

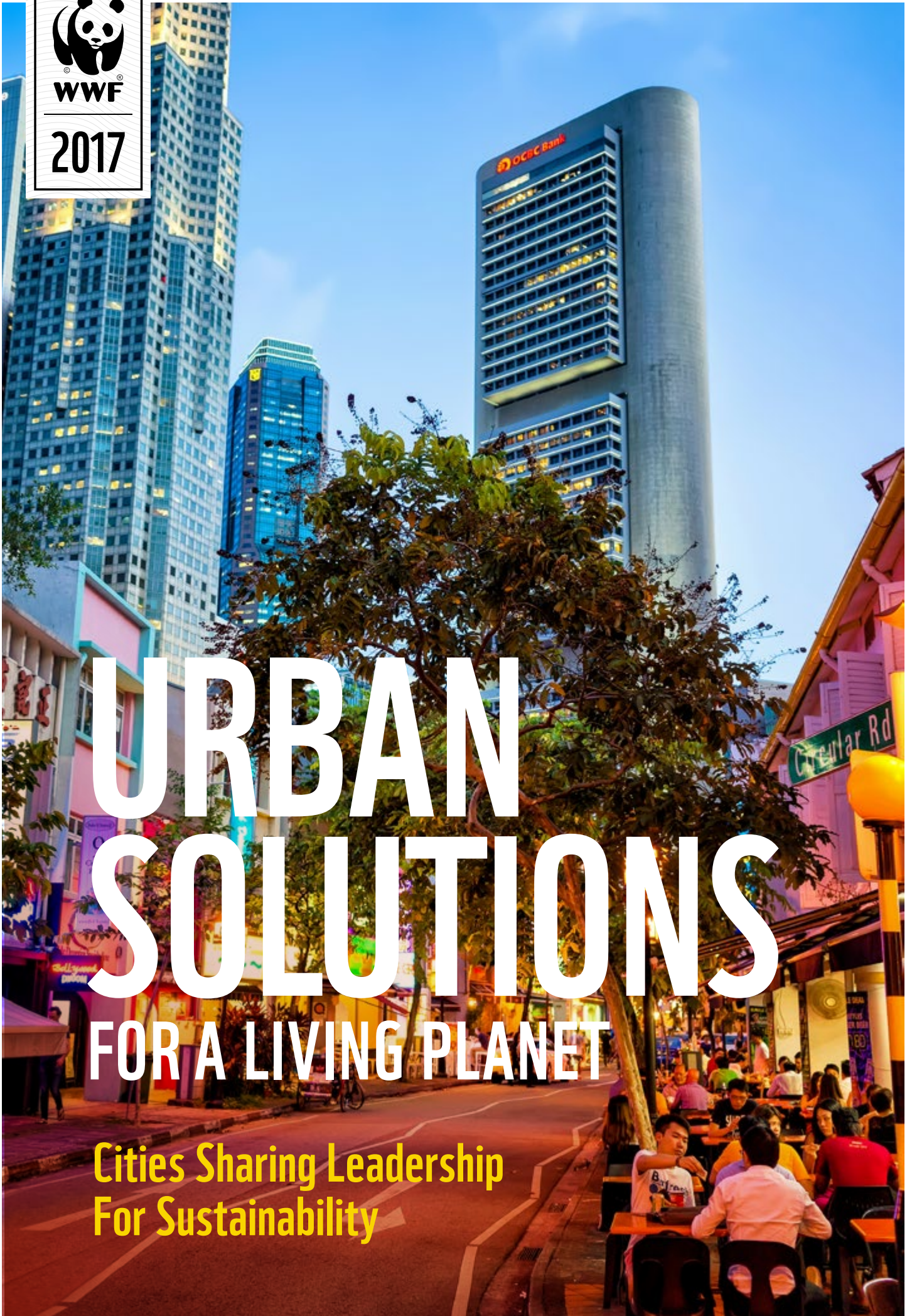


WWF

2017

URBAN SOLUTIONS FOR A LIVING PLANET

Cities Sharing Leadership
For Sustainability



CITIES ARE SPACES OF OPPORTUNITY & LEADERSHIP



WWF AND CITIES

WWF'S MISSION IS TO DEMONSTRATE THE POTENTIAL OF CITIES TO TRANSITION TOWARDS A CLIMATE RESILIENT AND 100 PERCENT RENEWABLE ENERGY BASED FUTURE, WHILE PROMOTING AND PROTECTING HUMAN WELFARE AND THE INTEGRITY OF OUR NATURAL ENVIRONMENT.

LEARN MORE:
PANDA.ORG/CITIES

This handbook is WWF's tool to inspire the transformation of cities around the world into collaborative leaders in social progress within ecological boundaries.

It outlines the global context of old risks as well as new mandates, presenting the opportunity for international partnership on urban solutions, and it summarises learning cases from around the world. The handbook is for all actors who work with cities and sustainability, and aims to initiate debate and learning in order to help cities of the global North and South achieve shared leadership of the next generation of sustainability action.

This handbook builds on previous [Urban Solutions](#) reports, and is intended to be used by, and developed in collaboration with, national and city-level partners in the coming years. It is also an introduction to and summary of the issues for all interested readers.

Cities are centers of dynamic change. They face huge challenges, yet also offer great opportunities and solutions

- » Cities are centers of the fastest and largest transformations in population, consumption, resource use and waste.
- » Cities have the richest opportunities to accelerate positive change by their planning of spatial structure, connected infrastructure, and organizational and social dynamics, and by the possibility for scale in effecting solutions.

Cities are important actors in the transition toward a low-carbon and sustainable future

- » Cities lead the way with innovative policies and action when it comes to low-carbon solutions. To fully unleash their potential, cities need a supportive environment that enables them to more easily achieve their goals.
- » Cities have massive leverage to reduce society's ecological footprints. Their choices around energy, transportation, and building standards, affect huge numbers of people.
- » Cities can directly improve quality of life while reducing environmental impact. Cities can offer options for smarter choices within energy, housing, transport, food, green space, water, and waste.

Sustainable mobility is key to the transformation to a One Planet Future

- » Mobility and accessibility are key areas for delivering solutions for a climate-resilient future, built on 100 percent renewable energy, and for the creation of attractive, sustainable cities, based on health, equality, and improved life quality.

Cities around the globe can share leadership for global sustainability

- » Cities can serve as powerful examples that others can learn from. By sharing experiences that acknowledge similar contexts – and recognize different challenges – cities around the world can accelerate their own sustainability initiatives.
- » By recognizing their own capacity, and amplifying it through partnerships, cities around the globe can share leadership for global sustainability.
- » The majority of future urban growth will take place in medium-sized, fast-growing cities. Sharing best practices with these fast-growing cities is vital.

Cities are hotspots for the development and implementation of transformative solutions for a One Planet Future. And we're all a part of the solution.

URBAN SOLUTIONS OUTLOOK



In this handbook WWF highlights cities from all over the world taking a lead in work towards a sustainable future. The cases are presented in longer Profile and shorter Snapshot learning cases. These learning cases provide real-life examples of urban-level actions to create a more sustainable, climate-friendly future.

Unless otherwise indicated, the source of data for these cases can be accessed at the Urban Solutions for a Living Planet web site. Here, WWF has studied and catalogued real examples of how cities are approaching the need to minimize their ecological footprints and protect ecosystem services and biodiversity, using [13 vital themes](#) for meeting human needs within the limit of our one living planet. The linkages between the UN Sustainable Development Goals (SDGs) and the WWF Urban Solutions themes are summarised at the centerfold of the report.

The inspiring examples provided by these learning cases highlight how cities are working, in real life and in real time, to reduce their ecological footprints and protect biodiversity and ecosystem services, supporting the SDGs at the urban level.

For more information on each case, please visit wwf.panda.org/urbansolutions.

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THE GLOBAL CONTEXT

Global environmental change

Industrial society has enabled wide wealth, health, and poverty alleviation

Industrial living is still very negative for resource conservation and nature protection

WWF tracks environmental impact trends in its biennial Living Planet Report using various science measures including biodiversity and resource consumption data



National governments can do more, cities are leading, and if we work together you'll see much more progress than what you've had to date at a national level.

Michael Bloomberg
Former Mayor, New York City

Living in a time of change and progress

Human society is experiencing one of the most intense periods of change in history. Demographics, political structures, industrial and economic models are all being transformed. Populations are converging on cities where lifestyles and workstyles are being dramatically reinvented through computer and communications technology.

Much of this change is positive, for the poorer communities as well as the wealthy ones. Health, sanitation, gender rights, education, mobility, political participation, access to goods and services, and other indices are – despite slow progress – improving overall.

Industrial society still depletes nature and resources

At the same time, the planet's natural resource base and its life-support systems – and the ecosystems, habitats, and populations of non-human organisms – are being relentlessly depleted and impacted. Despite decades of international commitments and action, the global society has not found a systematic way to balance economic aspirations and the earth's environmental realities. There can be no long-term progress or justice without resources, and no amount of progress can replace the value or functions of nature.

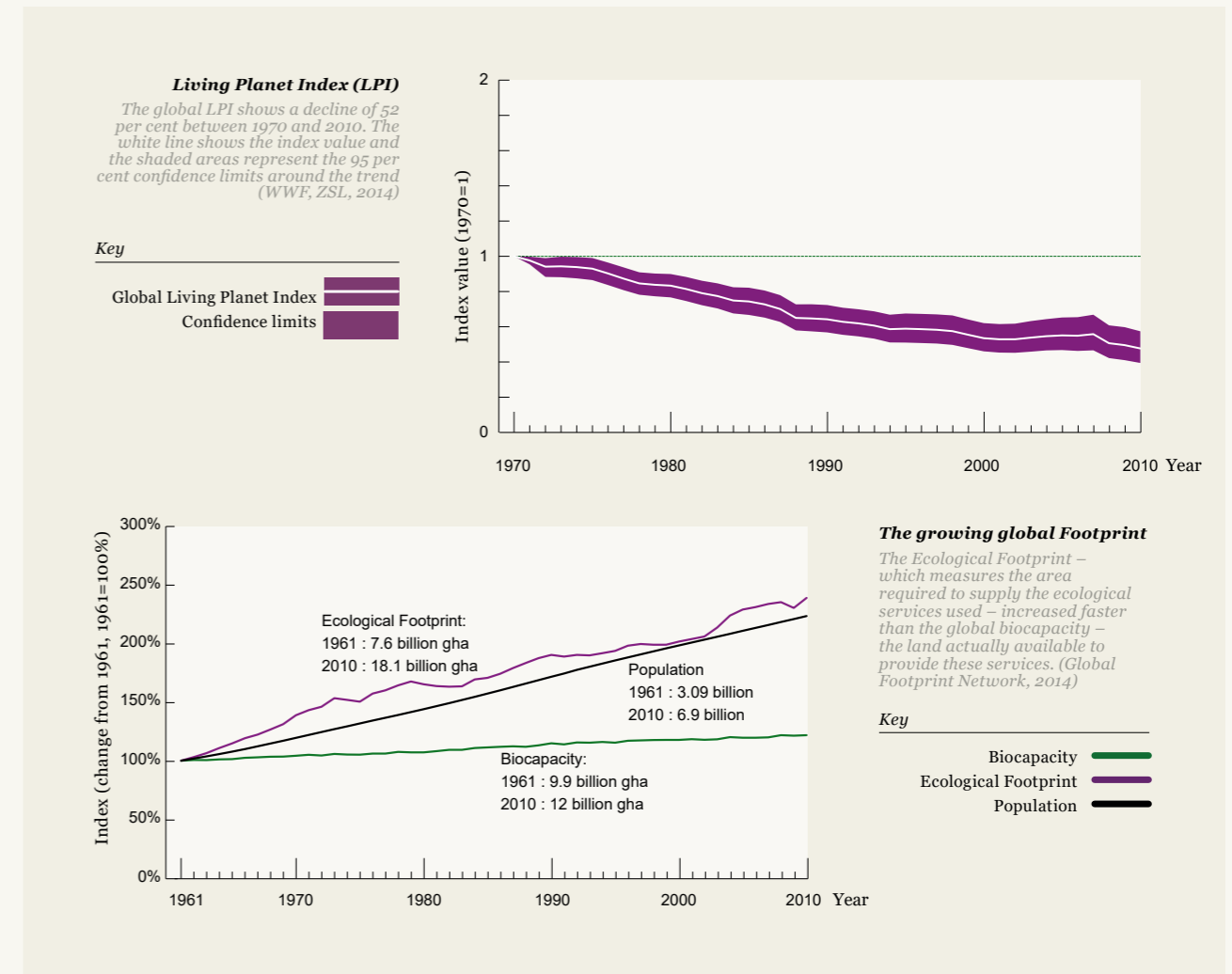
WWF's mandate is to act at this intersection – between social progress and environmental damage – by preserving biodiversity and by helping to reduce the impact of human development while ensuring quality of life for all. In order to act effectively, WWF bases its work on up-to-date science and systematic analysis, shared every other year in the [Living Planet Report \(LPR\)](#).

