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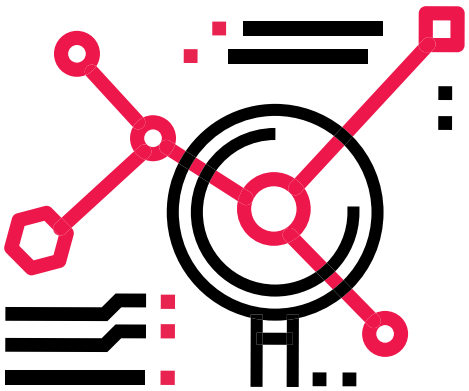
Policy
Insights



Impact
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Hub

European cities at the centre of the fight against climate change. Can local municipalities play a meaningful part in achieving global goals?

Summary

More than half of the world's population currently lives in urban areas. Urbanisation is, in fact one of the key trends of the current century and it is expected to continue. Estimates say that as much as 60% of us will be living in cities by 2030.

Then there are the climate risks - rising sea levels and floods, droughts and heatwaves - are becoming more and more a part of our everyday reality no matter what part of the world we live in. Europe will certainly not be spared exposure to the weather extremities that are the effect of climate change.

Urban climate change-related risks are likely to increase – effecting the safety of the roofs over our heads, our sources of income and most importantly of all – our health. Being aware of these risks and knowing how to prevent and handle them if they happen has never been more important than it is today.

And at no time has the role of the local entity, the city, been given as much attention and power in the fight against climate change as during the COP21 negotiations in 2015 in Paris.

This paper discusses 3 aspects of conclusions from COP21 that, more than others, empowered cities to act as effective climate-change agents:

- Enhanced mitigation, also at a local level;
- Tailored financial solutions;
- Formally putting cities on the agenda.

This paper also summarises the importance of more informal gatherings and initiatives than COP. Additionally, it analyses whether the level of involvement in issues related to combating climate change of Katowice (Poland) can change as a result of the fact that it is hosting the COP24 summit.

It is, however, equally important to note that ensuring that European cities will take active part in the fight against climate change requires addressing some key policy issues. The recommendations made by the author in this regard have been divided into three respective categories: those relevant to EU bodies, those regarding ideas to be potentially implemented at the national level and those to be considered by individual municipalities.

Contents

Introduction

In recent years, a focus on urban areas as key drivers of greenhouse gas emissions (GHGs) has led to a 'cottage industry' of frameworks and tools to measure and account for the impact of urban areas on climate change. Urban areas have become increasingly important units of environmental as well as developmental policy in an international context through a series of ongoing initiatives including the United Nations Sustainable Development Goals (SDGs), international climate negotiations regarding the United Nations Framework Convention on Climate Change (UNFCCC) and the Global Conference on Human Settlements (Habitat III). The proposed SDGs include, for example, city-specific goals, although targets as well as performance indicators used to measure the degree to which these goals are achieved, are yet to be firmly establish.

Over the last decade individual cities, organized groups of citizens and private-sector organisations are being looked to in order to fill leadership voids that are the result of a lack of action on a national level. (Biermann, 2012; Keohane and Victor, 2011; Pattberg and Stripple, 2008; Betsill and Bulkeley, 2007). Some scholars suggest that the increasing role of local as well as private entities in matters related to climate change-related issues results from them being 'closer to the action' – making it easier to commit to more ambitious, well targeted climate change policies in more timely fashion than national governments (Widerberg and Pattberg, 2014).

Scholars, including Bulkeley and Castan Broto (2013) emphasize that cities have the right mix of authority and flexibility to experiment and innovate when it comes to 'wicked problems' like climate change. Urban decision-makers are often directly elected, strengthening their authority while increasing their accountability.

More than half of the world's population, in fact, currently lives in urban areas and urbanisation is one of this century's key trends. With at least 60% of world population living in cities by 2030, the degree of urbanisation is expected to steadily increase. At the same time, many of the key and emerging climate risks, such as sea level rise or extreme weather events, are affecting cities in particular, especially informal settlements located in cities' suburbs of developing countries. Urban climate change-related risks are likely to increase and will impact infrastructure, ecosystems, housing, service delivery, as well as the livelihoods and health of urban communities. The importance of urban adaptation will therefore continue to increase.

As shown in the introductory paragraphs of this report, the power and willingness of urban authorities to represent themselves in climate change negotiations can be analysed using a myriad of sources. The topic of multilateral governance on the city level as well as building national and international networks of like-minded urban players when it comes to climate policy is equally exhaustive. This report therefore aims to provide the information necessary in understanding the process by which the 21st Conference of the Parties in Paris (COP) officially sanctioned the role of individual cities in such negotiations while also ending speculation regarding their legal standing in this process. As a result, even though the list of networks and organisations well-suited for cities involved in the fight against climate change is impressive, it will be referred to here only broadly – as relevant to opportunities related to financing projects. For this purpose, extensive data collection from secondary sources has been supplemented by substantial industry-wide research covering the viewpoints of key players.

Contrary to the European Union (EU) nomenclature, for the purposes of this study, the author has defined local or regional authorities (LRAs) as city or big urban areas authorities (including suburbs). As a result of EU policy favouring regions larger than single administrative units, the replaceable concepts used in this study should thus not be understood as bodies consisting of rural areas.

Last but not least, it must be emphasized that the focus of this study is on the broad European perspective. The core of this research is therefore focused on EU bodies rather than specific Member States (MSs) and their internal policies or funding opportunities. It is important to take note of the fact that the relevance of initiatives undertaken by individual MSs, may lead to increasingly important benefits, especially if truly binding pan-European regulations are not put into place in the near future. In an effort to show best practices from abroad, single cases from outside EU are also mentioned.

The challenge

Although scientists may differ when accessing the pace of climate change, and economists may argue about the optimal maximum mean temperature increase, everyone agrees that climate change is happening now, that anthropogenic emissions are one of its major causes and that humanity can dramatically diminish the negative impact of climate change by reducing GHG emissions in a substantial way.

The importance of adapting to climate change has increased rapidly in recent years. This is in large part due to the extent to which extreme events, related to climate change, have affected several areas in Europe over the last decade – with the effects of this extreme weather, that was the result of climate change, turning out far worse than anyone could have predicted ten years ago. In 2010 Cyclone Xynthia flooded many areas in coastal France and left almost a million people without electricity. In 2014 Croatia and Serbia suffered heavy flooding as a result of rainfall and in early June of that same year, a prolonged heatwave was followed by heavy rain in Belgium, the Netherlands and Luxembourg. The storm then moved into the Ruhr, leading to damages and floods in the area between Dusseldorf and Dortmund. Heatwaves have been another huge challenge in Europe, with particularly warm summers in 2013 and 2014. These are just a few examples of the events that have made governments and cities aware of the necessity to adapt to climate change – a phenomenon that is caused by the emission of GHGs.

