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On the eve of Rio+20, governments are challenged to build a world that is safer, cleaner and healthier in a 'do more with less' environment. Such a sustainable world starts with sustainable cities. Partnering to invest in sustainable and resilient cities is therefore central to achieving this goal.

ANGEL GURRÍA, OECD Secretary-General

The City of Chicago welcomes the upcoming collaboration between the C40, the OECD, and US HUD, as we look to develop new solutions to the most pressing sustainable infrastructure problems facing cities around the world. During my time in office I have focused heavily on how strategic infrastructure investments can build a stronger foundation for job creation, economic growth and sustainable development, and I look forward to working with other mayors and ministers to explore new approaches to these common challenges.

RAHM EMANUEL, Mayor of Chicago

City leaders understand better than anyone that the stakes are high. We know that on our rapidly urbanizing planet, cities hold the key to unlocking the solutions to climate change. The upcoming OECD roundtable provides an ideal opportunity for Mayors and Ministers to establish clear principles for local-national collaborations that will be communicated to Rio+20 conference in June.

MICHAEL R. BLOOMBERG, Mayor of New York City and Chair of the C40 Cities Climate Leadership Group

The OECD Roundtable of Mayors and Ministers will be an invaluable opportunity for us all to share best practices. We know that cities and regions that embrace sustainability and resiliency will have a built-in competitive edge in attracting jobs and private investment, which is a top priority for the Obama Administration. Through these collaborations with our municipal leaders, we will be able to develop effective, place-based solutions that support our cities and help them grow sustainably.

SHAUN DONOVAN, Secretary, US Department of Housing and Urban Development
Introduction

The fourth meeting of the OECD Roundtable of Mayors and Ministers: Mobilizing Investments for Urban Sustainability, Job Creation and Resilient Growth took place on 8 March 2012 in Chicago. The meeting was hosted by the City of Chicago and co-organised with the City of Chicago, the C40 Cities Climate Leadership Group and the US Department of Housing and Urban Development. Mayors and ministers from 22 countries attended the event. Discussions focused on the role of cities in achieving sustainable economic growth and how to mobilise investments in sustainable infrastructure as a mechanism for attaining long-term sustainability in urban areas. In parallel policy dialogues, participants further explored financing solutions for key urban infrastructure sectors: buildings, transportation, public utilities and energy.

The meeting resulted in two concrete outputs:

(1) The Chicago Proposal for Sustainable Cities

(2) The Chairs’ Communiqué

These texts present principles and conditions for financing sustainable cities and can contribute to ongoing discussions, such as the Rio+20 Conference, as well as the work of pertinent OECD committees.

The OECD Roundtable of Mayors and Ministers provides a unique forum for mayors and ministers from developed and emerging economies to discuss common challenges and best practices in a closed-door and policy-oriented setting. With participation from mayors, national ministers, former heads of state, and civil society, the Roundtable creates the necessary links between urban policy actors, acknowledging that metropolitan policies in many domains – including economic development, transportation, education, innovation, housing and the environment – are dependent on co-ordination and synergies between different levels of government. The Roundtable benefits from OECD experience in helping national governments design urban development policies that balance economic efficiency and environmental sustainability (www.oecd.org/gov/cities).

This report documents the discussions at the 2012 Roundtable in Chicago:

- The main outcomes of the roundtable
- Proceedings of the discussions that transpired in its three main sessions and four policy dialogues (Box 1)
- The agenda and list of roundtable participants
- The issues paper that was prepared for the roundtable and distributed in advance to roundtable participants to provide an overview of the main issues and to inform discussions at the meeting
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OUTCOMES
POLICY ALIGNMENT ACROSS LEVELS OF GOVERNMENT

1. **National policies are key.** The greener the national framework, the easier it will be to address city-specific challenges and to ensure coherence and consistency between national and local policies. The national framework is particularly important with respect to pricing signals for non-localised environmental externalities, such as greenhouse gas emissions. In many countries, moreover, reform of urban revenue sources requires central government action.

2. **Remove barriers to local government action.** While national governments may face challenges to immediately implementing holistic reforms, they can start by eliminating current regulations that impair the potential for local governments to act.

3. **A holistic approach is necessary.** Efforts to green urban revenue sources may have undesirable distributional consequences. These concerns should be addressed in the context of the entire tax and benefit system, rather than trying to ensure that each individual policy measure serves both environmental and equity objectives.

4. **Keep the policy package simple.** While the design of specific instruments will in many cases need to be quite sophisticated, it is important to keep the overall policy package as simple as possible. An overly complex system of environmental taxes, charges and fees makes impact assessment harder and raises the risk of unintended interaction effects or perverse incentives.

MAKING EXISTING REVENUE SOURCES GREENER

5. **The overriding aim is to internalise externalities.** To the extent possible, taxes, charges and fees should be designed to confront agents with the full marginal social cost of actions affecting the environment. At a minimum, this means eliminating the anti-green bias of some existing local tax provisions and the perverse incentives created by many environmentally harmful subsidies.

6. **Road-pricing policies can help reduce traffic and pollution.** Road-pricing policies like congestion charges are likely to be most effective at reducing traffic and emissions when differentiated according to the level of congestion, peak hours or both. Linking pricing structures to vehicle type as well may strengthen incentives to switch to greener forms of transport.

7. **Transport-related revenue sources require coherent planning.** The use of congestion charges to achieve green objectives will be more effective and less costly to users when alternative mobility solutions are available; governments might consider earmarking such revenues to finance public transportation.

8. **Fees for water and waste services should be more responsive to actual resource use.** Fees and prices should be used to signal the scarcity of the resources being consumed, as well as covering the costs of infrastructure investment and service provision.
9. Where appropriate, intergovernmental grants should take into account environmental objectives. This will help compensate cities for the opportunity costs of green behaviour (e.g. the loss of development charges if an area is designated as a public park). Specific or matching grants can compensate local governments for the spillovers generated by green policies that incur localised costs but generate broad benefits.

10. Carbon finance should be more accessible to cities. Cities and central governments can work together to make better use of carbon-offsetting programmes (e.g. the Clean Development Mechanism and Joint Implementation) and to ensure that these (and other) resources may come directly to cities. One of the conditions of carbon finance should be use of a harmonised emission inventory for cities.

11. Infrastructure needs related to new development should be internalised in the financing of development projects. The costs of sprawl, for example, may be recovered from developers through development charges or other financial contributions. In a similar fashion, new developments should also, where appropriate, incorporate the cost of investment in alternative water sources.

12. National-local co-operation is essential to developing access to new forms of green finance. There are a number of potential instruments for tapping private finance in support of urban greening and aligning private investment with policy priorities. These include private-public partnerships, green bonds and green infrastructure banks. However, they each raise potential problems of insufficient size, moral hazard and opportunism. Cities thus need to co-operate with one another and with central governments to build capacity and ensure that they possess the requisite financial, technical and legal expertise, as well as sufficient bargaining power, when negotiating private sector financing.
Chairs Communiqué

Fourth Meeting of the OECD Roundtable of Mayors and Ministers
Mobilizing Investments for Urban Sustainability, Job Creation and Resilient Growth
8 March 2012, Chicago, United States

Co-chairs: Angel Gurría, OECD Secretary-General; Rahm Emanuel, Mayor of the City of Chicago; Michael Bloomberg, Mayor of the City of New York and Chair of the C40 Cities Climate Leadership Group; Shaun Donovan, State Secretary, US Department of Housing and Urban Development

The Fourth Roundtable of Ministers and Mayors was held in Chicago, Illinois, on 8 March 2012. The main conclusions that emerged from the day’s discussion can be summarised in five points.

1. PARTNERSHIPS BETWEEN CITIES AND CENTRAL GOVERNMENTS ARE CRUCIAL IN GREENING OUT ECONOMIES

Cities can, and must, take a leading role in greening our economies and achieving urban sustainability. They pursue these goals, however, in the context of national and international policies. Coherence between national and local policies is vital: initiatives taken at different levels can at times be mutually reinforcing, but, if poorly co-ordinated, they can also undermine one another. The better the national framework, the easier it will be for cities to address their specific challenges in ways that enhance rather than undermine their competitiveness.

This Roundtable has provided a unique opportunity for city leaders and representatives of national governments, international organisations, businesses and NGOs to define a new partnership in support of urban sustainability, one that brings together public and private actors at all levels to ensure a co-ordinated, multi-level approach to integrating economic, environmental and social objectives in building greener, more sustainable cities.

2. SUSTAINABLE CITIES CAN GENERATE PROSPERITY WHILE ENHANCING EQUITY

We do not face a choice between green and growth: we can and must pursue both. Addressing sustainability in cities can deliver economic development by enhancing productivity, fostering innovation and opening new markets. Concerted action by cities, when complemented and reinforced by central governments and other actors, can generate prosperity while mitigating environmental risks, making our cities more resilient. Moreover, a number of cities have shown how well designed programmes to address issues like energy efficiency can contribute to the development of new skills and the creation of new employment, often targeting groups that face particular challenges on the labour market. Green growth can thus also enhance social inclusion and equity.
3. EFFECTIVE POLICIES REQUIRE ACCESSIBLE FINANCE

This Roundtable confirms that effective policies will depend on a combination of political will, technological capacity and accessible finance. In times of economic hardship, mobilising finance is particularly difficult. Huge investments are needed to make our cities greener. Cities will have to work hard on “greening” their finances, while leveraging new sources of funding. A set of draft proposals for “Greening Urban Finance” can help guide these efforts. The current draft, which should form the basis for further discussion in an effort to achieve consensus on best practice in this area, focuses on three broad areas:

- Getting the national framework right, facilitating policy coherence across levels of government and ensuring that central government policies do not inadvertently prevent local government action
- Ensuring that existing sources of urban finance encourage more environmentally responsible behaviour
- Tapping new sources of finance and better aligning private investors’ incentives with environmental policy goals

The overriding aim must be to confront agents with the marginal social cost of actions affecting the environment.

4. THE CHALLENGE IS GLOBAL, THE SOLUTIONS ARE LOCAL

The aim of this Roundtable was to identify common challenges and propose practical solutions. The discussions have shown once again that there is no “one-size-fits-all” model for implementing urban sustainability. Strategies will differ across cities as they do across countries, according to urban forms, economic and institutional settings, resource endowments and particular environmental pressure points. Despite these differences, cities have great potential to share local solutions, to transfer practices across national and continental boundaries, and to work collaboratively to advance innovative new approaches for financing critical infrastructure.

At the same time, national governments must recognise and embrace the critical role they can play in establishing the right framework to advance solutions that do not inadvertently limit or prevent local action.

5. LEARNING FROM POLICY AND MAKING ADJUSTMENTS WILL BE CRITICAL TO ENSURING A MORE SUSTAINABLE FUTURE

Making cities green and sustainable is a complex challenge that we will tackle over many years. It is likely to require experimentation and revision of policies along the way. Assessing progress, correcting mistakes and building on success will be crucial. This Roundtable has underlined the need to develop reliable, timely indicators that will allow cities to measure the tangible impacts of investments and policy interventions, and to adjust course accordingly. It has also underscored the need for continuing dialogue among cities and governments to promote policy learning and facilitate co-operation.

The Roundtable therefore calls upon the OECD:

- To establish benchmarks for monitoring progress in partnership with cities, including the C40 Cities Climate Leadership Group
- To develop “OECD Recommendations outlining options on financing urban sustainability”
- To present these outcomes at the fifth OECD Roundtable of Mayors and Ministers
Executive Summary

“Rebooting growth and jobs, protecting the environment, and promoting social cohesion is the magic policy triangle at the top of our policy agenda.”

ANGEL GURRÍA, OECD Secretary-General

In March 2012, ministers, mayors, and non-state actors from across the globe gathered in Chicago with a common goal: to secure urban sustainability, job creation and resilient growth through investments in sustainable infrastructure. The meeting focused on how to mobilise requisite investment to bring about sustainable and equitable economic growth in cities worldwide.

With rapid global urbanisation upon us, cities can – and must – be leaders in driving the international community towards a more sustainable and resilient development path. Population growth is expected to increase by 29% to 9 billion by 2050. This growth will increase demand for vital natural resources, such as clean water (55%) and energy (80%), and represent a 50% increase in greenhouse gas emissions.

There is no escaping the dwelling and population trends, but we can react with smart solutions that will safeguard future generations and create a more equitable world. This starts with identifying existing and new financial resources and creating an enabling environment to build a better environment and renew and improve our existing infrastructure.

“We’ve all talked about green jobs but now we’re really starting to see the economic consequences. And those cities that are not participating are finding all of a sudden that they are being left at a disadvantage.”

MICHAEL BLOOMBERG, Mayor of New York City

As Michael Bloomberg, Mayor of New York City and Chair of the C40 Cities Climate Leadership Group, underscored, “We are facing a worldwide recession and sluggish economic recovery, but the drive to create a sustainable urban future has not slowed down.” The 22 countries that came together in Chicago to define a sustainable way forward prove that Mayor Bloomberg is right – the political will exists. The large number of countries represented at the Roundtable is a show of their commitment to sustainability and a positive indication that the tide is changing.

Greening our cities does not happen in a vacuum, and it certainly does not happen by itself. There are several important components that together can create an enabling environment to set cities, national governments and non-state actors on the
right course. “The Chicago Proposal on Financing Sustainable Cities”, a major output from the fourth meeting of the OECD Roundtable of Mayors and Ministers, is an important first step in identifying the major ingredients for a global sustainable cities recipe. This 12-point proposal breaks the process down into three main steps: (1) aligning policy across levels of government; (2) making existing revenue sources greener; and (3) tapping new sources of finance.

We are at a crossroad: it’s not whether we spend on new infrastructure, but whether we seize the opportunity to green it as we renew and build it. Therefore, it is essential to create co-ordinated policy efforts and innovative financing that connect different levels of government and bring private sector capital to the funding mix. The progress that roundtable participants made in Chicago is significant—it puts forth a road map that can help create jobs and spur sustainable social and economic growth that is much needed as we come out of the global economic crisis.

Sustainable development is the economic development tool of the 21st century. As showcased by roundtable participants, cities are taking measures today to secure a more sustainable future, and the outstanding efforts and projects being implemented on the ground will create a tipping point. As pointed out by Mayor Emanuel in his welcome address, the OECD is an outgrowth of the Marshall Plan that helped to rebuild Europe after World War II, and today, it is taking a leading role in supporting cities to grow sustainably.
SUMMARY OF THE PROCEEDINGS

INTRODUCTION

On the eve of Rio+20, governments are taking stock of the world’s progress in promoting and achieving sustainable development. How much progress has the world made? And what can the international community do to make the next 20 years more sustainable than the last? As human wellbeing can no longer be separated from economic growth, the answers to these questions affect us all.

Sustainable development, like climate change, is a global, national and local issue. Action and co-operation among stakeholders at all levels – international, national and local government, private companies and citizens – is needed to forge a more sustainable and equitable path. In the wake of the global financial crisis, it is even more important that these actors work together to finance and implement a shift to sustainable urban growth.

“...if you go green you mobilise the economy.”

RUUD LUBBERS, Former Prime Minister of the Netherlands

Mayors and ministers from across the globe gathered in Chicago on 8 March 2012 for the fourth meeting of the OECD Urban Roundtable, Mobilizing Investments for Urban Sustainability, Job Creation and Resilient Growth. These leaders affirmed that this moment in history provides us with the opportunity to expand our knowledge and choose innovation over stagnancy. They worked together to assess and share existing best practices, to identify common challenges and to uncover financing solutions to secure sustainability in cities, which are home to over half of the world’s population, 67% of energy consumption, and growing environmental challenges.

The discussions confirmed that there is no “one-size-fits-all” model for implementing urban sustainability, and that strategies will differ across cities as they do across countries, according to urban form, economic and institutional settings, resource endowments and environmental pressures. Yet, the Roundtable participants’ work uncovered existing financing mechanisms and identified new approaches, shared local solutions, and set an agenda for change: a road map to help advance innovative new approaches for financing critical infrastructure, and ultimately achieve sustainability in our urban areas, create jobs and ensure resilient growth. A key point of agreement was that national governments have a critical role to play in establishing the right frameworks for financing urban sustainability.

The Roundtable concluded with a Communiqué from the four Chairs, which provides a framework for local and national governments to work together to increase investments for sustainable urban growth. The Chairs’ key conclusions were:

1. Partnerships between cities and central governments are crucial in greening our economies
2. Sustainable cities can generate prosperity while enhancing capacity
3. Effective policies require accessible finance
4. The challenge is global, but the solutions are local
5. Learning from policy and making adjustments is critical to ensure a more sustainable future

This summary of the proceedings of the OECD Roundtable of Mayors and Ministers is organised around the five main conclusions of the Chairs Communiqué. It draws from discussions that occurred during the three main sessions – (1) The role of cities on the road to Rio+20, (2) Investing in cities for sustainable economic growth, and (3) Financing cities: The way forward – as well as the four policy dialogues that focussed on key urban infrastructure sectors: buildings, transportation, public utilities and energy.

The purpose of this report is to provide an account of the fourth meeting of the OECD Roundtable of Mayors and Ministers and to help translate ideas into action to build better policies for better lives. The solutions to today’s challenges not only exist but they are within our reach.

CONCLUSION 1
PARTE RSHIPS BETWEEN CITIES AND CENTRAL GOVERNMENTS ARE CRUCIAL FOR GREENING OUR ECONOMY

Participants at the fourth meeting of the OECD Roundtable of Mayors and Ministers came together to share best practices and experiences, and to uncover financing solutions for sustainable urban development that will spur job creation and resilient growth. The starting point for discussions was that green and growth can and must be simultaneous; their common mission was to define how to pursue and finance such growth.

