

## The role of cities and local authorities following COP21 and the Paris Agreement

Nicola Tollin

Senior Research Fellow, University of Bradford

Executive Director, RESURBE International Program on Urban Resilience, RECNET  
[n.tollin@bradford.ac.uk](mailto:n.tollin@bradford.ac.uk)

### Abstracts

The article highlights the implications for cities, local authorities and non-party stakeholders of the Paris Agreement and the resolve of United Nations Climate Change Conference of the Parties COP21.

The article focuses on the central role that cities will have in the implementation of the Paris Agreement itself, particularly with reference to mitigation, adaptation, capacity building and technology transfer.

The Paragraphs finally identifies the key challenges for cities for their resilience transition, facing present and future climate change challenges, including the need for renewed planning and evaluation approaches and practices.

### Keywords

Climate change, urban resilience, adaptation, mitigation, COP21, Paris Agreement



Phoenix, USA from International Space Station, 2013

[https://www.nasa.gov/mission\\_pages/station/images/index.html?id=338431](https://www.nasa.gov/mission_pages/station/images/index.html?id=338431)

## 1. Cities and Climate Change: an introduction

“Cities consume 75% of the world’s natural resources, 80% of the global energy supply and produce approximately 75% of the global carbon emissions. In general, fossil fuel prices (coal, natural gas and crude oil) have risen steadily since the late ‘90s. This raises serious questions about the future sustainability of cities in terms of energy supply, their role in meeting global carbon emission reduction targets and their ability to participate in the carbon economy.” (UNEP-DTIE, 2013)

Climate change and warming are unequivocal, unprecedented climate changes have been registered for over 50 years, and it is scientifically recognized that it is triggered by anthropogenic activities, particularly related to the emission of greenhouse gases (IPCC, 2014) which are driven by the human system of consumption and production, and generated in particular in urban areas.

“Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century.” (IPCC, 2014): 4

Human settlements, and particularly cities, due to the concentration of human life and activities, are responsible for the current climate change trends and dynamics; and at the same time, human settlements are vulnerable to the increasing negative effects of climate change and to direct effects of pollution, particularly air related, which is generated mainly by greenhouse gas emission of mobility and heating/cooling systems.

Urbanization processes and dynamics are leading an exponential rise of world urban population in the next decades, coupled with increasing consumption levels, particularly in developing and transition countries; these development trends are causing increasing emissions of greenhouse gasses which will further contribute to climate change. The very climate change fostered by human activities concentrated in cities is having various negative impacts on cities themselves, also having a multiplying effects on already existing negative urban issues: i.e poverty, sprawl, inequality, health.

Urban systems are because of their evils and a radical re-thinking of the way in which cities are planned, managed and lived is indispensable, specifically coupling approaches to address at once mitigation and adaptation, both in terms of slow and rapid on setting disasters and impacts, actions through and an integrated resilience transition.

Therefore the redefinition of urban planning and management forms for systemic urban transition is indispensable, addressing the call for absolute decoupling of natural resource use and socio-economic development, which shall be based in re-developing an urban circular metabolic approach.

## 2. Cities and Climate Change: beyond COP21

Cities and climate change issues are not only addressed by UNFCCC Conference of the Parties (COP), but also by other United Nation initiatives, inter alia:

the 2030 Agenda for Sustainable Development through Sustainable Development Goals (SDGs) (United Nations, 2015c);

the International Strategy on Disaster Reduction (UNISDR) through Sendai Framework for Disaster Risk Reduction (United Nations, 2015b);

Habitat Program (UNHABITAT) through Medellin Collaboration on Urban Resilience and HABITAT III.

Furthermore, a number of international initiatives have been developed in the recent years, specifically dedicated to address urban issues related to climate change, in terms of risk, mitigation and adaptation, including:

Rockefeller Foundation's 100 Resilient Cities: A network of over 100 cities worldwide, jointly working to increase urban resilience against social, physical and economic major challenges, including climate change related.

City Climate Leadership Group (C40): it is a network of world megacities, which aimed to develop actions to mitigate climate change, by reducing emissions, and to adapt to its inevitable effects and impacts;

Covenant of Mayors: an European Union initiative and network of local and regional authorities, aimed to meet the EU 2020 20% emission reduction target, through increasing energy efficiency and the use of renewable energy;

Mayors Adapt: launched by the European Union in the frame of Mayor Adapt, with the aim to strengthen the resilience to the impact of climate change;

-UNHABITAT's Cities Resilience Profiling Programs (CRPP): a global program aimed at providing to local and national governments tools to measure and to increase resilience, through favouring the collaboration among stakeholders.