The Kyoto Protocol identifies and regulates six major GHGs: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbon and sulphur hexafluoride. These are released through anthropogenic activities - the most significant of which have to do with the generation of power, wastewater treatment, landfills, and fuel for transportation. Power generation for electricity, heat, and industrial activities makes up the bulk of emissions. This is followed by land use changes (for example, deforestation and burning), agriculture (including fertilizer use and livestock), and transportation (fossil fuels for automobiles). Clearly, the bigger the urban area, the bigger the amount of GHGs emissions it generates on a daily basis.

The contribution of cities to climate change

Economic growth and urbanization move in tandem, as have economic growth and GHGs emissions - for at least the last 100 years. The vital role of cities in the climate change process has to do with the fact that most economic activities revolve around them. Affluence and lifestyle choices determine gases emission levels. It is also important to note that, historically, emissions are higher in developed countries than developing ones. The world is quickly becoming more and more urbanized and, if this process is treated as 'business-as-usual', there is no doubt it will lead to a dramatic increase in GHGs emissions.

At the same time, half of the world's population already lives in cities – a figure that is likely to reach 70% by 2050. Moreover, cities consume as much as 80% of energy produced worldwide and, as a result, globally, account for a roughly the same share in GHGs creation. As our economies continue to transform there is a clear shift in the source of these emissions – from industrial activities to energy services required for lighting, heating, and cooling.

While the urban population is expected to double in the next couple of years, the global built-up area is expected to triple during the same period (Angel et al. 2005). This building out instead of building up will lead to a dramatic increase in energy requirements and costs of new infrastructure. Clearly, poorly managed cities intensify demand for energy and infrastructure investment. Their impact is also directly linked to the level of output and the combination of energy sources they use. Richer cities, less dense cities, and cities that depend predominantly on coal to produce energy all emit more GHGs.

Cities pose a unique challenge to engineers in that they require energy to be supplied in a concentrated fashion. Most cities are supplied with electricity from large-scale power plants, transmitted over a distance that is as short as

possible – this in effort to reduce transmission losses. Similarly, trucks, automobiles and aircrafts require fuel with a high energy content. Switching to electric vehicles will likely only intensify the need for concentrated sources of energy and again require a complex fuel distribution network. As water availability decreases, cities may also need additional energy sources for desalination purposes. Renewable energy sources, such as wind and solar power, will be an increasingly important source of energy for cities, but given their current limitations, will likely not be able to replace more concentrated hydroelectric, carbon-based, and nuclear energy sources. In order to significantly reduce GHG emissions changes in the approach to suppling energy, we have to include changes in energy use habits i.e. using automobiles less frequently and paying more attention to the energy efficiency of buildings.

In summary, cities need to be looked at as the first-responders in a crisis; they are the first to experience trends. One glowing case-in-point example of this can be seen in the fact that many local governments were aware of the 2008 financial crisis six months before national governments delivered warnings. How did they know this? Because waste generation rates and values for recyclables had dropped significantly. Additionally, it is important to remember that cities are usually the main agent implementing national directives. Because of their proximity to the public and their focus on providing day-to-day services, cities tend to be more pragmatic than senior levels of government. National governments may set the rules of the game, but it is cities that have to play in that game as the participating 'athletes". For this reason, it is crucial that they not only know the rules but also that their voices are heard while the rules of this game are being established

The impact of climate change on cities.

Climate change will have a variety of effects on cities. The most likely effects in Europe include an increase in extreme weather events such as floods, storms, and heatwaves. This could have a serious effect on urban infrastructure such as transport, sewage, and even food-delivery systems. One of the biggest dangers during periods of heavy rainfall and flooding has to do with a sewage systems that quite simply cannot cope with the volume. We have seen an example of this in 2011, during the rain storm in Copenhagen, which was a perfect illustration of the kind of disruption that can occur during periods of heavy rainfall. This storm led to flooding in houses while also damaging railways, roads, and the metro system. Heavy rainfall can also cause landslides in areas sounding mountain and hills outside cities. These landslides can cut off roads - making it difficult to deliver food and other goods. We have already seen this happen in Italy's Liguria region around Genoa.

Climate change places pressure on tangible infrastructure such as roads, houses, and sewage systems. But it also places pressure on intangible infrastructure such as our healthcare systems. This becomes evident during events such as heatwaves, which are another major problem in urban areas. A city is a kind of a 'heat islands' that, because of density of population and infrastructure, becomes much warmer than a rural area being particularly dangerous for older people. This creates a new type of challenge for our healthcare systems.

Cities are highly susceptible to the disruption given and interruption in the delivery of critical supplies. During medieval wars, for example, a primary tactic of invading armies was to prevent water and food from entering cities which were under siege. In recent times, the dependency of large cities on food imports has dramatically increased. London imports more than 80% of its food from outside the United Kingdom. The supply and distribution of energy, water and information technology as well as waste removal, and susceptibility to pandemics are all potential Achilles heels for cities. Social unrest caused by shortages and increases in the prices of key commodities, mass migration, high unemployment, terrorism, geophysical and climatic disasters are all also potential threats. Climate change intensifies the risk of all of these currently existing threats.

Although climate change will result in 'only" a gradual increase of some indicators (for example, mean annual temperatures and mean sea levels) it will also increase the risk of extreme events (for example, a greater number of high-intensity of cyclones, heatwaves, and flooding) in many locations. Responses to such extreme events need to be built on current experience in disaster risk reduction. Climate change will place an even higher premium on municipal capacity and management structures. Existing disaster reduction experience has shown that social capital is a critical aspect of all urban communities. Cities with strong social networks often have support systems that can aid in recovering from natural disasters and as well as handling more day-to-day challenges such as high heat, changing weather patterns and lack of water. Developing such networks further is an enormous challenge as they are already dealing with an extremely high capacity.

Key requests before COP21

The main request of the Local Governments and Municipal Authorities (LGMA) Constituency aware of the issues at stake before COP21, was to accelerate and enhance the dialogue with the Parties to facilitate an ambitious and inclusive climate framework, starting from Paris 2015.

The requests to the Parties included the need to advance global climate negotiations towards and ambitious and inclusive Agreement, through strengthening the dialogue with local and subnational governments, and other non-Party stakeholders that can deliver climate-change-related activities on the ground. Parties have also been asked to select national negotiators to provide clear recognition and reference to the role and impact of local and subnational governments – that including what is stated in the following paragraph 'Enhance action through the cooperative implementation of the policy options and further incentivize climate actions by subnational authorities, including local governments, such as establishing effective regulatory and institutional frameworks and financing mechanisms needed to address barriers and leverage investment, in accordance with their national circumstances'.

Prior to COP21, the Committee of the Regions (CoR) also underlined the fundamental role that local and regional governments can play in drafting and implementing climate change policies, referring to the potential that the Paris Agreement could have in unlocking resources that can help cities and regions meet and exceed their climate goals. This untapped potential should also be reflected, at the European level, in the 2030 policy framework - through actively strengthening the impact of EU local initiatives. The CoR also called for a new model of global climate governance based on the principles of multi-level governance, fully recognising the action of non-party stakeholders in order to maximise climate action and, to this end, supports the recognition of local and subnational governments through the establishment of a municipal and regional work programme addressing climate change.