“Cities are where we are going to see change. The efficiencies that are created in cities – in transportation, in energy, in policy, will drive that change.”

JOHN DICKERT, Mayor of Racine, Wisconsin, US

Mayors and ministers contended that building and strengthening partnerships between cities and central government is a critical first step in greening our economy. No one group can tackle the challenges alone; the greening of our economy is a collective call, and real, measurable progress can only be made when all actors work cohesively.

“We live in stormy times, facing headwinds in our economy, in our environment, in our society. We have to find innovative ways to foster new sources of growth and new sources of jobs in our economy. This growth needs to be smart, needs to be green and needs to be inclusive. Green and growth can go together; in fact, they must go together.”

ANGEL GURRÍA, OECD Secretary-General

Jorge Fernando Quiroga, Former President of Bolivia, Club of Madrid; Ilmar Reepalu, Mayor, City of Malmö; Ruud Lubbers, Former Prime Minister of the Netherlands, Club of Madrid; Hannu Penttila, Deputy Mayor of Helsinki, Finland; Anders Flanking, State Secretary for Environment, Sweden
Urban greening can provide cities with the competitive advantage and positive reputation that will attract private sector investment.

SUSANA VILLARAN, Mayor of Lima, Peru

The message from roundtable participants was clear: a strong national framework is necessary to empower and enable cities to address their individual challenges. How this framework looks will differ in each country according to national circumstances. In some countries, e.g. Australia and the United States, national legislation cannot mandate action at the state and local level, but the central government can still help to foster and ensure good practices through various mechanisms.

Cities account for 70-80% of energy use and greenhouse gas emissions, as noted by Anders Flanking, State Secretary for Environment, Sweden, and are dynamic engines of growth and change. They are at the heart of the green economy and have a leading role to play. The startling projections for growth in population, urbanisation and resource consumption suggest that cities will face additional stresses to both the environment and infrastructure. The role of cities in shifting the paradigm and converting to a green economy will thus continue to grow.

Cities are already playing an important role and taking action. As Michael Bloomberg, Mayor of New York City and Chair of the C40 Cities Climate Leadership Group, emphasised, cities are leading the charge with little involvement or support from the national government. Based on his work in New York City and the work of other C40 cities, he underscored just how much progress is being made at the local level.

Still, cities cannot act alone, and in many countries they are not acting alone. Municipal-level measures typically fall within a national or international context of overarching policies, so vertical integration is key. In order to successfully transition to a greener, more equitable economy, cities and central governments must forge new partnerships and co-operate more effectively so that resources are used more efficiently and initiatives have a broader impact. This co-operation should also be extended within the central government and local-level government entities.

The US Partnership for Sustainable Communities – a joint initiative among the United States Department of Housing and Urban Development (HUD), Department of Transportation (DOT), and Environmental Protection Agency (EPA) – presented by Shaun Donovan, Secretary, US HUD, is an example of inter-agency co-operation and a mechanism to help cities and regions discover, preserve and build on the uniqueness of their local strengths, to create a sustainable future (Box 2). This horizontal co-operation enhances the ability of central governments to work with cities and local-level actors. This type of multi-level governance is cost-effective, promotes equity, and enables sustainable green growth.
The United States Department of Housing and Urban Development, Department of Transportation and Environmental Protection Agency joined forces to implement the Sustainable Communities Initiative. This programme aims to stimulate more integrated and sophisticated regional planning to guide state, metropolitan, and local investments in land use, transportation and housing, as well as to challenge localities to undertake zoning and land-use reforms.

The three agencies guide US cities and states in developing more environmentally sustainable approaches to living based on six priorities:

- Provide more transportation choices;
- Promote equitable, affordable housing;
- Enhance economic competitiveness;
- Support existing communities;
- Co-ordinate and leverage federal policies and investment;
- Value communities and neighborhoods.

Shaun Donovan, Secretary, US Department of Housing and Urban Development (www.sustainablecommunities.gov)

Anthony Albanese, Minister for Infrastructure and Transport and Leader of the House of Representatives, Australia, gave another example of how the national government can be a guiding force in the absence of authority over state and local governments. In Australia, the national government can use its economic position to indirectly shape policy and action at the sub-national level. Infrastructure Australia was established by the national government to serve as an advisory board – made up of national, state, local and private sector representatives – to review and recommend projects for national funding based, in part, on sustainability criteria.

Incorporating sustainability standards changed the way funding decisions were made in Australia. A new “whole economy” approach places importance on the effect of the project economy-wide, leading to more viable national investments in infrastructure.

“Urban public transport becomes very viable as a national investment when you look at the impact to the whole economy, including health and other infrastructure costs.”

Anthony Albanese, Minister for Infrastructure and Transport and Leader of the House of Representatives, Australia

Many examples showcased throughout the day in both the roundtable sessions and sector policy dialogues illustrated the power of co-operative efforts. Sir Richard Leese, Leader of the Council, Manchester, UK, shared the City of Manchester’s experience in the transport sector. Manchester worked with ten local authorities to address important transportation needs, to keep communities connected and to support the city’s post-industrial economy by extending the light rail networks to the ten surrounding communities. At the time, the region was faced with a tight fiscal environment, so project funding through traditional channels (i.e. public sector funds) was difficult. However, the communities worked together to find an innovative solution, combining local, private sector and national funds to expand the light rail network. These efforts connected more citizens to public transportation, improving their quality of life and reducing stress on the environment (Box 3).
BOX 3. Expanding connectivity, improving lives

Manchester is a city that successfully made the transition from an industrial city to a post-industrial city. The success of its transition is due in part to the importance Manchester placed on international, national and local connectivity. Connectivity was the driver behind the city’s effort to introduce and expand street tram service among ten local communities that share a 25-year history of partnership. Given the tight national fiscal environment, these communities had to find alternative financing for their urban infrastructure expansion project.

Working together, the ten communities conducted an economic analysis to determine the program’s viability based on its contribution to value-added taxes and employment. The ten local authorities agreed to share the cost, 60% locally and 40% through private sector and national public sector funds. They successfully secured USD 1.8 billion.

As a result of this co-operation, the ten communities formed into a Greater Manchester metropolitan authority with statutory powers for economic development, transport and regeneration.

Sir Richard Leese, Leader of the Council, Manchester, UK

The US, Australian, Manchester and Warsaw initiatives illustrate the positive impacts of horizontal and vertical co-operation and partnerships. In today’s world, as roundtable participants stressed, co-operation extends beyond levels of government and includes private sector entities, non-governmental organisations, international organisations, and citizens. This multi-level governance approach is more conducive to integrating economic, environmental, and social objectives for building greener, more sustainable cities.

BOX 4. Cities coming together for common good

The public transport sector in Warsaw comprises state-owned railways operated by the city metropolitan railway, city underground, trams and buses (publicly and privately owned), and represents 60% of transportation.

To make public transport more attractive to residents of Warsaw and surrounding communities, the city implemented an interoperable ticket valid for all methods of public transportation. This regional initiative required co-operation between the city of Warsaw and 20 surrounding municipalities. Unlike Manchester, where a decision-making body oversaw the collaborative effort, the City of Warsaw signed voluntary agreements with the participating communities.

The programme aimed to improve connectivity, increase ridership and ease of use, and decrease greenhouse emissions in the sector. Individual transport (e.g. motor vehicles) currently represents 80% of emissions in the Warsaw’s transport sector. However, as public transport use becomes more popular, individual transport will decline.

A win-win initiative, the combined public transport ticket policy benefits both residents in Warsaw and participating communities and the environment.

Hanna Gronkiewicz-Waltz, Mayor of Warsaw, Poland

The Mayor of Warsaw, Poland, Hanna Gronkiewicz, spoke about the transport sector in her city, and the driving role it has played in forging partnerships to support green, resilient growth. The city worked with 20 surrounding municipalities to create a combined public transport ticket to facilitate travel within Warsaw and serve participating municipalities. The programme reduced greenhouse gas emissions in the local transport sector and made ridership easier across systems (Box 4).

“States and cities do not face a choice between green and growth: they can and must pursue both. There is no one-size-fits all solution for implementing sustainability.”

RETA-JO LEWIS, US Special Representative, Global Intergovernmental Affairs
CONCLUSION 2

SUSTAINABLE CITIES CAN GENERATE PROSPERITY WHILE ENHANCING CAPACITY

Participants at the roundtable emphasised cities’ essential role in enhancing productivity, fostering innovation and opening new markets to deliver economic growth that is green, inclusive and resilient. They emphasised that coherence between national and local-level policies is vital to empowering cities to take action for improved urban infrastructure. Cities matter for global sustainable development; they are integral actors in addressing pressing economic, environmental, and social issues where the damaging effects of our unsustainable path are manifesting and affecting people’s lives.

Mayor Bloomberg, speaking as Chair of the C40, highlighted the C40 cities’ outstanding efforts and successes in implementing policies related to climate change. The network of cities is proving that when cities act locally they can also have an impact globally. Mayor Bloomberg stressed that of the 4 700 actions pursued by the C40 cities, the most effective actions were implemented in areas where the cities exercised the broadest powers; “This is not an accident … that’s where mayors have the authority to go and implement change in transportation, solid waste management and public-private buildings.”

MAYORS PROVIDED EXAMPLES OF HOW THEIR CITIES ARE REALIZING THE SYNERGIES HIGHLIGHTED BY MS. LEWIS AND WHAT ACTIONS THEY ARE TAKING TOWARDS INCLUSIVE GREEN GROWTH. THEY UNDERSCORED THEIR CORE ROLE AS IMPLEMENTERS OF NATIONAL POLICIES RELATED TO CLIMATE CHANGE, WATER REFORM AND WASTE MANAGEMENT, AS WELL AS THEIR FAR-REACHING SPHERE OF INFLUENCE AS THE LEVEL OF GOVERNMENT CLOSEST TO CITIZENS. CITIES ARE AGENTS FOR CHANGE AND CAN INFLUENCE THE FUTURE BY LEADING BY EXAMPLE AND CREATING OPPORTUNITIES FOR SIGNIFICANT BEHAVIOURAL CHANGE IN FAVOUR OF CLEANER, GREENER HABITS.

The importance of cities will only increase as urbanisation continues to grow at unprecedented rates, with one million people moving to cities every week. This trend is particularly strong in the developing world, in Asian, African and Latin American cities. This rate of change, as Reta-Jo Lewis, US Special Representative, Global Intergovernmental Affairs reminded roundtable participants, places enormous challenges on capacity and resources, but also presents opportunities to realise synergies across social, environmental and economic objectives.

Rémi Dorval, Executive Vice President, Vinci; Jan O’Sullivan, Minister for Housing and Planning, Ireland; Gregor Robertson, Mayor of Vancouver, Canada; Raphael Bostic, Assistant Secretary, Office of Policy Development and Research Department of Housing and Urban Development

Remember that cities work down at the level where people actually have their economy and their health influenced by the climate.

MICHAEL BLOOMBERG, Mayor of New York City and Chair C40 Cities Climate Leadership Group

The BOX 5. Key conditions for urban sustainable economic development

If you can’t measure it, you can’t manage it. Harmonise and standardise carbon reporting among all the world cities.

Cities in economically advanced nations hold the key. Support financial transfers of technology and expertise from economically advanced cities to developing country cities.

Empower local-level authorities. Amend or remove policies or practices that may inadvertently impede action at the local level.

Unleash financial resources. Give cities greater access to the already existing financial resources and international mechanisms that encourage sustainability and shrink the world’s carbon footprint.

Mayor Bloomberg, Mayor of New York City and Chair C40 Cities Climate Leadership Group
Many participants noted that adopting green growth strategies opens cities up for sweeping gains in productivity, increased innovation and job creation. These opportunities are available to all cities; and, as Mayor Emanuel pointed out, they are happening in the roundtable host city of Chicago. The city is implementing innovative financing instruments to fund state-of-the-art improvements in water-related infrastructure and building retrofits to save energy and reduce greenhouse gas emissions. These investments are creating jobs – 18,000 jobs over the next decade in the water sector and 2,000 highly skilled and technical jobs in the buildings and energy sector. Chicago is also developing the next recreational frontier by cleaning up the riverfront and integrating it into the city’s park system. These infrastructure upgrades are opportunities, Mayor Emanuel explained, “allowing us to grow economically, attract businesses, investing in what I call a 21st century economy by having a 21st century infrastructure.”

“One lesson that we have learnt is that whatever projects you embark upon, they have to be able to sustain you in times of financial difficulty as well as when there is plenty of money in the economy.”

JAN O’SULLIVAN, Minister for Housing and Planning, Ireland

BOX 6: National initiative builds better municipalities

The Integral Urban Sustainable Development (DUIS) programme in Mexico is a national housing and development initiative aimed at improving the quality of life for residents. It focuses on creating an environment that provides low-cost housing with access to all basic services (energy, water, waste management, etc.) and connectivity. The national government works in partnership with local authorities and developers to create this environment by offering incentives to finance and assist housing developments.

Incentives include technical aid and assistance to local authorities; follow-up support for the project; technical support on transportation, solid waste and hazard prevention; and assistance with urban management, feasibility studies, licenses and permits. This assistance improves partners’ technical capacity, resulting in a more streamlined and efficient process.

Financial support from the national government supports infrastructure, urban facilities, construction and housing acquisition. Government subsidies for low-cost housing also ensure the sale of a percentage of the properties.

Working together, the national government and local authorities built a better environment for their citizens, and the local authorities provided quality housing to a range of residents, including underserved populations.

The programme improved the lives of local residents, created job and generated revenue to boost the economy.

Sarah Topelson de Grinberg, Undersecretary for Urban and Regional Development, Mexico

Sarah Topelson de Grinberg, Undersecretary for Urban and Regional Development, Mexico, provided an example of how cities can pursue sustainable strategies that generate prosperity while enhancing equity. In Mexico, the government is implementing measures under Integral Urban Sustainable Development (DUIS), a program that focuses on building residential housing in areas where integral planning is paramount to the livelihoods of people and businesses (Box 6). This national programme provides a host of incentives – including technical aid and support, and assistance to local authorities, developers and local governments – to invest in important infrastructure improvements and assure delivery of services and connectivity. With subsidies from the government, the risk to developers and local governments is low. This programme shows how co-operation between...
the central and local government as well as the private sector can result in access to low-cost quality housing, a better-built environment, and technical knowledge transfer from national to local authorities.

“...We must find ways to show that sustainable projects and programmes are not only better for the people and the planet but also for profits.”

GUY MORIN, Mayor of Basel, Switzerland

Participants argued that the world no longer has a choice between green and growth, because our common future depends on a more equitable and sustainable development path. Green and growth are compatible, and cities can and must lead the way; but as Gerald Tremblay, Mayor of Montreal, stated, “We must amend policies that may impede our actions at the local level and acknowledge the importance of the management of water and the links between poverty, water, food, energy and jobs.”

A green economy must also be an inclusive economy. When planning and implementing green growth initiatives, social equity and poverty eradication also need to be assessed. Investments in urban infrastructure, notably in the key sectors discussed during the roundtable can help address these important issues through job creation, new skills, more reliable and efficient services and better urban system and land-use decisions. Developing countries, in particular, have a lot to gain from these improvements.

Amy Fraenkel, Regional Director, United Nations Environment Programme, Regional Office for North America, spoke to roundtable participants about the role of the green economy in developing countries. In her view, the green economy is the way forward for developing countries, explaining that with technology transfer and capacity building, developing countries can leapfrog over the unsustainable path followed by the industrial world. However, they need access to financial resources and mechanisms, such as the Clean Development Mechanism (CDM), to implement climate change mitigation projects that address sustainability, and often also transfer new technologies, skills and jobs. Several participants supported making it easier for cities to access directly CDM and similar funds.

Abha Joshi-Ghani, Sector Manager, Urban Development and Local Government Unit, Sustainable Development, World Bank, also emphasised the importance of capacity building and partnerships with the developing world and the importance of technology transfer to avoid being locked into an unsustainable growth path that is not easy to change.

“...Sustainability investments should be targeted in way that also adds value for the most vulnerable members of our society.”

YORGOS KAMINIS, Mayor of Athens, Greece

When the global community meets at the Rio+20 meeting in June 2012, the role of cities will figure high on the agenda, as the world renews its global commitment to sustainable development.
CONCLUSION 3

EFFECTIVE POLICIES REQUIRE ACCESSIBLE FINANCE

Effective policies depend on a combination of political will, technological capacity and accessible finance. Participants argued that these ingredients could serve to catalyse funding to bring about meaningful change. Discussions on finance mobilisation considered how to create incentives to stimulate green growth and sustainable development in cities, what financing mechanisms are already in place and used by cities to fund infrastructure, how these instruments can be adopted to fund green investments in cities, and how cities can better attract emerging financing mechanisms for urban sustainability.

The Roundtable Chairs presented “The Chicago Proposal for Financing Cities” to serve as a guiding tool and basis for policy dialogue on financing urban infrastructure in key sectors (p. 9). The 12-point proposal aims to support local and national decision makers with mobilisation of funds for sustainable cities.

The points provide specific measures for:

1. Aligning policy across levels of government
2. Making existing revenue sources greener
3. Tapping new sources of finance

Many contributions during the policy dialogues supported these points, re-enforcing the evidence that cities are developing creative, effective financing solutions. Participants shared their successes and failures and offered ideas on what steps to take.

