by clear recommendations and actions aimed at addressing any identified shortcomings linked to capacity, systems or processes within the utility and its operations.

Resource implications and key requirements

Converting a municipal water utility into a JSC requires a significant legal effort and there is a need for clear political buy-in. However, it is in principle a one-off event and it does not require significant physical investment.

In contrast, building necessary capacity within the city administration and their water utility is a process that can take several years. It requires the utility to develop capacity to manage and plan its assets and future investment needs. This may require the utility to invest in better information management systems and to improve its accounting procedures. External technical assistance may be an effective way to start the process and developing a CDP and a twinning agreement with a more experienced water utility may also be a good starting point.

Implementation obstacles and solutions

Converting a water utility into a separate legal and commercial entity may imply a mayor's loss of control over daily operations at the water utility. Therefore, there may be political resistance to this structure. To provide the city administration with sufficient comfort regarding future control and supervision of the water company, a well-defined PSC can be developed and signed between the water company and its municipal owner.

Building necessary capacity is normally not controversial. However, any company restructuring aimed at improving efficiency that implies labour reforms may lead to opposition from political authorities and from the utility staff. Targeted retraining and relocation of staff, combined with natural attrition as a way to increase labour productivity may be needed to avoid overly severe social impact and political opposition. For example, in Madaba, Jordan, the first phase of the contract was seen as the basis for re-engineering of the business processes and entailed the implementation of the necessary systems as well as staff training.[106]

W3. Promotion of resource-efficient utilities

Description

There is a range of solutions that utilities can explore in order to improve resource efficiency or capture the value of various by-products. As a traditional approach, utilities can reduce water losses or energy consumption through targeted investments and the maintenance of distribution networks and related pumping equipment. To ensure well-targeted investments and timely maintenance, an asset management approach may be recommended. A mature asset management approach is based on having a good inventory and on planning procedures

[105] See Marin et al. (2017).
[106] See Sustainable Water Integrated Management (SWIM) Support Mechanism (2013).

in which investments and maintenance works are planned in a predictable and forward-looking manner. This approach requires good data collection and analysis by the utilities and a long-term commitment and budgeting from the city authorities.

Water utility companies can also be encouraged to explore more innovative solutions. For instance, water efficiency can be pursued through better utilisation of waste streams such as treated wastewater/grey water or better harvesting of water through sustainable urban drainage solutions – solutions that may have to be restructured to better prepare for future risks of flooding. The carbon footprint of water and wastewater services can be further reduced by including forms of energy generation as part of their operation. One way to do this is to exploit the hydropower potential and install a turbine inside the water pipes, transporting water down from a reservoir through gravitation. Energy can also be generated through the capture of biogas at wastewater treatment plants. Lastly, solar and wind power solutions can be located in wastewater treatment plants in order to cover some of the energy needs of the sector.

Another by-product of the wastewater treatment process is sludge. Increased wastewater service provision, for instance to address a sanitation shortfall or to meet higher regulations, will generate more wastewater sludge. The capacity of sanitary landfills to receive such sludge may be limited and the impact of the EU's Landfill Directive is likely to drive further reductions in these types of outlet. As a consequence, alternative solutions for effective management and disposal of wastewater sludge may be increasingly important in a many cities. Sludge re-use for landscaping or agriculture is one option. Other options include co-composting with green waste or using sludge, in combination with other waste or fuel sources, for power generation.

Resource implications and key requirements

Most of the energy and water efficiency solutions presented here require significant investment. Therefore, long and predictable contracts with clear revenue streams may be needed. For example, for renewable energy production to be made sufficiently attractive, any renewable energy subsidies on the energy market should be made available. This may require connections to the electricity grid and bilateral power purchasing agreements may need to be negotiated and signed. Consequently, a water utility firm may need to develop additional capacity and procedures for arrangements in the energy market. Commercial sludge management may also require predictable offtake agreements with relevant stakeholders. There may also be legal limitations on where the utility firm can dispose of wastewater sludge.

The Bangkok Metropolitan Administration has enacted by-laws requiring the installation of a wastewater treatment facility for new housing developments with more than 10 detached houses and for all industries and businesses. Septic sludge is treated in order to be used as fertiliser in the city's public parks, surrounding green areas and farmland. The administration also aims to produce compost with a mix of natural rice straw and the dewatered sludge from the 12 wastewater treatment plants, to be used as manure.[107]

Potential private-sector participation

Many of the necessary investments in resource efficiency can be provided through PPP-style contracts, whereby a private energy servicing company finances, constructs and operates the relevant installation in return for a performance-related remuneration.

In Aqaba, Jordan, the Aqaba Water Company has made large investments in sewers and wastewater treatment. Currently, 90 per cent of the city's wastewater is collected and treated, with 69 per cent of wastewater reused and 100 per cent of energy recovered. The capital investment is paid off by the sale of reclaimed water, under a PPP contract, to hotels and other commercial offtakers.[108]

There is also an important role for the private sector as offtakers of grey water and processed wastewater sludge. For example, selected companies may be interested in reusing treated wastewater for industrial purposes, and farmers or forestry companies may also wish to use wastewater sludge.

[107] See The International Water Association (2018).
[108] Ibid.

Implementation obstacles and possible solutions

Financial risks as well as legal and environmental uncertainties may prevent the pursuit of some of the solutions outlined above. To address such obstacles, it may be helpful to run comprehensive stakeholder engagement sessions. It may also be advisable to run adequate market testing to explore the opportunities for obtaining predictable and long-term offtake agreements with relevant stakeholders.

W4. Effective tariff reforms and price signals

Description

There is a legacy of subsidised water and wastewater tariffs in the EBRD regions – in particular for households. There is also a legacy of fixed monthly billing rather than consumption-based billing. Correct price signals are necessary to promote prudent water consumption – and tariff reforms remain a key challenge in many of the economies where the EBRD invests.

Good price signals require correct price-setting as well as good metering and billing mechanisms. Price-setting should reflect all costs of extracting, treating, transporting and disposing of water and wastewater. In water-scarce areas, water tariffs should go beyond covering production and distribution costs and also reflect the foregone benefits of farmers, for example, whose productivity losses may be higher than the regular water tariff.

In addition to an adequate price level, it is also important that tariffs are set and adjusted in a predictable manner. This is to make sure that related investments, made by businesses and others, can be undertaken without unnecessary risks of price volatility. To this end, the water tariffs should be developed using a formula-based methodology and approved by an independent and capable regulator. In the absence of a national water regulator, the city authorities can help set up or improve both the relevant methodology and a local regulatory authority.

Effective metering, billing and bill collection are also important to ensure true price signals for water use. Therefore, effective tariff reforms should include programmes aimed at installing or upgrading individual water meters whenever this is needed.

Resource implications and key requirements

Setting up the institutional capacity and operating a well-defined water tariff methodology is not too costly, but it may require strong political will to introduce tariff reforms that could be unpopular. What is costly, however, is the installation or upgrading of water meters. Installation of meters in private properties may also require access to the properties, and significant resources and cooperation with property owners will be needed to roll out new or improved water meters.

Implementation obstacles and solutions

Increased water tariffs will generally be unpopular and often difficult for low-income households to afford. The affordability problem should, however, be addressed through targeted support for the poor and not by providing subsidised water to the whole population. Installation of meters in private properties also requires access to the properties and cooperation with the property owners. To support this process, a combination of information campaigns, stakeholder consultation and price incentives to change metering arrangements would be recommended. A gradual adjustment in tariffs over several years may also be needed to obtain acceptance among the wider population.

W5. Awareness campaigns for households and industry

Description

Information campaigns at the household level can trigger behavioural changes in consumption. Different types of information can be communicated to promote water-saving initiatives and activities. This includes information about:

- devices for household appliances to monitor water use, such as for showers or washing machines
- technical advice that offers water-saving tips, for example, spending less time in the shower

- norm-based information communicating practical household experiences, as before-and-after examples, for instance
- benchmarking data, comparing the performance of a household against its neighbours
- informing residents of the potential impacts of localised drought and flooding.

This information can also be conveyed in different ways. Whereas providing information through public advertisement campaigns is one option, information can also be provided in combination with water-saving competitions or similar interactive ways of raising awareness. Attitude campaigns targeting children in schools and pre-schools, who then start 'policing' their parents, have also proven to be effective.

In Spain, the Zaragoza Water Saving City programme ran a broad media campaign, which was extended to schools. Discounts were offered on water-efficient products, and this initiated voluntary commitments by residents and businesses.[109] A "50 Good Practices" guide was also developed that provided businesses with a reference model for identifying effective methods of improving water efficiency.

Resource implications and key requirements

This policy option is a relatively low-cost and proactive approach compared to more reactive network investments. However, it requires substantial efforts to reach the majority of households, in particular, if children are to be convinced, and there should be an administrative commitment to the policy to generate long-term behavioural changes.

Potential private-sector participation

Public or private water utility firms may have an incentive to influence water consumption patterns – in particular, when infrastructure or water sources are stressed. Utility firms often provide awareness campaigns through external non-profit organisations and through school teachers when education campaigns target school children.

Implementation obstacles and solutions

A lack of municipal resources or committed city officials may prevent effective attitude campaigns from taking place. To overcome this problem, one solution may be to team up with local NGOs and schools in order to benefit from their resources and enthusiasm to promote public awareness and attitude campaigns, including for school children. Another ally could be the local water utility company, as it may have an incentive to influence water consumption patterns – in particular, when infrastructure or water sources are stressed.

3.5. Solid waste

The environmental objective of the waste management sector is first of all to ensure pollution control, preventing the diffusion of waste and pollution into soil and water, as well as the emission of GHGs into the atmosphere. This, in turn, protects and improves the environment, human health, nature and public spaces and further mitigates the risks of climate change. Second, the waste management sector also seeks to reduce landfilling while promoting value extraction and resource efficiency.