The LPR uses various indices for assessing the natural environment and human progress towards sustainability – two of these being the [Living Planet Index \(LPI\)](#) and the [Ecological Footprint](#). The LPI is a status check of the major wild animal categories around the planet, while the [Ecological Footprint](#) is a composite measure of our appropriation of so-called biocapacity, representing the planet's capacity to provide ecological resources and services. In addition to these indices, the LPR and other research efforts increasingly employ the [planetary boundaries](#) model of global environmental limits.

Living Planet Report summary

- » The global Living Planet Index shows an overall decline of 52 per cent of the major wild animal categories around the planet between 1970 and 2010.
- » We need 1.6 Earths to meet the demands we currently make on nature. This means we are eating into our natural capital, making it more difficult to sustain the needs of future generations.
- » Fossil fuel use and resulting emissions are the dominant component of humanity's Ecological Footprint (from 43% in 1961 to 60% in 2012). Together, fossil fuel consumption represents the largest single component for 145 of the world's 233 countries and territories.
- » The Ecological Footprint per capita of high-income countries remains about five times more than that of low-income countries.

» The planetary boundaries concept defines nine regulating processes that keep the Earth in a stable state where life can thrive. Transgressing any of the nine boundaries could generate abrupt or irreversible environmental changes. Four appear to have been crossed already: climate change, biosphere integrity, land-system change, and biogeochemical flows.



Progress towards sustainable development

Action since 1972

The warning signs detailed in the Living Planet Report and in other scientific sources are not being ignored. These signals are being translated, slowly but surely, into powerful policy mandates for global change.

Sustainable development has been on the global agenda since 1972

Since 1972, when Swedish Prime Minister Olof Palme opened the first global policy conference on sustainability – the [Stockholm Conference on the Human Environment](#) – the world's governments have individually created action frameworks based on growing evidence of the environmental crisis. Similar action frameworks on human development have also progressed at the international level.

In 2015, 17 global Sustainable Development Goals and the Paris Agreement on climate change were signed

Implementation frameworks include sustainable production and consumption, water-energy-food nexus, and cities

WWF is using these new mandates and the supporting implementation frameworks to help cities emerge as leaders in sustainability

Sustainable Development Goals and the Paris Agreement on Climate

In 2015, after decades of negotiations, the separate global frameworks on environment and development were finally united into one set of global goals, the seventeen [United Nations Sustainable Development Goals](#) (SDGs).

Soon after, governments signed a new agreement for action to reduce greenhouse gas (GHG) emissions, called the [Paris Agreement](#). This positions GHG emissions reduction as the priority around which the rest of the SDG goals can be laid out. One way to view the implementation challenge of climate agreements, used by the UN Environment, is in the idea of 'bridging the gap' between current practices and the lower emissions levels needed to limit global warming to well below a 2° Celsius rise.

Implementation frameworks and the changing role of cities

The SDGs and the Paris Agreement bring a fresh mandate and new political and social resources toward achieving change, and renew the opportunity to take action. They also give rise to additional, action-oriented frameworks for implementing sustainable development: two of the most far-reaching are the sustainable consumption and production (SCP) agenda and the 'water-energy-food nexus' concept of integrated infrastructure development.

SCP is a policy package as well as an ongoing discussion, summarised in [UN Environment's Consumption Opportunities](#) book. Both seek to demonstrate the economic and social advantages of more efficient patterns of production and consumption.

The [water-energy-food nexus](#) is a policy approach, proposed in 2011 by bodies including WWF, the World Economic Forum, and the UN Food and Agriculture Organisation, which recommends treating the infrastructural, social, and economic framing of water, energy, and food as an interlocked 'nexus'.

Christiana Figueres, former Executive Secretary of UN Framework Convention on Climate Change, leads talks towards the Paris Agreement, with French Foreign Minister Laurent Fabius, 2015



The importance of cities has been a prominent theme in sustainable development policy since the beginning. Already at the 1972 Stockholm Conference, the very first of its [109 recommendations](#) read:

“The planning, improvement and management of rural and urban settlements demand an approach, at all levels, which embraces all aspects of the human environment, both natural and man-made.”

At the [Earth Summit](#) in 1992, Chapter 7 of the resulting mandate, [Agenda 21](#), promoted “sustainable human settlement development”. This was carried forward in part by Local Agenda 21 action plans, at the municipal level, and supported by an organisation founded around the same time: [ICLEI – Local Governments for Sustainability](#). Since then, cities have increasingly come to be seen as important actors and potential leaders of action for sustainable development.

This handbook contributes to further appreciation of cities as potential leaders in implementing sustainable development. It uses the SDGs and Paris Agreement mandates, supported by the SCP agenda and water-energy-food nexus, to make the case that cities are not only helpful but necessary. Cities add vital capacity to actions being taken at the national, rural, and sub-municipal levels and bring unique new collaborative opportunities only they can establish.

North-South sustainable development relations

Sustainable development is a policy blending global environmental sustainability with economic progress in the global South

A key principle is common but differentiated responsibilities – shared goals, but differing paths

A positive approach to this, including synergy and complementarity, aligns with a stronger role for cities

Sustainable development as a North-South pact

Sustainable development is not a principle derived solely from science; it emerges equally from political necessity. When awareness of environmental degradation reached a high point in the 1980s and 1990s, it became clear that any strictly environmental version of sustainability was destined to clash, and not just with economic development and industrial progress. It was also misaligned with the global human development agenda overall, which includes economic and industrial development to raise standards of living.

Simply put, while the world's total resource footprint needed to shrink, the material consumption of the global South needed to grow. And leaders from the global South made it very clear that they could not be expected to restrain their economic patterns in the same way as the North was expecting. This logic was sound. The global North had for two centuries consumed the largest share of resource consumption and consequent environmental damage. Still today, these same countries permit resources-intensive and environmentally negative lifestyles and production modes. So how, argued the global South, could it achieve the same material standards, without access to resources equivalent to what the North enjoyed for generations? And why should it be expected to peg its development ambitions at a material level less than that which the North lavishes on its citizens?

At the 1992 Rio Earth Summit, a first framework for global environmental protection was agreed upon, partly to address this political conundrum. The agreement at Rio stated that global sustainability could progress as long as it continued to support human development in the global South. This is the basis of the concept of sustainable development. This linkage between sustainability and development was possible in part because of the evolution of another powerful principle: [Common But Differentiated Responsibility](#) (CBDR). Here is how it was expressed in Principle 7 of the [Rio Declaration](#), the framing agreement of the 1992 Earth Summit:

“States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.”

Common But Differentiated Responsibility

The SDGs and the Paris Agreement are significant achievements for diplomacy – yet they are also fragile because they explicitly rely on action through common but differentiated responsibility at a scale that has never to date been achieved. The climate negotiations up to and including the Paris Agreement were far from easy, and international governance seems to have reached the limit of its capacity to align otherwise contradictory interests within the current sustainable development



If you don't have political agreement, you can't approve good laws – if you don't have a continuity of programmes from one mayor to another, a good economy is not sufficient.

Márcio Araujo de Lacerda
Mayor of Belo Horizonte



When you have hard data you are able to really develop public policies that allow you to attend to the problem in a very responsible manner.

Tanya Müller
Environment Secretary,
Mexico City

discourse. If the Paris Agreement falls apart, through a lack of global collaboration, this will have dire consequences for human progress.

CBDR has mainly been viewed in defensive terms, and deployed as a tool of brinkmanship: the North must act, otherwise the South will not act. Increasingly, though, more nuanced interpretations are coming into play, seeking to interpret the principle as an opportunity.

Two emerging aspects of CBDR are particularly relevant in reinforcing the potential of cities as actors. First, certain opportunities arise only when relevant actors act in common, for example, when a collaboration creates synergy, i.e. output that is more than the sum of the parts. Two cities working together to place a joint order for solar panels, would be an example of synergy – employing economies of scale to reduce unit costs compared to the cities’ purchasing solar panels separately.

Second, competence and resources being diverse and differentiated between North and South creates complementarity. This means learning and exchange can be mutually beneficial for urban development: cities of the global North can offer knowledge in areas such as urban planning, while large cities of the global South can offer experience in areas such as urban enterprise and citizen participation. In fact, because much of the North-South partnership rhetoric has stalled at the national level, emphasising the role of cities in North-South affairs becomes even more vital. It may be the last remaining way in which the North-South conundrum can be turned from a point of tension into a point of mutual opportunity.

North and South as provisional categories

Before looking further at the urban possibilities for positive change, a clarification. While the concepts of global North and South help to interpret the complexity of relations between richer and historically poorer and post-colonial countries, they are not accurate categories for any one country or region. Increasingly, countries are exhibiting economic and social progress that breaks out of the North/South binary. The so-called BRICS group for example – a shorthand for Brazil, Russia, India, China and South Africa – have population, consumption and production, as well as economic scales and speeds of change that demand a different approach.

It certainly isn’t the case, either, that the concept of North/South captures all of the justice and economic disparity issues that need to be dealt with when delivering urban sustainability. Urbanisation can and does exacerbate wealth disparity within a country, between urban and rural dwellers. And urban solutions often focus on parts of the city with already functioning infrastructure and services, rather than on those parts without, such as informal settlements. These are aspects of what has been called the environmental justice agenda. They are connected to the North/South concepts of justice, impact, and opportunity, but operate at different scales – many of them urban.