RECNET's International Program on Urban Resilience (RESURBE): a multi-stakeholders platform aimed at realizing research, capacity building and urban development projects on urban resilience, coupling climate change risk/ adaptation / mitigation.

All these initiatives are playing a fundamental role in implementing the COP21 resolutions and the Paris agreement facilitating, supporting and coordinating the involvement and contribution of cities.

## 3 Cities and local authorities at COP21

The COP21 did not just see the unprecedented presence of over 150 heads of state but also the massive presence of city mayors; and a considerable and unprecedented number of side events specifically focusing on cities, although in large part outside the negotiation venue (Blue Zone).

The historic number of heads of state present gave the world the unequivocal signal that climate change is a real threat and shall be urgently addressed globally, and that all countries are willing to act, in a common but differentiated manner, to face such an unprecedented challenge for the humankind.

The over 400 mayors were present to call for a more direct involvement in the negotiations, noting that any agreement resulting from COP21 would need to be implemented at local level, as well as to stress that cities can play a central and fundamental role in defining and implementing innovative solutions to reduce the causes and the effects of climate change both locally and globally.

The wish of mayors to have a more central role at the negotiations table appears not fully realistic/feasible/reasonable, as the negotiations between 195 countries has already a very high degree of complexity that does not need to be further enhanced by the inclusion of other negotiating parties. Meanwhile the need to establish a space for open dialogue, and to facilitate the action at local level, through the definition of appropriate plans and actions for the implementation of the Paris Agreement, is very legitimate and quintessential to tackle climate change causes and effects.

In recognition of the simple fact that 5 billion people will live in urban areas by 2050, cities have indeed a central role in tackling climate change, and their resolve and action can champion the ambitious transformative changes which are indispensable to reduce emission and limit the damages and negative impact of climate change.

Regarding the more prominent role of cities within the negotiation process, there were important advances, particularly with reference to the UN Secretary General Ban Ki-Moon announcement that cities will be better recognized in future negotiations.

Following the side events organized by and dedicated to cities, unfortunately it was clear that cities are still proceeding with a scattered approach, despite the commendable effort of international programs and initiatives previously mentioned, and the very favourable momentum.

In order to exploiting fully the potential of local action in cities for combatting climate change it is necessary to harmonize the efforts of cities and local authorities, first at national and then at international level, and to facilitate a continuous co-creation and exchange of knowledge, promoting mutual learning process and capacity building. Furthermore there are still fundamental knowledge gaps, particularly related to planning and evaluation methodologies and approaches related to climate sensitive urban development, which will require dedicate effort and the proactive collaboration among stakeholders at different levels, including academia and local communities.

## 4. The role of cities for the implementation of the Paris Agreement

### 4.1. General provisions

Within the decision adopted by COP21, which includes the Paris Agreement in annex, cities are mentioned only twice within the text, where it is outlined that a stronger and more ambitious climate action is requiring also the full support of non-party stakeholders, including cities.

The Section 5 (United Nations, 2015a):19 [Sections V, Paragraphs 134 to 137 of the Decision] is dedicated to Non-Party Stakeholder (including cities, civil society and subnational authorities); it recognizes explicitly the important role of domestic policies and the need to strength and to increase efforts, practices, technologies and knowledge of local communities, including urban ones.

Cities, as non-party stakeholders, are called to increase and upscale their efforts for both mitigation and adaptation actions, reducing the emission and building resilience, adapting to rapid and slow on-setting climate extreme events and enduring conditions; this requiring more integrated and holistic approaches aimed to develop and implement systemic action coupling mitigation and adaptation.

Moreover, the Decision recognizes the importance and encouraged the creation of a dedicated platform/s for exchanging experiences and sharing best practices, for addressing and responding to climate change, ultimately favouring a continuous knowledge co-creation and exchange, for which network of cities are playing a central role, also supporting the systematization and normalization of these best practices, leading also to the development of common standards.

In relation to the role of cities implementing the Decision and the Paris Agreement, the resolutions regarding mitigations and adaptation are of central importance, without forgetting the also other resolutions including inter alia finance, technology and capacity building.