Getting the national framework right

Keiichi Ozawa, Vice Minister for Land, Infrastructure, Transport and Tourism, Japan, shared three efforts that Japan has pursued to achieve sustainable green economic growth, which have brought together public, private, and non-governmental forces. First, Japan developed a national policy framework that supports green cities and promotes a low-carbon society. Next, the country formulated policies to convert cities into low-carbon societies and industrial structures. Finally, they promoted virtually zero energy consumption for all public buildings, making necessary changes to legislation to attract private sector investment to finance energy savings and implement technology for energy storage.

Greening existing financing sources

Shaun Donovan, Secretary, US Department of Housing and Urban Development, shared the US experience, touching upon strategies to encourage private sector investments in sustainable development projects. In the US, regional planning in particular is being supported to encourage more integrated approaches to sustainable development. Private-sector investments can be guided by public policies. For example, tax and zoning codes play a huge role in the private sector’s transportation investment decisions. The US incentivises sustainability planning and co-ordinating across agencies through prioritised funding increases.

Secretary Donovan highlighted that the US federal government needs to better align infrastructure investments with areas that have comprehensive development plans. He explained that the US cannot mandate development plans, but it can create incentives for them through competition for infrastructure investments. The US is also working with the private sector to create self-financing mechanisms, such as projects funded by the energy savings from retrofits.
Tapping new revenue streams

Gregor Robertson, Mayor of Vancouver, Canada, shared Vancouver’s road to becoming the world’s greenest city by 2020. His city epitomises green growth objectives. Over the last few decades Vancouver has grown in population by 28% and increased jobs by 28%, all while meeting stringent greenhouse gas emission targets. Mayor Robertson attributed this to the city’s efforts to build partnerships, invest in key sectors such as public transport and green buildings, and monitor greenhouse gas emission reductions. Like many cities, finances are tight and funding from the federal government is limited, so the city has focused on building partnerships with the private sector to build infrastructure for electric cars and telecommunications (Box 7).

Box 7. Leveraging private sectors funds for sustainable urban infrastructure

The City of Vancouver is preparing to become the world’s greenest city by 2020. Partnering with the private sector, Vancouver is generating revenue and creating jobs by investing in sustainable urban infrastructure.

Electric cars: The city has partnered with the private sector to invest in public electrical vehicle charging infrastructures to prepare the city for a transition toward greater use of electrical vehicles. The city has been able to leverage 10 to 15 times city investments to put charging stations in place. The city rents “smart poles” and finances new generation infrastructure.

Smart poles: Through public-private partnerships, Vancouver is building “smart poles”, which combine antennas for cell phones and WiFi with LED streetlights and electrical vehicle charging. These initiatives and partnerships with the telecommunication and utility companies consolidate and improve services to customers and can build revenue.

Gregor Robertson, Mayor of Vancouver, Canada

Financing urban sustainability in key sectors

Roundtable participants stressed that greening urban infrastructure has the potential to solve many of the economic and environmental challenges facing cities and the world — in developed and developing countries alike. By getting energy, heating and cooling buildings, and transportation right, a significant portion of greenhouse gas emissions could be avoided, technology and skills transferred, and jobs created. Therefore, mobilising investments to renew and build greener systems clearly makes sense. Combined with community outreach focused on long-term behaviour change, actions in these areas will have a far-reaching impact, and if done well, can address social equity issues. There are many low hanging fruit options with relatively low cost interventions that can yield tremendous benefits.

“The Chicago Proposal for Financing Sustainable Cities is about getting the right financing tools in place and building the right partnerships.”

Mary Sue Barrett, President, Metropolitan Planning Council, Chicago

To increase financing for sustainable green investments in urban infrastructure, participants agreed that horizontal and vertical co-operation is imperative for creating an environment where investments make sense, have an impact and are safe. Participants noted that decision makers can do a lot to make existing revenue sources greener while tapping new sources of finance; this echoes the main points put forth in “The Chicago Proposal of Financing Sustainable Cities”.
1. Cities have power to use taxes and fees to incentivise green behaviour or punish dirty behaviour from consumers.

2. Public-private partnerships need an adequate regulatory framework, some of which could be developed locally, but with support from a national framework.

3. National governments can play a role to reduce the perverse incentives or disincentives to help cities attract green funds and strengthen the regulatory framework.

In four policy dialogues, participants discussed financing sustainable urban infrastructure in key sectors: buildings, transportation, public utilities and energy.

“One-quarter of the changes that are required will come from behaviour changes.”

Sir Richard Leese, Leader of the Council, Manchester, UK

Buildings

The world’s built environment is extremely energy intensive and polluting. Buildings typically account for 35-40% of a city’s energy consumption. Therefore, making changes in this sector can have an impact at the local, national and global level by reducing energy consumption and related greenhouse gas emissions. There are two main types of investments in the building sectors: (1) new, green buildings that are high performing, and (2) renewal of existing built stock to increase building performance. The financing mechanisms ranged from regulation in Lima to private sector funds brokered by public sector entities in Melbourne.

The main conclusions from the session highlighted the need to first implement “low hanging fruit” solutions like energy efficiency but also recognised the importance of regulation, both national and state, to create incentives to secure financing. In this sector, a transparent regulatory framework should have clear objectives, goals and parameters that address the different challenges for new construction, retrofits, and rehabilitation. A proper framework is also essential; creating common metrics is paramount in the buildings sector to create a system that can measure and document savings. As Mayor Bloomberg pointed out, “if you can’t measure it, you can’t manage it.” Without a baseline it is impossible to measure progress or encourage technological innovations. Creating a standard system of carbon accounting will allow information to be shared locally and across oceans.

Successful examples included (1) using public sector funds at the municipal level to help fund low-interest loans for financing retrofits of privately-owned buildings; (2) public-private partnerships to reduce the up-front costs of energy-efficiency improvements; and (3) intergovernmental grants and loans. In addition, several of the participants focused on how programmes to support energy-efficiency could benefit low-income households.

Claes Nilas, Permanent Secretary of State, Denmark provided an example of how to finance more investments in green buildings through energy investments in the social housing sector. There is strong support in Denmark for sustainability and investment in the building sector. Binding national targets to reduce carbon emissions by 40% compared to 1990 levels by 2050 demonstrates the political will to help spur investments. The Danish National Building Fund finances renewal of buildings that are part of the social housing stock. This fund is financed by payments from each social housing development (Box 8).
The social housing sector in Denmark accounts for one-fifth of the total Danish housing market. Therefore, energy improvements in this area can have an impact on national carbon emission reductions. Denmark established a national building fund to finance renewal of social housing buildings. The purpose of the fund is to subsidise new buildings, modernise and renovate older buildings and fund social unemployment activities in socially deprived areas. The fund is financed by the social housing developments through government loan subsidies.

Claes Nilas, Permanent Secretary of State, Denmark

**Transportation**

Participants noted that the challenge in transport was not primarily in finding the right the financing tools but rather in assembling the right partnerships, getting planning right and altering behaviour patterns. Investments in transport can be transformative in nature and have a huge impact on the economy. As highlighted by MarySue Barrett, President, Metropolitan Planning Council and policy dialogue chair, these investments can jump start economies, accomplish sustainability goals and build back in participation of disadvantaged people and communities. Rethinking transport is key to transforming and building more sustainable cities.

While investments in transport are often financed by a combination of national, local, and private sector funds, city-initiated solutions to transportation are equally important. Many participants shared information about how they layered the financing for transport investments, how they built the public support, and how they measured the results.

Mohamed Sajid, Mayor of Casablanca, Morocco, credits the mobility study in his city as the impetus and driving force to develop a green and responsive transportation plan to respond to the needs of the population. The long-term plan emphasises connectivity through multiple public transportation choices. Given that it is estimated to cost USD 6 billion, it will be carried out in stages. However, through public-private partnership the private sector, national government, and local-level governments each contribute a third of the costs.

Initial plans are underway to construct a streetcar line that extends 30 kilometres and serves a large portion of the city, including hospitals and universities.

A modal split programme in Luxembourg will be financed through a mix of contributions from the federal budget, the rails and road budget, car taxes, a carbon tax on gasoline, and municipal-level funding. Claude Wiseler, Minister for Sustainable Development and Infrastructure, Luxembourg, stated that his country is targeting a modal split of only 44% personal vehicle, 25% walking and biking and 19% public transport.

As evidenced during the transportation policy dialogue, countries are addressing sustainable transport solutions in many ways. The roundtable offered decision makers an avenue to share experiences, but the learning process continues. Participants pointed to areas where information gaps still exist, like values capture, emerging risk, appropriate risk sharing, appropriate parameters for public-private partnerships, and new emerging models of finance.
Municipalities, as participants noted, have much authority over waste and water, so they can leverage financing and encourage behaviour through local taxes and fees that serve as an incentive to green these services. This gives cities more opportunity to control the outcome in these sectors. As with the other sectors, however, the local and national regulatory framework needs to be conducive to investment. The national government can play an important role on this front in reducing perverse incentives, or disincentives, to help cities attract green financing. The cities of Amsterdam, Malmo and Helsinki all shared examples to support the important role that cities have in greening the public utilities sector.

The City of Amsterdam addresses waste, energy and water management together, creating a “circular economy” that results in very little waste (Box 9). The process is environmentally friendly and cost effective.

Box 9. Garbage is gold

In Amsterdam, “Garbage is gold”, and the economy is circular. Waste, energy and water management are combined to address important municipal concerns. The waste energy plant in Amsterdam, Afdal Energie Oost, is located beside the water cleaning plant, which allows the slush from the water plant to be made into energy. The energy produced from Amsterdam’s waste helps to run the city’s trams, and excess heat is used to provide district heating and hot water.

Carolien Gehrels, Deputy Mayor of Amsterdam, The Netherlands

In Malmo, less than 3% of the 550,000 tonnes of garbage collected each year (i.e. household and industry trash) ends up in a landfill. The rest is recycled, reused or regained as energy. The biogas converted from the waste heats 95% of all city buildings through district heating and fuels half of the city’s fleet of buses. The amount of energy Malmo generates from waste per year is equivalent to 173,000 cubic metres of oil or USD 100 million worth of oil.

The private sector also plays a role in increasing the sustainability of the utility sector. Through a public-private partnership, Suez Environnement is supplying low-water showerheads and equipment to monitor and control water use for lawns to encourage conservation at the household level. This results in the reduction of water use and better waste management. Suez argued that forging partnerships between the public and private sectors to deliver public utilities services makes sense because both share environmental and ethical goals and standards in the water, wastewater and solid waste sectors.

Energy

There is great potential to improve urban sustainability by investing in the energy sector. If we get energy right, we can meet environmental and economic challenges; but as mayors around the table emphasised throughout the day, mobilising financing in a prolonged tight fiscal environment can be onerous. Like in other sectors, some progress in the energy sector – e.g. in energy, carbon and financial savings – can be achieved through public awareness and behavioural change. Partnerships between the public sector (local, state and national) and private sector (utilities, etc.) provide many of the “low hanging fruit” solutions that require a relatively small investment.

The conclusions in the energy policy dialogue echoed those of other dialogue sessions: (1) Many cities have the power to shape their energy future through policies, taxes and user fees to modify behaviour; (2) Cities need to put in place a proper framework to partner with the private sector to leverage sufficient funding and execute projects.
In the energy dialogue, Lord Mayor Doyle, City of Melbourne, Australia, described how his city devoted financial resources to reduce carbon emissions and save residents and businesses money on their energy bills. Melbourne partnered with the National Australia Bank to provide green loans to improve the environmental performance of 1 200 commercially and privately owned buildings in the city. In order to offer this programme, Melbourne successfully sought legislative changes at the sub-national and state government to levels, as well as incentives from the federal government in the form of tax breaks. The project in Melbourne combines a number of elements of success: a national framework and needed policies were put in place, and existing sources of finance in the form of green loans encouraged environmentally responsible behaviour. The project is helping the city to meet its sustainability target of net zero emissions by the year 2020.

Another innovative example is the City of Chicago’s plan to launch an Infrastructure Trust to fund investments in key infrastructure. It will help to finance retrofits in the city’s schools, libraries and parks. The city will be investing USD 200 million throughout the city, saving USD 20 million over time in energy savings and creating 2 000 high skilled technical jobs.

“...the solutions are local, and they already exist. Mayor Bloomberg said, “The world’s cities have the markets, the private capital, the expertise and the motivation to support a new and hopeful industry, and create growth for our people.” Therefore, many Roundtable participants argued that cities need the authority to act.

The C40 Cities Climate Leadership Group is a prime example of large cities coming together to share experiences, practices and solutions, and its partnership with the World Bank shows that cities can partner with a range of stakeholders, including international organisations. As Mayor Bloomberg...
explained, the C40-World Bank partnership offers C40 cities the opportunity to obtain technical and financial support for green projects, leveraging funds from both the public and private arms of the World Bank. Access to this type of financing, as described by the Mayor, will accelerate the process of sustainability, job creation and resilient growth. The C40 joins cities from advanced, developing and emerging economies, so the C40-World Bank partnership can facilitate urban sustainability at all stages from renewal to new infrastructure. Bringing decision makers together facilitates knowledge sharing and builds capacity to access funding and technical assistance at the scale required to move toward a sustainable future. This level of co-operation should transcend national and continental boundaries.

**Box 10. World’s largest cities tackling climate change**

The C40 Cities Climate Leadership Group (C40) is a network of large and engaged cities from around the world committed to implementing meaningful and sustainable climate-related actions locally that will help address climate change globally. The organization’s global field staff works with city governments, supported by our technical experts across a range of program areas.

The C40 was created in 2005 by former Mayor of London Ken Livingstone, and forged a partnership in 2006 with the Cities program of President Clinton’s Climate Initiative (CCI) to reduce carbon emissions and increase energy efficiency in large cities across the world. Under the leadership of then Mayor of Toronto David Miller, who served after Mayor Livingstone as C40 Chair, the organization advanced programs and partnerships that drew international recognition for the role of cities as leaders in climate action. C40 was further strengthened in 2011 via a grant from Bloomberg Philanthropies and the full integration of the CCI Cities Program.

The current chair of the C40 is New York City Mayor Michael R. Bloomberg, who – with the support of the C40 executive leadership team – guides the work of the C40, along with the members of the C40 Steering Committee: Berlin, Hong Kong, Jakarta, Johannesburg, Los Angeles, London, New York City, Sao Paulo, Seoul and Tokyo.

http://live.c40Cities.org/

**Conclusion 5**

**Learning from policy and making adjustments will be critical to ensuring a more sustainable future**

Achieving urban green growth requires an iterative process. On-going evaluation and modification of approaches will be key to success and will require indicators to measure impacts of urban investments and policy interventions.

The Roundtable thus calls upon the OECD to establish benchmarks for monitoring progress in partnership with cities, to develop recommendations on financing options for green urban development, and to present these outcomes at the next OECD Roundtable of Mayors and Ministers. Through this sustainability improvement cycle – continuous action on urban green development, followed by shared review – we can make steady progress along the path toward green growth.

“There is a long road ahead, but we are confident that if we keep working together we can make swift progress towards achieving cleaner, more prosperous environments not only for today’s 3.5 billion city dwellers, but also for the future.”

**Angel Gurría**, OECD Secretary-General
**BOX 11: C40 Networks ahead of the curve**

**Sustainable Urban Development Network**

Every city is made up of communities, whose infrastructure, buildings and population can interact to create a sustainable way of living. The C40 Sustainable Urban Development Network will strengthen how local government practitioners work together to make sustainable communities possible in cities around the world. What cities do individually, as well as collectively through the C40, is increasingly setting the agenda for the entire world.

**Financing Network**

At the 2012 C40 Summit, C40 will launch a new effort to support C40 cities interested in collaborating on an on-going basis to identify financing solutions. Two closed-door sessions will be dedicated exclusively to this effort, in which cities will share good practice, policies and first-hand experience. An additional two sessions will give C40 city leaders from Europe, Africa and Latin America an opportunity to present innovative projects to a broader audience of infrastructure investors and other capital providers.


**NEXT STEPS**

The chairs and participants of the 2012 OECD Roundtable of Mayors and Ministers put forth a call to action to the global community to improve the world’s sustainability for generations to come. Viable solutions exist, and one important avenue is wide open for green investment that can be the engine of long-term change and sustainability. Cities can lead the way, and build a better tomorrow, today.

There is overwhelming consensus that cities can, and must, play a role in achieving sustainable urban development. The roundtable put forth two important documents to serve as guides for international, national and local level decision makers as they pursue urban sustainability. “The Chicago Proposal for Financing Sustainable Cities” and the “Chair’s Communiqué” will be taken to Rio+20, to provide a funding framework for governments committed to sustainable economic development in cities.
FOURTH MEETING OF THE OECD ROUNDTABLE OF MAYORS AND MINISTERS

AGENDA
Mobilizing Investments for Urban Sustainability, Job Creation and Resilient Growth

8 March 2012
Chicago Cultural Center

8:00-9:00 Coffee and pastry reception (GAR Hall Rotunda – 2nd Floor)

9:00-9:30 Opening session (GAR Hall, 2nd Floor)
Opening remarks from Angel Gurría, OECD Secretary-General and Chair of the OECD Roundtable of Mayors and Ministers

Welcome address
- Rahm Emanuel, Mayor of the City of Chicago
- Michael Bloomberg, Mayor of the City of New York and Chair of the C40 Cities Climate Leadership Group
- Shaun Donovan, Secretary, US Department of Housing and Urban Development

9:30-11:00 Investing in cities for sustainable economic growth (GAR Hall – 2nd Floor)
Co-Chairs: Rahm Emanuel, Mayor of the City of Chicago and Shaun Donovan, Secretary, US Department of Housing and Urban Development

Participants will explore whether a sustainable, “green growth” model can serve as a potential exit strategy from the global economic crisis, and particularly, how investment in municipal infrastructure, innovative technology, and quality of life can deliver economic, environmental and social gains. Given the considerable need for maintaining existing assets and building new ones, and the need for new financial structures and strategies to fund the, public resources will need to leverage and induce private sector investment. And within the public sector, national and local and other levels of government will need to work together.