So, when used in this handbook, North and South refer provisionally to the different expectations of countries that are already economically developed versus those that are, in the conventional sense, still ‘developing’.

THE URBAN OPPORTUNITY

Cities in sustainable development

Cities are becoming central to sustainable development because:

- Global decisions land in the city
- Cities have become home to more than 50% of world population
- Cities are ever more central to environmental damage control

The context in which we discuss the role of cities is clear:

- » reduction in global resource consumption and biological impact is more urgent than ever
- » there are new global mandates – the SDGs and the Paris Agreement – urging sustainable economic development, as well as conceptual frameworks that help to organise specific action – but not enough is being done
- » North-South collaboration is more essential than ever, and a positive approach to CBDR can lead to synergy and complementarity.

The first period of sustainable development policy evolution (between 1972 and 1992) affirmed the role of cities as a framework and context for sustainable development. But in the period since then policy has started to interpret cities not just as primary contexts for sustainable development but also as lead actors of change. How did this shift emerge?

Three reasons cities are becoming lead actors

National governments have been conventionally accepted as the leading actors in global affairs: they sign the treaties, and distribute the major budgets. But now, governments are willingly acting in new actor constellations, involving non-state partners, whether corporate, social, or technical. Examples of these include the [World Economic Forum](#) or the [Clinton Global Initiative](#). Even the Paris Agreement was signed at a meeting with unprecedented input from non-state actors. In the contemporary landscape of decision-making, cities, especially large ones, have new institutional power.

Also, cities have simply grown in individual scale, and in the total balance of population and economic activity. To take a single signal example: in 1972, China had an urban population of 154 million people, approximately 15% of the total population; by 2015, China’s urban population was nearing 800 million people, nearly 55% of the population. On a global scale, more than half the world currently lives in cities now. This vast scale of urban growth means that national-level concerns are more and more linked with cities’ concerns.

Finally, environmental threats and their causes are not distributed equally. They are embedded and exhibited more intensely and more diversely in cities than in any other context. For example, the rise of the private car can enable social freedoms or economic development. But in the urban context, the contribution of cars is a mixed blessing, and in many cities its legacy casts a shadow over current prospects. Fossil-based road transport accounts for nearly 50% of all oil consumption worldwide. Cities that are designed around road transport systematically sprawl over long distances. Sprawl is itself a form of spatial inefficiency, and it in turn implies: urban development locked into expensive and inefficient transport infrastructures to drive the economy; loss of essential food land; elimination of ecologically and socially important green space; and severe social costs.

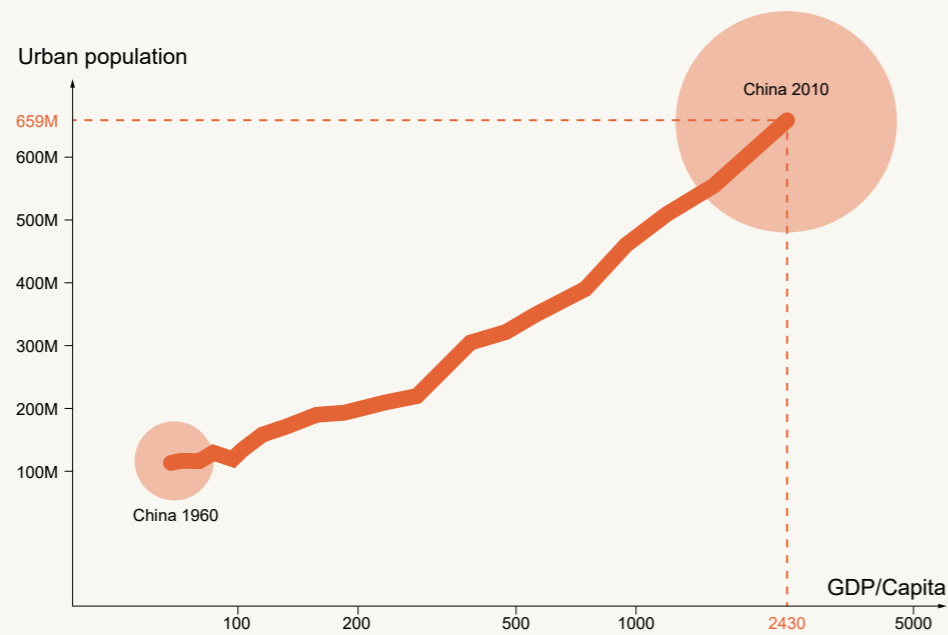


If we do not create jobs and prosperity for young people, we will never save the rhino or solve climate change.

Strive Masiwiya
 Founder, Chairman
 Econet Wireless

Urban environments are not just intensive sources of environmental damage – they are also recipients of it, in particular through climate change. For example, some of the largest cities in the world – including many of the poorer cities – are coastal and will be the first to experience the full force of climate change. This does not just entail extreme weather events, it also means incremental flooding that over time robs cities of their already dwindling cultivation land and natural habitats. City leaders and citizens are all too aware of the threats facing them, and not willing to wait for national governments to act.

These three reasons – new actor constellations, the growth of urban populations, and the asymmetric distribution of causes and threats – demonstrate why global attention is centered on cities. Cities also have special characteristics that enable their leadership of global change.



Cities as locations of change

Cities are drivers of resource consumption

The challenge of achieving sustainable production and consumption is applicable to all, but applies predominantly to urban lifestyles. The reason for this is that these lifestyles, established mainly in the North in the 20th century, involve hugely intensive consumption of natural resources and an outsized impact on nature. This consumption is based on the way urban consumers eat, travel, live at home, work at the office, and enjoy their leisure time – and the infrastructures required to satisfy these demands. Cities in the global South have different patterns of resource use – but even there, behavioural patterns are trending towards Northern lifestyles. Globally, urban areas account for around 70% of energy use and over 70% of global energy-related CO₂ emissions.

Cities are the global hotspots of material consumption

Cities are also, by evolution and design, optimised for efficient resource consumption – through scale, spatial configuration, and infrastructure

Commuter lifestyles developed around private car use involve hugely intensive consumption of natural resources and an outsized impact on nature

As such, the sustainable consumption debate has essentially merged with the sustainable urban lifestyles debate. The opportunity enabled by talking about consumption in an urban context is that we can address the systemic aspects – including supply-chain, retail, transport behaviours, workstyles, leisure patterns, waste – and their scale effects. These concrete aspects of change need more focus, in addition to personal awareness, preference, and behaviour, as the latter measures have proved ineffective, on their own, to achieve necessary change.



The same thinking is relevant in the global South, even though far less consumption is taking place there right now. The particular opportunity for the South is to plan its cities for the highest quality of life, without locking in the resource and social inefficiencies and externalities of modern Northern urban lifestyles. This is not the same as suggesting the global South should not have access to the same opportunities. Instead, it is about making sure cities of the South leapfrog to the best available urban designs, economic systems, and lifestyles. Historically this is significant, because millions of urban dwellers in the global South are currently in the early industrial phase of city living. They moved to the city essentially because of migration-inducing economic pressure, not natural choice, and find themselves with living standards often worse than those they had in the rural context.



Cities fighting climate change are cities where people are sitting together and working with each other towards finding solutions.

Alexandra van Huffelen
 Vice Mayor of Rotterdam

Resource consumption and ecological impact which cities are indirectly responsible for often does not take place in or near the cities themselves. This is because the centralisation of human habitation and intensity of economic activity in cities creates supply chains and other economic ripple effects that play out across the world. A city could be said to include not just what happens inside its territorial border, but ultimately all the actions and resource flows that are predominantly associated with the choices and activities of its inhabitants. The Ecological Footprint that WWF uses in the [Living Planet Report](#) is based originally, in fact, on an investigation of how much land and nature is required outside of cities to satisfy the consumption requirements of urban dwellers.

Cities exploit scale, space, and infrastructure

The city format represents a huge opportunity in implementing solutions for sustainability. First, modern lifestyles are more efficiently satisfied and managed in terms of nature preservation and resource use in the urban context: less logistics, easier waste management, more efficient distribution of the baseline services including water, energy and food. Second, in the city context, new solutions can rely on engaging concentrations of citizens and private, public, and non-profit organisations at far greater scale and speed than outside cities.



Cape Town's approach to climate change is to give specific priority to those projects that deliver co-benefits, or simultaneously reduce poverty and create much-needed jobs.

Patricia de Lille
Mayor, Cape Town

The reason cities are able to address resource flows at such scale, and to coordinate people in such quantities, is due to three features unique to cities: scale; spatial properties, including density and mutual industrial interactions (e.g. weavers and textile makers); and the glue that links these two, infrastructure, which needs both scale and spatial coordination to be effective.

Cities are thus far more than mere collections of people. If a new food, transport, or energy system is implemented in a city, in principle all components change together – at a scale that makes a great difference. This is different from individual citizen-based action, and is the insight leading to the idea of ‘nexus’ in the water-energy-food nexus approach.

These features are no accident: the spatial, scalar, and infrastructural character of cities, and their unique potential to enable efficient solutions, is the reason cities exist in the first place. Cities came about as ways to facilitate trade, exchange, and efficient productivity as much as for any social or cultural purpose, and this is the technical base of their growing relevance as changeleaders.

Better city design that exploits scale, space, and infrastructure can lead to efficient environmental solutions as well as social and economic improvements. And while the SDGs and the Paris Agreement may be considered top-down edicts, city-led development is more bottom up, because developments require some level of participation by city dwellers to be most effective.

The rural context and opportunity

An intensified focus on cities and their potential to shape change shouldn't deflect attention from relevant action in rural areas. One of the simpler conceptual roles of rural areas is as part of the supply-chain of inputs to the urban economy: inputs such as food, water, fibre, textiles, and minerals. But rural settlements and economies are important in their own right for many critical areas of sustainability including nature protection and environmental pollution.

Rural dwellers are the frontline in preserving many sensitive habitats and critical natural capital (including ecosystem resilience) in the form of forests, wetlands, and keystone species. And large-scale rural farming practices lead to forms of cumulative damage that can bypass cities entirely, such as eutrophication. Thus as cities grow, the importance of rural areas for managing natural capital and for managing and absorbing ambient pollution flows from agriculture also grows.

Rural economics and social dynamics should increasingly be structured to reflect this systemic role in which rural-urban relations obviously rely on rich interdependencies, beyond merely supply and support relationships.

Focusing on cities as leaders of sustainable change – as we do here – does not imply focusing only on the activity within the territorial borders of a city. The focus must include flows of resources that pass in and out of the city in relation to the different human activities taking place in cities, and the cultural and economic relations that facilitate those flows.

The rural and farming environment is critical for nature protection and resource management



Our cities are already developing sustainable, lasting and economic solutions to address the issue of climate change

Anne Hidalgo
Mayor of Paris

Cities are coherent organisational units where change can be effectively managed, often by mayors and offices of mayors.