Parties have also been requested to enhance vertical integration and foster effective multilevel governance through providing appropriate national agencies with a mandate to engage local and regional governments in the preparation and implementation of, among other, the Nationally Determined Contributions (NDCs), Nationally Appropriate Mitigation Actions (NAMAs), Low Emission Development Strategies (LEDS) and National Adaptation Plans (NAPs).

In addition to the Parties, local and regional governments, financial institutions and the private sector entities have also been requested to strengthen their partnerships in an effort to continue to explore innovative solution supplement and complement pre-2020 ambitions at the national and global level. This included providing better access to climate funding opportunities, fostering technical solutions that increase capacity versus existing infrastructure and finding innovative financing models. The CoR also called on EU MSs and developed countries outside the EU to, before COP21, put together a financial package that allows them to safely make good on their pledge of raising their 'fair share' - a commitment of USD 100 billion each, by 2020, while also providing direct access for cities and regions to the main global climate funds, namely: the Green Climate Fund, the Global Climate Facility and the Adaptation Fund.

In line with the principles of multi-level governance, local and subnational governments should just as individual nations have done using NDCs, be able to clearly define their mitigation and adaptation commitments. Thousands of local governments have in past years, made transparent, verifiable and reportable commitments. From the onwards, local leaders had to effectively create a system of Locally Determined Contribution (LDCs) that demonstrated their impact and motivated other players to increase their goals. The LGMA Constituency suggested using this opportunity to explore the possibility of direct linking these to NDCs. This would be not only more effective, but also in line with the principle of subsidiarity.

Committing to a LDCs was seen an important initial step in a broader undertaking. To this end cities and regions needed to have access to the resources necessary for achieve the goal they have stated. Local initiatives could not be effectively implemented without recognition in the form of a mandate and medium to long-term support and funding.

Adequate legal frameworks needed to be put in place to foster local activities. These frameworks, at national and also 'supranational' level (e.g. EU), were supposed to enable and facilitate the roll-out of activities from the bottom up. This included, for example, stimulating the energy transition as well as local investment in climate mitigation

and adaptation projects - through streamlining regulations, avoiding excessively burdening bureaucratic procedures and setting up frameworks that enable action instead of hindering it. In the EU specifically, while back then there was mention of the importance of LRAs in the Energy Union Package, the RED, EED and the EPBD, significant barriers existed limiting the ability of LRAs to fulfil these roles – and, in general, insufficient assistance was offered to the authorities for them to be able to succeed in filling these roles

Support in understanding and developing a comprehensive framework that encompasses the full cycle of planning and implementation and links all the resources that facilitate each step towards low carbon, systematic development was necessary. It was also crucial to ensure that adequate capacity and resources will be allocated for the development of practical solutions and activities at urban level every step of the way.

Paris: empowering cities to continue to lead

While, by definition, non-state actors cannot be subject to international laws; the Lima-Paris Action Agenda (LPAA), the Ad Hoc Working Group on the Durban Platform for Enhanced Action and activities such as the Non-State Actor Zone for Climate Action (NAZCA) inspired by COP21, provide new possibilities for non-state actors which want to play a role in climate-change-related negotiations.

The snapshot below offers insights into three big things that happened during or as a result of COP21 proceedings - each of which will prepare cities for effectively combating climate change.

Enhanced mitigation

The Paris Agreement sets an ambitious goal: 'Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels' [Article 2 of the Agreement].

While recognizing that peaking will take longer for developing countries, each country aims to reach global peaking of GHGs emissions as soon as possible and to undertake rapid reductions thereafter in accordance with the best available science [Article 4 of the Agreement]. The carbon budget to maintain the temperature below 2 degrees is below 1,000 GtCO2, and about half of that for 1.5 degrees – that makes these goals very ambitious. The current annual global emissions are approximately 50 GtCO2, meaning that, at current emission rates, this quota will be reached in around 10 years (for 1.5) or 20 years (2.0) respectively. [IPCC AR5 SYR 2014]

Starting in the year 2020, the year in which the Paris Agreement will officially take effect, countries are requested to submit national climate action plans, including updated NDCs, every five years. Each set of 'contributions' should be more ambitious than the previous one; according to a universally harmonized system for accounting, verification and evaluation. [Article 4 of the Agreement].

Completion of the more ambitious NDCs is scheduled to start in 2020. At the same time, it is noted with concern that currently intended NDCs are insufficient to holding the global average temperature below a 2.0 degree raise compared to pre-industrial times [Article 17 of the Decision].

Starting in 2023, a Global Stocktaking will be conducted jointly every five years to evaluate the progress toward the implementation of activities and degree to which goals set in the Agreement have been achieved. At the same time, every five years, the Parties will submit/review NDCs which will be more ambitious than the current ones [Article 2, 4 and 14 of the Agreement]. What is crucial though, is the fact that that NDCs need to include their local equivalents so that every stage of administrative unit will be covered.

Finance

Back in 2015, the Cities Climate Finance Leadership Alliance (CCFLA) agreed that, over the next 15 years, globally, roughly USD 93 trillion of low-emission and climate-resilient infrastructure will need to be built. Analysis conducted for this report suggests that more than 70% of this infrastructure will be built in urban areas, at a cost of USD 4.5 trillion to USD 5.4 trillion per year. The value of infrastructural investment required in urban areas over the next 15 years could be greater than the USD 50 trillion value of all the infrastructure in the world today.

In light of this enormous demand, understanding finance alternatives for combating climate change is tremendously important - it is obvious that a gap exists between urban climate change finance needs and demands and that it is significant. Even if every dollar of currently tracked climate finance were directed to urban areas, it would still not be enough to match the most conservative estimated requirement.

Moreover, the challenge is not simply to increase the amount of money in the pipeline, but also to create an enabling environment that encourages existing and new financing to flow from a broad spectrum of sources. Public and private funding can play a critical role in attracting investment. It will however be essential to further develop channels of municipal financing, such as transfers from national governments, revenues from local taxation and public services, and lending from local financial institutions, development banks, and international public or private sources in order to ensure adequate funding for the projects discussed in detail during COP21.

The national level

Although the mapping of national funding sources for urban activities related to this matter is not the objective of this report, a brief review suggests that most of the identified climate financing instruments for cities support mitigation measures, such as energy efficiency improvements, renewable energy and sustainable transport. The options for financing adaptation action however, appear to be more limited. Newer MSs like Bulgaria and Lithuania seem to rely primarily on EU and other international funds that offer grants for climate activities. At the same time, 'older' MSs, like France or Ireland are complementing EU or national grants with new and innovative financial instruments such as green bonds.