- How can investments in sustainable urban infrastructure projects spur short-term job creation and economic opportunities as well as long-term economic recovery?
- How can urban and national leaders attract investment?
- How to ensure that green investments are socially inclusive and contribute toward poverty alleviation?

11:00-11:30 Coffee break (GAR Hall Rotunda – 2nd Floor)

11:30-13:00 The role of cities on the road to Rio+20 (GAR Hall, 2nd Floor)
Co-Chairs: Angel Gurría, OECD Secretary-General and Michael Bloomberg, Mayor of New York and Chair of the C40 Cities Climate Leadership Group

- Michael Bloomberg, Chair of the C40 Cities Climate Leadership Group, Messages from the C40 to Rio+20
13:00-14:30  Lunch – International Women’s Day Lunch (Preston Bradley Hall – 3rd Floor)
- Rahm Emanuel, Mayor of the City of Chicago, Introductory remarks
- Karen Kornbluh, Ambassador of the United States to the OECD, “Improving Women’s Economic Empowerment”
- Angel Gurria, OECD Secretary General, Announcing the launch of the OECD Gender Browser
- Mary Sue Barrett, President of the Metropolitan Planning Council, “Progress, Pitfalls, and Prospects for Women in Chicago”
- Kim Campbell, Former Prime Minister of Canada, The Club of Madrid’s initiative on Women’s Political Participation and Leadership

14:30-15:30  Policy dialogues: Financing urban sustainability in key sectors

Dialogue 1A: Buildings (Millennium Park Room – 5th Floor)
Chair: Raphael Bostic, Assistant Secretary, US Department of Housing and Urban Development
Rapporteur: Abha Joshi-Ghani, Manager, Urban Development and Local Governments Unit, World Bank

The building sector is critical to improving urban sustainability in terms of energy consumption, emissions, land use and quality of life. Greening the building sector presents a major growth opportunity for both the public and private sectors but the returns on investment are uncertain. Many cities also have large roles with respect to urban form, and urban finance can be an important instrument to increase urban density.

- How can local public finance help to green the building sector?
- How can public policies stimulate private sector investment in green buildings?
- What role do lending institutions and insurance companies have in financing green buildings?
- What public-private and public-public partnership opportunities exist to green the building sector?
- What enabling frameworks can cities and national governments create to stimulate investments in this sector?

Dialogue 1B: Transport (Washington Room – 5th Floor)
Chair: MarySue Barrett, President, Metropolitan Planning Council
Rapporteur: George W. McCarthy, Director, Metropolitan Opportunity, Ford Foundation

Cities have important responsibilities for transport investments and public transit service. They have huge leverage power through these investments to improve the sustainability, equity and resilience of their cities. Large infrastructure is frequently jointly financed with state or national governments, requiring well-functioning public-public partnerships. In addition, many of these investments involve participation of the private sector, e.g. because they finance, design, construct or operate the infrastructure.

- How can national, regional, and local governments work together to fund and design sustainable transport infrastructure?
- How can successful public-private partnerships for sustainable urban transport be created and implemented?

15:30-16:00  Coffee break (Foyer, 5th Floor)
16:00-17:00 Policy dialogues: Financing urban sustainability in key sectors (cont.)

Dialogue 2A: Public Utilities (Millennium Park Room – 5th Floor)
Chair: Jorge Quiroga, Former President of Bolivia and Member of the Club of Madrid
Rapporteur: Ellis J. Juan, Coordinator, Vice-Presidency of Sectors and Knowledge, Inter-American Development Bank

Many utilities, such as waste and water services, are being carried out under the responsibility of cities, either by public bodies or private actors. Access to safe drinking water and sanitation services can also, in developing countries, be a pathway out of poverty. The way in which these services are financed has a large impact on water consumption, waste production and recycling. Some financial instruments, such as concessions, where private actors are paid according to realised volumes, are clearly less suitable if the goal is more sustainable (i.e. less) consumption.

- Which financial mechanisms for utilities are needed for green, strong and fair cities?
- What innovative financing tools have been developed in the waste and water management sectors?
- How can investments in public utilities contribute to cities’ resiliency to urban economic and environmental shocks?

16:00-17:00 Policy dialogues: Financing urban sustainability in key sectors (cont.)

Dialogue 2B: Energy (Washington Room – 5th Floor)
Chairperson: David Miller, Former Mayor of Toronto and former C40 Chair
Rapporteur: Joaquim Oliveira-Martins, Head of Division, Regional Development Policy, OECD

Because cities consume between 60 and 80% of global energy production worldwide, there is potential to improve urban sustainability by “greening” this consumption. Some cities are active as renewable energy producers, use district heating, or have implemented smart grids, but in many cases, cities are co-operating with the private sector for renewable energy production. Financial instruments in the hands of cities, such as energy related fees and charges could shape this co-operation and determine its effectiveness.

- What are the crucial conditions for effective public-private partnerships in the energy sector?
- How can cities effectively increase investment in renewable energy sources?
- How can public authorities create incentives to stimulate greener consumption in the energy sector?

17:00-18:00 Financing sustainable cities – The way forward (GAR Hall, 2nd Floor)

- Rahm Emanuel, Mayor of Chicago, Announcement of “The Chicago Proposal for Financing Sustainable Cities”
- Angel Gurría, OECD Secretary-General, Conclusions from the Chairs

18:30 Reception and dinner hosted by the Chicagoland Chamber of Commerce Foundation
LIST OF PARTICIPANTS
List of Participants
OECD Roundtable of Mayors and Ministers

8 March 2012
Chicago, United States

CHAIRS
Angel Gurría
OECD Secretary-General
Rahm Emanuel
Mayor
City of Chicago, Illinois
Michael Bloomberg
Mayor
City of New York, New York
Shaun Donovan
Secretary
Department of Housing and Urban Development

MAYOR AND MINISTERS

Australia
Anthony Albanese
Minister for Infrastructure and Transport
Leader of the House
Robert Doyle
Lord Mayor
City of Melbourne

Canada
Gregor Robertson
Mayor
City of Vancouver
Gérald Tremblay
Mayor
City of Montréal

Czech Republic
Tomas Chalupa
Minister of Environment and Urbanisation

Denmark
Claes Niøs
Permanent Secretary of State
Government of Denmark

Estonia
Siim Kisler
Minister for Regional Affairs
Estonian Ministry of the Interior

Finland
Hannu Penttilä
Deputy Mayor for City Planning and Real Estate
City of Helsinki

Greece
Yorgos Kaminis
Mayor
City of Athens

Indonesia
Sutanto Soehodho
Deputy Governor of Jakarta
City of Jakarta

Ireland
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Minister for Housing and Planning
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Mayor
City of Venice

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The OECD recognises the roundtable participants for coming to the table with open minds and engaging in dialogue with colleagues across levels of government. Without the support of the mayors and ministers around the table, a sustainable world will not be possible. The OECD commends these national and local-level decision makers for leading the charge and facilitating better policies for better lives.

**OECD**

The Organisation for Economic Co-operation and Development (OECD) is an international organisation of 34 countries that accept the principles of representative democracy and free-market economy. The OECD provides the preeminent policy forum where governments compare policy experiences, identify good practice, and co-ordinate domestic and international policies. It applies its wealth of information to help governments foster prosperity and fight poverty through economic growth and financial stability. It helps ensure the environmental implications of economic and social development are taken into account.

Mutual examination by governments plays a pivotal role at the OECD, which facilitates a multilateral review process through which the performance of individual countries is monitored by their peers. Discussions at the OECD level sometimes evolve into negotiations where OECD countries agree on rules of the game for international co-operation which can culminate in formal agreements by countries, for example on combating bribery or the regulation of capital movements.

In recent years, the organisation has provided a forum for countries to discuss numerous key issues relevant to international negotiations on climate change (e.g. emissions trading schemes, flexibility mechanisms, deforestation incentives, technology diffusion), and a wide range of climate change-related initiatives are underway (www.oecd.org).

**City of Chicago**

The City of Chicago, led by Mayor Rahm Emanuel, is host of the Fourth OECD Roundtable of Mayors and Ministers: Mobilizing Investments for Urban Sustainability, Job Creation and Resilient Growth. The City of Chicago leads the nation with innovative initiatives in sustainability that spur job growth and economic development. This includes developing the Chicago River into the city’s next recreational frontier, promoting energy efficiency projects downtown and in our neighbourhoods, and installing rooftop gardens on city owned buildings.

The City’s actions save money for residents and businesses and create new jobs throughout the City, all while having a profound impact on quality of life throughout the city. Creating a sustainable city requires hard work, co-operation, and a commitment from local government as well as every individual, business and institution in the city.

Mayor Emanuel and the City of Chicago strongly support the Roundtable’s goals of advancing sustainability policy and building successful collaborations between national and city governments. Through input from international
leaders and global experts, Chicago will build on its efforts to capture the critical economic benefits associated with sustainable development and energy efficiency, and help position Chicago and its residents for future prosperity. (www.cityofchicago.org/city/en/progs/env.html).

C40 Cities Climate Leadership Group

C40 is a major partner of the OECD Roundtable of Mayors and Ministers: Mobilizing Investments for Urban Sustainability, Job Creation and Resilient Growth. C40 is a global network of megacities taking action to combat climate change, by developing and implementing policies and programs that generate measurable reductions in both greenhouse gas emissions and climate risks.

C40 works in an aligned partnership with the Clinton Climate Initiative (CCI) Cities program, which was started by the William J. Clinton Foundation. Our global field staff works with city governments and critical partners, supported by our technical experts across a range of program areas. Together we facilitate active exchange, collaboration and policy and program implementation across our cities. The current chair of the C40 is New York City Mayor Michael R. Bloomberg. To learn more about the work of C40 and our Cities, please visit www.c40.org/.

US Department of Housing and Urban Development

The US Department of Housing and Urban Development (HUD) (www.hud.gov), led by Secretary Shaun Donovan, is a co-host and primary partner to the Fourth OECD Roundtable of Mayors and Ministers: Mobilizing Investments for Urban Sustainability, Job Creation, and Resilient Growth. HUD works to create strong, sustainable, inclusive communities and quality affordable homes for all.

HUD is working to strengthen the housing market to bolster the economy and protect consumers; meet the need for quality affordable rental homes: utilise housing as a platform for improving quality of life; build inclusive and sustainable communities free from discrimination; and transform the way HUD does business.

HUD’s Office for International and Philanthropic Innovation within the Office of Policy Development and Research serves as HUD’s liaison to the OECD and supports HUD’s efforts to find new solutions and align ideas and resources by working across domestic and international sectors -public, private, and civil - to further HUD’s mission (www.huduser.org/ipi).

Bloomberg Philanthropies

Bloomberg Philanthropies refers to all of Michael R. Bloomberg’s charitable activities, including the Bloomberg Family Foundation, Bloomberg LP and his personal charitable giving. Bloomberg Philanthropies works primarily to advance five areas globally: the Arts, Education, the Environment, Government Innovation and Public Health. In 2010, $279 million in grants were distributed and $20 million was invested in advocacy related initiatives. (www.mikebloomberg.com)

Ford Foundation

The Ford Foundation is an independent, nonprofit grant-making organization. For 75 years it has worked with courageous people on the frontlines of social change worldwide, guided by its mission to strengthen democratic values, reduce poverty and injustice, promote international cooperation, and advance human achievement. With headquarters in New York, the foundation has offices in Latin America, Africa, the Middle East, and Asia.(www.fordfoundation.org)

MacArthur Foundation

The MacArthur Foundation supports creative people and effective institutions committed to building a more just, verdant, and peaceful world. In addition to selecting the MacArthur Fellows, the Foundation works to defend human rights, advance global conservation and security, make cities better places, and understand how technology is affecting children and society. (www.macfound.org)
Metropolitan Planning Council

Since 1934, the Metropolitan Planning Council (MPC) has been dedicated to shaping a more sustainable and prosperous greater Chicago region. As an independent, nonprofit, nonpartisan organization, MPC serves communities and residents by developing, promoting and implementing solutions for sound regional growth.

Chicagoland Chamber of Commerce

The Chicagoland Chamber of Commerce is the host of the OECD Territorial Review of the Tri-State Chicago Metropolitan Region, the first of its kind in the United States. Together with the Chicago Council on Global Affairs, the Chamber is also co-organiser of Combating Global Headwinds: the OECD Perspective, a global policy dialogue led by Angel Gurría, Secretary-General of the OECD.

The Chicagoland Chamber of Commerce is one of the largest regional chambers in the nation, representing businesses principally from the six-county Northeastern Illinois region (Cook, DuPage, Kane, Lake, McHenry & Will) as well as member firms located in Indiana, Wisconsin and Ohio.

Founded in 1904, the Chicagoland Chamber is a private, non-profit business assistance and economic development organization, dedicated to helping member businesses grow while promoting sustainable, long-term economic development for the region as a whole. Its mission is to make the Chicago metropolitan region the most business-friendly region in America and enhance its members’ success through aggressive programs in advocacy, member benefits, services, and actionable information (www.chicagolandchamber.org).
The OECD Roundtable of Mayors and Ministers provides a pre-eminent forum to develop inter-governmental approaches for stronger, more effective urban policy. With participation from mayors, national ministers, former heads of state, and civil society, the Roundtable acknowledges the interdependence among urban policy actors and the metropolitan implications of policies in areas such as transportation, education, and environment.

Established in 2007, the Roundtable builds upon a long tradition of policy dialogue and research on urban issues at the OECD. Since 1979, OECD member countries have shared their experiences and identified best practices in urban development in terms of economic competitiveness, urban governance, local finance, infrastructure, climate change, social cohesion, immigrant integration and distressed areas (www.oecd.org/gov/cities). The Roundtable further contributes to the OECD’s extensive experience in helping national governments design urban development policies that balance economic efficiency and environmental sustainability.

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“On the eve of Rio+20, governments are challenged to build a world that is safer, cleaner and healthier in a ‘do more with less’ environment. Such a sustainable world starts with sustainable cities. Partnering to invest in sustainable and resilient cities is therefore central to achieving this goal.”

Angel Gurría
OECD Secretary-General

“The City of Chicago welcomes the upcoming collaboration between the C40, the OECD, and US HUD, as we look to develop new solutions to the most pressing sustainable infrastructure problems facing cities around the world. During my time in office I have focused heavily on how strategic infrastructure investments can build a stronger foundation for job creation, economic growth and sustainable development, and I look forward to working with other mayors and ministers to explore new approaches to these common challenges.”

Rahm Emanuel
Mayor of Chicago

“City leaders understand better than anyone that the stakes are high. We know that on our rapidly urbanizing planet, cities hold the key to unlocking the solutions to climate change. The upcoming OECD roundtable provides an ideal opportunity for Mayors and Ministers to establish clear principles for local-national collaborations that will be communicated to Rio+20 conference in June.”

Michael R. Bloomberg
Mayor of New York City
Chairman of the C40

“The OECD Urban Roundtable of Mayors and Ministers will be an invaluable opportunity for us all to share best practices. We know that cities and regions that embrace sustainability and resiliency will have a built-in competitive edge in attracting jobs and private investment which is a top priority for the Obama Administration. Through these collaborations with our municipal leaders, we will be able to develop effective, place-based solutions that support our cities and help them grow sustainably.”

Shaun Donovan
Secretary
U.S. Department of Housing and Urban Development
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I. Why is investing in cities critical to sustainable economic growth?

Business as usual is no longer an option

The global crisis has opened a window of opportunity to reconsider new sources of long-term sustainable growth. The repercussions from the worst financial and economic crisis of our lifetimes continue to be felt across the globe. In advanced economies, concern over sovereign debt, banking sector turmoil, political upheaval, and high unemployment are all weighing heavily on prospects for growth. Emerging economies are still growing at a healthy pace, but their growth rates are also moderating and they are not immune to the possibility of an economic downturn, given that global trade volumes falling strongly (OECD, 2011a). A large number of countries are still struggling to break through the middle-income "glass ceiling", and some continue to suffer under the weight of extreme poverty (OECD, 2010a).

An economic development model based on heavy resource consumption and pollution is no longer an option.

- Growing population and wealth mean greater energy demand. By 2050 the global population is expected to grow from 7 billion to over 9 billion, bringing with it higher living standards, a GDP four times larger than today and a projected 80% increase in global energy demand (OECD, 2012a).
- Greenhouse gas emissions are exceeding safe targets. Without ambitious action, greenhouse gas emissions are expected to increase by another 50% by 2050, primarily driven by a projected 70% increase in CO₂ emissions from energy use (OECD, 2012a). The world is far off course from achieving the international goal under the UN Framework Convention on Climate Change (UNFCCC) to limit the global average temperature increase to 2 degrees Celsius.
- Growing water demand threatens supplies. Globally, water demand is projected to increase by 55% globally between 2000 and 2050, with most of the increase from manufacturing (+400%), electricity (+140%) and domestic use (+130%) (OECD, 2012a).
- Declining urban air quality poses a major threat to public health. Urban air pollution is set to become the top environmental cause of premature mortality globally by 2050 (OECD, 2012a).