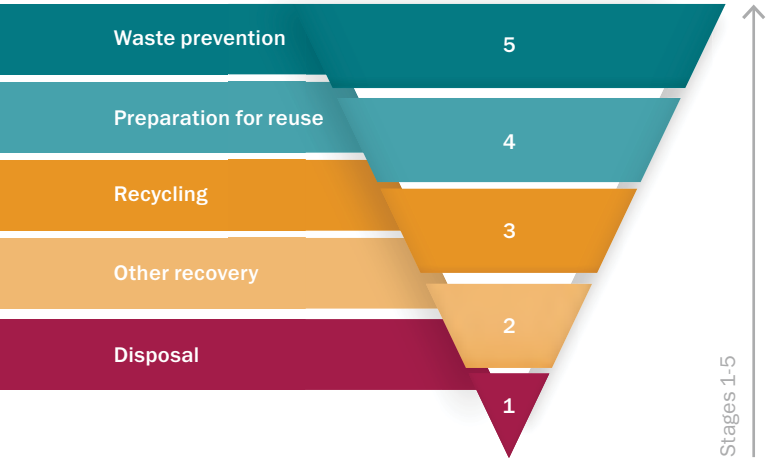
Pollution control (stage 1) can be achieved by ensuring proper collection and delivery of waste, to be disposed of at sanitary landfills, and further by the closure and decontamination of informal and non-compliant dumpsites. The reduction of landfilling and the promotion of value capture or resource efficiency can be realised by moving up the so-called waste hierarchy (see Figure 8), either through energy recovery (stage 2), recycling (3), reuse (4) or the reduction (5) of generated waste.

While the objectives may be clear, the waste sector is complex from a technical perspective, with multiple steps and processes required to take place for different waste streams in a carefully integrated manner. The sector is also complex from a policy perspective. Multiple formal and informal stakeholders and multiple laws seek to regulate, influence and operate within the sector. Regulations include, among

[109] See 2030 Water Resources Group (2013).

others, the application of land, air and water pollution directives as well as the obligations of national, regional and municipal authorities. Other factors include land planning and the obligations and rights of commercial and residential entities. The sector also relies heavily on the behaviour and buy-in of the public.

Figure 8. The waste hierarchy



Source: EBRD.

Poor waste management has been a widespread problem in most of the economies where the EBRD invests. Substandard planning, inadequate funding and limited know-how have led to poor performance and low environmental standards. Not only have poor planning and inadequate funding prevented the necessary investments and services from taking place, inadequate and unpredictable funding has also weakened accountability among the various operators and authorities in the sector. For example, an underpaid waste collection company will 'understandably' cut down on the collection frequency or coverage and thus not provide the agreed service level, making plans and targets less meaningful. Lastly, poor waste management services lead to a poor waste management culture and may hamper buy-in from residents and the relevant public and private institutions.

When seeking to improve the waste management sector, it is important to keep in mind that effective waste management is expensive, often comprising 20-50 per cent of municipal budgets.[110] Overall, it is not a profitable sector even after taking into account revenues from the sale of recyclables, refuse-derived fuels or energy. Therefore, adequate funding for both investments and operations must be in place at all times while improving the performance of the sector. In addition, due to the complexity of the sector, changes should be introduced incrementally, without oversized interventions, in line with the administrative capacity and with public support and willingness to contribute to an improved waste management system.

To help address the pollution challenges and gradually move up the waste hierarchy requires multiple technical and policy-related solutions – including policies that target good planning, adequate funding, effective accountability and effective change in attitudes among residents, businesses and public authorities. Some of the main policy options or building blocks are presented below, covering initiatives (i) to ensure effective governance and buy-in from various stakeholders and (ii) to move up the waste hierarchy.

Ensuring effective governance and buy-in:

1. Establishment of a waste management strategy, action plan and administrative capacity
2. Effective price signals and funding
3. Information strategies for residents and businesses
4. Formalisation of informal services

Moving up the waste hierarchy:

5. Improvement of waste collection
6. Waste sorting and treatment to encourage recycling and energy recovery
7. Promotion of sharing and reuse of products

[110] See World Bank (2019).

SW1. Establishment of a waste management strategy, action plan and administrative capacity

Description

In terms of waste management, an important first step is to develop a waste strategy and an action plan at the city level. If national or international (in other words, EU-level) waste strategy or policy and related institutions exist, this should be taken into account and strategies should be aligned. In the absence of national plans and regulation, local solutions can still be planned at the city level. Given the complexity of the waste sector, it is important that local waste strategies and action plans have holistic views in the pursuit of an integrated waste management structure, covering all the technical and practical steps. This includes the question of how to provide the infrastructure necessary to manage different waste streams, such as mixed municipal waste, recyclables, hazardous waste, construction and demolition waste, organic waste and medical waste. It further includes how to select collection or delivery solutions in terms of 'bring' systems or residential waste (kerbside) collection systems, bin types, volumes, collection frequencies and so on. If seeking to promote separation and collection of recyclables, careful planning is needed to make the process as convenient as possible for residents.

While a waste strategy may set up general objectives, responsibilities and resource implications, an action plan is more detailed and includes practical steps with details, targets and timelines for the implementation of different solutions. A waste plan should also clarify the capacity needed and responsibilities related to the provision of information, awareness campaigns and monitoring systems. Both the waste strategy and the action plan should cover all the formal processes of waste collection, transportation, treatment and final disposal – and may also include ways to better internalise the informal operators when relevant. An action plan should also articulate the roles of the public sector versus any private sector investments or operations. Moreover, as the sector seeks to move up its waste hierarchy, additional and more sophisticated efforts need to be planned, incentivised, coordinated and enforced.

At an early stage, it is important to build adequate capacity and know-how within the city administration in order to plan, operate, contract and monitor waste management activities. Considerable technical expertise is required to design a strategy or an action plan within the national context and based on local needs and conditions. Enforcement and reporting mechanisms are also necessary to ensure continued implementation and compliance. While some regulatory capacity and know-how can be provided by central authorities, the local administration should be expected to plan, secure financing, contract, supervise, monitor and enforce the waste management activities in the city.

Resource implications and key requirements

While the planning itself does not require significant financial or human resources, it needs sufficient know-how, which initially may need to come from the central government or other external knowledge providers. As the planning process evolves and the implementation and the related investments and operations start, the resources needed for a competent management and governance of the sector grow. For example, in Ljubljana in Slovenia, the public waste management company Snaga Ljubljana has been working on planning and administrating the process for 10 years in order to move the sector towards EU compliance – in other words, full collection, disposal in sanitary landfills and the closure of non-compliant dumpsites.[111] In September 2014, Ljubljana became the first European capital to commit to becoming a zero-waste city.[112]

Potential private-sector participation

Planning and regulation should be led by public institutions and relevant authorities. However, where there is a clear lack of know-how, private knowledge providers may be helpful when developing strategies and action plans for a city's waste management sector. To this end, numerous international consultancy firms offer specialist services related to

[111] See Zero Waste Europe (n.d.)
[112] See European Commission (2019).

the development of waste management strategies that comply with international standards.

Implementation obstacles and solutions

The implementation of an ambitious waste management strategy and action plan entails a number of challenges. Significant resistance can be expected from existing and well-connected operators providing suboptimal services. Informal waste management activities may lose out, with political and social implications, and adequate buy-in and commitment from the public may be difficult to achieve. Implementation therefore requires strong political commitment and support, combined with comprehensive awareness campaigns and education. In addition, as a city seeks to move up the waste hierarchy, it requires an ever-wider spectrum of stakeholder engagement. For example, moving up the waste hierarchy may involve stronger commitment to waste-sorting at source by residents, more standardised use of materials by producers or a sector-wide commitment to introducing nationwide deposit schemes for cans and bottles. It may also require changing the awareness and behaviour of citizens and the establishment of permanent communication and education about source-separation of recyclables and various forms of waste reduction. This work creates an understanding of the entire lifecycle of products as well as the feasibility of recycling and the repair of products. While these steps higher up in the waste hierarchy are ambitious measures, one may look at the way Tirana introduced compulsory payments for plastic bags provided by local shops. Alternatively, one can look at cities such as Parma in northern Italy or Ljubljana in Slovenia, where significant improvements have taken place on the back of a mix of policy measures.[113]

SW2. Effective price signals and funding

Description

Adequate pricing of waste-related activities can positively influence behaviour (in other words, lead to a reduction of waste) and ensure more sustainable funding of the sector. Cities have various possible pricing mechanisms and measures at their disposal that are outlined below.

Fist, city authorities can introduce pricing (pay-as-you-throw) on the waste delivered by – or collected from – households, businesses and industry. Pay-as-you-throw schemes can be set up for businesses and households as a charge for waste bags for different waste streams. However, with the exception of the most law-abiding and well-monitored societies, this solution can easily trigger illegal waste dumping and a fixed cost-reflective fee for municipal waste collection is normally a more feasible funding scheme.

Second, the city can normally set tipping fees at the landfill. To help reduce landfilling and to incentivise waste sorting at source, differentiated gate fees for sorted and mixed waste at the landfill can be introduced. This requires weight-based tipping fees and increased control.

Third, cities can introduce pricing requirements and subsidies on certain products, such as disposable and reusable grocery shopping bags, and they can promote the introduction of deposit return schemes for products such as beverage containers. In San Francisco, the checkout bag ordinance that was extended to cover all retail stores in 2012 and all food establishments in 2013 has led to a 72 per cent reduction in plastic bag use since 2010.[114]

Lastly, another pricing mechanism incentivising recycling is the introduction of deposit return schemes for products such as beverage containers. This can be introduced for selected outdoor bars or it can include the setting-up of machine-based schemes where individuals are rewarded for returning beverage containers, for example, in the case of the Veolia-linked pilot in London.[115] Moreover, while not a direct charging mechanism, cities can install and inform their residents about public drinking-water taps as a free alternative to buying new plastic water bottles.

Resource implication and requirement

A pay-as-you-throw scheme requires significant administrative and operational resources as well as substantial monitoring and enforcement efforts.

[113] See Pietzsch et al. (2017).
[114] See SF Environment (2019).
[115] See White (2019).

It also requires a relatively law-abiding culture – otherwise this approach may lead to unmanageable levels of illegal dumping.

Cost-reflective tipping fees do not require excessive investments or operating costs. However, differentiated gate fees for different waste streams will require some additional control and penalty procedures.