EU funds and financial instruments[1]

In response to the vast investment needs, the EU has committed at least 20% of its budget between 2014-2020 to activities combating climate change. Within this budget, several EU funds are available to LRAs that allow them to finance climate change mitigation and adaptation measures. Support is available in the form of non-repayable grants, financial instruments, and funding available for Project Development Assistance (PDA) and Technical Assistance (TA). There are also advisory services for some specific EU funding instruments.

The European Structural and Investment Funds (ESIF) represent an important source of funding aiding LRAs in tackling climate change issues. Although, in principle, each portion of the ESIF can support both climate change mitigation and adaptation measures, some funds concentrate more on mitigation while others focus on adaptation. The European Regional Development Fund (ERDF) – including the European Territorial Cooperation (ETC) objective, the Cohesion Fund (CF) and the European Social Fund (ESF) contribute mainly to financing climate change mitigation measures. Funding from the ESIF can be provided, to the final beneficiaries, in the form of grants or financial instruments, through the Managing Authorities in the MSs, which co-manage and implement the ESIF in each EU country.

The ESIF also include territorial integrated systems, which allow Managing Authorities to combine different priorities and Operational Programmes while attempting to finance integrated urban and territorial strategies. The Community-led Local Development (CLLD) and the Integrated Territorial Investments (ITI) are territorial integrated systems that may be used to support activities combating climate change being put into action by LRAs.

There are specific programmes under the ERDF available to support local measures combating climate change. The European Territorial Cooperation objective (ETC, or INTERREG) can support joint climate activities undertaken by local and/or regional governments across different countries. Within INTERREG, the URBACT III programme aims to

[1] This part is largely based on Committee of the Regions estimates (2017): https://cor.europa.eu/en/documentation/studies/Documents/Financing-climate-action.pdf

support sustainable integrated urban development in cities across Europe by promoting cooperation and knowledge exchange. INTERACT III provides advice on several issues, including instructions on using the financial instruments available as part OF INTERREG. The ERDF also finances the CIVITAS programme and Urban Innovation Actions (UIA). CIVITAS is specifically designed to support sustainable urban mobility in the EU, while UIA supports new solutions to urban challenges that range from integration of migrants to energy transition. Both these programmes are potential sources of financing as LRAs look to combat climate change.

What is crucial, advisory services are available to beneficiaries seeking to access ESIF. JASPERS (Joint Assistance to Support Projects in European Regions) offers support to authorities and promoters as they prepare and implement ESIF projects. Given the recent increase in the use of financial instruments under ESIF, a specific advisory service, FI-Compass, has been made available to Managing Authorities – aiding them in the use of those FIs. Previously, non-grant ESIF financial instruments for sustainable urban projects were supported through JESSICA (Joint European Support for Sustainable Investment in City Areas), which provided equity investments, loans and guarantees.

In addition to the ESIF, four other EU funds are relevant in terms of climate financing on a local level: LIFE, Horizon 2020 (H2020), the European Fund for Strategic Investments (EFSI) and the European Energy Efficiency Fund (EEEF). LIFE is designed specifically to finance projects combating environmental and climate change within the EU. In addition to grants, two financial instruments exist under LIFE and are managed by the European Investment Bank (EIB): the Natural Capital Financing Facility (NCFF), which is tailored to biodiversity and climate adaptation projects, and the Private Finance for Energy Efficiency (PF4EE), which provides finance for the energy efficiency programmes of EU Member States. Funding from the NCFF can be accessed directly by EU cities to finance both green and blue infrastructure - stand-alone projects, those integrated in an urban area investment scheme or as part of a social housing scheme. The PF4EE provides loans, risk mitigation mechanisms and TA to national financial intermediaries, which provide energy efficiency financing to private and public entities. It is, therefore, an indirect financing source for LRAs.

H2020 supports activities combating climate action through investments in research and innovation and has a 35% target in terms of climate-related expenditure across the fund. As a result, activities combating climate change are funded across all parts of the programme, particularly in the 'societal challenges' activities that are part of the program. Local governments are able to partner with researchers and other stakeholders to access funding under the H2020 actions for research and innovation activities that are part of the program. Local governments may also benefit from the outcomes of H2020 actions. For example, the H2020 project CITYnvest offers TA and capacity building to local authorities for energy efficient renovations of public buildings in three pilot regions: Liège (Belgium), Rhodope (Bulgaria) and Murcia (Spain). It also promotes innovative financing models for energy efficiency and knowledge exchange. H2020 also provides grants for TA and PDA under ELENA (European Local Energy Assistance). This instrument is specifically designed for LRAs looking to improve the quality and viability of their energy efficiency and renewable energy projects. LRAs can use ELENA for the preparation of studies, calls and 'bankable' projects. ELENA can be combined with future EIB operations, and serve as a first step for EIB financing operations.

The EEEF, managed by the EIB, provides financing specifically for energy efficiency and renewable energy initiatives in the form of Private Public Partnerships (PPP). The EEEF includes a TA facility to support the preparation of sustainable energy programmes.

The EFSI was designed to allow for the better utilization of private financial resources in investments that are key to EU policy objectives. Economically and technically viable projects that are consistent with EU policies are eligible for EFSI financing. Given the fact that combating climate change is a key priority of the EU, EFSI is an important source of financing when it comes climate change mitigation measures (e.g. investments in sustainable energy). Given its nature however, EFSI seems less suited to aid in the financing of adaptation measures - perhaps as a result of the fact that not all climate adaptation projects are 'bankable' i.e. they do not generate a direct financial return. As part of the Investment Plan that includes the EFSI, the EC launched the European Investment Advisory Hub (EIAH), which is managed by the EIB and is intended to support project promoters during the project development process – this thanks to through individualized advice and technical assistance from experts. The EIAH is designed to assist project promoters, including urban authorities, in overcoming technical obstacles before and during the process of EFSI financing application.

The international level

In addition to EU-based financing supporting the combating of climate change, LRAs in the EU can access other international financing resources. The EIB, on top of its blending facilities developed with the EU, as part of its standard operations, provides direct loans or loans via financial intermediaries, guarantees, and equity investments supporting activities combating climate change to LRAs in all EU Member States. An example of an EIB loan granted through financial intermediaries is the cooperation of the EIB and the Belgian commercial bank Belfius in setting up the 'Smart Cities' financing programme. Thanks to this programme, Belgian cities and towns could finance mitigation measures, such as photovoltaic panels and near-zero-energy public buildings. Another example of EIB financing at the local level is the EIB direct loan of EUR 50 million granted to the city of Bologna in Italy for the financing of the construction of a public high school which, among others, was characterized by high energy efficiency standards.