People can coordinate, innovate, and act at the urban scale because of cultural and spatial connections

Cities as lead actors of change

The power of the Mayor's Office

Cities are also the next generation of solution providers. Cities and urban regions have leadership and organisational characteristics that often don't exist at the national level. Specifically, the mayor or equivalent – in collaboration with an executive office team and regional leaders – can represent a concentrated political force with social popularity, a focus on local issues, and close control over budgets and administration. This is a seat of authority that can and has brought about massive change.

The figurehead role of the mayor along with the narrative of the self-improving city together loom large in mass social development. These are examples of leaders, and communities, that could not and would not wait for change from the outside.

Case studies of this urban autonomy potential have flourished in Latin America, in cities including Curitiba in Brazil and Medellín and Bogotá in Colombia, whose pioneering mayors have been, respectively, Jaime Lerner, Sergio Fajardo, and Enrique Peñalosa. These mayors exploited the classic urban dynamics described above – scale, spatial design, infrastructure – to make a direct difference. But they also used their personal proximity to the issues and to people, as well as the character of the political system and social networks in their urban contexts to implement massive changes in a short period.

Mayors also achieve really effective power to change their cities by gathering and empowering executive talent around them, by mobilising resources and skills in other sectors, and by recruiting and sustaining mass participation of citizens across the city.

Urban platforms and leadership

Michael Bloomberg, the former mayor of New York City, curated a vision for New York called [plaNYC](#), and embedded it in the new Mayor's Office of Sustainability. Bloomberg was uncompromising in his rhetoric around climate change and the role of the city in sustainability. This momentum, and the leadership provided by Mayor Ken Livingstone in London, helped establish a global initiative called [C40 Cities Climate Leadership Group](#) – a collection of megacities committed to reducing climate impacts.



During the UN Climate Change Conference in Paris (COP21) held in December 2015, mayors and other local and regional leaders also gathered at the Climate Summit for Local Leaders. Thereafter they signed the Paris City Hall Declaration.

Notably, this group's urban leaders rolled out policy platforms which have only loose connection to the policies of the conventional left-right political spectrum, and were instead very place-specific and concrete. It is possible that it is the climate issue that is enabling cross-boundary ideological collaboration.

Similarly, ICLEI and the other partner organisations at the Climate Summit for Local Leaders in Paris 2015 are examples of the post-party ideology platforms upon which city leaders are today uniting, even though they hold different political beliefs, and represent diverse institutional arrangements.

What's unexpected and particularly notable is that these networks are self-consciously seeking to lead, offering themselves up as partners in governmental processes, exceeding



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Most thinking and writing about urbanisation is about the problems, poverty, housing and so on — there's not enough about the value that the urban tissue generates.

Joan Clos
Executive Director,
UN-Habitat, Former Mayor
of Barcelona

national government targets at the urban level, and contributing to ambitious policy and research. Examples of this include ICLEI and partners lobbying the [Intergovernmental Panel on Climate Change \(IPCC\)](#) to add urban-centric research to their research and reporting structure; the [Paris City Hall Declaration](#) which was made by a meeting of mayors and local leaders in parallel with the Paris Climate Summit in 2015 and aims to go *beyond* the Paris Agreement; and the emergence of the [New Climate Economy](#) policy and research group and its recently launched urban sub-project, [The Coalition for Urban Transitions](#).

The power of the people

Even for those not influential in the formal urban administration structures, the power of cities as systems of human organisation is undeniable. People can be mobilised, enterprises started, and public services delivered at the city level in ways that are more manageable than at the national levels.

Some examples of how cities could enable rapid and scaled impacts in social and environmental spheres are: recruiting the supporters of a city's football team to an education initiative and using one of the footballers as a figurehead; starting a food-distribution or waste-collection service using otherwise unemployed informal labour, or distributing vital healthcare via the public transit system. The effectiveness of people and organisations, which are central to such examples, is crucially enabled by the spatial and scale features of the city. We here see the special potential of cities in action, exploiting the technical features of urban living, while actively relying on the unique social and governance systems that people trust and own together.

Exploiting the city in these ways, and giving the city its power in these forms, exploits a rich mix of different institutions, making the city what it is and can be. Beyond the formal actors, what the city is, how it is led, and how it leads will include popular and participatory movements, technocratic cadres, plan-led bureaucracies, commercial-industrial-financial clusters, transnational corporations, microenterprises, classic public-private partnerships, and more.

The practical reality is that cities now need also to be accepted as some of the most powerful and fast-acting institutions available on the planet. On this basis, they can be added to the group of leading actors – governments, industry, research, enterprise, media, culture, and civil society – that hold effective levers of power and influence at the global level.

TransJakarta
Bundaran



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Cities as vehicles for North-South partnership

Cities of the North and South can use common but differentiated responsibility as a collaboration tool

Partnerships seeking innovative synergy are exciting opportunities to advance implementation more cheaply

Cities collectively and national governments can achieve a form of shared leadership for sustainability

Common but differentiated responsibility as an urban partnership opportunity

Cities across the world have different capacities and are embarking on different development paths. How can they be brought into a shared pathway to sustainable development? Another way of asking this would be to consider two more specific questions. Do the cities of the global North and South also have 'common but differentiated responsibilities'? If so, can this offer an opportunity for synergy and partnership rather than more grounds for mistrust?

The answer to both is yes. Not only are cities ready to take on a leadership role, they can do so in a way that makes the most of the difference between urban regions of the North and South.

All or most of the formulations of what a city 'is' seem relevant to this new dimension of North-South partnership, as seen from the cases in this handbook. In various ways, cities can and do act not only to their own social, economic, and environmental benefit, but as part of the implementation of the global environmental mandates, including the SDGs and Paris Agreement. In doing so, they help ease the tension between nations regarding the division of responsibilities between North and South.

Complementarity and mutual learning

The simplest form of positive North-South interaction cities can pursue is complementarity, that is, learning from mutually useful differences, in particular diverging competencies. Despite large differences in economic and cultural circumstances, cities of similar scale can engage in sustained exchange about governance and development. City planning activities, for example, implementing and running a sanitation, or transport, or waste system, are technical practices that most cities of the North have mastered to a greater or lesser degree – and that knowledge can be shared with partners in the South. Many of the urban problems in the global South are compounded by the lack of a stable urban planning culture.

The South also has much to share with the North. Cities in the North want to experience the efficiencies and life quality upgrades of innovative uses of urban space and infrastructure, both public and private. Microparks, so-called 'street life', co-working and collaborative production concepts, business clusters, selective pedestrianisation, and much more are examples of innovative city life that are in demand in the North. But the traditions of central planning and governance in Northern cities have often depleted genuine urban creativity and risk-taking required for innovation. The role of citizen participation, local enterprise, and culture in urban innovation – including innovation around core utilities and expressions of cultural values are sources of expertise that cities of the global South can share to great benefit with Northern cities.

This is not merely conceptual: Northern cities are currently experimenting with practices that the global South has led on for years. For example, an app was launched in Stockholm in 2016, to facilitate citizen-led collection of waste for recycling – a practice that Jaime Lerner's Curitiba made standard more than 20 years ago. Another example is street food. Modern cities, including Stockholm and London, Helsinki, New York, and Pittsburgh, are crying out for better street food – of the sort that has been provided in most of the world's Southern capitals for generations. Even budgeting can be made interactive: cities such as Porto Alegre in Brazil have pioneered participatory budgeting, and it is being explored in a simple form in Paris. It could also be aligned with local financial innovations such as Gothenburg, Sweden's use of green bonds.



© TRI RISMAHARINI

There's no use if a city is developed, but the people cannot enjoy the benefits. The people must be the masters, not just spectators.

Tri Rismaharini
Mayor of Surabaya



You have to keep things simple, and just start working. You get creative when you take a zero from your budget.

Jaime Lerner
Former Mayor of Curitiba

Partnering and synergy

Beyond complementarity and mutual learning comes partnering, which seeks to achieve synergy. It is somewhat harder for cities than countries to be involved in multilateral partnerships, as cities have fewer resources than nations: global intergovernmental organisations are more developed than interurban ones, and there are so many more cities than countries. At the same time, cities can efficiently establish bilateral, place-to-place partnerships with selected urban counterparts to introduce spatial, infrastructural, social, economic, and governance collaborations.

One form of partnership is structured reciprocity: financial payment moving from North to South, in return for reciprocal value – access to markets, outsourced labour, commercial and cultural benefits – moving in the other direction. Conventionally, this is arranged as a national, bilateral trading relationship. But a city or urban region, such as the major industrial zones in China, might well negotiate this on their own terms. This form of partnership would support a key premise of the Paris Agreement, and other international agreements: that the North will financially support the South.

Another potential approach might be via distributed industrial development. The same technology or product could be tested in urban markets in different cities around the world, and when sent for full-scale production, enjoy preestablished markets and sales channels. For example, rooftop solar panels or smart-grid technologies would benefit from diverse deployment scenarios during the testing phase, and an immediately scaled total market in the sales phase.

Cities include actor constellations of various sorts, not just the municipal public sector. Some technology solutions can actually facilitate North-South partnerships without long lead times, for huge potential effect.

Lyft, the rideshare company that has established itself as the largest global competitor to Uber, received a billion dollars of new investment in 2015, partly on the basis of its new expansion to the cities of Southeast Asia, namely in China and India. The essence of this deal is collaboration between the cities served by the ridesharing companies in North and South through the Lyft app.

Thirty-six cities came together at the 2015 ICLEI World Congress to sign up to the Global Covenant of Mayors to expand North-South collaboration around sustainable urban development



In the future, we will only use cars when they are the best transportation choice for a particular trip. The car will no longer be the default mode.

Robin Chase
Founder, ZipCar

The role of cities can and should be taken into account in the ODA reform debate, as cities can share leadership with national governments in implementing sustainability actions

The Lyft case is an example of both distributed development and collaborative market, and shows how city-level actors can operate at scales previously only imaginable for nation-level actors. Also, it demonstrates that collaboration between and among cities can bring about synergy: benefits that accrue due to active integration of efforts, rather than merely aligned but separate activities.

Shared leadership with others cities and national governments

What all this adds up to is new sources of capacity for action on global sustainability, and confirmation of the role of cities as platforms for and leaders of this new generation of solutions. Where this action takes the form of sustained North-South partnership, a new form of shared leadership might be occurring that has proved almost impossible so far on the international level.

Demonstrating how cities can support the positive implementation of Common but Differentiated Responsibility brings into view other ways that cities can foster intergovernmental action on sustainable development. For example, at the margin of the SDG debates are calls, in many countries, for reform of official development assistance (ODA), the grants and loans that countries of the global North use to support countries of the global South, including for sustainable development. Cities can be invited to have a stronger role in this, as it is likely governments will start to seek North-South city partnerships.

One form of this may be direct ODA distribution from Northern governments to larger cities of the South. This makes sense in principle not least because so much poverty – the major target of ODA – is concentrated in urban areas. In such context, governments might request that recipient cities have concrete plans for implementing the SDGs – all 17 goals being relevant for the urban development agenda.

Alternatively, ODA projects might focus on supporting and cultivating partnerships between complementary cities in the South and North. The extent to which some cities are already leading partners in either voluntary or mandated carbon reduction programs makes this a natural step to consider.