The introduction of payment for disposable products, such as grocery plastic bags, does not imply large costs for a city administration, but substantial efforts linked to public communication are likely.

Potential private-sector participation

Introducing payments or deposit return schemes for certain disposable products requires close cooperation with the private sector. For instance, in Scotland, neither the Scottish government nor Zero Waste Scotland will run the scheme. That is the job of the scheme administrator(s), which is expected to be an industry-led, privately owned and not-for-profit private-sector enterprise. Typically, the administrator(s) of the scheme will be responsible for its day-to-day management. In the case of Scotland, the Deposit Return Scheme for bottles and cans creates new obligations for drinks producers and most of them are likely to nominate a scheme administrator to fulfil these on their behalf.[116] The service will be funded partly by small fees paid by producers, with the size of those fees based on the number of drinks containers that producers put on the market. For retailers and hospitality firms, who will collect returned cans and empty bottles, their main contact will be the scheme administrator. For deposits that firms (the `return points') refund, the administrator will provide reimbursement and pay the handling fee.

"Introducing payments or deposit return schemes for certain disposable products requires close cooperation with the private sector."

Implementation obstacles and solutions

Requesting payment and fees for something that used to be free of charge is never popular. However, comprehensive awareness-raising campaigns in cooperation with affected business communities and relevant NGOs can ensure acceptance and buy-in from the relevant population and businesses.

SW3. Information strategies for residents and businesses

Description

Waste prevention depends on a shift in the attitudes and behaviour of residents and businesses. This can be encouraged through various informational measures. Drawing public attention to waste prevention is a fundamental step in nudging behavioural change towards more sustainable consumption and waste management practices. Such informational strategies aim to change consumer behaviour, encouraging informed decisions on reducing waste generation and improved separate collection of different waste streams. This can lead to a number of benefits, including reductions in GHG emissions, environmental pollution and the use of materials. Moreover, waste prevention leads to cost reduction as collection and transport costs, landfill volume and clean-up costs are all lower.

In addition, it is important to inform the public how the current systems work, or how source-separation works, and to communicate the city's plans and achievements. For instance, a new sanitary landfill will lead to tariff increases, but only a few neighbours might see improvements – thus, the city needs to communicate this, too, in order to improve acceptance of increased tariffs.

A number of information strategies can be used, including awareness campaigns, information on waste prevention techniques, training programmes for local authorities and eco-labelling. Effective awareness campaigns often focus on a specific waste stream

[116] See Zero Waste Scotland (2020).

and provide easy-to-follow practical advice on waste-prevention actions. Campaigns may choose to focus on visible actions, such as the use of canvas bags instead of plastic bags, the implementation of home composting, the use of no-junk-mail stickers and the repair and recycling of clothing.[117] Specific methods for information dissemination include online information portals geared towards consumers, online tools facilitating the calculation and tracking of data on waste and the development of waste prevention plans.

Resource implications and key requirements

Education campaigns can be administratively demanding due to the need to provide information on waste prevention techniques for specific users, such as households, businesses and organisations. In addition, the campaigns demand substantial budgetary resources, with leading waste authorities in Europe having invested significant resources into awareness generation, of at least €5 per resident.[118] For this reason, it is important that the financing of campaigns is stable. At the same time, waste prevention also saves a city money – for instance, if food waste is recycled instead of disposed of in a landfill – and awareness campaigns could therefore have a positive effect on a city's budget. Campaigns can be tailor-made for specific waste streams and target groups, using different media.

Potential private-sector participation

Although campaigns are often conducted at the national level, several cities have also been proactive in launching their own campaigns. While the private sector is rarely involved, it is common for awareness campaigns to be provided through external non-profit organisations, and through school teachers when education campaigns target school children. A specific measure for awareness-raising is the establishment of a network of waste advisers. These are volunteers or employees trained in waste prevention and management who support residents in reducing and correctly separating at source the waste generated in households. Leading waste organisations in Europe have put in place one waste adviser per 20,000 residents.

Implementation obstacles and solutions

It is important that messages are tailor-made for well-defined target audiences and delivered consistently through a range of complementary measures. Other success factors include cooperation between the local authority and the stakeholders involved in providing the campaign, such as waste charities, school teachers and waste advisers. The quality of preparation and implementation of the campaign is important and can be based on previous studies and recommendations from stakeholders. Campaign continuity and well-developed materials are equally important for a successful campaign, as well as recognition of the campaign at the national level.[119] It is also crucial to monitor the impact of particular campaigns on key performance indicators.

Successful examples of campaigns in the UK targeted towards consumers include the Love Food Hate Waste campaign, the Recycle Now campaign, the Love Your Clothes campaign and the Real Nappies campaign. Examples in other countries include campaigns for tap water instead of bottled water in Portugal and Italy and the Stop Pub campaign in France. Furthermore, Vienna is promoting lifestyles geared towards services and culture rather than products. Successful examples of informational tools include Eunaofaçolixo.com in Portugal, which suggests waste prevention techniques for different types of household room, the WRAP Waste Prevention toolkit and WasteCap, a non-profit network in the USA.

Comparison with other policy options

Information strategies are a necessary step towards inducing behaviour change and therefore any waste prevention policy will implicitly require information strategies. Awareness campaigns must be delivered in conjunction with the right tools to support organisations in managing their waste, together with an efficient separate waste-collection system and promotional measures for waste reuse and repair.

[117] See European Commission Directorate – General Environment (2012).
[118] See Dri et al. (2018).
[119] See Regions4recycling (2014).

SW4. Formalisation of informal waste collectors

Description

Many economies in the EBRD regions are affected by a number of financial, technical and efficiency-related problems in their waste sector that have caused poor waste management practices and sometimes a lack of any formal practices. This situation has led individuals, groups and micro-enterprises to perform informal collection and recycling, generating income through collection fees and by selling the extracted valuable materials. Informal workers perform their activities under inadequate and uncontrolled conditions, putting themselves at risk of occupational injury and disease.[120] Their work is further characterised by low entry barriers, low organisation levels and irregular income.

The integration of the informal sector into formal solid waste management systems can help reduce overall system costs, support the local industry by providing low-cost materials and create new jobs. Furthermore, it can reduce negative environmental and climate impacts from solid waste management through improved resource recovery and reduced disposal. Lastly, it can help to generate income and improve working conditions for poor populations who often lack other economic opportunities.

Recognising the role of the informal waste sector, several governments have implemented various formalisation measures to address the social problems linked to the sector. There are three main types of approaches to the formal and legal recognition of informal waste collectors:

(i) Formalisation based on organising informal waste workers in associations and cooperatives, which establish contracts or cooperation agreements for performing waste collection and recycling services. The sustainability of such models can be ensured through waste policy and regulation changes proposing a combination of sources of revenue.

(ii) Formalisation based on organising recyclers in community-based organisations or micro and small enterprises. These are mostly covered by waste collection fees paid by users and from selling recycled materials. The role of the municipality is minor in such cases, mostly supporting through awareness-raising and equipment provision.

(iii) Formalisation based on integrating recyclers as workers for the formal waste management sector, by recruiting them to perform collection or recycling at facilities.

Several factors are critical for the successful integration of the informal sector, including deploying a mix of approaches and establishing stable organisational structures. Cooperatives, small enterprises and networks in numerous countries show that these organisations were the first step to get informal workers out of social marginalisation, improving their economic efficiency and thus their position in the economic value chain. They also made partnerships with municipalities and other stakeholders possible.[121]

Resource implications and key requirements

The integration of the informal waste sector demands substantial administrative resources to coordinate their formalisation into a formal sector or through associations and community organisations.

Potential private-sector participation

Partnerships in the private sector, between formal and informal actors, become more and more important. Many private enterprises perceive the opportunities stemming from the use of waste as a (material or energy) resource and recognise that partnerships with the informal sector can improve the value chains related to sourcing materials from waste. The private sector can, for instance, be responsible for providing training and empowerment of waste workers as well as implementing occupational safety practices. Furthermore, it can also help assess and document the waste management system and expand the capital base of the sector. And lastly, the private sector may need to be involved to formally recruit informal waste collectors.

[120] See Wilson et al. (2006).
[121] See GIZ (2012).

Implementation obstacles and solutions

Not all attempts at formalisation have been successful, due to the existence of barriers which have prevented the implementation of such attempts as well as a lack of understanding of these barriers and the measures that may enable formalisation.[122] For instance, formalisation reduces waste pickers' ability to enter and exit the waste management economy, and research shows that waste pickers value that flexibility. Hence, formalisation efforts by government have often been unsuccessful, exposing the limitations of the government's ability to regulate and monitor the actions of those in the sector.[123] Governments should therefore seek to provide economic support through financial incentives, diversification of services and appropriate payment schemes. The formation of partnerships and stakeholder involvement are key and can involve the formation of cooperatives and associations. Funding should also be provided for waste infrastructure to provide adequate sorting and storage spaces. It is also best practice to train and empower informal workers and include them in formalised waste activities.

For instance, the city of Cairo pursued a policy of the privatisation of municipal solid waste collection as part of various World Bank initiatives to improve the conditions in the city. However, this has been seen as threatening the sustainability of garbage collectors' communities as well as new claims on and the commodification of Cairo's waste materials, to the detriment of effective collection.[124]

Integration of informal workers into the formal sector has been successfully used in Austria and Hungary as the preferred option. Recent waste policies and legal frameworks of countries such as Brazil and Peru have included recycling associations and cooperatives in separate collection and recycling programmes. Colombia has introduced a 3R (reduce, reuse, recycle) waste hierarchy and enabled the participation of marginalised groups in a bidding process. Countries such as India and the Philippines have also recognised the need to involve informal waste collectors.

SW5. Improvement of waste collection services

Description

Three components are needed to rectify a poor waste collection system: (i) infrastructure or equipment, (ii) good collection services, and (iii) adequate contribution by waste generators – in other words, households, institutions and businesses. Furthermore, in the economies where the EBRD invests, there is often no full 'collection service coverage rate', meaning that not all households have access to frequent waste collection services. Hence, typically, in addition to replacing worn-out collection infrastructure, cities also seek to extend collection services to the whole city.