Delaying action will only increase costs. Delaying climate action and limiting emission cuts to the insufficient pledges made in Copenhagen and Cancun would raise the global cost of mitigation by 50% compared to starting more ambitious actions globally today, and also increase the risk of irreversible environmental impacts (OECD, 2012a). Waiting for the adoption of more advanced technologies or restricting emission reductions to the Copenhagen and Cancun pledges would require costlier, faster and larger-scale efforts after 2020. The combined "costs of inaction" could result in losses equivalent to a 14% decrease in global per capita consumption (Stern, 2007; OECD, 2008).

Human well-being can no longer be separated from economic growth. Countries all over the world are confronting a deep social crisis, and poverty and inequality have increased everywhere. The roots of this social crisis go back to before the Great Recession and stretch well beyond developing countries.

The gap between rich and poor has reached the highest level in 50 years in OECD countries, with the average income of the richest 10% of the population roughly nine times greater than that of the poorest 10%. Greater inequality raises economic, political and ethical challenges as it risks leaving a growing number of people behind in an ever-changing economy (OECD, 2011b).

The call for more social and economic justice is being made with increasing clarity and stridency in many large cities, from Tahrir square in Cairo to the Puerta del Sol in Madrid, from the streets of Tunis to the avenues of New Delhi, from pro-democracy unrest in Thailand in 2010 to the Occupy Wall Street movements in New York City, Oakland, and many other US cities (OECD, 2011c).
A new sustainable economic development model is needed, and cities are at the heart of it. Over 50% of the world’s population is now living in cities¹, and 70% of the population is expected to be urban by 2050. Within the next decade, there will be more than 500 cities of more than a million people, including several “megacities” with a population exceeding 20 million (UN Habitat, 2010). Cities are essential to making growth stronger, greener and more inclusive, for four reasons:

1. **Cities are critical drivers of national growth.** Urban areas in the OECD tend to feature higher income and productivity (Figure 1). Just 2% of OECD regions, mainly the largest OECD urban areas, produce 1/3 of all growth in the OECD (OECD, 2011d). In both India and China, the five largest cities’ economies contribute approximately 15% of national GDP—roughly three times their share of the population (UN Habitat, 2010). As centres of innovation, cities play a disproportionate role in knowledge-generation, which will clearly play a critical role in strategies to address climate change and resource scarcity.

![Figure 1. Urbanisation and income](image)

**Share of total population in predominantly urban regions and per capita GDP in OECD countries**

- **Greenhouse gas emissions.**
  Cities account for an estimated 67% of global energy use and 71% of global energy-related CO₂ emissions (IEA, 2010). The 40 large-city members of the C40 Climate Leadership Group alone represent 4% of the world population but generate 18% of global GDP and 10% of global carbon emissions (C40 & ARUP, 2011). Estimates of urban CO₂ emissions per capita vary greatly throughout the OECD, with the highest emissions recorded in US metro regions and the lowest recorded in Mexican metro regions (Figure 2).

- **Vulnerability to climate change impacts.**
  A 50 cm sea-level rise combined with baseline socio-economic growth by 2070 could triple the population at exposed to coastal flooding and expose ten times the amount of assets exposed, representing 9% of global GDP in 2070 (Nicholls, et al., 2008). Rising temperatures, exacerbated by the urban heat island effect increases the likelihood of heat waves, spikes in energy demand and power blackouts, which threaten both the local economy and public health.

- **Growing urbanisation increases pressures on the environment.**
  Within the next decade, there will be more than 500 cities of more than a million people, including several “megacities” with a population exceeding 20 million, while the average size of the world’s 100 largest cities will have reached 8.5 million (UN Habitat, 2010). The expansion of cities without adequate investment in housing and other essential infrastructure, or unmitigated growth and insufficient planning more generally, can give rise to substandard living conditions. Urbanisation also often entails a range of environmental pressures associated with the geographic concentration of people and economic activity, including severe air and water pollution, as well as the accumulation and inappropriate disposal of household and industrial waste. For instance, the OECD projects that without new policies, the health impacts of urban air pollution will continue to worsen to 2050 and become the top environmental cause of premature mortality worldwide (OECD 2012a, forthcoming).

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1. Throughout this Issues Paper, the term “city” refers to urban municipalities located in metropolitan regions.
Figure 2. Estimated CO₂ emissions per capita in OECD metropolitan regions, tonnes of CO₂ per capita (2005)

North American OECD metropolitan regions

European OECD metropolitan regions

Asian OECD metropolitan regions

Note: size of the circles corresponds to level of CO₂ emissions. Data not available for some OECD member countries. This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Urban form – and lifestyles – matter. There is a strong relationship between urban form and sustainable development.

CO₂ emissions from transport are likely to be greater in less densely populated areas than in more densely populated areas (Figure 3). However, over 2000-2050, the consumption of land for built-up areas will increase faster than total population in 30 out of 34 OECD countries. Sprawling urban form tends to be accompanied by high levels of private vehicle use, and also makes it difficult to build enough demand to efficiently deliver public services.

For example, the cost savings by containing sprawl in the United States are estimated to be USD 12.6 billion for water and sewer infrastructure and USD 110 billion for road infrastructure (OECD, 2012 forthcoming; OECD, 2002). Urban sprawl can contribute to social exclusion as well, by increasing the distance between lower-income neighbourhoods and centres of employment and effectively reducing the size of the local labour market.

When OECD functional urban regions within the same bracket for GDP per capita and national energy prices are compared, CO₂ emissions for lower-density cities can range up to roughly three times more than for cities with higher density (Figure 4). However, density is not the whole story. Other factors that come into play include availability of public transportation, lifestyle choices, and the proximity to industry, power generation and other potential sources of greenhouse gas emissions. Urban areas can become less dense – to a point – without necessarily moving far up the CO₂ emissions curve, in part due to innovation. This is important because many fast-growing cities in emerging economies are currently highly dense but are expected to become less dense over time (LILP).

For example, in China over the past 30 years, the urban population has increased by 1.6 times while the total constructed urban area has increased by 4 times. Correspondingly, the density of total constructed urban area has decreased from around 20,000 in early 1980s to around 10,000 recently. However, the relationship between density and CO₂ emissions per capita implies that whether emerging economies will urbanise following a low-density or a high-density model will make a big difference in their future CO₂ emissions. In other words, the urban form and the density of cities should be taken into account in global CO₂ emissions reduction plans.

Note: Figure shows estimates of per capita emission for all sectors; variations from the curve can partly be explained by differences in emissions from electricity consumption. Source: OECD Metropolitan Database 2011
4. The struggle for inclusive growth is most intense in cities. There is an urban paradox: wealth and economic growth concentrate in cities, but so do exclusion and poverty. Poverty in cities tends to cluster spatially into socially segregated neighbourhoods, laying the groundwork for social unrest. No city is immune from social exclusion, whether it occurs in the centre of a restructured industrial hub (Rotterdam, Lille, Detroit) or in the suburbs of some of the richest metro-regions in the world (Paris, London, Chicago). Developing country cities whose population has grown faster than their industrial base have to face the acute challenge of upgrading and incorporating slums, whose population worldwide is projected to reach 889 million by 2020 (UN Habitat, 2010).

Urban green growth provides a model for achieving sustainable development

Green growth is a key element of sustainable development and economic recovery. Green growth offers a way forward towards a new sustainable development paradigm that will respond to the triple challenge of expanding economic opportunities while mitigating the environmental and social pressures that threaten our ability to seize these opportunities. Green growth fosters economic growth and development while ensuring that natural assets continue to provide the resources and ecosystem services on which our well-being relies. To do this it must catalyse investment, competition and innovation, which will underpin sustained growth and give rise to new economic opportunities. In that sense, green growth is not a replacement for sustainable development, but a means to help achieve it (OECD, 2011g).

Cities have a unique role to play in advancing inclusive green growth and sustainable development. Cities have greater potential to create synergies between environmental and economic objectives because policies that respond to the negative effects of urban agglomeration address both environmental and economic growth priorities, for example road congestion charges, brownfield redevelopment or sustainable cost recovery for water and waste services.

Moreover, attractiveness is a key factor in a city’s economic growth and can be hampered by a poor environment. Congestion, pollution and public service constraints affect not only environmental quality, but also the efficiency of local economic activities and cities’ ability to attract firms and skilled workers. Finally, the implementation of green growth at the local level can address social issues in a more direct way than at the national level. There are clear instances where green growth initiatives can provide social co-benefits simultaneously, such as reducing social exclusion through public transit enhancements and reducing households’ energy costs through energy-efficiency retrofits or solar water heaters.

Taking these examples into account, we define urban green growth as:

Fostering economic growth and development through urban activities that reduce negative environmental externalities, the impact on natural resources and the pressure on ecosystem services. The greening of the traditional urban economy and expanding the green urban sector can generate growth (through increased supply and demand), job creation and increased urban attractiveness. These effects are in part the result of stronger interactions at the urban level among economic efficiency, equity and environmental objectives (OECD, 2011g).
Making the most of complimentary policies is also important for developing country cities. Given the importance of urbanisation as a driver of economic growth, there are strong opportunities for efforts that promote greener, more environmentally friendly cities to complement those that promote rapid economic development. A policy approach which aims to address the adverse effects of urbanisation, including environmental degradation, will also contribute to making cities more economically dynamic, thereby supporting broader national economic goals (OECD, 2012c).

Policies aimed at inclusiveness in developing country cities—and therefore at social equity and economic efficiency—often yield double benefits in the form of environmental improvements. This is the case of a mass transportation system replacing old and energy-inefficient taxis and small buses. If public transportation policies are combined with land use policies designed to combat urban sprawl, further reductions in local and global air pollution can be achieved. This is also the case with policies aimed at substituting wood and charcoal for cooking by electricity and bottled gas, as they reduce indoor air pollution and excessive deforestation (OECD, 2011h).

Investments to make cities more environmentally resilient can contribute to green growth. Given their higher densities, more complex infrastructure, and tendency to be located near coasts and waterways, cities in both developing and developed countries are particularly vulnerable to the impacts of rising temperatures, more-severe storms, and rising sea levels. Infrastructure investments to reduce vulnerability to these anticipated impacts of climate change can contribute to economic growth. For example, investments to improve the climate resilience of energy, water and transportation infrastructure can contribute to urban attractiveness as firms are likely to factor the long-term reliability of these services into their siting decisions.

The value of resilient infrastructure will also become increasingly explicit as more and more insurance companies factor in vulnerability to climate impacts into the cost of coverage. Resilient infrastructure investments can result in new jobs, particularly in occupations related to construction and engineering. Finally, improvements to urban infrastructure aimed at increasing resiliency to climate impacts can also increase the efficiency of water and energy delivery, resulting in cost savings for utilities, local governments, and consumers.

**Investing in green urban infrastructure can contribute to recovery**

Investing in sustainable cities presents an opportunity for countries to recover from the recession. To make the most of public investments for recovery, governments at all levels need to efficiently manage trade-offs and maximise synergies among policies where they occur. Policies are more likely to reach their goals when they take into account the assets specific to a particular place and seek to co-ordinate the various sectoral policies affecting that place (OECD, 2011d). Not surprisingly, several national stimulus and recovery plans have focused on urban infrastructure projects in key urban sectors such as building, transport, energy and public utilities.

### In practice

**Urban sectors have been featured in national green stimulus policies.** Korea’s “Green New Deal Policy” featured public investment in major infrastructure projects, including the expansion of a high-speed rail line, to stimulate a jump in short-term public employment. In Australia, AUD 3.2 billion were announced for energy-efficiency measures for homes. In the US, the American Recovery and Reinvestment Act (ARRA) focused on the renewable energy sector, requiring states to direct part of their stimulus funding to green investment. In Canada, green measures accounted for approximately 8% of the stimulus budget, with a particular focus on sustainable energy (Hanak, 2009; OECD, 2011i). Transport infrastructure investment has also been a core pillar of the UK economic stimulus plans as a means of generating short-term job creation (e.g. UK’s new cross-London rail link and high-speed rail line from London to the north).

**Investing in sustainable urban infrastructure can create jobs and jump-start economic recovery along a more sustainable, long-term development path.** Green urban infrastructure projects can create jobs, decrease the urban carbon and environmental footprint, and strengthen the resiliency of cities to both economic and environmental shocks. Examples of employment-intensive urban investments include: housing and construction, renewable energy and recycling, pollution control, smart grid upgrades and multi-modal public transportation systems. These initiatives generate short-term employment and improve the overall efficiency of the urban system, which should yield further economic gains over the medium-long term.

**Actual green urban infrastructure investment falls far short of need, however**

Investing in green urban infrastructure is challenged by the current global fiscal constraints in an environment where public authorities at all levels are doing more with less. Resources are scarce and all levels of government are affected. Some fiscal stimulus packages, including in the US and South Korea, focused to some extent on urban green growth initiatives, providing more room for public investment in the short term. Since 2010, however, most OECD countries have attempted to curb public debt by reducing public expenditure. As a result, many cities around the world have been faced with a reduction of their local budgets due to reduced intergovernmental transfers and decreased tax bases.

At the same time, global infrastructure investment needs are huge. The OECD has estimated that USD 35 to 40 trillion will be needed to improve the world’s infrastructure: this is about USD 2 trillion dollars per year, or 2.5% of global GDP (OECD, 2007). Major sectors that will need increases in investments include road, rails, telecoms, electricity and water. In line with these estimates, the International Energy Agency (IEA) estimates that an average of USD 48 billion per year will need up to 2030 to be invested into the energy sector alone to meet global population growth, especially for the BRIICS countries: Brazil, Russia, China, India, Indonesia and South Africa (IEA, 2011l). The same IEA estimates that a USD 46 trillion increase in energy investment would be required globally between 2010 and 2050 to deliver low-carbon energy systems, which would yield cumulative fuel savings equal to USD 112 trillion (IEA, 2010). A large share of this investment is required in cities.
The urban infrastructure deficit in developing countries is particularly acute. A high proportion of the urban population in Africa and Asia and a significant proportion in Latin America and the Caribbean live in homes and settlements with little or no infrastructure (i.e. no all-weather roads, no drains, no piped water supplies and no provision for electricity). Most urban centres in developing countries have no sewers, including many with several million inhabitants. One recent estimate suggested that the cost of removing the housing and infrastructure deficit in developing countries by 2030 would be about USD 6.3 trillion – and this would include USD 700 billion for expanding housing and infrastructure for growing urban populations (Parry et al, 2009 in UN Habitat, 2010).

Greening urban infrastructure investments are expensive, but fit within the context of global infrastructure investment needs. The total capital cost of infrastructure investments needed to mitigate greenhouse gas emissions of all C40 cities is estimated at approximately USD 3 trillion. This is not an incremental cost, but a total cost, much of which may replace other capital investments. This estimate includes investments by the private sector and all levels of government over multiple years, and does not account for the potential monetary benefits of such investments. If the OECD estimates of global infrastructure investment needs at 2.5% of global GDP per year were applied to the C40 cities, total infrastructure investment needs in C40 cities could be estimated at USD 275 billion per year. The full, multi-year investment needed to reach carbon-neutral activity in all C40 cities is thus estimated at ten times the annual infrastructure investment need in those cities. However, existing urban infrastructure investment falls far short of this. For example, investment by local governments in 20 EU cities averages USD 270 per capita per year, which, if applied to the C40 population, would equal only 80 USD billion per year. Adaptation to climate changes in cities will require significant funding as well. While estimates on the extent of these costs vary, they generally indicate the need for considerable investment. Global climate change adaptation costs alone are estimated to be between USD 49 billion and 171 billion per year until 2030 (UNFCCC, 2007) or several hundred billion dollars a year (International Strategy for Disaster Response, 2009), and cities will need to bear a large share of this cost. Individual city calculations support overall estimates of green urban infrastructure investment needs. London, for example, has estimated that meeting the Mayor’s target to reduce CO₂ emissions by 60% by 2025 will cost about GBP 40 billion and the Mayor’s existing climate change mitigation programme is projected to cost about GBP 14 billion by 2025 (KPMG and C40, 2011). These calculations cannot be extrapolated to other cities, as local circumstances vary (e.g. existing infrastructure, required improvements, costs of workforce training, and baseline data). However, an overview of the available data on capital costs of projects in different cities gives some indication of the costs of green urban infrastructure investment, specific to individual city contexts (Table 1).

### Table 1. Capital costs of selected green projects in a number of OECD cities

<table>
<thead>
<tr>
<th>Project</th>
<th>City</th>
<th>Annual GHG Savings (kt CO₂e)</th>
<th>Capital costs (USD million)</th>
<th>Annual GHG Savings (kt CO₂e/year / USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus Rapid Transit</td>
<td>Vancouver</td>
<td>1.8</td>
<td>39.2</td>
<td>45.9</td>
</tr>
<tr>
<td>Congestion charging</td>
<td>London</td>
<td>120</td>
<td>244</td>
<td>491.8</td>
</tr>
<tr>
<td>Bike sharing</td>
<td>Paris</td>
<td>18</td>
<td>132</td>
<td>136.4</td>
</tr>
<tr>
<td>Buildings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar Air Heating</td>
<td>Montreal</td>
<td>1.34</td>
<td>1.96</td>
<td>683.7</td>
</tr>
<tr>
<td>Solar Centre Receiver Station</td>
<td>Seville</td>
<td>110</td>
<td>41</td>
<td>2682.9</td>
</tr>
<tr>
<td>Urban Wind Power</td>
<td>Toronto</td>
<td>0.38</td>
<td>1.21</td>
<td>314</td>
</tr>
<tr>
<td>Solid Waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source- Separation and Methane Production</td>
<td>Sydney</td>
<td>210</td>
<td>75</td>
<td>2800</td>
</tr>
<tr>
<td>Incineration-Based CHP</td>
<td>Gothenburg</td>
<td>205</td>
<td>453</td>
<td>452.5</td>
</tr>
<tr>
<td>Water/ Wastewater</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biogass from sewage</td>
<td>Stockholm</td>
<td>14</td>
<td>15</td>
<td>933.4</td>
</tr>
</tbody>
</table>

3. This estimate is based on a rough estimate of C40 emissions of 1,750 MtCO₂e (Hoornweg et al., 2011) and an average mitigation cost effectiveness of carbon neutral infrastructure projects in cities of USD 120 CO₂e / USD million. Kennedy et al. 2009. This estimate does not account for future population growth in C40 cities. A better estimate of the total capital cost, e.g., broken down by sector, could be produced if GHG inventories were accessible for all C40 cities.
4. Given that the estimated GDP of C40 cities is about USD 11 trillion (Hoornweg et al., 2011).
5. This projection is now considered by some to be an underestimation (Parry et al. 2009), and by others to be an overestimation (World Bank, 2012).
II. How can we increase green infrastructure investment in cities?