### 4.2. Mitigation

Mitigation efforts [Section III, Paragraphs from 22 to 41 of the Decision and Articles, 4, 5 and 6 of the Agreement] are the core of the decision and agreement, following the basic principles that the investments and resources mobilized for appropriate mitigation actions will save fundamental resources in adapting to more severe climate change impacts when occurring.

Mitigation efforts to reduce greenhouse gas emissions and to maintain the temperature bellow 2.0, or better 1.5 degrees, are determined at national level through the Intended Nationally Determined Contribution INDCs, which it is clear that at the moment are largely insufficient, urgently requiring more ambitious efforts.

Cities, are playing a key role in defining and implementing much more ambitious mitigation goals, both because the majority of world emissions are responsibility of cities and an increasing number of cities have started to develop local action plans and pledges that are already beyond the INDCs communicated by their own countries.

It is well recognized that transport and energy are key sectors for action, both for cities in developed and developing countries in differentiated manners, as well as construction sector and land use change; the first step required in the development of appropriate urban climate solutions, is to shift from sectorial approaches to more integrated and holistic ones, re-thinking the very way in which cities are planned, constructed, managed and lived.

Emission reduction shall be coupled with removal of emission, preferably through the use of appropriate technologies; for example through greening of cities, stopping urban sprawl, via reversing urban sprawl dynamics and land use change, also through the re-naturalization of both central and border areas of the cities.

#### 4.3. Adaptation

Adaptation had an unprecedented attention during the COP21 negotiations, also due to the undeniable, and in a certain form unexpected negative impact that climate change is already having, particularly in developing countries where populations are more vulnerable, and the knowledge and financial resources are not fully available [Section III, Paragraphs from 42 to 47 of the Decision and Articles 7 and 8 of the Agreement]

Adaptation to climate change is going to be mainstreamed through national adaptation plans, to be used for the implementation of policies, programs and projects, thereby cities shall have central role in the definition of such national plans, which are aimed to coordinate and harmonize efforts, also because adaptation can be more difficultly addressed at local level only.

For cities the definition and implementation of adaptation measures will be particularly challenging, for a number of reasons including, the scale of rapid and slow on-setting climate driven disasters and negative impacts, the limited predictability of both extreme events and long lasting conditions, the need of increasing resilience of key infrastructures which control is often beyond the cities capacities.

The key adaptation issues that cities are facing include flooding, drought, and more frequent extreme weather events of higher magnitude, which put in danger the function and ability to recover of structure and infrastructure, directly and indirectly endangering human living conditions and lives.

The exchange of best practices, lessons learned and knowledge is of great importance for cities also regarding adaptation measures, and fundamental are also radical innovations in the forms of governance, planning, managing the cities as well as methods and tools to evaluate and apprise the adaptive capacity of cities.

#### 4.4. Finance

The availability, timely and in due time, of financial resources is a key factors for climate change action, regarding both adaptation and mitigation. The availability of the necessary financial resources is crucial for developing countries which should mainly rely on the direct or indirect contribution from developed countries. [Section III, Paragraphs from 53 to 65 of the Decision and Article 9 of the Agreement]

Cities are in a critical position as they cannot, in most cases, autonomously mobilize the necessary financial resources to implement the necessary actions for addressing mitigation and adaptation needs, such as resilient infrastructure, or to foster more radical innovation, as a systemic low-carbon emission transition.

The Cities Climate Finance Leadership Alliance estimates that the cost of maintaining the operational capacity of urban infrastructure is \$4.1-4.3 trillion to which it would be necessary to add €0.4-1.1 trillion to develop low-emission and resilient infrastructure, this only well beyond the budget availability for climate change action worldwide.

#### 4.5. Technology Development and Transfer

The technological capacity of countries and cities to undertake necessary mitigation and adaptation actions is a key enabling factor for the successful implementation of the COP21 Decision and the Paris Agreements [Section III, Paragraphs from 66 to 71 of the Decision and Article 10 of the Agreement].

The concept of technology, of great importance particularly for cities, it is not only limited to high technologies but includes appropriate technologies, also related to intangible knowledge and heritage; moreover the understanding of technology is here to be intended in a broader sense including methods and processes.

