Foreword – Anne Hidalgo, Mayor of Paris and Chair of C40

Taking action to fight climate change is increasingly a priority for cities around the world, where half the world's population now lives and where two-thirds of the inhabitants of our planet will be concentrated by 2050.

The best science has illuminated major risks facing our planet, and as mayors, we have heeded the call to tackle climate change head-on, both in terms of mitigation (reduction of greenhouse gases) and adaptation (development of resilience to climate stresses). Climate action is and must be incorporated into everyday urban planning and growth in a way that is sustainable and also financially viable. The Urban Climate Change Research Network (UCCRN) was established to meet the information needs of cities responding to climate change, and ARC3.2 provides the critical knowledge base for city actions on climate change around the world.

Because cities are both vulnerable to climate risks and are also sources of innovation for sustainable solutions, it is essential that they collaborate to find bold solutions based on cutting-edge research, such as that found in ARC3.2. The City of Paris was delighted to host the UCCRN European Hub and the launch of the *Second Assessment Report on Climate Change and Cities (ARC3.2)* at the Climate Summit for Local Leaders, hosted by the City of Paris at Paris City Hall and held during the UNFCCC Conference of the Parties 21 (COP21) in Paris at the end of 2015.

ARC3.2 focuses on key urban sectors (energy, transportation, water, and sanitation), as well as on human services in cities (health and housing). Chapters on urban ecology and coastal zones reveal important dimensions of urban climate change action. And in the chapter on equity and environmental justice, the volume highlights the need for cities to consider their most vulnerable citizens.

The City of Paris released its Climate and Energy Action Plan in 2007, updated it in 2012, and adopted a new Adaptation Roadmap in 2015 that presents comprehensive strategies for responding to the city's own climate change challenges.

The City of Paris is committed to the pathway of climate change solutions, sustainability, and transformation and looks forward to a continued partnership with UCCRN and the ARC3 series to achieve these goals.

Anne Hidalgo
Mayor of Paris
Chair of C40 Cities Climate Leadership Group

Foreword – Eduardo Paes, Former Mayor of Rio de Janeiro and Former Chair of C40

The coming years are critical to determining our future in regard to climate change. Scientists, leaders, and decision-makers are joining forces to balance growth with environmental protection and social justice.

The *Second Assessment Report on Climate Change and Cities* (ARC3.2), developed by the Urban Climate Change Research Network (UCCRN), presents cutting-edge scientific information on climate change mitigation and adaptation in cities. It offers detailed information to support policy-makers in making better, more information-informed decisions about how climate change affects public health, local infrastructures, and the economy.

The past work of the Intergovernmental Panel on Climate Change (IPCC) has been decisive in changing the mindsets of world leaders, and the UCCRN *First Assessment Report on Climate Change and Cities (ARC3.1)* provoked similar transformations at the local level. The *Second Assessment Report* now highlights how poverty and biodiversity are intimately connected to the challenges of urban climate change.

The Report stresses the importance of addressing poverty and climate change together. There is no opposition between social development and environmental protection – we must do both. Climate change in cities affects the poorest and most vulnerable members of our societies. Transforming cities into successful low-carbon communities will only be possible if these changes are made in combination with social and environmental justice.

The ARC3.2 also emphasizes the importance of environmental preservation as a means of fostering urban resilience. Rio de Janeiro – as a coastal and tropical city – experiences heavy summer rains. Their impacts will likely grow more frequent and intense with climate change. For this reason, the protection of the city's biodiversity is vital, to avoid landslides and other adverse consequences of the increased rainfall. Investing in quality green spaces is a means of strengthening resilience, while improving residents' quality of life.

Decision-makers and local leaders around the world need the support of the scientific community and the knowledge it provides; their work is complementary. That is why we have endorsed a new partnership with the Urban Climate Change Research Network to establish a Latin American Hub in Rio de Janeiro. Recently, we have been working with UCCRN on developing the Rio de Janeiro Resilience Plan. Our collaboration has resulted in studies on heat islands, the proliferation of dengue fever (and other vector-borne diseases), and other local development challenges, contributing to risk reduction for the city's residents and infrastructure.