Meeting the need for green urban infrastructure will require a new focus on green requiring upfront investments, with benefits that will sometimes occur only in the long run and risks related to uncertainty over regulatory, economic and technological developments, including energy prices and the cost of CO2 emissions. The relatively limited size of urban projects, transaction costs related to mobilising private finance and limited capacity at the urban level present constraints that will have to be addressed. Of course, these considerations are neither insurmountable nor unique to green issues. They apply to “conventional” infrastructure investment as well, a great deal of which must be undertaken in coming decades even if cities do nothing to address environmental sustainability challenges. Nevertheless, the green dimension adds a further degree of uncertainty to the process.

Both cities and investors are often tempted to focus on short-term priorities and concerns, so the challenge will be to develop viable business cases for investment in green urban infrastructure. A new focus on green urban finance and innovative finance solutions is needed, and a range of instruments can help to achieve these goals (Table 2).

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Transportation</th>
<th>Buildings</th>
<th>Water/Waste</th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxes</td>
<td>Property tax</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fees and charges</td>
<td>Congestion charges</td>
<td>Parking fees</td>
<td>HOT lanes</td>
<td>Building permits</td>
</tr>
<tr>
<td>Grants</td>
<td>General grants with environmental indicators; specific grants for environmental goods and services; matching grants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPPs</td>
<td>Concessions and Private Finance Initiatives (PFIs), energy performance contracts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land-based income</td>
<td>Development charges/impact fees</td>
<td>Value capture tax</td>
<td>Higher density building rights</td>
<td>Tax increment financing</td>
</tr>
<tr>
<td>Loans and bonds</td>
<td>Loans and green bonds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon finance</td>
<td>Clean development mechanism/Joint Implementation, voluntary carbon offsets</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cities need to do more with less. In light of the global recession, debt crisis and other financial changes, there are fewer funds available for green urban infrastructure investment. This means creating the right incentives, mobilising the private sector, and tailoring financing mechanisms to urban sectors.

1. Get the incentives right.

Urban revenue sources can either help or hinder green policy priorities. Fiscal policies – operating within and across levels of government – should be reconsidered to identify perverse incentives to green growth and sustainable development (see Corfee-Morlot et al., 2012). Relevant instruments include taxes, fees and grants, where fiscal policies and market-based instruments have the potential to provide incentives for green innovation and for green growth in key sectors. These sectors include building (property tax) and transportation (fees and charges), and water and waste (fees and charges). To the extent possible, taxes, charges and fees should be designed to confront agents with the full marginal social cost of actions affecting the environment. At a minimum, this means eliminating the anti-green bias of some existing local tax provisions and the perverse incentives created by many environmentally harmful subsidies.

Three broad principles need to be borne in mind when identifying an appropriate mix of green revenue reforms:

1. **Policy coherence across levels of government is critical.** Reforms to urban revenue sources need to be designed with an eye on the broader policy framework. The greener the national framework, the easier it will be to address city-specific challenges and to ensure coherence and consistency between national and local policies. At times, national-level initiatives may make the need for local action unnecessary; in other cases, they may, on the contrary, create new opportunities for cities to act. And if co-ordination is poor, national and local initiatives can hinder each other’s effectiveness. The national framework is particularly important with respect to pricing signals for non-localised environmental externalities, such as greenhouse gas emissions. (Some specific aspects of the national framework that merit particular attention in this context are considered below.)

2. **A holistic approach is necessary.** Efforts to green urban revenue sources may have undesirable distributional consequences. These concerns should be addressed in the context of the entire tax and benefit system, rather than trying to ensure that each individual policy measure serves both environmental and equity objectives. Thus, changes to transfers or non-environmental taxes and charges may be needed to offset the distributional impact of reforms seeking to green some revenue sources.

3. **The instruments should be sophisticated but the package should be simple.** The design of specific instruments will in many cases need to be quite sophisticated in order to avoid creating perverse incentives. Congestion charges, for example, will probably be more effective if they vary according to vehicle type, peak hours, etc. Nevertheless, it is important to keep the overall policy package as simple as possible. An overly complex system of environmental taxes, charges and fees makes impact assessment harder and raises the risk of unintended interaction effects or perverse incentives.
**Property taxes and development fees**

Property taxes should be designed to limit urban sprawl. Throughout the OECD, local governments earn the most revenue from property taxes. The impact of these taxes on land use, density and urban sprawl depends on policy choices – what is included and excluded from the tax base, how property value is defined for different classes of property (e.g. residential, multi-residential, farm, commercial and industrial properties), what percentage of the value is taxable, and how effective tax rates vary within and among property classes.

By altering the relative price of property, these taxes can influence a number of decisions regarding property improvement, size and location – and ultimately increase or decrease urban sprawl (Deskins & Fox, 2010).

Priority action to decrease sprawl through property taxes includes:

- **Eliminate policies that favour single-family homes over apartments.** Policies that favour single-family homes over multi-family properties result in less dense development. Perverse incentives are created when single-family residential properties are offered lower taxes than higher-density properties of the same value (Haveman & Sexton, 2008).

- **Tax the land value, not the property.** When property taxes are based on land value, rather than buildings or other improvements to the property, owners have an incentive to develop the land to its most profitable use. Development in the urban core could be encouraged by replacing a traditional property tax with a land value tax, or a split-value tax that includes higher rates for land value and lower rates for structures or other improvements.

**In practice**

Some municipalities in Pennsylvania, US, use a split-rate property tax to tax land more heavily than structures or other improvements.

Development fees can discourage sprawl and fund infrastructure. In several countries, municipalities have the discretion to negotiate infrastructure improvements with developers when the municipalities make new land available for urban development. Such contributions from developers could be designed to discourage sprawl if they manage to cover the real costs of infrastructure provision to the new site.

This could be achieved through:

- **Area-specific development charges**, which are a one-time levy on developers to finance the growth-related infrastructure investments needed to serve the new development or, in some cases, redevelopment. This type of pricing policy can be an effective planning tool that renders developers fully responsible for their project costs on to the developer, promotes the need to correct for the external costs of development by increasing land cost, and generates funds for infrastructure development and compensation programmes. For example, the extension of the metro-line in Copenhagen was financed through fees from development of the Ørestad area of Copenhagen (OECD, 2009).

- **The sale of additional building rights.** In São Paolo, for example, the building rights for additional floor space on the top of existing buildings that exceeded normal maximum density were sold in areas authorised for higher-density development. Similar mechanisms can be found in the state of Maharashtra (India), where the maximum floor space index was increased and the extra floor space sold to developers. Both initiatives have generated additional infrastructure funding while increasing urban density. The sale of additional building rights is particularly relevant for growing cities with scarce land, as long as construction and safety standards are taken into account.

- **Taxing low-density development.** France introduced a scheme in 2010 that taxes development that does not meet minimum density requirements. The City of Austin (Texas) has introduced a special transportation levy on all municipal utility bills, based on the estimated average number of daily trips, in effect penalizing less-dense development.

**Transportation fees and charges**

Transportation fees should discourage car use and encourage public transit and non-motorised travel. While national or state/provincial governments control most transportation-related taxes, local governments often control transportation fees and charges. The following instruments have been used successfully to reduce the share of car traffic, reduce emissions, and raise funding to finance local transportation infrastructure:

- **Congestion charges** are fees for road use that are applied exclusively or more intensely during peak traffic periods. Congestion charges have reduced CO₂ emissions up to 19.5% in the cities where they have been applied and decreased other air pollutants as well (Beever & Carslaw, 2005) (Table 3). Higher-polluting vehicles may be charged higher rates (e.g. Singapore, Milan), which more closely ties the congestion charges to greenhouse gas reduction goals. Some cities (e.g. London) use the revenue from congestion charges to finance urban public transport.
Variable parking fees and taxes can reduce car trips and encourage public transportation use (OECD, 2010b). Parking fees can even more effectively discourage car use by charging higher rates in congested areas or during peak hours (e.g. Los Angeles and New York City), especially if the parking tax revenue is used to finance public transit.

High occupancy toll (HOT) lanes encourage carpooling by charging a toll on vehicles with less than a minimum number of occupants (usually two or three). The effectiveness of HOT-lanes is mixed, considering the relatively high costs for collecting tolls: e.g. a major HOT lane in Los Angeles has operating expenses totalling 27% of gross revenues (Dachis, 2011).

Utility fees

Utility fees should encourage resource conservation. Water, waste and energy fees should be used to signal the scarcity of the resource being consumed. This will discourage resource consumption and waste generation, which can in turn increase efficiency and revenues. Many local governments already do link fees to actual consumption of water and energy and actual generation of waste, but many others could strengthen this link to promote conservation and less waste. Fees that are tied to resource consumption or waste generation can fund service delivery and infrastructure improvements, although they are best considered as part of a funding package that also includes taxes and transfers.

Impact of national policy

National policies’ impacts on local incentives should also be reviewed. As noted above, national government policies can support or undermine local green development. It is important to identify and remove perverse incentives so as to encourage infrastructure investment in line with sustainable development and green growth goals.

Remove national obstacles to local incentives. National regulations may in some cases constrain local governments’ ability to act. For example, several countries require national government approval for cities to use revenue from congestion charges, as they are considered new taxes (e.g. Denmark).

In practice

Portuguese national grants reward municipalities for designating Natura 2000 sites and other protected areas within their boundaries, representing 5% of total money allocated through this grant. Several Brazilian states allocate state tax revenues to municipalities based in part on the amount of land municipalities set aside for environmental protection (OECD, 2010b).

2. Mobilise private finance

Private sector urban financing is increasingly being used for green infrastructure projects. Three conditions help make this possible and determine their success: ensuring sufficient return in order to balance the risk (matching the right financing tool to the risk); scaling the project to be large enough to lower transaction costs, increase returns and attract investment; and guaranteeing competitive pricing signals for green technologies used.

Public-private partnerships can diversify green finance.

Public-private partnerships (PPPs) are already funding a diverse set of green urban infrastructure projects. Several urban infrastructure projects funded through PPPs were identified by the C40 Climate Leadership Group as best practices (Table 4) (C40 and ARUP, 2011).
### Table 4. C40 best practice projects

<table>
<thead>
<tr>
<th>Activity</th>
<th>City</th>
<th>Country</th>
<th>Governance</th>
<th>Type of contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycle sharing</td>
<td>Paris</td>
<td>France</td>
<td>PPP</td>
<td>Concession</td>
</tr>
<tr>
<td></td>
<td>London</td>
<td>UK</td>
<td>PPP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Barcelona</td>
<td>Spain</td>
<td>PPP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oslo</td>
<td>Norway</td>
<td>PPP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lyon</td>
<td>France</td>
<td>PPP</td>
<td></td>
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<tr>
<td></td>
<td>Stockholm</td>
<td>Sweden</td>
<td>PPP</td>
<td></td>
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<tr>
<td></td>
<td>Brussels</td>
<td>Belgium</td>
<td>PPP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seville</td>
<td>Spain</td>
<td>PPP</td>
<td></td>
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<tr>
<td></td>
<td>Dublin</td>
<td>Ireland</td>
<td>PPP</td>
<td></td>
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<tr>
<td></td>
<td>Copenhagen</td>
<td>Denmark</td>
<td>NGO</td>
<td></td>
</tr>
<tr>
<td>Bicycle paths</td>
<td>Bogota</td>
<td>Columbia</td>
<td>In-house</td>
<td></td>
</tr>
<tr>
<td>Congestion charge</td>
<td>Stockholm</td>
<td>Sweden</td>
<td>Procure-ment</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewable energy supply</td>
<td>Austin</td>
<td>USA</td>
<td>In-house</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Melbourne</td>
<td>Australia</td>
<td>Procure-ment</td>
<td>Supply and install</td>
</tr>
<tr>
<td>Energy savings</td>
<td>Rizhao</td>
<td>China</td>
<td>Public</td>
<td>Regulation, subsidy</td>
</tr>
<tr>
<td></td>
<td>Barcelona</td>
<td>Spain</td>
<td>Public</td>
<td>Regulation</td>
</tr>
<tr>
<td></td>
<td>Chicago</td>
<td>USA</td>
<td>In-house</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Copenhagen</td>
<td>Denmark</td>
<td>In-house</td>
<td></td>
</tr>
<tr>
<td>Street lighting</td>
<td>Tokyo</td>
<td>Japan</td>
<td>Public</td>
<td>Regulation</td>
</tr>
<tr>
<td>Building</td>
<td>Los Angeles</td>
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<td>In-house</td>
<td></td>
</tr>
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<td>Germany</td>
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<td>London</td>
<td>UK</td>
<td>PPP</td>
<td>EPC2</td>
</tr>
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<td>Germany</td>
<td>In-house</td>
<td></td>
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<td>Paris</td>
<td>France</td>
<td>PPP</td>
<td>PFI3</td>
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<tr>
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<td>China</td>
<td>PPP</td>
<td></td>
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<tr>
<td>Waste</td>
<td>Gothenburg</td>
<td>Sweden</td>
<td>PPP</td>
<td>Management contract</td>
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<td>Sydney</td>
<td>Australia</td>
<td>PPP</td>
<td>BOO4</td>
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<tr>
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<td>India</td>
<td>NGO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tokyo</td>
<td>Japan</td>
<td>In-house</td>
<td></td>
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<tr>
<td></td>
<td>Emefuloni</td>
<td>South Africa</td>
<td>PPP</td>
<td>BOT5</td>
</tr>
<tr>
<td></td>
<td>Austin</td>
<td>USA</td>
<td>Public</td>
<td>Regulation, subsidy</td>
</tr>
</tbody>
</table>

What are public-private partnerships?

Public-private partnerships (PPPs) are long-term contractual agreements between a private operator, company, or consortium and a public entity under which a service is provided, generally with related investments. PPPs are characterised by the transfer of some of the risk to the private partner and long-term contracts, covering multiple stages of an investment project. Unlike traditional public sector procurement, where the private contractor simply designs and/or builds what the public sector orders, PPPs involve a competitive tendering process in which private operators bid for a contract to design, finance and manage the risks involved in delivering public services or assets. In return, the private contractor is paid fees by the public body and/or tolls from users for the long term operation and maintenance of the asset. Two main types of PPPs – concessions and private finance initiatives (PFIs) – differ in terms of the level of risk the private sector assumes. Payment under PFIs depends on the operator’s ability to meet performance targets, while revenues under concessions are directly tied to consumption, and so are more exposed to risk associated with changes in demand.

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1. Energy Savings Partnership
2. Energy Performance Contracting
3. The French PFI applied to Energy Performance Contracting is called Contrat de Partenariat de Performance Énergétique
4. Build-Own-Operate contracts: the private operator builds, owns, and operates the infrastructure project.
5. Build-operate-transfer contract: the operator builds the infrastructure project, operates it and eventually transfers ownership of the project to the government.

PPPAs can make green public investment more efficient and effective, under the right conditions. PPPs can make undertaking and operating large projects more efficient through competitive bidding and concession contracting processes. PPPs can also diversify business risks and the stakeholders engaged in the project. These benefits depend, however, on well-designed, well-implemented concessions and related government regulations. Conditions for successful green urban PPPs include:

- **Interaction and negotiation:** Interaction and negotiation with one or several operators during the call for bidders phase can clarify the objectives of the partnership, but is a practice that is far from common. However, it can provide innovative technological solutions that had not been envisioned by the public body. In order for this phase to be efficient, the public body must have enough expertise and generate enough competition to be able to challenge the candidates.

- **Effective partnerships:** Because PPPs can last much longer than traditional procurements for assets or services – from 15-90 or more years – it is essential to establish a real partnership beyond a mere financial relationship, based on cooperation and sharing of expertise. This requires the public entity to have sufficient expertise to design the PPP in a way that meets long-term sustainable development and green growth goals.

- **Clear environmental objectives:** Effective green PPPs are only possible if their environmental objectives and their weight in the award procedure are clear. The addition of green requirements after the project has begun can raise costs and risks locking in technologies that are incompatible with sustainable development or green growth goals. Environmental objectives should be clearly defined and output should be measurable, which requires the development of better city-level sustainable development indicators.

- **Anticipation of change:** Enabling efficient response to changing requirements and new technologies is key to long-term success of a PPP. In addition, the contract should include descriptions and projections of how partners will facilitate the evolving PPP relationship over time and what will happen (renegotiation, termination etc) in the event of unanticipated events, such as lower than expected demand (Sydney harbour tunnel) or higher than expected costs (Paris bicycle share programme).