The European Bank for Reconstruction and Development (EBRD) provides LRAs with financing options similar to the EIB, specifically however in certain Eastern EU MSs. The EBRD used to have a specially designed financing programme for adaptation and mitigation, the Sustainable Energy Initiative, which was operational until 2015. Since 2015, the EBRD has adopted the Green Economy Transition approach with the aim of supporting sustainable financing. Through this, LRAs can apply for direct EBRD financing (loans and equity) for large projects (between EUR 5 and 250 million). For smaller projects, LRAs can access EBRD financing through the Sustainable Energy Finance Facility, which provides credit lines to local financial intermediaries. Moreover, the EBRD acts as an agency for the Global Environment Facility, an international partnership of 183 countries working on global environmental issues. Through this entity LRAs in EU countries with transition economies can access grants for climate change mitigation projects. To do so, LRA project promoters need to contact the relevant national Operational Focal Point – there project proposals are reviewed to ensure that the eligibility criteria for Global Environment Facility financing are met.

The Council of Europe Development Bank (CEB) also provides financing to LRAs within its MSs, with a focus on improving living conditions in rural areas. The CEB has financed local-level energy efficiency projects in Estonia.

Green bonds represent an additional instrument for financing general activities related to combating climate change. They are available to LRAs in the EU and allows LRAs to diversify their funding sources and access low-cost capital for infrastructure and climate-change-related investments. The number of sub-national and municipal green bond issuers has been increasing over the years, nearly doubling from 2014 to 2016 and reaching a total market value around USD 20 billion globally. The Ile-de-France region entered the green bonds market in 2012 and the city of Gothenburg in 2013, just to mention a few examples.

Formally putting cities on the agenda

The importance of the LPAA is that it 'complements the NAZCA launched at COP 20 in Lima, Peru (...), which registers individual and cooperative commitments to action by companies, cities, subnational regions, and investors to address climate change'.

Following the summit of local leaders on December 4th 2015, under the Paris Declaration, the LPAA Focus on Cities highlighted the unprecedented level of sub-national government activities related to combating climate change and the wide involvement of all effected parties - which are joining forces to achieve large-scale transformation across wide territories.

Since then, the involvement of local authorities in the agenda of activities designed to fight climate change has been quickly increasing and spreading across all continents: more than 7000 sub-national governments have made commitments. As many as 2,255 cities and 150 regions are already registered on the NAZCA climate commitments platform, which represents 17% of the world population (1.25 billion inhabitants). There is a wide range of initiative steering this broad trend toward transformation:

- The Global Covenant of Mayors for Climate & Energy (7,504 cities, representing 683,910,662 people worldwide and 9.30% of the total global population);
- The Compact of States and Regions;

- The Under2MOU initiative;
- The Cities CCFLA.

The main goals of the LPAA are:

- To showcase, in each of the big impact areas, the key actions that need to be taken in order to stay under the 1.5/2°C ceiling and to highlight key issues related to resilience;
- To demonstrate, through individual and cooperative commitments from non-state entities, that a significant number of major players are already committed to this pathway;
- To encourage others to follow the same path of essential steps, as it is in their best interests.

Marc Roelfsema (2016) described the involvement of EU member states in LPAA city initiatives as follows:

- More than 7000 sub-national governments have made commitments;
- 2253 are registered with LPAA on the NAZCA platform;
- City initiatives in LPAA include (in terms of cooperative actions) the Covenant of Mayors, the Compact of Mayors, Under2MOU, Mobilise Your City and more – their extensive distribution across EU member states should also be noted.

Paris City Hall provided a beautiful backdrop to the high-energy city-related events at COP21 that were a manifestation of the bold, collaborative local actions being undertaken in the climate change fight. By the end of the Sustainable City Forum, UN chief Ban Ki-Moon announced that in future negotiations, cities would be formally recognized. This recognition is important in terms of being a testament to the fact that national governments are just one of the players in the ongoing fight against climate change. One of the first big follow-ups to this announcement was the Climate Action 2016 summit held in Washington, D.C. in May of 2016. Ever since, the role of urban players has been steadily increasing.

The section below presents 3 event-based case studies selected in terms of the importance of the role they fostered or might foster in the fight against climate change. Each of them illustrate a specific form of engagement that will enable GHGs limitation-related developments and transform a particular aspect of international negotiations on environmental policy. This will, in turn, contribute to development of more peer-to-peer-learning and a greater amount of know-how being exchanged. It will also lead to further networking and opportunities for LRAs and citizens alike.

Building on the progress made at COP21

Better partnership and collaboration are crucial to the success of any activity related to climate change. Nearly three-quarters of the climate challenges faced by cities require collaboration with national governments, the private sector and other players. Cities have shown that they are willing and able to act, but stronger relationships within and beyond the municipal government will be pivotal in unlocking their full potential. Still, instead of acting like a partner, national governments often prevent city governments from taking stronger action.

At the same time, cities that collaborate with other player in the equation are able to make good on twice as many climate-change-related activities as those that govern through a less partnership-based approach. In order for cities to continue to assume a key leadership role in the fight against climate change the business community, the general society, as well as government at every level, must all play fundamental roles. Only with a truly focused, multi-stakeholder effort can the progress we have seen to date be sustained.

Based on current trends in consumption and infrastructural development, within five years, the world will be heading straight for a future of emissions that will exceed the globally safe carbon budget. A third of these emissions will be controlled by cities, meaning city mayors and citizens play a crucial role in this puzzle. C40 found about 27,000 potential activities that cities have not yet attempted to implement. Out of those, about 2,300 priority activities were selected based on the following criteria:

- Activities where cities can learn from their peers: activities cities have successfully undertaken and can serve as examples for other cities.
- Activities in the undertaking of which cities have powerful positions: activities within sectors that cities have control over, such as buses or electric utilities.
- Activities that have a potentially high chance of reducing city emissions.

Overall, activities that are achievable and can, at the same time have the largest positive impact receive the highest priority. Of course, C40 does not expect every city to take on all 2,300 activities. It is not realistic to suggest that each city should get involved in every single activity, at least in the short term. Some activities may also be entirely inappropriate for certain cities. However, it is still this first group of priority activities, meaning peer-to-peer learning, that each and every city is interested in.

A flurry of meetings helping to curb greenhouse-gas emissions

In late Spring of 2017, France's environment ministry moved to an 18th-century mansion close to the National Assembly and Elysée Palace. The relocation and the institution's new name, the Ministry for Ecological and Inclusive Transition, confirmed Emmanuel Macron's desire to be seen as a global leader in the fight against climate change. In fact, since his election to the French presidency, green activists have placed their hopes in President Macron as a stronghold against his carbon-cuddling American counterpart, Donald Trump. They came to Paris in force for a One Planet Summit on December 12th, 2017 at which French President hosted more than 50 world leaders to celebrate the anniversary of the UN climate compact entered into in the French capital in 2015.

At the same time, a campaign to attract American green technologists and climate scientists to move to France has been launched. Another six countries joined a coalition led by Britain committed to phasing out coal, bringing the total number of its members to 26. The market value of companies agreeing to follow recent recommendations on climate-related financial disclosures from a task force set up by the Financial Stability Board, an international watch-dog, reached USD 6.3 trillion: the World Bank said it would stop funding oil and gas exploration in two years; the EU pledged EUR 9 billion (USD 11 billion) to help poor countries fight climate change while the Bill and Melinda Gates Foundation, the world's largest charity, said it would match the EUR 270 million the EU has promised – donating the same amount to research aiding poor farmers in Africa and Asia as they adjust global warming.