Rocinha Favela,
Rio de Janeiro, Brazil

UN SUSTAINABLE DEVELOPMENT GOALS

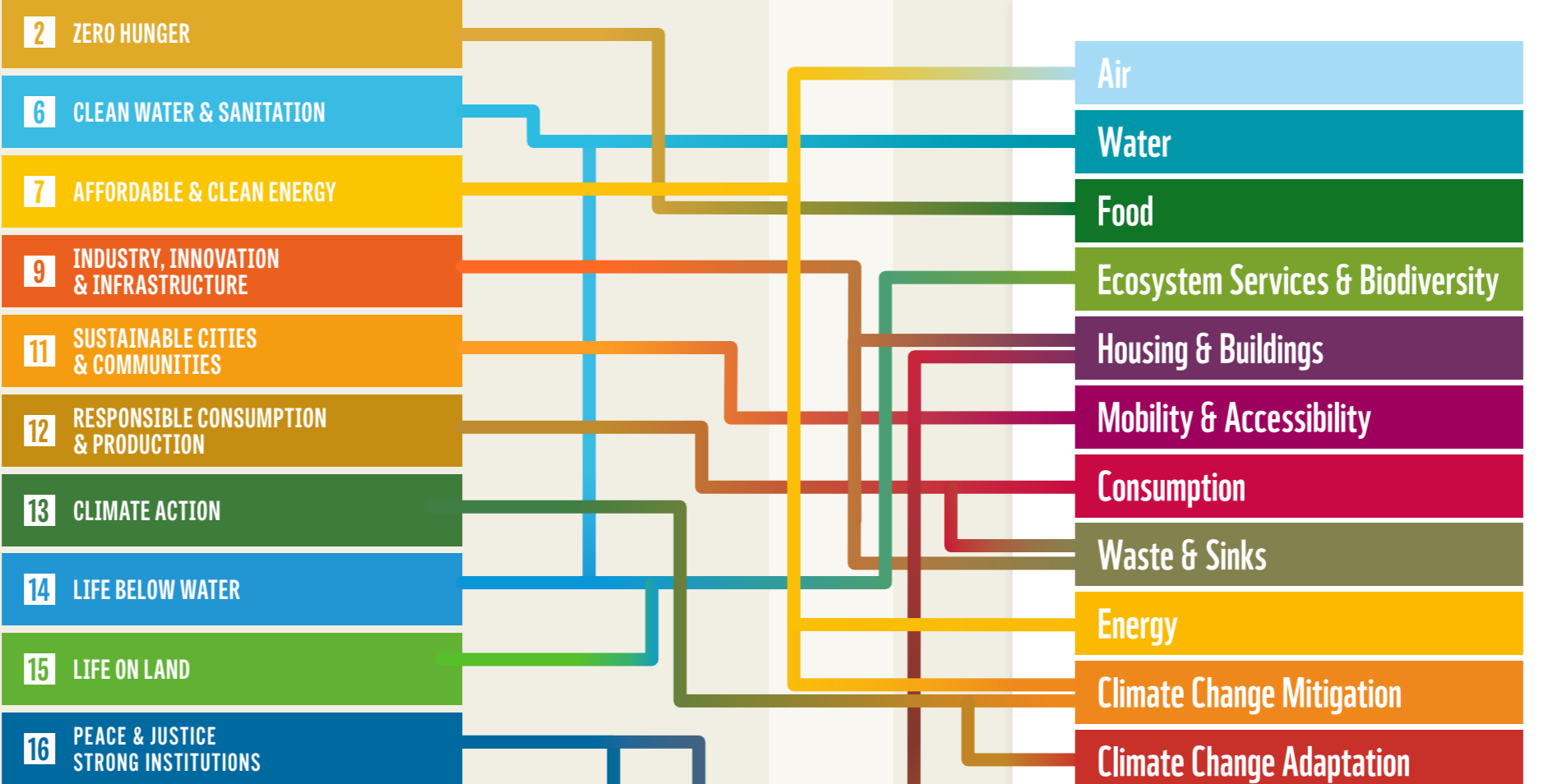
& WWF URBAN SOLUTIONS



The UN Sustainable Development Goals are 17 thematic targets agreed upon by the international community. These overlap significantly with the WWF Urban Solutions platform, which divides sustainable urban development into 13 action themes. The diagram shows examples of linkages between the Urban Solutions platform and the SDGs.

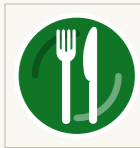


Some SDGs link directly to WWF's Urban Solutions themes, and others link in a more general way. The learning cases in the following pages further demonstrate how Urban Solutions is a ready-made support platform for promoting and implementing SDGs at the city level.



- Air
- Water
- Food
- Ecosystem Services & Biodiversity
- Housing & Buildings
- Mobility & Accessibility
- Consumption
- Waste & Sinks
- Energy
- Climate Change Mitigation
- Climate Change Adaptation
- Governance & Citizenship
- Resilience

BELO HORIZONTE, BRAZIL

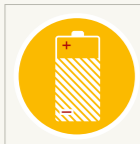


Brazil's sustainability lab

Belo Horizonte is the national winner of WWF's City Challenge for three years in a row (2014-2016). Belo Horizonte (6.3 million in the metropolitan area) provides an impressive example of visionary and comprehensive sustainability planning and programs.



In 2011 the city adopted a climate policy with the goal of a 20% citywide reduction of greenhouse gas emissions by 2030. This is a broad sustainability program with 40 major projects and over 500 actions.



The city provides certificates to public and private companies that have taken actions to reduce emissions and energy and water consumption, especially in buildings. And it has switched all the city's own public lighting to efficient sodium vapor lighting, as well as changed all traffic lights to safer, more efficient LED lights.



Belo Horizonte is also considered the solar energy capital of Brazil with almost 3,000 installations of solar water heaters in residential buildings –more than 10 times the national average per capita.



In 2012, then President Dilma Rousseff established the National Policy on Urban Mobility. This is a package of principles, guidelines and tools for all cities in Brazil. It mandates urban mobility plans for all cities with more than 20,000 residents, in return for federal funding.



The city's BRT (Bus Rapid Transit) system called **MOVE** – with two corridors, for a total of 38 kilometers – was opened in time for the football World Cup in 2014. It has the ability to transport 700,000 passengers daily, reducing travel times by up to 50%. This makes Belo Horizonte's one of the largest BRT systems in the world, by passenger volume. The city is also building new bicycle lanes, has created a bikeshare system, and plans to increase the cycling network from 70 km to 360 km in the coming years – as well as partially pedestrianising the historic city centre.

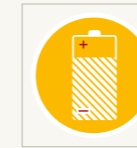


Additionally in 1993, the mayor of Belo Horizonte, Patrus Ananias, declared that food was a right of citizenship and it was the duty of the government to guarantee this right. Thus the city:

- » subsidises some restaurant food, and food vans in poor neighbourhoods
- » supplies food directly to public schools and other centres
- » offers a nutrition program for families with malnourished children
- » helped establish over a hundred community and school gardens
- » regulates food distribution and prices in shops and markets to enable universal access to quality produce.

As a result, Belo Horizonte has almost eliminated hunger, reduced poverty, created price stability, and generated rural sustainability and a thriving urban and local agriculture sector. Belo Horizonte's sustainability performance also includes participatory land use and emergency planning that has prevented loss of life and property from landslides and flooding. It has a strong claim to be one of the true world leaders in urban sustainability, and has much to teach cities in the global North and South.

MALMÖ, SWEDEN



Starting in the 1990s, Malmö's government transitioned away from its declining industry and embarked on a new vision for the city. This included a commitment to regional collaboration and economic development, starting with the Öresund Bridge to Copenhagen, as well as an ambition to be among the most sustainably-planned cities in Sweden, if not Europe. Two new development areas stand out: the Western Harbour, which has pioneered low-car, high-density living, and Hyllie, which is pioneering 100% climate-neutral energy through its smart grid and an integrated energy, heating, cooling, and waste infrastructure. Malmö also addresses sustainable retrofits of existing areas: Sege Park brings urban farming into the area and Sustainable Rosengård is a program working closely with local inhabitants to plan an innovative property renovation and sustainable economic regeneration model. Malmö set its own target to use 100% renewable energy by 2030, and was Sweden's first winner of WWF's City Challenge in 2011.

Malmö's vision for Sege Park, with a public park amid urban farming and buildings



© MALMÖ STAD/MANDAWORKS

SANTIAGO, CHILE



Roughly 75% of the Latin America population lives in cities, making it the world's most urbanized region. Santiago de Chile is home to five million inhabitants and a traffic system causing severe air pollution, congestion and accidents. To address these challenges, the local government and other organizations have engaged to convert car-congested spaces, such as the city's central market into pedestrian-friendly zones; expand bike lanes and the city's bike-share system **BikeSantiago**; introduce cycling safety for children; and conduct tactical urbanism experiments.

Tactical urbanism, or short-term, simple, inexpensive actions, invites citizens to witness how public spaces could be redesigned to more people-friendly spaces. Examples include building temporary "pocket plazas" in parking lots or on busy avenues, using bright paints to redesign sidewalks or add bike lanes, often combined with reduced speed zones, or conducting street dinner parties to bring people together. Together these efforts have real impact: cycling rates increased thirtyfold in recent years, for example. Santiago de Chile won the 2017 **International Sustainable Transport Award**.

VANCOUVER, CANADA

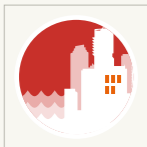


Vancouver has finished the first part of its [Greenest City 2020 plan](#), adopted in 2011, by implementing 80% of the 125 priority actions it set out to achieve by the end of 2014. Vancouver has reduced community GHG emissions by 7% from a 2007 baseline, though it is still far from the target of 33% by 2020. Vancouver was the first global winner of WWF's City Challenge in 2013.



The city has already met its 2020 goal of foot, bicycle, and public transit making up the majority of trips, and its goal to reduce the average distance driven per resident by 20%. The city has also come two-thirds of the way towards a 50% increase of city-wide and neighbourhood food production.

HAT YAI, THAILAND



Hat Yai is a coastal town in southern Thailand that is undergoing rapid urbanization and commercialization, with 160,000 people in the city and 800,000 in the greater area. Hat Yai has become a model for flood resilience in Thailand as one of ten core cities in the [Asian Cities Climate Change Resilience Network](#) (ACCCRN).



Shifting the focus from flood prevention to learning how to live with floods, Hat Yai has developed a resilience strategy with evacuation centers, an early warning system, education programs, and community-based capacity building. Hat Yai was chosen as Thailand's national winner of WWF's City Challenge in 2015.



© HOLGERMETTE / ISTOCK

MOSHI, TANZANIA



By delivering clean, safe, and affordable water to more than 95% of its residents, and pioneering Water Safety Plans (WSP) across Tanzania, [Moshi](#) stands out in a country that for decades has struggled to improve its water management. Moshi is a medium-sized town with almost 200,000 citizens, located on the southern slopes of Kilimanjaro. In 1998, the [Moshi Urban Water and Sewerage Authority](#) (MUWSA) was created at a time when Tanzania was decentralising its water management system. Since MUWSA was formed, it has transformed an aged infrastructure with a low number of household connections and frequent interruptions into a reliable public utility serving affordable, safe water 24 hours a day.