National government assistance can increase the success of urban green infrastructure PPPs. In addition to the necessary pre-conditions of transparency and sound financial management practices for all private-sector contracting, national governments can also support the development of green urban PPPs by:

- **Providing incentives to reduce the uncertainty related to urban green growth projects.** The high level of uncertainty characteristic in green projects increases the insecurity and instability of the PPP. Certain national governments (e.g. South Korea) have put in place financial transfer and incentive measures to eliminate some of this uncertainty and stimulate urban green growth PPPs.

- **Increasing cities’ capacity to design and manage PPPs.** Local governments face the challenge of designing and implementation PPP contracts with private sector partners who may have much greater technical expertise and knowledge of the project requirements. To minimise this information asymmetry, national governments should provide technical assistance to cities. This could take the form of what has been called “dedicated PPP units”, specialised public bodies with PPP experts, which already operate at the national in several OECD countries to increase the capacity of the public sector in engaging in PPPs (OECD, 2010c).

### In practice

The national government of South Korea implements various kinds of financial and tax incentive policies that can facilitate green growth PPP financing, in line with its First Five-Year Action Plan for Green Growth initiated in 2009. More specifically, the government provides (i) construction subsidies, (ii) compensation for base cost, (iii) infrastructure credit guarantees via the Infrastructure Credit Guarantee Fund, and (iv) tax incentives.
Value-capture taxes and tax-increment financing are innovative ways to leverage private finance.

Existing models can be used to access private sector leverage. Private finance for green urban infrastructure can be increased by capturing the value increases resulting from new public infrastructure investment. This has been particularly applied in the transportation sector. Singapore, for example, has made ample use of these instruments to finance infrastructure, but the implementation challenges Poland faced with similar instruments show that it is essential to use well-established methodologies to measuring value increases.

- Value capture tax is an increase in property values arising from public infrastructure development. This higher value results from the increased desirability of the location, better access, and the potential for higher rents, increased resale value and higher-density development. Value capture taxes have been used to finance transport infrastructure in cities as different as Hong Kong, Miami, Milan and Bogotá.
- Tax increment financing (TIF) allows municipalities to earmark tax revenue from assessed property values within a designated area as economic development and use those finances to fund local public transportation programmes, for example.

Cities can increase their use of loans and bonds.

Larger access to loans and bonds could help to mobilise finance for green urban investment. Bonds provide institutional investors, such as pension funds, stable yields and limited risks. Urban green growth investments currently use both to a limited extent, but they could be more often leveraged for infrastructure investments (Della Croce et al., 2011). There is a relationship between access to borrowing and cities’ own revenue sources: the more revenue sources a city has, the higher its perceived repayment capacity, and thus the greater its access to debt markets, including loans.

Local government access to private loans could increase as long as sound local financial management practices are in place. Some OECD member states’ fiscal rules may ban local governments from borrowing or issuing bonds; while others constrain the size of municipal budget deficits or debt levels. In most OECD countries, local governments are only allowed to borrow to finance investment (i.e. the golden rule for debt financing). In some countries, only long-term borrowing is limited to investment, while short-term loans may be used to finance operating expenditures.

Local borrowing is also subject to prudential regulations, based on debt service and repayment capacity. In most countries, collateral restrictions exist for debt issuance. As a result of all these constraints, local governments generally have a low debt to GDP ratio; only in a few OECD countries, like Denmark, Iceland, Italy and the Netherlands, does the stock of local government liabilities reach 10% of GDP or more. However, sound local financial management practices could limit the risk that increasing access to borrowing could also increase sub-national fiscal irresponsibility.

Green bonds are promising vehicles for cities to attract private finance. Green bonds provide a channel for directing institutional investor capital towards green projects (Della Croce et al. 2011). Institutional investors in OECD countries are looking for long-term investments with steady yields and limited risks; so their portfolios are dominated by bonds, accounting for half of total assets under management in OECD pension funds. The share of bond investment in green infrastructure is currently small, and even smaller for green urban infrastructure, but three promising models exist:

1. Multi-national development banks have started to fund green bonds. To ensure returns, the World Bank’s green bonds were structured with standard financial features, such as a AAA credit rating. Urban green investment projects are estimated to make up 20% to 25% of the green bond portfolio. Other development banks have created similar instruments: the European Investment Bank has developed Climate Awareness Bonds that financed green projects in several cities, such as district heating in Paris.

2. US Green Bonds. Unlike many other countries, the US has a well-developed market of tax-exempt local bonds that can substantially help finance cities. These include: Clean Energy Renewable Bonds (CREBs), Qualified Energy Conservation Bonds (QECBs), Property Assessed Clean Energy Bonds (PACE) and Build America Bonds (BABs) (e.g. see Della Croce et al. 2011). Some cities, including Chicago, have developed their own green bond programme for energy efficiency and renewable energy goals. Such programmes, however, are only viable for cities that have credit ratings that are similar to the national credit ratings; if not, a national programme would make more sense.

3. Climate-specific institutional investors groups. Several institutional investors have grouped together to form climate change groups (e.g. Institutional Investors Group on Climate Change (IIGCC) and the Investor Network on Climate Risk). They are creating their own financing packages such as climate bonds and could potentially be interested in urban sustainability projects.
Cities generally have lower development—small scale of municipal-level greenhouse gas reduction; limited autonomy of urban authorities to directly regulate; lack of support from national governments; limited institutional and technical capacity; limited budgets and access to start-up capital; difficulties in measuring the effects of urban mitigation. Loans and investments.

What are green bonds?

Green bonds are fixed-income securities issued to raise the necessary capital for a project that contributes to a low carbon, climate resilient economy. While green bonds can be issued by governments, multi-national banks or corporations, most to date have been issued as AAA-rated securities by the World Bank and other multi-lateral development banks, such as the European Investment Bank (EIB) and the Asian Development Bank (ADB). Green bonds have been designed to attract capital from institutional investors, or as a means for governments to direct funding to climate change mitigation. The current market size for all green bond issuance – approximately USD 15.6 billion – is however still marginal (0.017%) compared to the capital held in global bonds markets.

Green infrastructure banks could help solve market failures and the challenge of limited market size. Development banks serve to unify finances and distribute it across countries; such projects may include waste infrastructure or water treatment. Development banks like the Green Infrastructure Investment Bank (GIB) being set up by the UK, may offer financial benefits such as technical assistance or lengthening the repayment period for a loan. For this purpose, the UK Government unified local government spending into a lump sum of GBP 100 million to invest in smaller waste infrastructure projects (typically in the size range of GBP 15-25 million), on a fully commercial basis.

The waste infrastructure projects will be transacted initially through specialized fund managers experienced in this sector, in order to ensure that government funds are deployed on equal terms with private capital. The bank manages the full procurement process of these types of loans and investments.

Carbon finance could be more widely applied in cities.

Obstacles to cities’ access to carbon finance need to be addressed. Cities could also take better advantage of opportunities provided by carbon finance (Clapp et al., 2010). The two greenhouse gas offset mechanisms put in place by the Kyoto Protocol under the UNFCCC are the Clean Development Mechanism (CDM) and Joint Implementation (JI). Both can serve as sources of revenue for metropolitan areas. CDM allows developed countries to purchase certified carbon credits from approved emission reduction projects in developing countries, and JI from emission reduction projects in other developed countries. In addition, voluntary carbon markets can and have been used to put a price on carbon, independent of any national emissions cap.

Another option is to use domestic offsets as an incentive mechanism, by agreement between local and national governments; in this case national governments could agree to “pay” local governments for emission reductions achieved by local policies, thus assisting with the achievement of national mitigation targets. To date, the participation of cities and urban mitigation projects in the global carbon markets remains extremely limited. Reasons for low participation include (Clapp et a. 2010; World Bank, 2010):

- limited autonomy of urban authorities to directly regulate greenhouse gas emissions;
- limited budgets and access to start-up capital;
- limited institutional and technical capacity;
- difficulties in measuring the effects of urban mitigation projects with existing methodologies and lack of standardised methodologies (e.g. for greenhouse gas inventories at the urban level);
- small scale of municipal-level greenhouse gas reduction initiatives (e.g. improved efficiency of street lights) that do not warrant the transaction costs of pursuing carbon finance;
- lack of support from national governments

Overcoming these barriers could facilitate cities’ engagement in carbon finance. Future use of these instruments by cities needs to be integrated into urban planning and financial frameworks so that carbon financing, if and when available to support urban mitigation projects, also contributes to the broader urban sustainability agenda.

3. Tailor financing mechanisms to urban sectors

Each of the above mechanisms apply in different ways to specific urban sectors. The sectors of building, transportation, energy, water and wastewater, and solid waste present opportunities for green growth and sustainable development, as they are not only the dominant sources of urban energy consumption and greenhouse gas emissions, but they also shape resource consumption, waste generation, and quality of life.

They can present opportunities to reduce environmental impact and to contribute to growth, particularly in terms of job creation, strengthening the market for green goods and services, urban attractiveness, cost savings, and increasing social equity.
Building sector - financing green building construction and energy efficiency retrofits

What are the priorities for building sector green infrastructure investment?

- Public construction of green buildings and investments in eco-neighbourhoods e.g. Stockholm Royal Seaport.
- Lowering the barriers to private construction of green buildings e.g. Kronsberg Passive House Estate in Hannover, Germany
- Energy-efficiency retrofitting of city-owned buildings e.g. matching funds for retrofitting schools in Japanese cities.
- Lowering the barriers to energy-efficiency retrofitting of privately owned buildings e.g. Berlin energy efficiency retrofit programme, Melbourne commercial retrofit loan programme.

What are the socio-economic benefits of investing in building sector green infrastructure investments?

- Job creation: Green building construction and energy-efficiency retrofits are expected to generate considerable job growth over the medium to long term in many cities. Retrofitting existing buildings to increase their energy-efficiency involves a relatively high demand for low and semi-skilled labour. The design and construction of new green buildings call for both low and medium-to-high skilled labour.
- Strengthening the market for green goods and services: Green building regulations and energy-retrofitting programmes can stimulate the demand for more resource-efficient products and energy efficiency consulting services all along the value chain.
- Increased urban attractiveness: Energy-efficiency retrofitting and new green building requirements improve the quality of a city’s residential and commercial building stock, which can attract new firms and residents.
- Cost savings: The green building design and construction sector has the potential to generate cost and energy savings for energy consumers.
- Social equity: Retrofitting can lower energy costs for poorer households, who often spend a greater share of their budget on energy. Some cities have implemented specific green jobs programmes that target disadvantaged groups.

What financing mechanisms could be used?

- Financial mechanism such as Property-Assessed Clean Energy (PACE) programmes allow property owners to borrow funds from their municipality to pay for efficiency improvements. The cost of the loan is added to the property tax bill and is repaid as part of regular tax payments. PACE loans stays with the property, encouraging investment even by property owners who do not expect to stay long enough to recover their investment. Municipalities establish a funding pool from private investors to pay for the upfront installation costs; the pool is repaid into a revolving loan fund.
- Intergovernmental grants, loans or subsidised tax deduction for municipal bonds can leverage private financing for a city to retrofit its government property.
- Energy Service Companies (ESCOs) offer energy efficiency improvement or energy services based on performance, in which the ESCO’s payment is directly linked to the amount of energy saved (in physical or monetary terms) (e.g. Energy Performance Contracting) (Ürge-Vorsatz, et al 2007). Cities may set minimum requirements for energy savings and help individual property owners contract with ESCOs.
- Leveraging partnerships from CDM/JI could incentivise private investors.

What are the buildings sector environmental challenges?

Buildings are key energy consumers and contributors to greenhouse gas emissions. On average, energy used in buildings in OECD cities account for 35-40% of cities’ energy consumption on average (Milan conference), and in C40 cities’ building energy accounts for 45% of carbon emissions (C40 & ARUP, 2011).
Transportation sector – financing public transportation, greening fleets and encouraging non-motorised travel

What are the priorities for transportation sector green infrastructure investment?

- Expanding public transportation lines and modes, and enhancing quality e.g. Paris, Beijing
- Enabling non-motorised travel e.g. Paris’s ‘Vélib’ programme and bicycle lane improvements, Rio de Janeiro’s Samba and Montreal’s Bixi programme
- Greening the public fleet e.g. Toronto’s Green Fleet Plan
- Reducing vulnerability of transportation infrastructure to climate change impacts e.g. flood risk included in the design of Copenhagen’s metro stations (OECD, 2011)

What are the transportation sector environmental challenges?

The sector, which includes the movement of both people and goods, is a major determinant of cities’ environmental footprint pollution, as it is responsible for 23% of world CO₂ emissions and a significant amount of localised pollution. Rising income and car use in developing countries will exacerbate traffic congestion and air pollution. For example, in Bangkok, transportation alone is responsible for 38% of the city’s total emissions whereas electricity contributes with 33% and solid waste and wastewater with 20% (UN-Habitat, 2010).

What financing mechanisms make this possible?

- Tax increment financing (TIF) allows municipalities to earmark property tax revenue from assessed property values within a designated area as economic development and use those finances to fund local public transportation programmes.
- The build-operate-transfer (BOT) model enables the recovery of private-sector investment through its operation and maintenance: a private entity receives a concession from the public sector to finance, design, construct, and operate a facility stated in the concession contract.
- Receipts from congestion charges, HOT lanes, parking fees and taxes are used to finance urban public transport. Cities and local government dispose of fees and charges through which they can finance local transportation infrastructure.
- Intergovernmental grants, loans or subsidised tax deduction for municipal bonds can leverage private financing for building roads.
- Direct public investment through green bonds, green investment banks and CDM/JI incentivise private sector investments by leveraging partnerships for a portion of the costs of the infrastructure development. For example, Transmilenio Bus Rapid Transit System in Bogota Colombia (Clapp et al., 2011).

What are the socio-economic benefits of investing in transportation sector green infrastructure investments?

- Job creation: The urban transport sector represents a significant public employer in many cities: operation of the public transportation sector employs 164 043 people in Mumbai, 78 393 in New York City and 24 975 in London (UNEP, 2011). Developing and expanding public transit networks can lead to both short-term job creation during the construction phase, as well as job growth over the medium- and longer-term (e.g. operators and maintenance workers). Furthermore, the development of new multimodal stations when the public transport network is extended can lead to the creation of yet further jobs linked to the growth of new activities (establishment of offices, businesses and other services).
- Strengthening the market for green goods and services: Developing the public transport network and vehicles that generate less pollution can help to fuel regional demand for transport-related green goods and services all along the value chain, such as the manufacturing of parts for public transit equipment.
- Increased urban attractiveness: Expanding the public transit network can effectively expand the size of the regional labour market– an asset in attracting firms. Public transport infrastructure investments tend to increase the value of nearby properties. Finally, urban amenities designed to attract people to non-motorised forms of travel can enhance the attractiveness of the urban area to firms and residents (e.g. walkable neighbourhoods, bicycle-share programmes).
- Cost savings: Investments to reduce the use of personal vehicles also reduce the costs associated with congestion, which can undermine urban competitiveness. Increasing the climate-resiliency of transport infrastructure is also expected to generate cost savings over the long term.
- Social equity: Expanding public transit and enhancing options for non-motorised travel can reduce urban fragmentation and the exclusion of poorer and disadvantaged neighbourhoods. Increased accessibility can increase job opportunities for residents of neighbourhoods previously disconnected from or ill served by public transportation.
Energy sector – investing in, generating and enabling renewable energy generation

What are the priorities for energy sector green infrastructure investment?

- **Renewable energy generation.** e.g. Los Angeles GreenLA Climate Action Plan targets or Copenhagen’s development of wind energy installations to offset energy use
- **District heating and cooling.** e.g. expansion of Copenhagen’s district energy system to include cogeneration; changes in energy grid model
- **Purchase of renewable energy for city or regional operations.** e.g. Seoul’s plan to expand its renewable energy share from 1.5% in 2007 to 20% by 2030.
- **Requiring or lowering the barriers to distributed renewable energy generation** e.g. Barcelona Solar Ordinance

What are the energy sector environmental challenges?

Fossil fuels still account for a large share of cities’ energy consumption. In 2007, cities and towns directly consumed approximately 340 EJ (8 100 Mtoe) of primary energy, with higher per capita consumption of coal, gas and electricity than rural residents (IEA, 2008). The share of renewable energy consumed will need to increase greatly to meet greenhouse gas emission reductions targets. The IPCC 4th Assessment Report projected 33% electricity and 10% biofuels coming from renewable energies in 2030 (IEA, 2009; IPCC, 2007). Cities’ impact on greenhouse gas emissions varies greatly with the carbon intensity of the energy source. For example, Cape Town has comparatively lower per capita electricity consumption than Geneva but its electricity consumption has a higher greenhouse gas emissions factor per unit since South Africa uses coal to generate 92% of its electricity while Switzerland relies heavily on hydropower (Kennedy et al, 2009b).

What financing mechanisms make this possible?

- **Financial mechanism such as Property-Assessed Clean Energy (PACE) programmes allow property owners to borrow funds from their municipality to pay for distributed renewable energy technologies, similar to energy efficiency investments in the building sector.**
- **Intergovernmental grants, loans or subsidised tax deduction for municipal bonds can leverage private financing for a city to generate or purchase renewable energy.**
- **Leveraging partnerships from CDM/JI could incentivise private sector investments.** For example, the Fuel Switching and Energy Efficiency Project in the North Rhine Westphalia, Germany (Clapp et al., 2011).

What are the socio-economic benefits of investing in energy sector green infrastructure investments?