The Technology Executive Committee and the Technology Centre and Network, received the mandate for technology research, development and demonstration, as well as for development of endogenous capacities and technologies. It is important to highlight that there is increasing focus on and request for adaptation technologies development, particularly in cities.

Key enabling technologies and processes for climate change in cities, include inter alia:

- low-carbon and energy efficient ones, related to mitigation with reference to emission reduction;
- intangible and traditional ones, to build architecture that are more resilient to extreme temperature, at urban and architectural scale, related to adaptation of buildings to extreme temperature and meteorological events.

#### 4.6 Capacity Building

The Paris Committee on Capacity Building has been established to bridge knowledge gaps and to mainstream action, through dedicated efforts with regard to the coordination and coherence of capacity building activities, considering multiple scale of intervention from national to regional and subnational level. [Section III, Paragraphs from 72 to 84 of the Decision and Article 11 of the Agreement]

The role of cities on capacity building is essential, also through the international program and initiatives listed above, including for the definition and development of dissemination tools and methodology for capacity building; this including the systematic identification and collection of best practices, experiences and lessons learned, focusing on the enabling conditions for the replication and upscaling of such best practices.

For the development of appropriate actions for capacity building is fundamental to ensure ad-hoc education and training, and to enhance and develop capacity building among all local stakeholders and communities, to favour the definition and implementation of appropriate actions for mitigation and adaptation to climate change at urban level.

Climate capacity building for cities would also include the training and continuous professionalization of both policy makers and technical staff within the cities administrations, as well as the education and the continuous training of planners, architects and technical staff able to address present and future urban climate challenges in a more integrated manner, also through innovative forms of urban planning and design.

Moreover, it is important to outline that, particularly regarding adaptation plans and actions for cities, it is indispensable to go beyond the usual north-south capacity building and knowledge transfer, favouring not only south-south but also south-north knowledge brokerage and exchange; for example enabling cities in developed countries to learn about successful solutions and action implemented in developing cities, within limited financial and technological availability, and possibly with very successful of governance and engagement of local communities..

## 5. Conclusions

The successful implementation of the Paris Agreement, ultimately to maintain the global average temperature well below 2.0, and possibly within 1.5 degrees, depends from the ability of cities, local stakeholders and communities to rapidly gather the necessary resources and to develop radically innovative solutions to plan, design, build and manage cities in climate sensitive and integrated manner.

It is also important to promote an understanding of urban resilience that is coupling mitigation, risk and adaption to climate change, moving toward an integrated and systemic urban planning and design approach, able to address

Cities are having the creative capacity and the innovation potential to start radical transformative processes which are indispensable for shifting from the current unsustainable and over emitting patterns of urban development to a climate proof ones, requiring a radical re-thinking of the very nature of cities and their development pathway.

This fundamental change shall be enabled by a radical transformation in the forms of governance of the cities, based on the simple idea that the challenge of implementing climate solutions requires the active involvement and cooperation among all local stakeholders, in liaison with national and international ones.

Cities shall work in liaison with their respective national governments, the Paris Agreement is a party lead agreement, and ultimately it is championed by countries and groups of countries, thereby it is essential that cities can harmonize nationally their efforts in line with the provision and pledges of their countries. This does not imply that cities shall not also operate at international level, through umbrella organizations and programs, at the contrary, through their ability to operate both nationally and internationally, their innovation potential can be extremely useful to champion, through example, the definition of more ambitious pledges, including nationally determined contributions.

It is fundamental to define common measuring and evaluation methods, tools, practices, in first instance at national level, and then with reference to internationally agreed guidelines and standards, this also to maintain transparent the pledges and the results of the plans and actions undertaken, and also to ensure that double counting is avoided.

The key priorities to promote resilience management of cities and successfully contribute of the Paris Agreement, it is depending to possibility of mainstreaming efforts among cities to bridge two key knowledge gaps: the first related to the evaluation and measurement of urban resilience and the second to the definition of appropriate planning methodologies and practices for urban resilience. These two knowledge gaps and the ability to bridge them properly and timely, depends largely on a key enabling factors as: capacity building and knowledge brokerage among cities.

Ultimately it is indispensable to remind that cities are places that shall provide better quality of life, development opportunities, safety and just access and redistribution of resources; as well as that if cities are a major course of climate change they can also have a fundamental role in developing and implementing innovative solution to address this unprecedented global challenge.

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