CAPE TOWN, SOUTH AFRICA

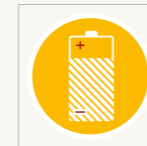


Sustainability for all

Cape Town became the global winner of WWF's City Challenge in 2014 for "its ambition and pioneering actions to combat climate change in its effort to bolster quality of life for its citizens." This is based on years of sustained commitment to sustainability.



In 2006, the city became the first in Africa to adopt a climate mitigation plan. In the years following, climate change mitigation was integrated into the city's plans and institutions. In 2010, the Council of Cape Town approved a comprehensive Energy and Climate Action Plan with 11 objectives, 50 programs, and 120 projects. The plan focussed on energy security, a lower carbon future, economic development, climate resilience and adaptation, resource efficiency, and poverty alleviation. A central plank of the plan is solar water heating. Cape Town managed to install 10% of all households and 10% of city-owned housing with solar water heaters (SWH), insulated ceilings, and efficient lighting by 2010 – that is, in 2,300 low-income family homes.



Cape Town intensified the solar water heating program to have 500,000 installations in place by the end of 2015, thereby reducing electricity demand by 5%. To achieve this, it has launched a residential solar water heater accreditation and finance program to encourage mid- to high-income residents to reduce their consumption of electricity. Cape Town has several programs to reduce its energy consumption:



- » greening its 6,000-vehicle fleet
- » setting up a green purchasing policy
- » replacing its traffic lights and street lights and retrofitting municipal buildings.



To achieve energy efficiency in the wider community, the city has an ambitious electricity savings campaign since 2009, including the creation of the commercial [Energy Efficiency Forum](#) with over 200 participating companies.



Transport is responsible for 50% of Cape Town's citywide energy consumption. Thus Cape Town has ambitious plans for an integrated public transport system and for an improved pedestrian and cycling infrastructure. It completed the first phase of Integrated Rapid Transit – an initiative to transform the public transport system – in 2010 with the opening of [MyCiTi](#), a BRT system of dedicated busways using a fleet of modern, energy-efficient buses. Cape Town is expanding its bicycle and pedestrian provision in recent years too.



Cape Town lies within the Cape Floristic Region, a UNESCO World Heritage Site, and is a global hotspot of biodiversity with the highest number of threatened plant species of any city in the world. To protect this unique nature, Cape Town's Biodiversity Network has identified the minimum natural vegetation remnants needed to conserve the city's biodiversity, and has taken action to protect 16 nature reserves.

The city council bases this sustainability work on a participatory approach, bringing together residents, NGOs, and local businesses. Another example is the Smart Living Campaign, aimed at promoting sustainable lifestyles amongst city staff, the private sector, local communities, and schools, as well as the [Youth Environmental School](#) (YES) Program, which arranges a year-round program of activities for learners and educators.

GOTHENBURG, SWEDEN



Green bonds & carbon ambition

Gothenburg was Sweden's national winner of WWF's City Challenge in 2015, based on its innovative use of financing instruments, and its deep-reaching climate targets. Gothenburg set a climate plan in 2014 that was innovative for its inclusion of consumption-based carbon footprint measurements and targets: emissions in other parts of the world caused by consumption from Gothenburg's citizens, are included. Few other cities are taking this far-sighted approach. The overall goal is to reach a globally sustainable and equitable level of greenhouse gas emissions by 2050, which is interpreted as 1.9 tonnes of carbon dioxide equivalents per inhabitant per year. This isn't easy for a western industrial city to achieve. According to Gothenburg's estimates, its current consumption-based emissions stand at 8 tonnes per capita, so achieving this goal will entail more than a 75% reduction of total emissions. Gothenburg has set intermediate objectives:

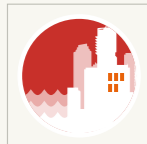
- » by 2020, to reduce direct emissions by 40% from a 1990 baseline, and to reduce energy use in homes by 30% and electricity use by 20% from a 1995 baseline
- » by 2035, to reduce emissions within municipal boundaries to 2 tonnes of carbon dioxide equivalents per person and to reduce consumption-based emissions to 3.5 tonnes of carbon dioxide equivalents per person.

To achieve this, Gothenburg has embarked on a range of urban sustainability measures, including the West Swedish Agreement, a massive investment in the region's transport system that helps to enable: a modal shift to public transport and cycling; investments in wind power and biogas production; and outreach efforts to reduce the climate impact of air travel, food, and citizens' consumption of consumer goods.

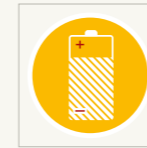
The City of Gothenburg was helped in its calculations on consumption-based emissions by [Mistra Urban Futures](#), a locally-based global research institute, which in 2014 published the report [Low-carbon Gothenburg 2.0: Technological potentials and lifestyle changes](#).

In 2013, Gothenburg became the first city in the world to issue green bonds, a financial tool to combat climate change designed in 2008 by the World Bank. As of March 2016, the City of Gothenburg had issued \$415 million worth of green bonds, financing a special portion of the city's infrastructure investments and other projects, and creating new partnerships internally between the financial and environmental departments of the city. Several other local and regional governments have followed Gothenburg's example, including the State of California and the City of Johannesburg. This city-level leadership and collaboration is an aspect of sustainable development which urban actors rarely even engage with: financial instrument innovation.

The global response to Gothenburg's work with green bonds and consumption-based emissions has been tremendously positive. In 2014 alone, more than 40 delegations from 22 countries visited Gothenburg to look at the city's initiatives. And Gothenburg has been invited to take part in the World Bank's development of a new training program, the City Climate Planner Professional Certification Program.



LAPPEENRANTA, FINLAND



In [Lappeenranta](#), the national winner of WWF's City Challenge in 2016, a government dedicated to urban sustainable development, a university specializing in green energy, a budding clean-tech cluster, and an enthusiastic public have come together to create a city united by technical engagement in sustainability. Highlights include: construction of Finland's largest and most modern bioenergy plant Kauvo; an internationally awarded Green Campus at Lappeenranta University of Technology (LUT); and development of a solar-powered Green Marina in the harbor. LUT has also created more than 20 spin-off companies.

Lappeenranta's strategic goal for 2028 is to become a model city for eco-action, in which a clean living environment and a zero-waste world are sources of innovative business growth.

TSHWANE, SOUTH AFRICA



The City of Tshwane was established in 2000 through the merger of 13 municipalities, including the executive South African capital Pretoria. It already has three million inhabitants and the highest urbanization rate in South Africa – a 65% growth rate between 1996-2011. Under the leadership of the Mayor Kgosientso Ramokgopa, [Tshwane](#) tackled development issues and integrated sustainability principles. In particular, Tshwane is transforming its waste management away from dumping everything in landfills, to a modern system with recycling facilities, composting plants, and landfill-to-gas plants. Tshwane became South Africa's national winner of WWF's City Challenge in 2016.



© CITY OF TSHWANE

PETALING JAYA, MALAYSIA



Petaling Jaya (population 700,000) is part of the Greater Kuala Lumpur metropolis and originally developed as a satellite township of the capital. It has been working with sustainability issues since 2000, and became a pilot for **Malaysia's Low Carbon City Framework** in 2010. The city is one of only a few in the world to reward residents for eco-friendly behavior through tax rebates of up to 100% for taking household measures on energy, water, biodiversity, transportation or waste. It also has a compulsory green building code. These measures are part of Petaling Jaya's Livable Strategic Plan 2030, and the city was chosen as Malaysia's national winner of WWF's City Challenge in 2016.

MEXICO CITY, MEXICO



Mexico City has built one of the world's largest BRT systems – Metrobus – and one of the world's leading bike sharing systems – **Ecobici** – in a major overhaul of the city's transport system. The transport sector contributed 62% of the total carbon dioxide cut during Mexico City's successful Climate Action Program 2008-2012. That program reduced emissions by 13% in just four years, beating the 12% target. As of 2014, the Metrobus corridor system consists of five lines totaling 105 kilometers. A sixth line of 20 kilometers is under construction. Metrobus transports 900,000 passengers a day, which puts it in third place for throughput together with Guangzhou (850,000), behind Curitiba (2.3 million) and Bogotá (1.65 million).



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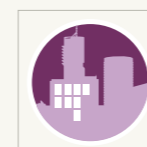
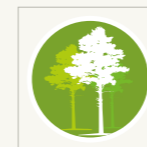
MUMBAI, INDIA



Delivery-based home services are a huge part of the digital lifestyle transformation taking place in cities around the world. The potential that service-based and delivery-based living offers for urban sustainability is huge, based on the reduction in wasted storage space, disused goods and potential reduction in disposable packaging. But service-based living doesn't need to rely on digital solutions: it can be based on social practices and organisational efficiency.

The **Dabbawalla system** in Mumbai delivers 130,000 individual lunch boxes to workers across the city. They are collected in the morning from homes and delivered back before the end of the day, relying almost entirely on walking, cycling and rail. It is so efficient that global logistics companies, business schools and consultants have visited to study it, and learn from its 5000 largely illiterate delivery workers.

CHENGDU, CHINA



Expansion & environmental protection

Chengdu is one of the world's fastest growing cities. After the industrialisation of the 1980s, the city became known as the most polluted in China. Chengdu is cradled by a system of major tributaries of the Yangtze River. These could be fished as late as the 1960s, but mismanagement led to contaminated water, droughts, floods, and the spread of slums.

The cleanup of the Fu and Nan rivers received international attention – and UN Habitat awards. Chengdu succeeded through the strength of its own initiative, even though it was one of the poorest cities in China at the time. Involving inhabitants and local companies was key. Slum dwellers were offered the chance to move to subsidised, newly-built housing. There after, additional financing was generated by increasing land prices in former slum areas. The UN highlighted the social dimension of Chengdu's work, as it demonstrated that a poor town could clean up its environment, manage freshwater, and create a vision for a sustainable future, using only its own resources.

Chengdu's pioneering work included:

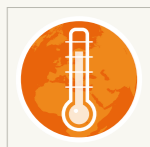
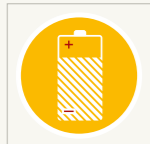
- » 500,000 jobs created
- » 16 km of river dredged
- » 750,000 cubic metres of sludge cleaned
- » 42 km of trenches excavated
- » 18 bridges and 12 new shipyards built
- » 1000 polluting companies closed, renovated or relocated
- » 100 public latrines renovated
- » 26 km of sewage pipes laid along the river
- » two new sewage treatment plants built
- » rivers widened to prevent flooding
- » plantations and parks established on river banks
- » traffic around the rivers redirected, reducing congestion
- » a "living water-garden" revived the traditional Dragon Boat Festival.

River remediation work was expanded upstream to the Minjiang River during the 2000s. The Minjiang flows through the district of Wenjiang, the centre of the ancient kingdom of Shu. Rivers even further upstream, vital for fresh water, will be protected. Work on the rivers inspired Chengdu to construct a Giant Panda Sanctuary and the Dujiangyan Ecological Model Zone. In these efforts, Chengdu's politicians have been helped by the Chengdu Urban Rivers Association (CURA), a local NGO working to protect the water of the region.