Infrastructure investments (in other words, bins, containers, collection points, vehicles and perhaps transfer stations) and related maintenance will have to be well planned and financed, and cover collection systems for different waste streams. For instance, container-based 'bring' systems can be used for construction and demolition waste, whereas residential waste (kerbside) collection systems are feasible for municipal waste with clearly defined bin types, volumes, collection frequencies and so on. Adequate maintenance also includes cleaning, repair and replacement of broken equipment, for which responsibilities must be clearly defined.

A good collection service implies adequate coverage of all locations and adequate frequency and capacity as well as the provision of collection services in a predictable and resource-efficient manner.

Effective waste collection systems rely on sufficient contributions from households, institutions, businesses and industry. Different waste streams must be delivered as planned, placed in the right containers and bins, which must be made easily available and looked after. In order to ensure that residents and other stakeholders are committed and contribute to the collection process, effective information and attitude campaigns may be needed. Such campaigns can be pursued through a combination of different forms, but one effective way is

[122] See Aparcana (2017).
[123] See Linder (2019).
[124] See Fahmi and Sutton (2010).

to educate children through schools and kindergartens, who later 'police' their parents and carers.

Resource implications and key requirements

Waste collection services are costly as they imply capital costs for equipment and vehicles, and significant operating costs for fuel and operating staff.

The logistics and efforts needed to put in place adequate infrastructure can be substantial, depending on how radical the changes to the collection system are. Sometimes, it can mean bins, containers and new or additional collection vehicles only. At other times, it may also include the acquisition or construction of new collection points and transfer stations to streamline some of the processes. For example, Ljubljana invested €421,291 in its door-to-door system to be able to provide bins and vehicles servicing an urban population of 400,000 in the municipality of Ljubljana and 10 bordering municipalities. The annual running costs for the door-to-door system were estimated to be €98.4 per tonne.[125]

Potential private-sector participation

Private collection companies contracted through international competitive tenders can provide useful expertise and cost-efficient waste collection solutions. Private contracts can also help introduce better contractual arrangements and help depoliticise and professionalise the collection services, with clearly defined rights, obligations, processes, performance targets and incentive-based revenues. By requiring private collection companies to undertake awareness and attitude campaigns, incentives are further aligned, given that successful attitude campaigns and increased buy-in from inhabitants will benefit the collection company. Some of the financing for vehicles and other equipment can also be provided by private collection companies, although this does not bring down the overall costs for the waste collection services. There may be benefits to splitting a city into more than one collection area or contract for comparative and competitive reasons. Private collection contracts should cover multiple years (five or more) in order for companies to be considered creditworthy and to benefit from their awareness and attitude campaigns.

Implementation obstacles and solutions

Significant resistance can be expected from existing and well-connected operators providing suboptimal collection services. Informal waste collection activities may also lose out, with political and social implications. There may also be significant objections from residents and businesses, groups that may have to change their efforts and pay a higher waste collection fee in order to make a new collection system work. Therefore, strong political commitment combined with comprehensive awareness campaigns, education and a wide spectrum of stakeholder engagement are necessary. By aligning incentives for private collection companies to also undertake awareness-raising campaigns, the effort required to improve commitment and buy-in from various stakeholders will be increased.

SW6. Waste sorting and treatment to encourage recycling and energy recovery

Description

Important steps to reduce landfilling include sorting and treatment of waste. These are also necessary steps to capture economic value from produced waste. Waste sorting is a prerequisite for specialised disposal of hazardous waste and for recycling. It is also the first step of treatment processes aiming to convert waste into fuel for energy purposes.

Waste can be sorted after its arrival at a landfill, a transfer station or a waste treatment plant. However, waste sorting has proven to be most cost efficient when it is combined with pre-sorting at source by households and businesses – for example, through kerbside collection schemes or recycling yards with multiple bins for recyclables and other waste streams such as paper, glass, metal, garden waste, food waste and residual waste. However, it should be noted that waste sorting, aimed at promoting recycling, is only economically justified when the general waste stream is sufficiently rich in recyclables. As a general rule, the share of recyclables in the general waste stream tends to increase in line with GDP per capita.

[125] See European Commission (2014).

Further treatment of non-recycled waste includes the biological treatment of residual waste or anaerobic digestion of food waste. Both treatment processes require large investments and aim to convert waste into refuse-derived fuel (RDF). As recyclables and RDFs are sold through pre-agreed contracts or through relevant markets, it is important to secure reliable access to such markets and contracts prior to large investments in sorting and treatment solutions.

Resource implications and key requirements

Separation of waste is costly. Pre-sorting of waste at source implies additional costs for equipment and vehicles able to deal with pre-sorted material. It also implies additional capital, energy and staff costs linked to the extra mechanical or manual sorting processes. As a general rule, one can assume that recycling of household segregated waste is almost never a profitable activity despite the revenues from the sale of recyclables. However, recovering recyclables from industry and institutions is easier to operate and less costly and may generate profit for the operators.

Waste treatment facilities are large investments and require predictable waste streams and offtake agreements for many years.

Potential private-sector participation

Experienced private collection companies contracted through international competitive tenders can provide useful expertise and cost-efficient waste sorting and collection solutions. Private contracts can also help introduce better contractual arrangements and depoliticise and professionalise collection services, with clearly defined rights, obligations, processes, performance targets and incentive-based revenues. Requiring private collection companies to undertake awareness and attitude campaigns can be a way to further align the incentives – as successful attitude campaigns and increased buy-in from residents and businesses benefit the collection company. Some of the financing for vehicles and other equipment can also be provided by private collection firms, although this will not bring down the overall costs of waste sorting and collection. Private contracts for the promotion and collection of pre-sorted waste should cover multiple years (five or more) in order for companies to be considered creditworthy and to benefit from their information and attitude campaigns.

The financing, construction and operation of waste treatment plants have proven to be done effectively by private contractors through PPP-style arrangements. However, risk mitigation through long-term agreements covering waste delivery and offtake of refuse-derived fuel plays an important role.

Implementation obstacles and solutions

Formalised waste separation at source may come into conflict with informal waste collection activities and may have political and social implications. Waste sorting may also be met with objections from

residents and businesses, who may have to change their behaviour and potentially encounter higher collection fees. To address this, targeted awareness campaigns, comprehensive stakeholder engagement and strong political commitment are necessary. By incentivising private collection companies to also undertake awareness-raising campaigns one may accelerate the effort needed to improve sorting and the overall buy-in from various stakeholders.

Unintended effects

Waste-to-energy solutions can come into conflict with efforts aimed at recycling or waste minimisation, as large investment in waste treatment facilities requires large volumes of waste, preferably with a high calorific value sometimes found in recyclables. EU directives are increasingly ambitious in terms of recycling and waste minimisation and it is important that waste-to-energy solutions are aligned with these targets for all EU and EU candidate countries.

SW7. Promotion of sharing and reuse of products

Description

The sharing and reuse of products can also cut down the overall use of resources as these are cost-effective ways to reduce waste generation and landfilling. This approach can provide a number of benefits, including reductions in environmental pollution, material consumption and the need for additional landfills. It can also provide employment opportunities in secondary markets and increase societal cohesion through the promotion of a sharing culture. In addition to environmental benefits, sharing can create a sense of community among strangers, thus facilitating trust and social inclusion. It can also supplement supply in periods of peak demand: for instance, a tourist location can benefit from a sharing platform through which multiple owners make accommodation available during peak season, rather than turning to additional construction.[126]

These approaches include both sharing among individuals and communities as well as among city governments. In the former category, the sharing economy has entered nearly all urban spheres and includes solutions related to mobility and transport (for example, Uber and Zipcar), spaces (for example, Airbnb and WeWork), skills and talent (for example, Upwork and Fiverr), financing (for example, Zopa and Kickstarter), health (for example, CrowdMed), utilities (for example, Gridmates and Vandebron), food (for example, VizEat) and learning (for example, Coursera). With regard to the latter category, cities can also leverage the potential of the sharing economy, in municipal goods, municipal spaces, civic assets, municipal services and the skills and talent of city residents. An example related to municipal services is the Intermunicipal Collaboration Framework in Alberta, Canada.[127]

[126] See World Economic Forum (2017).
[127] See Government of Alberta (2020).

Policies supporting these sharing approaches both among individuals and among city administrations include the provision of physical and IT-based infrastructure that is necessary for product sharing and for second-hand markets to take place. Policies also include initiatives aimed at raising awareness and changing people's mindsets. Today, various city governments have institutionalised sharing practices through innovation offices (Seoul and Amsterdam), working groups (Vienna), a task force (Denver) or similar institutions dedicated to advocacy, awareness and furthering the agenda of sharing in cities.

Resource implications and key requirements

Reuse and sharing of products are primarily a result of market-based solutions, which may need only modest provision of interventions or resources by the city authorities. For example, a sharing-based economy is increasingly being promoted in some areas, such as through car and bike-sharing schemes, on the back of increased digitalisation and the development of user-friendly apps where the private sector plays a key role. Moreover, it is possible to further increase the awareness and popularity of second-hand products through the involvement of NGOs, community-based initiatives and the availability of infrastructure-facilitating second-hand markets.

This is also a field of resource efficiency, and waste minimisation and promotional measures can place a substantial administrative burden on the local administration, which would need to engage with various stakeholders to coordinate promotional action. Depending on the nature of the promotional strategies, the measures may also necessitate significant financial and technical resources.

Potential private-sector participation

As outlined above, solutions related to the reuse of products are primarily driven by the private sector or charities. City governments can also take on a combination of roles, depending on the socioeconomic environment in the city. An example is the Sharing City Seoul project, which is being implemented based on cooperation between the private and public sectors, steered by the Sharing Promotion Committee. The initiative has certified 50 sharing projects that provide people with an alternative to owning things they rarely use and has given grants to a number of these projects.

Implementation obstacles and solutions

People's mindset may be the biggest obstacle to the development of an economy based on more sharing and reuse of products. Identity is often linked to the products (for example, cars) a person owns and second-hand products may be viewed as something for the poor. A gradual process, supported by community-based and city-supported awareness campaigns, may be the most effective way forward.