This flurry of announcements, was intended to breathe new life into the Paris deal and show that America's planned departure did not strike it a mortal blow. Moreover, it may even have convinced the last two holdouts, Nicaragua and Syria, to sign up in November 2017.

In fact, President Macron's initiative was one in a year-long series of climate get-togethers, some of them being organised by green-minded politicians and some of them being part of the Paris deal. Anyhow, all of these high-level talks provided an excellent opportunity for politicians and philanthropists to make further commitments. They also put pressure on those who have fallen behind and remind the public about a problem that is developing so slowly that is dangerously easy to ignore.

Bonn and other avenues for cities and regions to promote outstanding requests

On November 12th 2017, at COP23, the hundreds of local and regional leaders at the Climate Summit of Local and Regional Leaders, by acclamation, signalled that as part of their commitment and in an effort to carry out successful activities they intend to work in partnership with all levels of government. Local and regional leaders from around the world have issued the Bonn-Fiji Commitment of Local and Regional Leaders to Deliver the Paris Agreement at all levels, a pledge that signals their commitment to bring forward a critical shift in global development.

The Bonn-Fiji Commitment aims to advance sustainable urban development as a critical component of activities combating climate change and the 2030 Agenda for Sustainable Development, specifically SDG11 (sustainable cities and communities). It describes commitments, ambitions and activities of local and regional actors, such as implementing the Paris Agreement in local jurisdictions, and enhancing engagement of local authorities in the UNFCCC negotiation process. Calls and positions detailed in the commitment, inter alia, invite Parties to strengthen the urban, regional and territorial dimensions of their NDCs; and call on the global finance community to prioritize capacity building, technology transfer, project preparation, decentralized cooperation, and strategic plans and investments for sustainable urban and territorial development.

In a similar vein and just prior to the Climate Summit of Local and Regional Leaders, Human Settlements Action Day focused on the inextricable links between, and action required to achieve, both the Paris Agreement and SDG 11. During the Day, a number of initiatives were highlighted and discussed, including an ICLEI[2]-NDC Partnership to advance climate governance at all levels with the objective of bringing together national and subnational levels of government to improve the process of revising and implementing NDCs. In addition, the Global Alliance for Buildings and Construction, which was launched by France and UN Environment in Paris in 2015 and aims to decarbonize buildings and the construction sector in line with the Paris Agreement, agreed to dramatically speed up and scale up collaborative action.

Moreover, an alliance of major cities including London and Oslo challenged nation states attending the event to 'kick dirty carbon to the curb and immediately commit and work straightaway towards carbon neutrality, 100% renewable energy, zero-waste and zero-carbon'. The Carbon Neutral Cities Alliance is a new collaboration of 20 international cities (other members include Washington DC, San Francisco, and Sydney). All of them are striving for carbon neutrality and cutting greenhouse gas emissions by at least 80% by 2050.

As the Alliance stated in a strongly-worded letter sent to every country's delegation at climate talks: dirty fuels and climate disruption are killing and displacing millions of citizens around the world. Even European cities are right at the heart of the battle - exposed to impact climate change. And that is why they see the urgency of activities combating climate change and need nation-states to be as committed as the LRAs are. Moreover, cities could do a lot more with national support, and it will be tough to reach carbon neutrality without it. Norway, for example, has heavy taxes on fossil fuel vehicles and no tax on electric vehicles. As a result, every other car is either fully electric or a hybrid. This situation is, however, much more the exception than the rule when we take a look at the rest of Europe.

Paradoxically, member countries aim to grow the alliance to 50 partners, one that is to include the world's biggest cities by the 2018 UN Climate Change Conference (COP24) in Katowice – a city officially known as a European coal capital.

Katowice - a European coal capital goes green

Nowhere in the EU is smog more suffocating than in southern Poland. This year, the polluted Polish mining city Katowice will host the COP24 climate conference. Ahead of that, change is in the air and on the ground.

[2] ICLEI - Local Governments for Sustainability is the leading global network of more than 1,500 cities, towns and regions committed to building a sustainable future. By helping the ICLEI Network to become sustainable, low-carbon, resilient, ecomobile, biodiverse, resource-efficient and productive, healthy and happy, with a green economy and smart infrastructure, ICLEI impacts over 25% of the global urban population.

The city, with a population of around 300,000, is located in the southeaster part of the country and sits in the heart of the Polish rust belt. It hosts the mining industry's largest trade fair and is home to Europe's largest coal producer. On top of this, almost half of the 82,000 jobs in Poland that rely on coal production are found in Katowice's wider metropolitan region of Upper Silesia. Critics of organising COP in this particular city questioned if an end to fossil fuel energy could genuinely be negotiated in a region that has inspired coal production like no other in the country and perhaps even in Europe. Many environmentalists doubt that a climate conference held in the midst of the powerful Polish coal lobby can succeed. But, according to others, Katowice is worth a second look: the city is changing at a rapid pace and it is becoming greener and more sustainable in many surprising ways.

The burning of low-quality coal and even household waste is common, further exacerbating air pollution. The result for residents, according to activists from Katowice Smog Alarm, is that every citizen breathes in the equivalent of 1,711 cigarettes per year involuntarily. That is why a sniffer drone to help combat this issue has been developed. Armed with sensors and cameras, it floats about the city's roofs and chimneys and maps out air quality. The flying patrol's mission is to expose the biggest polluters - all in an effort to ultimately build awareness, among residents, about the types of fuel that should be burned in their households and, of course, educate the population on how to prevent smog.

What is more, jobs are a central theme of this post-coal credo. Current estimates point out that the renewable energy sector in Poland could provide employment for 186,000 people by 2030. If one compares that with the 82,000 jobs in the mining industry, it might mean there is a specific, viable alternative for the today's miner – who is well aware of the need to make a transition given the growing interest in green technology that is popping up around him. As just one piece of tangible proof it is easy to point to the fact that, at the last regional economic forum, the number of exhibitors in the field of renewable energy doubled in just a single year.

Meetings concerned with adapting to climate change are being held in Katowice's town hall, and there is a subsidy program for replacing old coal-fired heaters with newer systems, preferably powered by renewable energy. Although the local government acknowledges the importance of the region's carbon-based economy in this region and the fact that it is not going anywhere, at least for the next couple of years, that very fact makes Katowice a good place to discuss what to do with coal-based regions while fighting for the greener future.

Finally, one needs to remember that a key factor, which makes or breaks multilateral conferences, is the diplomatic capacity and finesse of the chair. The Danish chair at Copenhagen COP15 was accused of holding secret negotiations behind closed doors with select states. In an attempt to restore legitimacy to the climate negotiation process, Durban's indaba process (meeting open to all ministers at all levels) at COP17, and the egalitarian model of Comité de Paris (open to all countries, but limited to four representatives per country) at COP21 were hallmark legacies of the respective South African and French chairs.