- **Job creation:** New investments in renewable technologies are generally more labour-intensive than investments to expand fossil fuel-based energy generation. Distributed solar Photovoltaic (PV) in particular are labour-intensive: installing a large 100 MW solar array in the desert requires significantly less labour than installing 100 MW of 4 kW residential rooftop PV systems (i.e., 25 000 systems). Labour demands, particularly for maintenance and operation vary significantly across renewable technologies. Installing 1 MWa of wind turbine capacity creates an estimated 0.7-2.9 times as much permanent employment as a comparable natural gas combined cycle (NGCC) power plant; installing 1 MWa of rooftop solar PV creates an estimated 7.8 times more employment than a NGCC power plant (Kammen et al., 2006; OECD, 2010b).
- **Strengthening the market for green goods and services:** Stimulating the renewable energy sector can lead to increased demand for renewable energy technologies all along the value chain, including manufacturing, installation, maintenance and consulting services.
- **Increased urban attractiveness:** Increasing a city’s share of renewable energy has been part of some cities’ strategies to attract firms and residents by offering cleaner energy protection, improved air quality, and responding to a demand for green energy.
- **Social equity:** (IEA, 2011) Distributed renewable energy, such as solar panels, can provide more reliable sources of power than what many poorer households in developing countries currently experience.
Water sector – improving water quality and increasing conservation

What are the priorities for water sector green infrastructure investment?

- Infrastructure upgrades to increase efficiency, improve wastewater treatment quality, and increase resilience to climate change impacts (e.g. tackling water leakage by upgrading pipes in Tokyo)
- Deploying water conservation and reuse technologies through financial incentives for recycled water systems and low-flow appliances (e.g. Melbourne)
- Using natural systems to provide wastewater treatment service (e.g. land treatment for wastewater and vegetated land, and constructed wetlands for small communities and rural areas) OECD (2011h); and C40 & ARUP, 2011)

What are the water sector environmental challenges?

While most OECD countries have been able to ensure adequate access to a safe water supply for human needs and significant efforts have been made to treat organic pollution from urban wastewater, considerable investments are needed to retrofit wastewater infrastructure and insufficient progress has been made to tackle pollution arising from agricultural runoff and other non-point sources of pollution. A large share of the population in many developing countries lacks access to sewerage infrastructure. Progress in establishing more sewerage infrastructure is expected to continue to 2030, but it is still projected that there will be 1.1 billion more people worldwide in 2030 who lack access to basic sanitation services compared with 2000 (OECD, 2011h; Jouravlev, 2004).

What financing mechanisms make this possible?

- User fees linked to water consumption
- Intergovernmental grants, loans or subsidised tax deduction for municipal bonds
- Leveraging partnerships from CDM/JI could incentivise private sector investments. For example, the Solar Water Heating Systems programme in Ho Chi Minh City, Vietnam, which uses the “programme of activities” approach. (Clapp et al. 2011).

What are the socio-economic benefits of investing in water sector green infrastructure investments?

- Job creation: Investment in water efficiency could boost overall GDP and create jobs across a range of sectors, including the construction, manufacturing, retail trade and waste sectors, and provide low-skilled jobs (Alliance for Water Efficiency, 2008) A US Council of Mayors report found that adding one job in the water and sewage sectors creates 3.68 jobs in the national economy to support these jobs (Krop, et al., 2008).
- Strengthening goods and services: Demand for water technologies to conserve and improve water quality can boost innovation across the value chain (e.g. Milwaukee Water Council cluster).
- Increased attractiveness to firms: Adequate water and sanitation can be key drivers for economic growth (OECD, 2011h). Recent estimates by the US Conference of Mayors indicate that USD 1.00 of water and sewer infrastructure investment can increase private long-term output (GDP) by USD 6.35 (Krop, et al., 2008).
- Cost savings. Water is energy intensive in its delivery, which contributes to higher cost. Increased water conservation contributes not only to water savings but also energy savings.
- Social equity: The benefits of basic water supply and sanitation services, including time gains and reductions in waste-borne diseases, can far exceed the costs particularly in developing countries.
Waste sector – diverting waste from landfills and creating energy from waste

What are the priorities for waste sector green infrastructure investment?

- Waste-to-energy and landfill methane capture-to-energy plants (e.g. Amsterdam Afval Energie Bedrijf waste-to-energy plant provides electricity to 285,000 households and district heating and hot water to 20,000 households; Durban waste-to-energy; Monterrey, Mexico landfill methane gas capture providing electricity to power the city’s light-rail transit system and its streetlights)
- Direct investment in public or enabling of private recycling and composting services (e.g. San Francisco’s composting programme).

What are the socio-economic benefits of investing in waste sector green infrastructure investments?

- Job creation and social equity: Operations promoting re-use can create employment or training opportunities for marginalised populations (Curran & Williams, 2010; Sharp & Luckin, 2006). Informal recycling plays an important role in cities throughout Asia and in Latin America (Nas & Jaffe, 2004; Leslie & Utter, 2006).
- Strengthening the market for green goods and services: Programmes to increase recycling can strengthen private sector operations. For example, Kitakyushu, Japan launched the Eco-Town project in 1997 to foster an industrial recycling cluster, which by 2008 had grown to 26 companies and 17 research institutions were in operation, employing 1,352 people (OECD, 2011h).
- Cost savings – Eco-industrial parks save firms money by converting waste and lost energy from one firm into inputs for another. For example the diverse firms in the eco-park of Kalundborg utilise each other’s surplus heat and waste products, with annual estimated savings of USD 12-15 million.
- Social equity – Given the impact on water, air and health of waste that is inappropriately burned or dumped, investments to recycle or incinerate waste in line with environmental best practices can improve the quality of life for poorer communities, where inappropriate waste disposal may be more prevalent.

What financing mechanisms make this possible?

- User fees linked to waste generation
- Intergovernmental grants, loans or subsidised tax deduction for municipal bonds
- Leveraging partnerships from CDM/JI could also incentivise private sector investments. Example: the Landfill Gas Utilisation Project in Christchurch City, New Zealand (Clapp et al, 2011).

What are the waste sector environmental challenges?

Urban waste contributes to climate change through the release of methane (CH4) and, to a lesser extent, CO₂ in landfills and emitted by waste incinerators. Waste generation levels are growing in OECD countries, and are projected to increase by 38% from 2005-2030 (OECD, 2008). In BRICS countries, the increase will be more severe: for example, urban municipal waste generation in China is expected to grow 214% over 2004-2030, to 1.5kg/capita/day, and in India it is expected to grow 130% over 2001-2030, to 1.4kg/capita/day (OECD, 2008; World Bank, 2005). Municipal waste generation in Brazil, Russia, Indonesia and South Africa in 2005 was already significantly higher than in China and India, approaching waste generation rates in Asian OECD countries. Over half of all waste is inappropriately disposed of in Brazil, Indonesia and South Africa (OECD, 2008).
III. How can cities advance the Rio+20 agenda?

Cities matter for global sustainable development

In June 2012, two decades after the first Earth Summit, the international community will return to Rio de Janeiro to secure a renewed commitment to a sustainable model of development that is inclusive, economically resilient and respectful of the environment. The Rio+20 global conference centres on two themes: (a) the green economy in the context of sustainable development and poverty eradication, and (b) the institutional framework for sustainable development.

Potential operational outcomes currently under discussion by countries may include:

- Initiation of a process toward development of global Sustainable Development Goals (SDGs) for 2015 that, while universal and applicable worldwide, would allow for differentiated approaches among countries.
- A call to business and industry to develop green economy plans or commitments for their respective sectors, with concrete goals and benchmarks of progress (e.g. net creation of jobs).
- A voluntary Compendium of Commitments, which would house commitments to advance sustainable development, brought forward by governments, the private sector, NGOs and other stakeholders.
- The creation of an international knowledge-sharing platform to facilitate countries’ green economy policy design and implementation, as envisaged in the current Rio+20 zero draft outcome document.

Whatever countries agree to at Rio+20, it will be critical that cities be reflected as integral actors for two fundamental reasons:

1. Addressing urbanisation will be necessary for achieving sustainable development objectives. A more sustainable, equitable form of urbanisation is imperative for advancing the green economy and sustainable development agenda of the Rio+20 conference.
2. Local government officials are already taking action towards inclusive green growth. They are the core implementers of national policies relating to climate change, water reform and waste management, and they are the level of government that is closest to citizens. City officials have also engaged in public information and awareness campaigns to change consumer behaviour in favour of cleaner, greener habits.

Cities are key to implementing green growth and sustainable development

It will take city-level action to implement green growth strategies and advance towards sustainable development. The lead-up discussions to Rio+20 have revealed divergent views on how to define the green economy and how it is applied to different country circumstances in relation to sustainable development.

While interrelated, sustainable development, green economy and green growth should be understood as distinct but mutually reinforcing concepts. Stronger policy complementarities at the local level put cities in a better position to reconcile economic, environmental and social equity objectives.

The link between green growth and sustainable development.

According to the UN, sustainable development emphasises “a holistic, equitable and far-sighted approach to decision-making at all levels… not just strong economic performance but intra-generational and intergenerational equity” (UN, 2012). The concepts of both the green economy and green growth, on the other hand, focus more explicitly on the intersection of environmental and economic objectives. The OECD definition of green growth focuses on fostering economic growth and well-being in the context of scarce natural assets (OECD, 2011g). The OECD recognises that green growth is not a replacement for sustainable development, but a means to help achieve it. In this view, green growth is a practical and flexible approach for accelerating progress in the economic and environmental pillars of sustainable development, while taking full account of the social consequences of greening the growth dynamic of economies. There is no “one-size-fits-all” prescription for implementing green growth. Greening the growth path of an economy will depend on policy and institutional settings, level of development, resource endowments and particular environmental pressure points.

Within any green economy plans that emerge from the Rio+20 Conference, it will be necessary to reflect cities as both a separate theme and a cross-cutting issue.

As the UN Secretary-General points out, “a green economy in the context of sustainable development and poverty eradication is an approach to economic decision-making that will need to be built from the bottom up, responding to national and local priorities and challenges” (UN SG submission).

Any plans or commitments for a green economy need to recognise both:

- The urban dimension as an integral part of the policy framework for sustainable development. Urbanisation merits treatment as a separate theme given the large impact of the urban form on environmental, economic and social equity objectives.
- The interconnection of urban policies with sustainable development priorities. Cities are the focal point for the implementation of many sustainable development priorities, in areas such as water and wastewater services, and air pollution. Local government action is one of the key determinants of the success or failure of many national level sustainable development targets.
Green growth policies at the urban level should take into account their potential impact on jobs and inequality. While green growth can contribute to social equity, the latter must be explicitly addressed in green growth policy design to ensure that inequality does not rise. Green growth initiatives need to be assessed not only in terms of their impact on local economic growth and the environment, but also in terms of opportunities for low, medium, and high-skilled workers.

Strategies for greener growth must also explicitly account for any distributional effects, especially on low-income and disadvantaged communities. Although a “green premium” may be necessary to attract investments, it may also result in disproportional pricing, preventing the poor from taking advantage of greener goods and services.

The alignment of green growth and poverty eradication goals is even more critical in rapidly growing cities in developing countries. Policies aimed at inclusiveness – and therefore at social equity and economic efficiency – can often yield double benefits in the form of environmental improvements. This is the case of a mass transportation system that replaces old energy-inefficient taxis and small buses. Initiatives to eradicate poverty and combat urban social fragmentation must thus complement the design of developing country cities’ green policies.

In practice

The Mayor’s Tower Renewal Project in Toronto provides an example of how green growth initiatives can align with social equity objectives. The programme aims to conduct energy-efficiency retrofits in over 1,000 apartments in towers built before 1984, which would cut electricity use by 50%, gas consumption by over 50%, water consumption by 20%, and the production of waste for incineration by 30%. The programme recruits labour in low-income communities in co-operation with building unions, and offers workers training. Social equity is achieved here both through improvements to homes in low-income neighbourhoods and through local job creation (OECD, 2011h).

A national framework is needed to advance urban green growth, including (OECD, 2010b; OECD, 2011h):

- A clear policy and regulatory framework at multiple levels of government that cuts across sectors to integrate economic, environmental and social equity objectives (OECD, 2010b)
- National pricing signals on carbon and natural resources, such as through a carbon tax or cap-and-trade system (OECD, 2011g)
- Removing national barriers to local action (such as national policies that conflict with or prevent local action) (OECD, 2010b; OECD, 2011h)
- Providing technical assistance, funding and knowledge sharing (for example, establishing common methodologies for urban socio-economic and environmental indicators) (OECD, 2010b)
- Providing coherent and accessible financing mechanisms

Cities need their own set of green growth indicators

There is a need to develop more effective tools for measuring cities progress towards green growth. A natural starting point could be a measurement framework that includes goals at the city scale and proposes general principles for sustainable and just cities. This could include for instance: (a) Integrated public transportation; (b) Wide access to high-quality public services; (c) Efficient land-form that prioritizes infill over greenfield development and discourages “leapfrog” development; (d) Access to open space (e.g. parks, riverways); (e) Significant share of energy from renewable sources; (f) Energy-efficient, affordable housing and (g) Support for green industries and greening existing industries.

There is also need for developing more effective tools for measuring progress towards commitments related to Rio+20. This could include:

- The establishment of an internationally harmonised methodology for collecting reliable, comparable data at the city scale (OECD, 2011g; OECD, 2010b).
- Estimates of approximate costs and time-horizons of needed investments. A better understanding of a city’s baseline conditions can make prioritisation of expenditures easier and make for local governments more efficient.
- Indicators to capture the triple metric of job-creation effects, impact on the local environment and the distribution of benefits.
Measuring progress towards green growth in cities requires looking beyond GDP. OECD environmental and socio-economic indicators at the metropolitan scale provide reliable comparisons of urban density, estimated greenhouse gas emissions, air pollution, land-use cover and forest ecosystem, and carbon absorption for the 90 largest OECD metropolitan regions.

The OECD has also ongoing work with more comprehensive indicators (such as Green Growth Indicators, the Beyond GDP initiative, the How’s Life initiative and the Better Life Index), which can support countries’ efforts to monitor the impact of green growth and sustainable development initiatives, including by providing regional and urban-level data.

In partnership with cities, including the C40, an important measurement agenda for cities would include working a harmonised methodology for collecting reliable, comparable data at the city scale. These need to be embedded in a framework and selected according to well-specified criteria. Ultimately, they need to be capable of sending clear messages that speak to policy makers and the public at large.

Cities’ participation in the institutional arrangements for green growth and sustainable development is critical

It is important to enhance cities’ participation in multi-level governance for sustainable development. Implementation barriers have stymied progress on the 1992 Rio agenda. Factors include a lack of good governance, technical capacity, and sufficient measurement and monitoring tools. Involving sub-national governments into the Rio+20 agenda could provide an important contribution to close the implementation gap.

Multi-level governance gaps to be addressed include:

- More coordinated policies at multiple levels of government, including a greater level of horizontal coordination and planning among national ministries, such as those responsible for infrastructure, environment, finance, economic growth and social development (OECD, 2010b; OECD, 2011h).
- A reinforcement of cities’ long-term planning capacity, especially in developing countries, for instance through technical assistance, sharing of best practices, and financial assistance. Short-term development decisions can “lock in” low-density, sprawling urban forms that result in high greenhouse gas emissions from transport and energy-intensive delivery of public services.
- Better equipping cities with the necessary expertise and financial resources to fulfill their implementation responsibilities. In a tight fiscal environment, national governments can maximise the value of their efforts through best practices sharing and grant mechanisms that encourage policy innovation.

There is an increasing awareness among the global community of the great challenges raised by a fast and uncontrolled urbanisation process and the key role sub-national governments play in advancing a sustainable development agenda. This sentiment was echoed in a large number of institutional submissions to the Rio+20 conference, including in the Zero Draft.

International networks of cities and global associations of local governments such as the C40, ICLEI, UCLG, and others have been increasingly active in advancing climate and sustainable issues. Although the question of stronger involvement of local governments in the global governance architecture remains controversial, it is important to capitalise on this burgeoning “peer-to-peer” community in a post Rio+20 agenda.

Consultations mechanism involving cities along with other public, private and intergovernmental organisations need to be developed. With an aim to identify and address key knowledge gaps and assist in the design and implementation of public policy, an international knowledge platform has been proposed as a potential operational outcome of the Rio+20 conference. The recently launched Green Growth Knowledge Platform (GGKP), based on a core partnership between the OECD, the Global Green Growth Institute, UNEP and the World Bank, could provide a useful basis for such an international knowledge-sharing platform.

To expand our understanding of urban green growth and sustainable development, the GGKP could foster partnerships with associations of local governments. For example, these could be focused on advancing the harmonisation of methodologies for measuring cities’ CO₂ emissions, as well as guidelines for evaluating the full economic, environmental and social costs and benefits of urban green infrastructure investment. The GGKP’s findings could in turn inform the programmes of work of its founding institutions, which could streamline the practical implementation of policy research in both developed and developing country cities.

The Green Growth Knowledge Platform (GGKP)

The GGKP is aimed at enhancing and expanding efforts to identify and address major knowledge gaps in green growth theory and practice, and at helping countries to identify, design and implement policies to move towards greener economies. To this end, it seeks to create a global network of expert researchers, practitioners and policy makers to promote widespread consultation and facilitate world-class research with a view to improving the policy tools necessary to foster economic growth in the context of sustainable development. The GGKP will help to assess and refine local, national and global policies to facilitate their implementation in both developing and developed countries, with the aim of increasing local environmental co-benefits and stimulating growth.
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