In Belgium, Ghent's Foodsavers platform, operated by the city, brings together food leftovers from the wholesale market and local retailers and redistributes them to food banks, social restaurants and social supermarkets. Another successful initiative is the Restorestje, a local version of a leftover container. It is distributed to restaurants for free in order to encourage them to use it. Campaigns have managed to change people's behaviour and encouraged them to take their leftovers home.[128]

In general, not all aspects of sharing-economy models are positive. Cities have faced challenges in creating policy and regulatory frameworks, protecting consumers, avoiding unfair competition, modernising outdated taxation laws and assuring social equality. For instance, while sharing can bring social and environmental benefits, sharing models can also result in excess supply. One example of this is in China, where companies like MoBike (bike-sharing) have created a surplus of bikes at rental stations, rather than improving the use of existing assets, in the belief that a large inventory will help them to dominate an extremely competitive market.

It is therefore crucial for cities to establish trust and reputation in sharing platforms, ensure the safety and security of data and people and be cautious about social inequalities that can potentially be caused by the sharing economy.

[128] See RUAF Foundation (n.d.).

04

Cross-cutting policy options ↘

Cross-cutting policy options ↘

Strong institutional structures and reliable financial mechanisms are required for cities to pursue their green agendas effectively.

Local governments often struggle to undertake environmental action due to several constraints, including limited political power, low levels of institutional capacity, low levels of stakeholder integration, low levels of multi-level government cooperation, limited fiscal power, poor financial management and lack of access to finance.[129] Cities need strong institutional environments that allow their local governments to function more efficiently, flexibly and competitively to achieve an ambitious green city agenda.

Local governments around the world are also increasingly responsible for providing and coordinating services across the sectors of transport, energy, buildings, waste, water and land use. These require heavy infrastructure investment and may have substantial administrative and budgetary implications. Local governments are also responsible for managing social sectors such as health, education and public safety, which have significant operating costs.[130] It is therefore important for local governments to explore the ways in which they can improve their governance and financial responsibility.

While the policy options presented in this chapter may not target green objectives directly, they are critical for enabling cities to pursue their green agendas in a sustainable and efficient manner. The continuous improvement of the institutional environment of cities can make policy implementation more effective, enabling the transition to prosperous cities in which sustainability is integrated into the different facets of public- and private-sector decision-making. A strong institutional environment comprises aspects such as (i) the devolution of powers to local governments, (ii) sufficient multi-level government coordination, (iii) capacity and expertise of all actors so they can play their roles effectively, (iv) participation of relevant stakeholders, including residents and representatives from various groups (women, young people, the elderly, migrants, people with disabilities, and so on), (v) financial transfers from central government and (vi) accountable management and transparent use of public resources. The enabling environment may be divided into two cross-cutting policy areas, namely governance and finance.

4.1. Governance

Economies and cities in the EBRD regions have a legacy of poor governance, which was further exacerbated after the poorly planned decentralisation that followed the collapse of centrally planned regimes. City governments in these regions tend to lack strong administrative authority, political autonomy, skills, resources, technologies and capacity to play an active role in city planning, management and development. This has led to a limited ability to coordinate public infrastructure and service provision at the local level, as well as to weak procedures,

[129] See Sustainable Development Solutions Network (2016).
[130] See UN-Habitat (2009).

a culture of insufficient observation and the criticism of city governments by the public.

Local governments may explore the following selection of policy options, perhaps in combination with each other as a policy mix:

1. Political and fiscal decentralisation
2. Improved transparency and accountability
3. Enhanced integration across government bodies
4. Effective stakeholder participation
5. Capacity-building.

These can bring a number of benefits beyond environmental improvements, including better social cohesion and inclusion, improved political involvement and a stronger ability to successfully change behaviours, with a long-term view to generating sustainable development.

G1. Political and fiscal decentralisation

Description

Empowered local governments have been shown to have a positive impact on the provision of public services and quality of life.[131] The major benefits of decentralised decisions include (i) a more targeted or tailored supply of public services and infrastructure in response to local demand, which should lead to (ii) a more cost-efficient use of public expenditure and may (iii) increase cost-recovery funding from residents who are more willing to pay for adequate services. Decentralisation can also (iv) promote accountability and reduce corruption due to proximity to the population, which may be more aware of local governments' actions than those of the central government.

However, if poorly implemented, decentralisation may result in inefficiencies and corruption, and further disillusionment with the government. Therefore, for the abovementioned benefits to materialise, it is important that (a) decisions (and not only operational obligations) are transferred to local authorities; (b) local authorities have sufficient financial and institutional capacity and procedures in place; and (c) the decentralisation promotes engagement and enables people to hold institutions to account for delivering policies in a transparent way.

The transfer of political or decision-making powers (point (a) above) would primarily be a central government choice. The same is true for the decision to transfer parts of the central budget or collected taxes to local authorities in order to improve their fiscal capacity (point b). However, ensuring adequate funding is also a task for the local authorities and so is the building of institutional capacity and procedures. These enable good governance to promote the population's ability to engage with and hold institutions to account for delivering policies in a transparent way (point c). For example, in terms of fundraising, decentralised governments may be responsible for raising their own revenue and setting their own taxes. That should further improve accountability and responsibility at a local level. There is also evidence that taxes are easier to collect when people can see that they are being used for local purposes.[132] Beyond setting local business, personal or property taxes, local revenues can also come from increased fees for licences or permits, or from higher tariffs for utility services. These options are discussed further under the policy area for local financing (see Section F1).

Resource implications and key requirements

Key requirements for effective decentralisation include central government support and a meaningful local democracy that can inform the local decision-makers and hold them accountable for delivering policies. It is also instrumental to have adequate capacity and procedures in place before any transfer of political and fiscal powers, in order to minimise uncertainties and confusion during the decentralisation process. Significant resources are needed to ensure adequate institutional capacity and

[131] See Bilbao (2015).
[132] McKinsey & Company (2013).

procedures – and further resources will be needed to ensure people's engagement to further deliver results. For instance, in Poland, the reform of public administration demanded effective legislative and operational work, monitoring of the implementation, evaluation of the effects of the reforms and engagement with civil society and local residents about the reform.[133]

Implementation obstacles and solutions

A decentralisation process may meet opposition at central and local levels. Central authorities may be reluctant to give away powers and may be concerned about the ability of local authorities to assume new responsibilities and powers. Local authorities also may be reluctant to take on responsibilities and powers that they are not familiar with. In both cases, it may be argued that uncertainty and limited capacity are the key sources of the problem. While limited capacity can be addressed through capacity-building programmes, uncertainties for both central and local stakeholders can be mitigated by a gradual transfer of powers, for example, first transferring a prescribed service delivery before greater powers to define and organise service obligations and later giving extended local powers to plan, invest and finance local infrastructure and related services. Uncertainties can also be mitigated through a careful sequencing of capacity-building and the promotion of local stakeholders' understanding of tasks and processes before powers are decentralised. Close cooperation and the transfer of skills between central and local authorities are also important to mitigate uncertainties and risks during the transfer process.

Lastly, while decentralisation can help strengthen accountability and improve performance and decisions by bringing government closer to people, it can also present risks of corruption and poor performance. Local officials may have greater vested interests based on family, friendship and business ties that can influence decision-making, and local institutions designed to hold local public officials to account are not always adequate.

G2. Improved transparency and accountability

Description

When transparency and accountability are put at the heart of local governance systems, the risk of corruption is reduced and incentives to perform well can be strengthened. Central authorities can promote accountability incentives through a top-down approach. However, transparency and accountability should also be promoted through a bottom-up approach where residents can participate in and influence city policy design and implementation, as well as hold local officials to account for their decisions and the performance of local institutions.

Transparency can be promoted through mutually reinforcing strategies that include (i) ensuring access to information, (ii) enhancing ethics, professionalism and integrity, and (iii) conducting regular assessment and monitoring.

A well-organised record management system that contains accurate and easily accessible information about municipal rules, decisions, plans, public spending and financial management can be developed, and it is advisable to disclose documents of general interest through user-friendly reports and online presentations. Information should cover rules and procedures related to the hiring and administration of staff, calls for tenders, procurement and monitoring of contract execution. Further information relates to how the law requires that local governments be subject to regular and independent financial and organisational audits within a specific timeframe. E-government is a commonly used tool for local governments to disseminate information and interact with their citizens.

Moreover, the transparency of a local government is contingent on the strength of its legal infrastructure, which regulates the behaviour of city officials and promotes ethics and integrity. Such legal infrastructure may include laws on conflict of interest, on disclosure of income and assets, and on whistleblower protection and transparent procurement. In addition to legal measures, a municipal code of ethics could be established, thoroughly communicated with city

[133] See Kulesza (n.d.).

officials and effectively implemented. Municipalities should also consider designating an independent agency that has the authority to interpret and enforce the code.

As for assessment and monitoring, the key objective is to inform the public about the activities and performance of the local government and its departments. In order to incentivise good performance, the government should conduct annual public reporting about municipal services. These services should be measured against agreed targets and against the performance levels of previous years. Other useful tools for assessment and monitoring include the Municipal Checklist, the Urban Corruption Survey and Report Cards, developed jointly by Transparency International and UN-Habitat.[134]

In order to further bolster accountability, well-resourced institutions designed to ensure adequate structures for checks and balances should be promoted and civic oversight and control should be encouraged. One way to promote better accountability within municipal operations is to transform municipal services, such as water supply, district heating or public transport into separate legal and commercial companies. Such public companies can then be further governed by a well-defined public service contract to be signed between the municipality and the municipal company. A public service contract refers here to a contract that sets out rights and obligations for both parties, including performance targets, planning processes and procedures for approval of revenues and tariff adjustments. It also sets out the role of the municipality and limits on its ability to interfere in operational decisions. The objective of such contracts is to ensure transparency, predictability and accountability for both sides.

Another institutional innovation to improve accountability is the complaints and ombudsman's office, which allows people to address their grievances and complaints about government bureaucracies. This option is additional to existing channels such as the judiciary or internal complaints procedures. The ombudsman is an independent organisation that receives and investigates allegations of maladministration. The office of the Northern Ireland

Ombudsman, for example, deals with complaints from people who claim injustice due to maladministration. The Ombudsman is entirely independent of the Northern Ireland Assembly and the Northern Ireland Executive. All complaints are treated in confidence and the services are provided to citizens free of charge.