The new Polish Prime Minister Mateusz Morawiecki insisted in one of his first official speeches, that 'when it comes to climate and energy policy (...) Poland would make up lost ground'. Perhaps, that is the main reason why a new minister responsible for clean air has been appointed and Jan Szyszko, the former environment minister who was supposed to chair the COP24 proceedings, is out. He has been criticised for leading a big increase in logging in the primeval and protected Białowieża forest, prompting Brussels to launch an infringement case against Poland before the European Court of Justice. It should also be noted that Minister Szyszko gave more freedom to Polish hunters and, in what was perhaps his most controversial position given the above context questioned the extent to which humans are responsible for global warming. Henryk Kowalczyk, a minister without portfolio, replaced Szyszko. Breathing new life in COP24 while also improve the perception of Poland in terms of the country's, as well as the host city's commitment to activities that combat climate change is now in his hands.

Conclusions

It is not an exaggeration to claim that fate of the campaign against climate change and other existential threats depends in large part on democratic politics within and among cities. Keen to confront global warming, but not yet fully empowered to do so, cities must not only accept their responsibility for assuring a sustainable world but assert their right to do so.

There are two formidable obstacles blocking cities from taking on a larger role: a scarcity of resources and the absence of autonomy and jurisdiction. If cities are to get the power they need, they will have to demand the right of self-governance. In fact, to this end, the Global Parliament of Mayors, an international grouping of city mayors and the 'global city rights movement', held its inaugural session in 2014.

It is the Paris Climate Package however that foresees a more effective engagement of all levels of government in pursuing the 1.5-degree Celsius goal, and it is vital that local and sub-national leaders capitalize on the existing global momentum in this regard.

Local policies continue to be the most ambitious, but vigorous capacity building and strategic partnerships are needed if appropriate activities combating climate change are to be implemented quickly and with the use of state-of-the-art technology. Consistent and transparent performance evaluation, reporting and monitoring are needed to give greater legitimacy to climate commitments. To enable such action, urban players need the support of an appropriately effective regulatory framework at both pan-EU and national level. They also need to be provided with the necessary technical and financial options – to implement activities that can realistically help in pursuing the 1.5-degree Celsius goal.

To raise ambitions in this area on a global scale, in line with what cities across the world have been implementing, it is necessary to strengthen vertical integration and cooperation. Local and regional action can and should complement NDCs effectively and provide solid, transparent contributions. That starts with well thought-out, comprehensive MRV processes resulting from initiatives like the Global Covenant of Mayors for Climate & Energy, a newly merged initiative of the Covenant of Mayors and the Compact of Mayors to bring these two efforts together. Technical and financial resources need to be dispersed in support of local activities, via national, regional and global climate mechanisms (e.g. GEF, GCF, CTCN, Cities Climate Finance Leadership Alliance, Climate-KIC Local etc). Engagement in the Global Exchange and Knowledge Development should continue enhancing participation of local governments in the UNFCCC process including the Paris Agreement Technical Examination Process, Paris Committee on Capacity Building and NAZCA Platform.

There are still many decisions that need to be made in order to ensure that the Paris Agreement can actually be implemented by the Parties. Many obligations in the Agreement are vague, imprecise and lack details. All these details should, ideally, be worked out before the Paris Agreement enters into force so that these respective decisions can be adopted at the first CMA session to be swiftly implemented.

Thus, cities and regions should continue their dialogue with Parties at the national and European level, as well as with the UNFCCC Secretariat – in order to identify a system of LDCs that, when it is implemented, is directly connected to and complements NDCs.

Given all of the above, the author sees numerous policy areas that need addressing if we are to ensure that the endeavours of individual cities impact the European fight against climate change in a positive way. The recommendations discussed below have been divided into three categories: those relevant for EU bodies, those regarding ideas to be implemented at the national level, and those to be considered by single urban municipalities. It is worth mentioning that these three categories of recommendations do not serve to compete rather but fully complement one another.

Recommendations

Possible support to be provided at the European level

- Cities face a variety of challenges in adapting to climate change. Lack of knowledge may be the greatest challenge. Many city governments do not know how their city will be affected by climate change. Those cities that wish to take action to prepare for climate change often do not know what actions to take or how to organise an appropriate response. Many cities are unaware of the funding and advice available across Europe in this respect. These challenges are now being addressed. Some national governments have programmes in place to help their cities create adaptation plans. The UK government has a programme called UKCIP and the German government has a programme called KomPass. At the EU-level, there is now an EU Strategy on Adaptation to Climate Change. And the EU has created a website called Climate-ADAPT, run by the European Environment Agency. Climate-ADAPT helps in educating cities, regions, and national governments about climate change adaptation. There is a European-level organisation established specifically to help cities: Mayors Adapt. ICLEI organises conferences like the Bonn Resilient Cities Congress and — in cooperation with the European Environment Agency — the Open European Day. The latter of the two supports the exchange of know-how between practitioners from different urban areas and should definitely be publicised further.

- As climate change becomes an increasingly important policy driver of regional and urban economic development, a comprehensive quantitative, evidence base is required to serve as a source of information as well as evaluation and ensure sound public policy development and implementation. Currently, large information gaps related to inter-jurisdictional comparability, common progress indicators and key performance metrics still exist. One of the most primary needs has to do with establishing a comprehensive evidence base which will serve as efficient and easily accessible source for best practices, not only at the local level but also in terms of illustrating how partnerships between national and local government partners can get the most out of their cooperation. Stronger empirical evidence – including improved local inventories of GHG emissions will lead to a greater understanding of which activities intended to combat climate change are the most effective and why. It will also shed some light the extent to which specific national policy frameworks enable or constrain performance at the sub-national level. The EC can play a key role in developing the evidence base required to ensure more informed public policy development and implementation in this area. It can also serve as a forum for sharing good practices.

- It is crucial to recognise EU-wide capacity constraints. Too great an emphasis on measuring, monitoring and verifying performance in future programmes may lead to excluding a large number of cities in which action on climate change is vitally important. Striking the right balance between assessing performance and successful activities on the ground will be critical.

- Providing political support as well as financing: the role of the EU, its agencies and transnational networks in providing opportunities for leadership and political support is perhaps as important as providing access to additional sources of funding that allows for the building of appropriate local capacity to act on climate change.

- Engaging municipalities, stakeholders and communities in conferences/special events: the ability of municipal governments to take action is largely dependent on a range of stakeholders and communities. At the same time, urban responses to climate change are being guided by a variety of agents outside of municipalities. Seeking to develop partnerships between these constituents on a pan-European level will be an important function of future programmes for activities combating climate change in urban areas.

- One of the more practical challenges that cities face is in organising their response across administrative levels. Climate change adaptation means making connections across administrative barriers. For example, if you look at rivers that cross different cities, the responsibility for water management in the urban part of a river might not even lie with the city in question. Things can get even more complicated in the case of rivers that cross several countries like the Rhine and the Danube. Therefore, effective flood protection related to these rivers requires cities to experiment – finding new ways to effectively manage such events on both a local and international level.