The city is building smart electricity and communication systems. It has delivered one of the China's first large-scale Bus Rapid Transit (BRT) systems, and is still expanding the metro and trams. It is enhancing the city's forests, and has hundreds of projects for reducing pollution to water and air. It is reforming agriculture, investing in renewable sources of energy, closing coal mines, and has an action program to reduce greenhouse gas emissions.

Chengdu's leadership, and what it has to offer other cities around the world, comes in the form of partnerships including a special collaboration with the City of Bonn involving an exchange of skill information, and collaborative development.

SEOUL, SOUTH KOREA



Sustainable energy everywhere

The city of **Seoul** was chosen as the global winner of WWF's City Challenge in 2015, for its comprehensive approach to tackling climate change and its determination to ramp up use of renewable energy. The city's approach to radically reduce emissions involves not just promoting but also financing, for example, the increasing production of solar power, while reducing transport emissions through greener fuels, building more bus lanes, and car sharing programs. The first phase of its **One Less Nuclear Power Plant** program set and achieved the goal of reducing the city's energy consumption from external sources by two million TOE (tonnes of oil equivalent), roughly comparable to the energy production of a nuclear plant with 2-3 reactors.

It did this in less than three years through heavy investments in energy efficiency and local renewables. Actions included investments in hydrogen cells, capturing waste heat, geothermal energy, energy caps for new buildings, building retrofit programs, LED replacements, eco-friendly transportation, and solar PV. This included the Sunlight City project, which involved installing rooftop solar PVs on about 10,000 buildings, for a total capacity of 320 MW.

The program also pioneered energy savings through active participation by citizens in conservation efforts. This accounted for 40%, the largest single part, of total reductions, mainly through the Eco-Mileage program, which rewards energy savings by citizen with points that can be used to purchase eco-friendly products as well as receive financial support for retrofitting buildings. The program started in 2009 and has more than tripled since to 1.68 million participants – 47% of the city's households.

The second phase of the program plans for the city to achieve a 20% self-sufficiency in electricity by 2020, which equals another four million TOE of reductions: 46% of this come from renewable energy and cogeneration, with the remaining 54% from improvements in energy efficiency and conservation of energy. The city has enhanced the Eco-Mileage program, linking it to other energy-related projects such as production of new renewable energy, building retrofits, and LED replacements. Seoul's further investments in solar power up to 2020 include:

- » 40,000 micro PV power plants that can be installed in homes for the purpose of enabling home energy production and greater awareness
- » 10 MW "Solar Power Landmarks" along the city's main streets
- » The "Solar Power Generation Citizens' Fund" for citizens to make direct investments in the PV power plant business and earn profits
- » Expansion of rooftop installations on both public and private buildings.

With continued investments in network fuel cells and its smart grid, Seoul is also building an infrastructure that can take advantage of small scale, intermittent electricity production.

Seoul acts as a model and partner for established cities of the North as well as fast-growing cities in the global South, in Southeast Asia in particular.

Seoul skyline

COPENHAGEN, DENMARK



Copenhagen is internationally regarded as one of the world capitals of bicycling. During World War II, cycling remained important due to fuel shortages for other transport modes; however following the post-war period the car took over. The oil shortages in the 1970s brought the value of cycling back to the attention of planners and citizens. Copenhagen's first cycling policy was published in 2002, and now 45-50% of all trips to work and study by people living in Copenhagen take place on bikes. While public transport is also popular, in Copenhagen citizens travel twice as much by bicycle as they do by metro – leaving fewer that choose to take the private car. To support this popular transport, the city is building 500 km of "bike superhighways" for rapid commuting.

Copenhagen is a city of cycling innovation: they enhanced the aesthetics of city cycling, via bicycle-only bridges, such as the **Bicycle Snake**, across the city's many waterways and developed **green-cycle paths** on old railways; they were the first to launch an e-bike sharing system, called **Bycyklen**; Copenhagen even has an innovative cycling wheel, the **Copenhagen Wheel** named after it.



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MEDELLÍN, COLOMBIA



The smartest mobility plans in cities involve creatively deploying density and well-designed access – for example, co-locating housing and workplaces – and otherwise exploiting existing density. In the mountainous city of Medellín, mobility innovations focus on the local context: escalators were installed in poorer neighbourhoods, making the most of the steep geography in parts of the city. The city also invested in an above-ground metro that links to a Metrocable (or gondola) system; the latter which serves as a vertical public transport system, to improve access to the city's harder-to-reach areas.

The sustainable mobility debate looks at the overall strategy of modality – which vehicles are used for what purposes – and enables sustainability through encouraging multimodal travel, for example via trains, bicycles, and walking. The latest phase of the debate brings in the issues of density and access, where the question is primarily how city dwellers gain access to the things they want, whether it is jobs, homes, culture, or nature.

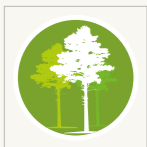
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SINGAPORE



Singapore has heavily invested in solar power over the last years under its new program SolarNova. It aims to install 350 MW of solar PV capacity by 2020, amounting to almost 10,000 rooftop installations and covering 5 percent of the city's electricity demand. The Singapore Economic Development Board is working with key government agencies to aggregate demand for solar deployment across government buildings and spaces. Singapore has also invested heavily in energy efficiency and other energy measures, both in buildings and transports. This city-state pioneered congestion charges in the 1970s and is the only country in the world to cap vehicle growth and price vehicle usage aggressively.

SAN FRANCISCO, UNITED STATES



The San Francisco Bay Area has pioneered conservation trusts – also land trusts and conservation easements – in urbanised areas. Around 25% of the entire San Francisco Bay Area is held in protection status. From 1988-92, nearly 60% (32,000 ha) of all newly available open space, for example from factory decommissioning, in the Bay Area was acquired by land trusts.

Now conservation trusts are expanding beyond protecting agricultural land and are protecting a wide range of ecosystem services available from land such as recreation in nature and habitat for biodiversity. One type of trust used for these purposes is a conservation easement, an agreement on the limits of land use, paid for directly or, for example, with reduced taxes.

HELSINKI, FINLAND



In cities where there are many good public transport options across varying transport modes, one of the barriers to greater adoption is the tickets themselves. Having to buy more than one ticket per journey, and having to pay multiple times even if the total trip is short in both distance and time, creates a strong disincentive to use public transport.

Many global cities have extended multimodality (or harmonising all public transition options in one system) to their core transport options of metro and bus. Helsinki plans to treat all mobility modes, including car share and bikeshare, as configurable public transport options that can be used in one journey with one ticket, to make urban public transport as convenient and integrated as possible.

PUEBLA, MEXICO



With 1.5 million inhabitants, the industrial city of Puebla is Mexico's fourth largest urban area. In 2013, at the city's request, Puebla became a pilot city for the World Bank Tool for the Rapid Assessment of City Energy (TRACE). TRACE is a practical tool for picking the low-hanging fruits of urban climate change mitigation. This work jumpstarted measures focused on street lighting, municipal buildings, transit systems, and solid waste management in Puebla and contributed to the development of a national urban energy efficiency strategy. In 2015 the city was chosen as Mexico's national winner of WWF's City Challenge, in particular for its ambitious commitments and high level of investments in climate action.



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NEW YORK, UNITED STATES



Transport historically has been all about getting somewhere fast. How about the value of getting there slow? The High Line in New York City is a converted freight rail line, raised on a platform above the streets, and has been converted, thanks to lobbying by social activists and urbanists, into one of the city's most beloved cultural attractions, a creatively landscaped and art-filled walking line.

It's a 2.5km urban oasis, where pedestrians, whether locals or tourists, are invited to view the city around them at their leisure. One part of the line includes theatre-style seating in front of a big window looking directly up 10th Avenue, as if the cars and street-life was a kind of theatrical performance. The landscaping favours local plant types, requires limited watering, and has been a magnet for wildlife.

COIMBATORE, INDIA



Coimbatore is one of 36 cities that has finalized its solar city master plan as part of its participation in [India's National Solar Cities Programme](#). The plan includes the goal to reduce conventional energy consumption by 10% within five years, through investments in renewables and energy-efficiency measures. As a first step, the city has started to install solar photovoltaic panels PVs on all municipal buildings, and is completing its energy-saving project for streetlights by using timers, dimmers, electronic meters, and LEDs. Coimbatore, also known as Kovai, is the second largest city in the southern state of Tamil Nadu, with a population of 2.2 million in the greater metropolitan area.

The solar city master plan includes comprehensive investments in an array of renewables and energy-efficiency measures both in municipal operations and in the wider community. It also is coupled to BRT and bikeshare expansion plans.

ISTANBUL, TURKEY



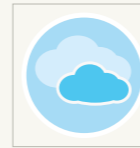
The oldest form of human mobility – walking – is slowly making a comeback in cities. Cities are experimenting with car-free days, and boosting pedestrianisation around the world. This is a sign of the North following the lead of the global South. Oslo, for example, plans to be entirely car-free in its downtown by 2019.

One of the most concerted pedestrianisation efforts has been quietly taking place in Istanbul, in collaboration with a pioneer of the liveable city, Copenhagen's urban designer, Jan Gehl. In 2010, the Istanbul Metropolitan Municipality, supported by [Gehl Architects](#) and the [World Resources Institute](#), set out on a long-term path of pedestrianisation, in order to improve quality of life and air quality, while protecting cultural heritage and improving trading potential in the ancient city centre. Since then, some of the main cultural monuments, including Sultanahmet Square and hundreds of streets around the city have been pedestrianised, with broad social and commercial approval.



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PARIS, FRANCE



Mayors lead the vision of sustainability

Paris was chosen as the 2016 global winner of WWF's City Challenge, based partly on the vision and actions of current and former mayors. On September 27, 2015 Paris barred traffic inside the périphérique ring road, effectively creating one of history's largest car-free days, and transforming the city center to a walkable space from the Champs-Élysées to the Bastille. Reducing city traffic by 30% was enough to cut pollution levels by up to 40% and noise levels by up to 50% in some areas. The initiative was part of the city's commitments under its own 2012 Paris Climate and Energy Action Plan. Roughly half of Paris' GHG emissions come from transport – and half of the planned cut of 25% total emissions by 2020 is intended to be achieved from the transport sector. To do this, Paris plans to cut inner city travel emissions by 60%, and in outer Paris by 35%. By 2009, the city had already reduced emissions by 12% since 2001, as well as doubling bicycle travel and increasing Metro travel by 16%.

Paris has continued with a number of actions, including improving public transport, launching the groundbreaking bicycle and electric car renting systems Vélib and Autolib, and building another 400 km of bicycle paths. Together, these actions are expected to reduce emissions by 40% in the inner city. To achieve the remaining 20%, Paris plans to: reduce the speed limit on the périphérique; create zones with a 30 km/h speed limit as well as pedestrian/vehicle zones with a 20 km/h speed limit; introduce stricter parking policies; and create a citywide low emission zone, banning access for the highest polluting vehicles. The city is also creating a new logistics system for goods transports, with the goal to have all last-mile deliveries made by non-diesel vehicles by 2020.