Resource implications and key requirements

The improvement of transparency and accountability requires substantial administrative capacity as well as some financial and technical resources. However, it also enables cities to make efficiency gains once processes are in place. For example, Vienna introduced an information management system as part of the initiative Smart City Wien that was also used for effective public disclosure of performance monitoring. The success of the programme was facilitated by its integration within the city's overall planning framework and by giving the entire municipal authority access to the system.[135] For tools like e-Government to have a meaningful impact, computer literacy should be reasonably widespread and access to the internet for local residents must be ensured.

Implementation obstacles and solutions

People and institutions may oppose significant transparency as it is more comfortable to not be held to account. The publicised data may also be perceived as unreliable, which again may hamper the benefits of a transparency initiative. Part of the problem is

[134] See Transparency International and UN-Habitat (2004).
[135] See Department MA 18 – Urban Development and Planning (2018).

connected to trust. This relates both to trust among the data providers that accurate reporting will not lead to harsh penalties or public outcry and no reward, and trust among the data consumers that the reported information is correct or intended to be correct.

In such cases, it may be necessary to introduce transparent reporting gradually. One example of this is the water sector in a country in south-eastern Europe. Here, the central government initiated compulsory performance reporting and benchmarking for the water utilities. This initiative failed as the water utilities misreported performance levels in fear of being penalised for any reported underperformance. Following this failure, a voluntary performance benchmarking initiative was initiated among the leading water utility firms. Performance data was collected and shared during workshops, but the identity of the utilities reporting their performance levels was hidden behind a number (for example, utility number 1, number 2, number 3). Following some successful workshops, the firms no longer saw the need to hide their identities and were happy to replace the numbers with the real utility names. Later, fear of the central government and the sector regulator also vanished and these institutions were invited to participate in performance benchmarking workshops and to see the accurately reported data that the central government had not been able to obtain in the first attempt.

G3. Enhanced integration across government bodies

Description

The enabling environment for city governments is influenced by multiple levels of governance. Integration in government refers to the coordination between multiple departments or public-sector organisations in providing a public service or programme. Such integration is essential to develop a shared long-term vision for economic development across government bodies and sectors and to ensure effective delivery of public services. Collaboration has a number of benefits, including the provision of more comprehensive services at the local level, promotion of joint cultural and economic development, strengthened relationships between local and national governments, improved local governance through modelling and information exchange, opportunities for integrated planning, increased access to a skills, knowledge and services, better use of available technology and better use of capital and other assets.[136]

An integrated approach to urban planning emphasises the social, economic and environmental dimensions of sustainable development, by:

(i) aligning vertical development priorities across different levels of government

(ii) encouraging horizontal coordination between departments and public-sector institutions

(iii) promoting intermunicipal or territorial coordination.

Working in partnership with higher levels of government is required to improve the governance of local governments. Vertical coordination across different levels of government may be achieved through representative institutions at the central government level working with local governments to offer capacity development and cooperation. Special purpose vehicles – partnerships formed for joint project planning and implementation – can also be used. In addition, central governments may provide vertical funds, which are funds earmarked for programmatic planning. For example, in France, the Agence de l'Environnement et de la Maîtrise de l'Energie, an inter-ministerial agency focused on environmental and energy research and policy, has developed a funding programme to assist municipal areas with the development of a Bilan Carbone emissions inventory.[137]

Horizontal and cross-sectoral coordination between departments and public-sector institutions is a necessary approach to dealing with public problems effectively.[138] This may be achieved through informal cooperation or local government directives. Cross-sectoral departments, such as planning and statistics departments, can be allocated the responsibility of facilitating multi-sectoral cooperation. Lastly, shared

[136] See Institute of Public Administration (2012).
[137] See Corfee-Morlot et al. (2009).
[138] See Howell (2012).

digital platforms, such as GIS-based platforms, should be made accessible to all departments to foster a culture of open data and information sharing.

Intermunicipal or territorial coordination can be facilitated through intermunicipal agencies that provide coordination among municipal organisations, often called strategic alliances. Sectoral governance boards support service delivery across municipal borders to ensure fair cost distribution and service efficiencies. The benefit of this approach is that it achieves the advantages of amalgamation, such as economies of scale, streamlined business processes and improved service delivery, while preserving local democracy. An example of such coordinating bodies can be found in the Romanian water sector, where regional water utilities servicing several municipalities are governed by inter-community development associations representing all the relevant municipalities.

Resource implications and key requirements

Integration among government bodies demands a certain level of administrative, human and IT-related resources. Technical resources may be necessary when a government body needs to integrate functions or processes that they did not previously use. Integration necessitates limited financial resources, although this depends on the specific integration package. It also provides opportunities for cost-sharing among administrations. For example, Alba Iulia, a city of 74,000 people in Romania, introduced a pilot smart city project in 2018 developed jointly with the national government and more than 20 private companies. The open data platform under construction will provide useful data to aid decision-making and foster evidence-based analysis.[139]

Implementation obstacles and solutions

A major barrier to government integration is the tendency to think in a 'silo' approach, which is difficult to break out of.[140] There are several other barriers to cooperation, such as an emphasis on the status quo, processes that bring everyone together but reinforce silos, processes that set similar goals and use the same data, and decision-making driven by quests for funding.[141]

The success of integration depends on high levels of commitment and resource-sharing. Successful cooperation strategies need to be based on an understanding of the collaboration cycle, strong leadership capacities, an understanding of the balances between risks and rewards, a culture of innovation and an emphasis on the desired outcomes and impacts.[142] Collaborating parties should take a design approach to cross-sector collaboration and should adopt flexible structures.[143]

It is important to start change management efforts early in the process of planning and implementation. To this end, during the planning stage, it is advisable to develop a thorough plan for change management. Lastly, a phased approach to government integration can be more manageable than a direct cutover approach.

A practical form of integrated governance framework is illustrated by the Urban Nexus, a concept developed by ICLEI - Local Governments for Sustainability (ICLEI) in cooperation with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). At a variety of scales, this framework integrates services across systems, sectors, social relations and behaviours. For example, the city of Hanover in Germany used the framework to guide the integrated planning and construction process of the environmentally friendly district Kronsberg, improving the provision of affordable housing and social cohesion in the metropolitan area.[144]

G4. Effective stakeholder participation

Description

Effective stakeholder participation should be an underlying principle for most municipal activities. It can enable different forms of collaborative governance and help improve decision-making, implementation

[139] See Sustainable Cities (2018).
[140] See OECD (n.d.a).
[141] See Norris-Tirrell and Clay (2010).
[142] See Institute of Public Administration (2012).
[143] See Bryson et al. (2015).
[144] See ICLEI and GIZ (2014).

and monitoring at the local level. It can cover a wide range of activities and may involve governmental bodies, the private sector, residents, interest groups, NGOs and more.

For instance, at an early phase of a potential investment project, residents and other interested groups can help inform the city about their needs and concerns even before concrete proposals have been developed. Stakeholders can at a later stage respond to ideas or discuss solutions proposed by the municipality, by developers or by other organisations, such as industries or NGOs. A city administration can also invite its population to provide their own suggestions in response to certain challenges or development goals, for example, through the co-design of public spaces (see policy option L4). Effective monitoring of municipal services and assets can be undertaken by city residents or NGOs, for example, by online reporting on the quality of their local road network. Residents and NGOs can also play an important role as volunteers or implementing agencies for attitude campaigns, for example, by informing school children about the benefits of recycling and waste separation.

A transparent, integrated, and inclusive process to engage a wide range of stakeholders helps align different perspectives, altering traditional political dynamics.[145] It helps strengthen relationships and increases the sense of ownership of city strategies and plans among residents. It can also improve the quality, acceptance, and effectiveness of project implementation and produce better social cohesion and urban planning outcomes.[146] It is thus important to engage a wide range of stakeholders, and particularly groups that are less likely to be able to participate in standard engagement activities, such as women, young people, the elderly, ethnic minorities, migrants, disabled people, LGBTQ+ people, and so on. Cities should ensure the participation of these groups in discussions.

Resource implications and key requirements

Improving the participation and inclusion of stakeholders demands substantial administrative capacities and may necessitate technical capacity-building in public stakeholder engagement. Success factors related to stakeholder participation include a stakeholder engagement strategy for policymaking which understands the needs, priorities and interests and seeks participation from key stakeholders. Cities also need to develop effective communication, keeping stakeholders informed and motivated to participate.

Monitoring of the number of stakeholders involved in decision-making activities, and the presence of mechanisms that encourage community engagement, also support effective stakeholder participation processes. Collaborative governance is therefore closely linked to the development of open governance systems, open platform databases and shared information systems, government resource-sharing, research and development activities and innovation and technology transfer.

As part of a national road connectivity initiative, the city of Tirana in Albania introduced an online app for reporting sections of road that need repair and also offered public information on the time it takes to address the reported need for repair.[147] The setting-up and operation of this system had cost implications, but in return the city achieved road surveillance for ‘free’.

[145] See UCLG and World Bank (2009).
[146] See Global Platform for Sustainable Cities and World Bank (2018).
[147] See World Bank (2018).

Cluj-Napoca in Romania initiated the Innovation and Civic Imagination Centre to support the co-design and co-creation of urban solutions within the local community. In 2019, two major debates were held, one in support of a master plan for a large-scale development area, while the other focused on EU cohesion policy. The organisation of meetings and workshops that take place at the centre costs the municipal budget €10,000-€15,000 per month.[148]

Implementation obstacles and solutions

Active public participation may require a certain culture and an active civil society that may not be present in many cities in the EBRD regions. This form of democratic development can be fostered, however, through the education system and also by introducing feedback loops that do not require the capacity of effective civil society units. Tirana's online app for reporting road defects is an example of a user-friendly feedback system.