In the case of the Rhine river, Switzerland, France, Germany, and the Netherlands all came together in order to implement an appropriate retention areas for flood water. In order to effectively adapt to climate change cities and countries will need to do much more of this kind of planning in the future. The EC should keep a watchful eye on that.

- A wide range of funds is already available: the EU has set aside 20% of its budget to help cities and countries prevent and adapt to climate change. However, many cities are unaware of the existence of this funding. Launching public consultations related specifically to climate change targeted primarily at urban-levels players could help solve that. Extended questionnaires from the implementers will without any doubt aid regulators in their policy design and help the EU win the climate change fight.

National-level support for activities undertaken by cities in the climate change fight

- Unless significant investments are made, natural disasters can cost cities worldwide USD 314 billion a year. On top of that, climate change may push up to 77 million more urban residents into poverty. In a report, 'Investing in Urban Resilience' published in late 2016, the World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR) note that more than 60% of areas expected to be so are yet to be urbanized. The report points to a number of major hurdles facing municipal governments and recommends steps to increase investment in resilience, such as implementing and enforcing modern building codes and creating a pipeline of investor-ready projects. MSs should help cities promote urban resilience investment by offering:
  - Pre-developed grant financing and technical assistance in project preparation,
  - Advisory services to help develop the concept behind, structure and finance investor-ready projects,
  - Analysis that includes the potential hazards and risk involved in project design and delivery,
  - Technical Assistance from central government to improve the investment climate, regulatory environment, and financial credibility of particulars cities.
- Information: Apps are not just for the drought-afflicted. Using real-time data from the US Geological Survey and National Weather Service FloodWatch provides both recent and historical data regarding river height, precipitation totals and flood stage data throughout the United States. The app allows users to monitor nearby rivers and streams and keep an eye on potential flooding issues, giving them time to move their valuables to safety. European countries should all work on the equivalent of such solution.
- Alternatively, when in search of a more global perspective, countries should check the Flood App from Swiss Re, the leading global reinsurer. With a focus on climate change adaptation, the app offers reliable general information on flood risks and how to manage and insure these risks. Bologna adopted a very different approach. Bologna is an old medieval city at risk of flooding by the Po river. It is also, however, affected by heavy rainfall and heatwaves, so they face a triple challenge. The city government of Bologna developed a mobile app, through which citizens can detect and report any kind of damage in the city that was the events such as heavy rainfall or a heatwave. The app also allows citizens to make suggestions to the city government on how to prepare for any future event that might happen. The app was part of Bologna's Blue AP adaptation plan and received funding from the EU. Each and every country should provide as much information as possible so that this as well as other available app stay up-to-date.
- Recognition of the municipal role: national governments need to explicitly recognise the contribution that municipal authorities to the climate change fight. Officially empowering cities as well as providing them with guidance regarding their current competencies in the best possible way will lead to better, more effective action at the local level.

- Financing the climate fight: providing specific funds for climate-related initiatives at the municipal level has been a successful strategy in some countries, in others flexibility over the use of municipal funds has been important in facilitating local activities.

- Co-ordination between different levels of government in relation to climate-related policy is regarded as critical to success and as crucial in overcoming conflicts between climate change and other social, economic and environmental priorities.

Measures to be implemented at the local level

- It should first of all be noted that there is enough information to act on climate change today - based on the best-available science. Cities can of course update their climate projections and urban climate change action plans as scientific understanding improves and city leaders learn more about resiliency, but there is no reason to delay climate action planning. In New York City, the New York Panel on Climate Change (NPCC), a body of experts first convened by Mayor Bloomberg in 2008, developed the concept of Flexible Adaptation Pathways that the city adopted in its long-term planning. Originally conceived in London, this approach calls for agencies to start adopting resiliency measures immediately, monitor how well they work, and continually update their understanding of climate risk information and responses as the climate system and resilience actions evolve. All European cities should follow suite in this regard.

- Planning across entire metropolitan regions is a very important aspect. In preparing for climate change, the city of New York is taking an approach that encompasses the entire 'infrastructure-shed' of the city. For example, a climate action task force should include regional transportation providers who manage the subways, buses, and railroads that run within and around the city into the extended metropolitan region. Plans must also consider how extreme droughts and inland floods can affect the water management system that supplies a city's drinking water. Disasters and extreme events do not respect political boundaries, so steps to make cities more resilient cannot stop at city limits. Instead, they need to encompass the interconnected energy, water, transportation, telecommunications, sanitation, health, food and public safety systems that extend beyond municipal borders to the wider metropolitan region and beyond, including national and international supply chains.

- Bring together municipal decision-makers, infrastructure managers, citizens groups and other key actors with researchers to develop a shared understanding of city's specific climate change vulnerabilities and scientific needs is a separate issue. Climate change will not impact every city in the same way. Some cities, for example, will be exposed to repeated and worsening droughts, while others may be more exposed to flooding or extreme heat levels. In order to effectively prepare for climate change., scientists and other stakeholders need to work together to understand the risks that are most relevant to each city.

- City authorities must have the right skills and training. Engineers and planners must understand how climate change is going to affect other areas. They can establish city networks to share their learnings with other municipalities. In Latin America and the Caribbean, cities that had made progress in preparing for climate change connected with others that had not. Seeing better-prepared places facing similar problems motivated city officials to act. European cities cannot afford to lag behind in terms of implanting such initiatives.

- In the case of extreme 'outlier' events that occur once every 200 years or so, city residents must be able to fend for themselves until government support arrives. City governments and non-governmental organisations must work with vulnerable residents to ensure that they have the right resources. Projects in northern India involved appointing community volunteers to take people to safety, enabling savings groups so that people have financial support in the case of such an emergency, or ensuring that essential services, such as water and electricity, come from multiple sources, should primary fail. This approach will be more difficult to implement in European communities which are, by default, less integrated, but it is definitely something to work on.

- The involvement of local businesses is crucial. They are, after all, the drivers of urban expansion. Guilds of masons, contractors and builders can be made aware of the expected impacts of climate change and trained in resilient building techniques.

- Mainstream climate change is another issue. Evidence suggests that the integration of climate change across different policy domains is critical to developing effective legislation and activities. Various institutional structures can facilitate this (e.g. climate reporting for all departments, centralising climate change in a Chief Executive's department).

- Cities and regions have a variety of ways in which they can influence international climate policy. They can aim to influence negotiation processes, i.e. seeking getting in touch with national representatives, becoming part of national delegation to an international event, communicating their positions through official statements etc. They can also use the framework of the Global Climate Action Agenda to push for ambitious activities combating climate change in a more official, political way. Finally, they can use COP side events and events outside the UNFCCC negotiations to get activities combating climate change moving in the right direction.

- In order to speed up the know-how exchange process, further development and collaboration within C40 and similar associations is needed.

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