This promising trajectory is the work of Anne Hidalgo, the first female mayor of Paris, building on a foundation set by the previous Mayor Bertrand Delanoë. The Mayor's visionary plan is being implemented by a central strategy committee which brings together external stakeholders and ordinary Parisians in participatory measures. For example, €500 million, or 5% of the city's investment budget, has been allocated to projects chosen by the public through participatory budgeting.

In 2015, the city's environmental achievement culminated with the UN Climate Change Conference (COP21), at which the Paris Agreement was successfully signed. At the margins of the global political event, Mayor Hidalgo and former Mayor of New York City Michael Bloomberg hosted the Climate Summit for Local Leaders, a parallel summit for city and regional actors in influential roles. The outcome of this event was the Paris City Hall Declaration in which the urban leaders committed, among other things to:

“Advance and exceed the expected goals of the 2015 Paris Agreement to be reached at COP21 to the full extent of our authorities [and] engage in partnerships among ourselves and with global organizations, national governments, the private sector, and civil society to enhance cooperation and capacity-building programs, scale-up climate change solutions, develop metrics and promote innovative finance mechanisms and investments in low-emission projects across the world.”

This Declaration, coming together with the Paris Agreement, is a representation of the self-consciously collaborative and path finding character of today's cities and their leaders.

EVANSTON, UNITED STATES



Public-NGO Energy Partnership

Evanston, the US national winner of WWF's City Challenge in 2015, is a suburban community of 75,000 people north of Chicago and the home to Northwestern University.

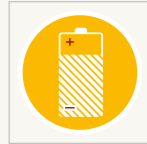
In 2012, Evanston held a referendum where 73% of the voters authorized the City Council to set up an opt-out **Community Choice Electricity Aggregation** program, where the city aggregates residential and small business electric accounts to collectively seek bids for an energy supplier. Spurred by the work of the local NGO, Citizens' Greener Evanston, the City Council also selected a supplier to provide a 100% renewable energy mix. In a few months, Evanston had halved emissions from electricity in the residential sector while the government's own operations were now run on 100% green electricity, including from 25-kilowatt solar panels on the roof of the Evanston Water Treatment Facility. Evanston was catapulted to the top lists of the US Environmental Protection Agency's (EPA) Green Power Partnerships.

By 2015, Evanston's City Government was the 19th largest green power user among local governments in the US. On the EPA's Green Power Community rankings, comparing the green electricity usage of whole communities, Evanston ranked 7th in absolute numbers despite its small size, and 6th in percentage of green power usage, which in Evanston's case was 29%.

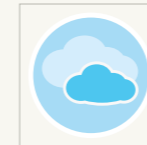
Evanston has continued to purchase 100% green electricity, and has also developed plans for an offshore wind farm in Lake Michigan. The aggregation program not only saved participating households money – by 2013 it also helped the city reach its goal of a 13% reduction of community-wide GHG emissions from a 2005 baseline, as set out in its 2008 Climate Action Program. In 2014, once again mobilised by Citizens' Greener Evanston, Evanston took the next step in its new Evanston Livability Plan, which set the goal of a 20% reduction in GHG emissions by 2016 from a 2005 baseline.

The aggregation program was the biggest factor in reducing emissions, but it is only one of many actions taken by Evanston. Others include: a low-income weatherization program, and other energy efficiency projects for buildings; a new green building ordinance; charging stations for electric cars; biking programs; a new transport plan, waste programs; a farmers' market, and several outreach programs to engage residents and businesses. These are continuing to be developed under the Evanston Livability Plan, with a special focus on green power, building retrofits, transport, and obtaining emissions reductions by the city's seven largest employers, who work collaboratively on sustainability initiatives through the Evanston Green Ribbon Committee.

Evanston's transport ambitions and innovations are being noticed at the regional and national level – and are themselves a result of learnings from the global level. The car-free centre, and Evanston's focus on Transit-Oriented Development (TOD) are picking up attention in Washington and in Chicago. TOD focuses on putting the citizen and urban quality at the centre of transport plans.



MUANGKLANG, THAILAND



Mekong's Low Carbon Model

Muangklang is one of three model towns in Thailand's Low Carbon City program. With mostly local resources, this small town of 17,000 people transformed its environment in the early 2000s, becoming famous for its green-city development in the process.

Muangklang's process started in 2001 with the election of Somchai Chariyacharoen, a mayor who wanted to bring the polluted Prasae River back to life, as this river is central to the identity of the Muangklang region. With a budget of only \$1,300, Chariyacharoen launched a solid waste management system, which gradually grew into a comprehensive sustainability program. In cooperation with residents and different stakeholders, the system led to a significant increase in quality of life for the inhabitants.

Instead of constructing a sophisticated incinerator, a simple outdoor conveyer belt was set up for waste separation, reuse, and recycling, which significantly reduced waste going to the municipal landfill. The operation paid for itself by selling compost, recyclable materials from the landfill, and locally-grown organic vegetables.

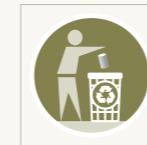
To improve air quality, the municipality started a program for free public transport, investing in brightly-colored natural gas-powered buses. Traffic was regulated to reduce congestion, car parking reduced, cycling and walking promoted with dedicated routes, and a boat service introduced on the dredged river, reviving this traditional means of transport.

Air quality and livability were improved further through a program of urban agriculture and greenery. The city converted unused land and promoted urban farming, not only of vegetables, but also of rice, reviving an old local practice, with the aim of reducing food miles (the amount of logistics required for any food item) and energy from food transportation.

To improve the energy efficiency of its operations, the municipality introduced a standard for energy and environmental management, ISO 14001. Measures so far include: a change to high-efficiency air conditioners; migration of public lighting to efficient bulbs and solar powered street lights; construction of a high water tower to increase pressure and reduce pumping; more efficient garbage collection; and an energy-efficiency campaign in the community to encourage the use of green products. Muangklang has also started an education program in recycling and sustainable consumption in schools.

Mayor Chariyacharoen also put in motion ambitions for a cultural revitalization – linking this with the sustainability initiatives. During a traditional festival, or Tham Boon, on the renovated old boat pier, the municipality celebrated the clean-up of the river, and then launched an annual river festival. The popularity of these programs has ensured the reelection of the mayor several times.

By 2020, Muangklang aims to be a green, sustainable, and low-carbon city with low levels of waste, high energy efficiency and sustainable levels of consumption, as well as a learning center for other local governments within Thailand as well as the Greater Mekong region.



A One Planet Future



© Asia One/BT

I feel very positive about the possibility to reignite a new global movement, and I think WWF is in a fantastic position to do that.

Marco Lambertini
Director General,
WWF International

WWF's mission is to stop the degradation of our planet's natural environment, and build a future in which humans live in harmony with nature. In order to achieve this mission, WWF focuses its efforts on two broad areas: Biodiversity and Ecological Footprint. WWF's long-term vision is embodied in the phrase *One Planet Future*. WWF seeks a future in which humanity can prosper within the capacity of our one Earth to sustain people and nature, and where all people have equitable access to and use of natural resources.

WWF has ambitious **global goals** covering six thematic areas: oceans, wildlife, forests, freshwater, climate & energy and food – and three drivers: finance, markets and governance. WWF works to ensure that:

- » the world's most important fisheries and ocean ecosystems are productive and resilient and improve livelihoods and biodiversity
- » the most iconic and endangered species are secured and recovering in the wild
- » the integrity of our most important forests, including their benefits to human well-being, is enhanced and maintained
- » freshwater ecosystems and flow regimes provide water for people and nature
- » a global shift toward a low carbon and climate resilient future is achieved
- » and sustainable food systems conserve nature and maintain food security.

WWF works through innovative partnerships that combine on-the-ground conservation, high-level policy and advocacy, as well as collaborations and communications to make business and industry more sustainable. Urbanisation and sustainable urban development are important emerging fields within WWF's global program, and are key to the goal of reducing humanity's impact, while meeting development needs.

One Planet City Challenge



© Dora Nteoh

In the next five to ten years Tshwane will be the most sustainable city in Africa. We are challenging all other African cities, especially other capital cities.

Dora Nteoh
Executive Director of
Sustainability,
City of Tshwane

The **One Planet City Challenge** is designed by WWF to mobilize action and support from cities in the global transition toward a climate resilient future run on 100 percent renewable energy. The Challenge is run every other year, and engages cities from 30 countries in the current round, and its outreach continues to expand.

Local governments and municipalities in participating countries are invited to present holistic, inspiring, and credible plans for combatting climate change and for dramatically increasing the use of sustainable, efficient and renewable energy solutions in the next few decades. Entrants are also evaluated on their ability to realize other key benefits like increased resilience and enabling attractive, one-planet lifestyles. In the City Challenge 2017-18, special mention will be given to cities that present impressive plans and actions for sustainable transport solutions. Local context, including resource availability, legal mandates, and basic needs of residents, is taken into consideration in order to create a level playing field for evaluation.

Cities looking to join the Challenge can find the application form on the **carbonn® Climate Registry (cCR)**, an internationally recognized climate reporting platform managed by **ICLEI – Local Governments for Sustainability**. Strategies will be evaluated by an international jury of experts in areas ranging from urban planning and transport to consumer behavior and energy systems.



Join the One Planet City Challenge and Inspire the World!

Entrants will be evaluated on criteria including:

- » Level of ambition and ability to deliver on commitments and transformational change
- » Ability to integrate actions into coherent and overarching climate action plans
- » Determination to align with a transparent, science-based GHG emission reduction trajectory
- » Innovative approaches to addressing urban mobility.

An international jury will recognize the most ambitious cities as national winners. From among these, one city will be crowned the global winner of the One Planet City Challenge.

To this date, **over 320 cities** from around the world have participated in WWF's City Challenge, showing the world their role in leading the transition toward a climate-friendly, one-planet future. Together, these cities account for 80% of all the climate actions reported on the cCR.

Learn more



WWF One Planet Cities:
wwf.panda.org/cities



Urban Solutions for a Living Planet:
wwf.panda.org/urbansolutions



One Planet City Challenge:
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WWF is one of the world's largest and most experienced independent conservation organizations, with over 5 million supporters and a global Network active in more than 100 countries.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by: conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

URBAN SOLUTIONS HANDBOOK 2017

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NEW CITY ROLES

Cities are taking new, leading roles in the global transition to sustainability.

NORTH-SOUTH PARTNERSHIP

Cities of the global North and South are sharing leadership for sustainability.

SDGs & PARIS

The UN Sustainable Development Goals and the Paris Agreement on Climate Change are the framework for action shared by the global community.



ONE PLANET CITY CHALLENGE

WWF's City Challenge aims to mobilize action and support from cities in the global transition toward a climate resilient future run on 100 percent renewable energy.

LEARNING CASES

WWF's Urban Solutions provide learning cases for the new role and partnership opportunity of cities, linked to the UN Sustainable Development Goals.

	<p>Why we are here To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.</p> <p>www.panda.org</p>
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