Several cities have incorporated civil society into their urban planning and implementation process. Cities including Surabaya (Indonesia) and Ghent (Belgium) have seen improved outcomes. Ouagadougou (Burkina Faso) and Douala (Cameroon) also represent impressive examples of cities that have improved development initiatives through an inclusive and participatory approach. Ongoing advocacy and open dialogues were key to encouraging citizens to engage in a city strategy. Consensus and cooperation in establishing and acting on the strategy contributed to institutional confidence and unlocked financial opportunities.[149]

São Paulo (Brazil) has made a considerable effort to include residents in the development of the municipality's Open Government Partnership local action plan. São Paulo has also made efforts to encourage large-scale public participation in the development of a new master plan for the city, with more than 25,000 people attending 114 public hearings. Between these hearings and the city's online crowdsourcing platform, São Paulo's inhabitants have contributed over 10,000 ideas to improve the city and therefore the environment around them.[150]

G5. Capacity-building

Description

Capacity-building is the process through which individuals and organisations can obtain, strengthen and maintain the capabilities to set and achieve their goals.[151] Capacity-building is important for local governments as they adopt increasingly sophisticated policies, management practices and an integrated planning culture.

There are three broad types of capability that should be recognised: (i) institutional or organisational capacity refers to the policies, structures, process, rules and procedures that allow local governments to operate and provide leadership in their jurisdiction; (ii) human capacity refers to the experience, tools and knowledge mastered by the employees of local governments, which enable them to identify, analyse and respond to people's needs, ensure their implementation and assess their impact; and (iii) societal capacity refers to the empowerment of the community, NGOs and city residents, including those that face disproportionate barriers to economic opportunities, to inform and hold local governments and administrations accountable for the services they offer and the good management of the community.

Human capacity-building focuses on strengthening different types of abilities and skills within local governance. Organisational skills are associated with efficiency in programme and project management, tax collection and procurement processes, and municipal finance management. Technical skills target particular areas of expertise in specific sectors, such as urban planning, water and sanitation engineering, waste management, and transport engineering. Behavioural skills have to do with cultural shifts and changes in attitude among all stakeholders, including residents, such as for encouraging multi-level cooperation or waste prevention.[152] Incorporating digital technologies

[148] See Euro Cities (2019).
[149] See UN-Habitat (2009).
[150] See WRI (2016).
[151] See UNDP (2009).
[152] See Sustainable Development Solutions Network (2016).

can further ease administrative burdens, promote greater cooperation between stakeholders and allow for more oversight and transparency in operations.

A number of potential activities are aimed at promoting well-targeted capacity-building within a public administration. Initial diagnostics should help identify relevant shortcomings in capacity. Legal stipulations can require capacity-development plans and/or budget allocations for all implementation programmes. Regular staff-training programmes or requirements for continued learning can be put in place among public-sector employees. Project partnerships with higher levels of government, public or private organisations, academic institutions and civil society groups can also involve capacity-building. Moreover, external expert consultants from private organisations or academic institutions with sectoral or technical expertise can provide skills that are required for a specified period of time, as opposed to training internal staff.

Resource implications and key requirements

Capacity-building demands substantial administrative, budgetary and technical resources. It is a long-term process and should be represented in annual budgets and administrative commitments.

Implementation obstacles and solutions

Budget constraints may be a key implementation obstacle, but clearly defined needs and plans with well-defined objectives and performance indicators may help mobilise funding and support from central governments, international networks or organisations, or NGOs.

Learning from the experiences and outcomes of initiatives by other cities or local governments, for example, by joining coalitions of cities, is another way to build capacity. A successful example of cooperation among municipalities and regions is the Network of Towns and Cities towards Sustainability created in 1997 by the Barcelona Provincial Council. It allows municipalities to exchange knowledge and pool resources. A particular success has been the working group on the Covenant of Mayors, which, along with other support from the Barcelona Provincial Council, has meant that most municipalities have now drawn up local-level sustainable energy action plans.[153]

4.2. Finance

City governments must harness their financial reserves effectively to deliver the necessary services and infrastructure that meet the needs of their residents. The ability to collect, manage and invest these resources through appropriate financial mechanisms determines a city's fiscal sustainability. Examples of unsustainable approaches include high levels of debt or other liabilities, which can divert funds from policy investments, or corruption and mismanagement of funds. The following policy options or policy objectives are discussed below.

1. Improved revenue and financial autonomy
2. Improved accountability and transparency
3. Improved creditworthiness
4. Financial incentives or financial support schemes for green investments.

This section explores the policies or approaches that city governments can take to address these points and strengthen their financial credentials so that they can finance the necessary projects to become a green and sustainable city.

F1. Improved revenue and financial autonomy

Description

It is generally desirable for local governments to have the opportunity to raise their own revenue and set their own taxes. This is also a good way of achieving accountability and responsibility at a local level.

[153] See European Union (2017).

In addition, there is evidence suggesting that taxes are easier to collect when people can see that they are being used for local purposes. To ensure a degree of political and financial autonomy, it is important that local revenues go beyond the bare minimum needed to cover the municipality's allocated service obligations, so that surplus funds can be used to finance investments or services at the discretion of the city administration. If a city relies too heavily on the national government, the city may be restricted in the way it spends funding, the extent of the spending, and the time it takes to use it. This, in turn, will affect the delivery of policies and programmes. Fundraising instruments or mechanisms that ensure adequate local revenues include (i) taxes and transfers, (ii) administrative or commercial fees and (iii) land-value capture.

Taxes and transfers: The opportunity to raise or receive tax revenues depends on the fiscal decentralisation in the country and primarily falls outside of the control of the local government. Such tax revenues are typically linked to local property, sales and business taxes or local personal taxes. It also includes "sharing" taxes between the nation and the region in the form of budgetary transfers from the national budget to local administrations.

Local administrative or commercial revenues: This represents funding that local authorities can influence to a larger degree, regardless of the country's fiscal decentralisation. This normally happens through the way fees are set and the rigour with which they are collected. Administrative fees could include building permits or licensing for a wide range of activities such as operating certain business premises or motor vehicles. Municipal commercial revenues may include fees or tariffs for municipal services such as water, waste, heating and parking services or revenues from the letting out, or sale of, public land and public real-estate to private entities. Cost-reflective and consumption-based heat and water bills not only provide sustainable funding for the sector, but also promote resource efficiency. Therefore, it may be recommended to move utility services towards proper metering and fully cost-reflective tariffs while providing targeted support for low-income households (see policy option E4).

Local administrative and commercial revenues account for just over one-fifth of revenues in Sofia, Bulgaria, with 16 per cent of the annual budget in 2018 coming from municipal fees and 6 per cent from fines and penalties, income from asset ownership and sale of non-financial assets. Other key sources of revenue include 20 per cent in property and other taxes, 28 per cent in intergovernmental transfers and 21 per cent in EU funding.[154]

Land-value capture: There is a strong link between public investments, for example, in transport, and economic growth and property values, with new transport services such as train and metro stations typically increasing the accessibility, attractiveness and value of their surrounding areas. The benefits of public investment can therefore often be substantially captured by private individuals as an unearned windfall gain. This problem, in combination with public funding constraints, has led to the development of a variety of 'land-value capture' mechanisms in order to transfer some private financial benefits back to the public sector. These mechanisms may include:

1. Direct development: The city transport authority makes direct purchases of land surrounding planned new transit stations and develops the land directly or in partnership with the private sector, making commercial returns through subsequent sale or lease (shops, commercial units, flats and so on). Examples include Network Rail station development programmes such as London's Kings Cross St Pancras, or the Hong Kong Metro. This approach involves little complexity – it can be implemented by the city or transport authority directly – and is less controversial than some other mechanisms that may require imposing taxes on developers and existing businesses and residents. However, it may require significant upfront investment and financial risk for the city.
2. Negotiated payments from developers: The city authority secures payments from local developers to fund infrastructure improvements associated with specific large developments, for example, the agreement between London and the Battersea Power Station developers to partly fund the Northern Line extension. This approach also involves little complexity – it can be

[154] See Sofia Municipality (2018).

implemented through direct negotiation between the city or transport authority and developers seeking planning consent.

3. Zonal or city-wide tax increment: A zonal tax increment is a tax uplift or levy imposed by the transport authority and local government on commercial and/or residential properties set to benefit within a specified area around the site, to capture part of the windfall gains accruing to property owners. This increment could be applied to various taxes, for example, business rates, council tax or stamp duty. This approach is more complex as it is likely to require legal or tax reform and central political support for the increases in tax. Focusing on areas of benefit may reduce objections – but requires difficult decisions over boundaries. A city-wide tax increment avoids the boundary question and has the potential to raise very large sums to support strategic infrastructure investment, but may not provide sufficient targeting of areas that gain the most benefit (see, for example, the Community Infrastructure Levy for Crossrail in London).

Resource implications and key requirements

Setting and raising local tax revenues, whether as part of general taxes or as a form of land-value capture, requires adequate fiscal decentralisation and sufficient administrative capacity. This requires time and the development of significant resources. Increasing and collecting administrative fees for permits or end-user tariffs for utility services is less complex but requires political will and enforcement capacity.

Implementation obstacles and solutions

Fiscal decentralisation may be hampered by a lack of local administrative capacity and processes. Therefore, ensuring adequate local capacity and procedures is often an important first step. While fiscal decentralisation may take a long time to implement, local authorities can improve their financial position by raising funds through increased fees and commercial revenues. This also gives the local authorities the opportunity to experience and demonstrate their capacity to plan, budget and operate municipal infrastructure, and can subsequently help increase confidence among local and central authorities that further fiscal decentralisation is feasible.

"Strong fiscal accountability and transparency are also likely to reduce or prevent corruption, thus leading to more efficient spending of public resources."

F2. Improved financial accountability and transparency

Description

The financial management of a municipality should ensure accountability and transparency. This can improve the confidence of and support from central governments, the international community, civil society and local and international businesses – which in turn can lead to greater receipt of public and private funds. Accurate financial management can also enable better insight into which groups benefit most from the municipal budget, including various marginalised groups. Strong fiscal accountability and transparency are also likely to reduce or prevent corruption, thus leading to more efficient spending of public resources. Robust public financial management can also improve a city's creditworthiness and enable better access to commercial debt and capital markets. Municipalities can take several steps to enhance their financial accountability and transparency, including: (i) ensuring that they apply accrual accounting in order to provide an accurate financial picture, which is then used to make fiscal and budgetary decisions; (ii) ensuring that well-defined systems are in place, with clearly defined auditing and control functions; (iii) publishing municipal financial statements regularly; and (iv) using any financial information combined with data analytics to identify inefficiencies, mismanagement or fraudulent behaviour.