Science works to understand the multiple dimensions of climate change hazards, imparting knowledge that is often lacking in cities. Developing cities represent the fastest-growing urban places in the world. The UCCRN Latin American Hub can identify and promote the resilience potential of cities in the region and reinforce our mitigation and adaptation policies. Lessons learned in Rio will benefit other cities in the region, just as studies elsewhere will help local policy-makers deal with their local challenges.

On the road from COP21, cities are central to supporting the ambitious commitments and to implementing the Paris agreements. Mayors from around the world have shown impressive leadership, but they need support to do more. The remarkable ARC3.2 will make a difference in developing effective and efficient climate change mitigation and adaptation policies in cities.

Eduardo Paes
Former Mayor of Rio de Janeiro
Former Chair of C40 Cities Climate Leadership Group

Foreword – James Nxumalo, Former Mayor of Durban

The future of our planet was shaped in 2015. In December, negotiating parties representing nations from around the globe met in Paris for the United Nations Framework Convention on Climate Change's 21st Conference of the Parties (COP21), and agreed on planet-saving measures to combat climate change. With a rapidly urbanizing globe, the role of cities and local governments is pivotal. Cities must be supported effectively because the challenge of climate change will be won and lost in urban areas. Cities offer twin transformative solutions, with the greatest opportunities for reducing greenhouse gas emissions through mitigation activities and localized climate risk reduction through urban adaptation. Given the uncertainty around climate change impacts at the local level, it is critical that the adaptive management decisions are informed by cutting-edge science and independent research.

The climate change challenge cuts across a broad range of disciplines. The development of research partnerships that connect scientists from different disciplines to work collaboratively to inform city-level management decisions is a high priority. The Urban Climate Change Research Network (UCCRN) is an excellent example of how urban-focused climate change research can bridge the divide between researchers and policy-makers. The *First Assessment Report on Climate Change and Cities* (ARC3.1) was published in 2011 and did exactly that. It provided a multidisciplinary, global assessment of climate risks, adaptation, mitigation, and policy mechanisms that is relevant to cities and based on sound scientific principles.

The Summary for City Leaders of the *Second UCCRN Assessment Report* (ARC3.2) was launched during COP21 in Paris in 2015 and will serve as a "call to action." The full ARC3.2 report, the *Second UCCRN Assessment Report on Climate Change and Cities*, is the gold standard for science-based policy-making as we enter into the post-2015, climate change implementation era. Developing partnerships to share knowledge products will be important so that all stakeholders – especially those in low-income countries – can benefit. In this respect, the development of a knowledge network, formed around UCCRN Hubs, offers a transformative solution. We are proud that, as of the launch in 2016, the city of Durban in South Africa will function as one of these UCCRN Hubs.

Furthermore, through an agreement to collaborate with UCCRN as its key knowledge partner, the Durban Adaptation Charter will enable scaling up the knowledge-to-policy process with its signatory base of more than a thousand cities. This empowering linkage from co-generated research to implementation partnership will support city leaders from low-income countries as they operationalize climate change mitigation and adaptation policies and action plans at transformative scales.

James Nxumalo
Former Mayor of Durban, eThekwini Municipality

Foreword – Joan Clos, Former Executive Secretary of UN-Habitat and Former Mayor of Barcelona

Cities and local governments are increasingly recognized as key actors in addressing climate challenges. They are strong sources of leadership that require enabling frameworks and a combination of global, national, and local measures in order to achieve the transformational change that is needed. It is important to provide decision-makers with the latest data at different levels of granularity, as well as with global platforms for exchange of information.

Since the Urban Climate Change Research Network (UCCRN) published its innovative *First Assessment Report on Climate Change and Cities* (ARC3.1) in 2011, we have seen a significant increase of attention to this issue, as well as considerable growth of the body of knowledge. This is exemplified by the recent publications of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), which has dedicated two full chapters to the urban issue – one on mitigation and one on impacts, adaptation, and vulnerabilities. The report of the New Climate Economy has elaborated on the cost of inaction and the co-benefits of compact urban growth, connected infrastructure, and coordinated governance. This new edition, the *Second UCCRN Assessment Report on Climate Change and Cities* (ARC3.2), offers not only updated findings, but is expanded in scope and coverage. It includes an extensive database of case studies, which will allow for a continuous collection of key city data online and will enable users to compare cases and lessons learned across factors such as geography, sector, income levels, and size.