Resource implications and key requirements

Accrual accounting goes beyond reporting on cash coming in and going out. It also looks at assets and liabilities to provide a more complete and accurate picture of the financial position of a municipality. Preparation of accrual accounting requires the identification and valuing of all municipal assets and liabilities. Such inventory requires significant resources. In addition, substantial resources and time

are needed for the development of the necessary IT systems for accounting purposes, data analytics and information management. For example, over the course of five years, together with the World Bank, Rijeka in Croatia planned and transformed its financial management and accounting system to one based on transparent accrual accounting and improved accountability.[155]

Implementation obstacles and solutions

Lack of local technical, administrative or financial capacity may prevent necessary improvements to municipal financial management. There may also be vested interests that do not want increased transparency. These obstacles or challenges may be addressed through adequate capacity-building programmes and well-defined action plans aimed at improving governance structures, with clearly defined auditing and control functions.

Belize has identified a need to address fiscal accountability as one factor that could contribute to improvements in municipal management. Despite beginning the process of decentralisation in the 1990s, there has since been little impact as local authorities do not have the technical, administrative or financial capacity to manage funds and powers effectively. The World Bank worked alongside the Belize government to leverage grant resources from the Public-Private Infrastructure Advisory Facility (PPIAF) to support capacity-building around fiscal management. Key activities included conducting a diagnosis of fiscal conditions, training practitioners in financial management, revenue collection, use of financial management software and designing a new accounting approach that included balance sheets.[156]

This case of Belize demonstrates the absence of basic accounting procedures in many countries and cities, and the importance of supporting policies, for example, information and capacity-building (see policy option G5) to support improvements in fiscal accountability.

In Cape Town, South Africa, despite significant efforts to decentralise powers to local authorities, poor sector budgeting is significantly limiting urban development decisions. Current reporting of spending is ineffective (often done in a highly technical manner), resident participation occurs after decision-making and there is no clear public framework that outlines the process of spending decisions. This in turn leads to a lack of trust in the local authority and further lowers public participation. To address this, the Development Action Group convened a number of civic organisations to discuss a range of issues, but all were centred on the absence of accountability. From this measure, two civic coalitions were created. These held workshops and developed resolutions to improve accountability, while encouraging greater civic participation via their web-based platform. This case in Cape Town demonstrates the importance of stakeholder engagement as well as the value of providing a platform for local people to query and challenge public fiscal spending as well as bridging key knowledge gaps.[157]

F3. Improved creditworthiness

Description

Creditworthiness is essentially an opinion by third parties, mainly lenders, on whether debt service payments will be made fully and on time. A lender that has confidence in the long-term financial strength of the borrower, and in the ability and willingness of the municipality to pay its obligations in full and on time, will regard that municipality as creditworthy.

In order to attract private financing, cities must demonstrate that they are a viable investment proposal, that they are able to effectively manage their own finances and are transparent in this process. Improving the creditworthiness or the credit rating of a city is a gradual process partly limited by factors external to the city, such as the wealth and credit rating of the national authorities. However, there are measures a city can take to strengthen its creditworthiness.

[155] See World Bank Institute (2013).
[156] World Bank (2017).
[157] See Kumar and Fester (2019).

A city seeking to improve its creditworthiness should focus on improving conditions in the following five broad categories:

- economic conditions, for example, municipal income levels and economic diversification
- financial management, including transparency, administrative capacity, professional management of debt and liquidity
- budgetary performance or operating balance
- budgetary flexibility, for example, own-source revenues
- current level of debt, debt servicing requirements and other liabilities.

While some of these dimensions are difficult to change in the short term, a city may develop a creditworthiness action plan as a start. This allows the city to set a current baseline and realistic ambitions and aims, as well as identify problematic and priority areas that need to be addressed. Key areas may include managing expenditure, developing a pipeline of public infrastructure projects to be funded and undertaking its own 'shadow' credit rating assessment.

An official municipal credit rating issued by a well-recognised rating agency has several benefits. Beyond improving access to private financing, it represents and guides a process aimed at improving the financial management of a municipality. This also provides valuable information, to the benefit of central authorities and potential donors. It also further enhances the accountability of the city management as it clearly shows the financial rigour of the municipality.

Resource implications and key requirements

A creditworthiness enhancement programme is not difficult to develop, but is challenging to implement. It is also important to remember that improving the creditworthiness or the credit rating of a city is a gradual process. For example, Zaprešić in Croatia has worked to improve its creditworthiness since the establishment of a local treasury system in 2012. The city was assessed in 2016 as having a low credit risk, with a high level of budget liquidity, and has been placed in the top 5 per cent of exceptionally transparent local budgets in Croatia.[158,159]

In Uganda, Kampala's improvements in municipal revenue can be attributed to the work undertaken by local authorities since 2012 to improve its creditworthiness, delivered through a city-wide strategic plan. Despite the city's growing economy, Kampala has faced significant financial problems, including poor revenue collection, weak governance and reliance on government transfers. This limited the city's ability to invest in improving its local services and implementing infrastructure projects. In light of this situation, a strategic plan was developed to strengthen the governance and service delivery. The plan identified key areas to target, including human resource development, better record management and stronger monitoring processes.

To improve its administrative capacity, the city received assistance from the World Bank and PPIAF, enabling the Kampala authorities to develop more robust accounting approaches. The plan was extremely successful and in one year, Kampala managed to increase its revenues by 86 per cent. However, as identified creditworthiness is a continuum, this requires continuous effort and commitment to financial management.

Implementation obstacles and solutions

Pursuing a credit rating can be an administratively and technically challenging task, as it requires addressing any gaps or weaknesses in financial management. Cities can seek support from the national level or through the capacity-building programmes of international organisations, for example, the C40 Cities Finance Facility. Incorporating a resourcing timeline into a creditworthiness action plan allows cities to effectively manage their staff and budgets for this process.

External factors may include an unstable wider economy and, as the national assessment forms an

[158] See World Bank Group and Government of Austria (2018).
[159] See City of Zaprešić, Finance and Budgeting Department (n.d.).

element of a credit rating, this may impact a city's ability to obtain private finance. Improving these external factors can be beyond the remit of a city. However, active stakeholder engagement with the national government and other surrounding cities or municipalities can enable the sharing of best practice and improvement of wider conditions.

F4. Financial incentives or financial support schemes for green investments

Description

Local governments can help provide financial incentives and funding in support of green investments. Such support schemes can include targeted subsidy schemes like the Seoul solar panel programme. It can further include the setting-up of municipally owned or funded green banks or the setting-up of investment funds (for example, the Melbourne green investment fund) that can provide green loans or dedicated risk-sharing facilities for private banks. Local authorities may also work with local banks in order to facilitate green lending solutions with little or no financial contribution from the city.

One example is Frederikshavn, Denmark, which developed specific soft loans for the energy renovation of housing to meet its climate change targets. A new product was developed by the municipality in agreement with local banks featuring lower interest rates and a longer maturity period relative to typical market conditions. The municipality does not allocate any funds to the financing scheme. Instead, soft loans are provided by the partner banks that bear all the risk. They run a creditworthiness check of homeowners, to decide who gets a loan and under what conditions.

Resource implications and key requirements

Providing financial incentives will require budgetary commitments and may be administratively demanding for the local government. Significant technical capacity will also be required to identify how to configure and apply incentives. Incentives can target lower income brackets of the population to address social equity concerns associated with energy poverty. Both the central and local policy frameworks need to accommodate the setting-up of incentive and funding schemes by local authorities.

Potential private-sector participation

Local governments can work with commercial banks to provide financial incentives, therefore sharing or shifting the financial burden from the public to the private sector.

Implementation obstacles and solutions

The provision of direct financial support is financially demanding for local governments and can target fuel-poor homes. It is good practice to undertake a comprehensive cost and benefit analysis of retrofitting to zero carbon for all households that are in fuel poverty and provide targeted funding for these homes.[160] One of the first programmes to tackle energy poverty was the Warm Front programme in the United Kingdom. A total of 2.3 million households received assistance from the scheme. Grants were offered for improvements such as loft insulation, cavity wall insulation and heating system improvements.[161]

The success factors associated with energy efficiency measures include gaining and maintaining consumer trust, an effective communication and marketing strategy, training and qualification schemes to ensure that worker qualifications keep pace with the technical complexity of buildings and the targeting of trigger points such as household renovations or sales.[162] The provision of financial incentives and favourable financing should only come after energy efficiency building codes have been enacted and adequate enforcement and compliance mechanisms are in place for building construction and retrofits.

[160] See National Assembly for Wales (2018).
[161] See UK Parliament (2013).
[162] See Committee on Climate Change (2016).

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Abbreviations and acronyms ↘

Abbreviation	Definition
AfDB	African Development Bank
ADB	Asian Development Bank
CDP	corporate development programme
CEE	central and eastern Europe
CTCN	Climate Technology Centre and Network
DH	district heating
the EBRD, the Bank	European Bank for Reconstruction and Development
EIB	European Investment Bank
EPC	energy performance contracting
ESCO	energy service company
EVSE	electric vehicle supply equipment
EU	European Union
GCAP	Green City Action Plan
GDP	gross domestic product
GHG	greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICLEI	ICLEI - Local Governments for Sustainability
IDB	Inter-American Development Bank
ITDP	Institute for Transportation and Development Policy
IT	information technology
JSC	joint stock company
OECD	Organisation for Economic Co-operation and Development
LCV	light commercial vehicle
LSE	London School of Economics and Political Science
NGO	non-governmental organisation
PM	particulate matter
PPP	public-private partnership
PSC	public service contract
SEE	south-eastern Europe
SEMED	southern and eastern Mediterranean
UCLG	United Cities and Local Governments
UN	United Nations
UNDP	United Nations Development Programme
WHO	World Health Organization

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One Exchange Square
London EC2A 2JN
United Kingdom
www.ebrd.com

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