The nexus between cities and climate change is crucial for addressing the sustainable development challenges of the 21st century. More than half of the global population is already living in urban areas, and it is estimated that, by 2050, this figure will grow to more than two-thirds. Production and consumption is concentrated in urban areas, generating around 80% of gross domestic product (GDP) and more than 60% of all carbon dioxide, in addition to significant amounts of other greenhouse gas (GHG) emissions. Urban areas host most of the vulnerable populations as well as vital economic and social infrastructure. Hundreds of millions of people in urban areas across the world will be affected by rising sea levels, increased precipitation extremes, landslides, inland floods, more frequent and intense cyclones and storms, and periods of more extreme heat.

The year 2015 constituted a pivotal point for the global policy agenda on sustainable development and climate change with key conferences, such as the UN Summit for the Adoption of the Post-2015 Development Agenda, the Financing for Development Conference, the UN 21st World Conference on Disaster Risk Reduction, and the Conference of the Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC) in Paris. The urban issue is increasingly recognized as a key component in these global processes. Furthermore, the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) took place in Quito in October 2016. Habitat III served to reinvigorate the global commitment to sustainable urbanization and to focus on the implementation of a "New Urban Agenda."

UN-Habitat is working with partners at various levels to integrate climate mitigation and adaptation concerns into policy and infrastructure planning processes, taking into account broader sustainability considerations and economic, environmental, and social co-benefits. It is doing so, for example, in the context of the Cities and Climate Change Initiative, which targets medium-sized cities in developing and least-developed countries, as well as through the Urban-LEDS project, which promotes Low-Emission Urban Development in Emerging Economies. Climate change is also among the cross-cutting issues mainstreamed throughout UN-Habitat as per its strategic plan. Complementing its intergovernmental activities, UN-Habitat is partnering with a broad range of stakeholders to advance the implementation of a number of initiatives launched at the Secretary-General's Climate Summit in September 2014, such as the Global Covenant of Mayors, the Cities Climate Financing Leadership Alliance, the Urban Electric Mobility Initiative, and the Resilient Cities Accelerator Initiative.

I am confident that this report will contribute significantly to the body of knowledge in this area and help guide decision-makers at the various levels in their quest for sustainable urbanization. It is a great example of the benefit of interdisciplinary science policy cooperation. Cities provide tremendous opportunities to mitigate climate change and increase resilience while also improving well-being and economic output. If well planned, equipped with the necessary capacity, and managed through the appropriate governance structures, cities can be places of innovation and efficiency. ARC3.2 will help to ensure that our future cities enable us to live more sustainably and be more resilient.

Joan Clos
Former Executive Secretary of UN-Habitat
Former Mayor of Barcelona

Foreword – Christiana Figueres, Former Executive Secretary, United Nations Framework Convention on Climate Change and Vice Chair of the Global Covenant of Mayors

With the majority of the world's population living in urban areas, action by cities holds great potential to curb emissions and build resilience to climate impacts. Cities are a powerful force in meeting the global challenge of climate change. This fact was underscored at the 2015 UN Climate Change Conference in Paris (COP21), where commitments to act by cities registered on the United Nations Framework Convention on Climate Change (UNFCCC).

The Paris Agreement is a transformative vision of growth shared by the 195 countries that adopted it. It is built on a foundation of national climate change action plans. For these plans to succeed, and for us to meet the climate change challenge, cities must align policy to national goals and the long-term goal of the Paris Agreement. I welcome the *Second UCCRN Assessment Report on Climate Change and Cities (ARC3.2)* because it will help cities choose a policy suite that accelerates their local transition to low-emission and highly resilient growth. With this report as a resource, I am confident that cities can be engaged in meeting our global goals while enhancing liveability in their communities.

Christiana Figueres
Former Executive Secretary of UNFCCC
Vice Chair, Global Covenant of Mayors for Climate & Energy