POLICY BRIEF

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The importance of cities and regions in delivering the Paris objectives and scaling up climate ambition[1]

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The implementation of the intended nationally determined contributions (INDCs) to the Paris agreement and the scaling-up of future ambition through the five-year review cycle will require actions at all levels (international, national, regional, local) and different actors (governments, civil society and private actors) to fulfil the commitments made in Paris and accelerate the pace of decarbonisation at global scale. The Lima-Paris Action managed to mobilize a multi-stakeholder movement, bringing together a large number of cities, private actors and civil society organisations to scale up climate action and accelerate the uptake of innovative solutions.

Regions and cities could play a vital role in reaching national climate and energy targets, strengthening resilience, adopting climate adaptation measures and cooperating towards a more sustainable future. The United Nations Development Programme estimated that 50% to 80% of climate adaptation and mitigation measures will be implemented on the subnational or local level.[1] In addition, one third of the world's remaining carbon budget could be determined by urban policy decisions in the next five years. At the same time, regions and cities represent the levels closest to the citizens and local communities. Building capacity at local level, peer-to-peer sharing among city practitioners, green twinning and exchange of best practices at local and regional level are paramount for unlocking the potential that cities and regions hold.

EU initiatives like the Covenant of Mayors and the Sustainable Energy Community initiative have contributed substantially to involving thousands of municipalities from Europe and beyond in adopting sustainable energy policies, committing to CO_2 reduction measures and developing sustainable energy action plans. Global city initiatives such as C40, comprising the world's megacities, have supported cities in developing robust baseline emission inventories, climate mitigation targets and plans, driving market transformation and designing innovative solutions.

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1 The policy brief is based on the results of the conference "The role of cities and regions as drivers of global climate leadership in the post-Paris climate and energy governance. Best practices in Europe, China and the US" that took place on 19th April 2016 in Brussels and was organized jointly by the Heinrich-Böll-Stiftung EU Office and the Representation of the State of North Rhine-Westphalia to the EU in cooperation with Stiftung Asienhaus.
2 UNDP: National/Sub-national Strategies, URL: http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/focus_areas/climate_strategies/undp_projects_thatcontributetogreenlecrds/national_sub-nationalstrategies.html

More attention should be paid also to regional governments (e.g. US-States, Bundesländer, Spanish regions, Canadian Province, etc.) that could act as the missing link between cities and national governments in designing and implementing concrete climate measures. Subnational governments have driven a lot of innovative sustainability policies and are often seen as laboratories for policy innovations to be up scaled at the federal and even international level. An illuminating example of collaboration between states, regions and cities to reduce their greenhouse gas emissions by 80% to 95% by 2050 and commit to implementation pathways is the Under 2 MOU initiative which was born out of a partnership between California and the federal state of Baden-Württemberg. Driven by a broad citizen movement and endorsed by regional governments, the initiative aims at achieving a concrete impact and action on the ground.

What did Paris change for these actors?

As advocates of more ambitious climate and sustainable energy targets, regional and local representatives in Europe have been contributing actively to the Lima-Paris Action Agenda through the Covenant of Mayors, the Compact of States and Regions and the Under 2 Memorandum of Understanding. In the aftermath of COP21, the Commission started to recognize the power of bottom-up action and endorsed a multi-level governance approach in its communication "The road from Paris". As a result, the Paris agreement intensified the inter-institutional dialogue between the Committee of the Regions (CoR) and the European Commission not only in its internal energy and climate policies, but also in its external climate actions and partnerships with third countries.

Since Paris, the European External Action Service is also developing a strategy to integrate this added value in the EU Climate Diplomacy. Subnational climate cooperation between the EU and its international partners has been fostered through a stronger dialogue between the Committee of the Regions (CoR) and the Assembly of local and regional authorities from the Euro-Mediterranean zone (ARLEM), bringing together mayors and governors from the three shores of the Mediterranean Sea, as well as through similar structural dialogues with local leaders from Turkey, the Balkan area and countries from the Eastern partnership. One of the objectives of the European climate diplomacy in these regions is to expand the scope of the Covenant of Mayors within the Euro- Mediterranean zone, promote its added value and adapt it to the local needs and expectations. In the context of the upcoming COP22, a strong partnership has been forged with the Mayor of Marrakesh through the assembly and the leadership of local leaders. In addition to these decentralised cooperation partnerships, the members of the CoR have their own transnational twinning projects that are promoting bottom-up initiatives including civil society and business actors.

The CoR sees its role not only as a consultative body in the EU climate architecture but also as a bridge-builder between European and other neighbouring regions, as well as a more active player in the implementation of the Paris agreement empowering its members on climate actions.

What are the current challenges local and regional actors are facing?

One of the major challenges cities and regions are facing is the lack of clear autonomy in climate and energy diplomacy, as well as their limited power to undertake large-scale projects. Despite the great potential of the bottom-up approach to deliver fast and concrete results and accelerate investments, subnational actors cannot fulfil it without the financial, institutional, technical support of higher levels of government to maximize their potential for action.

Limited access to financing, budget cuts, lack of awareness of alternative finance options, legal uncertainty, limited capacity, institutional challenges, as well as political barriers related to convincing other key stakeholders with different priorities have been identified as some of the most pressing challenges for subnational actors. Other challenges are posed by the difficulty in monitoring progress of sustainable energy targets and environmental performance (CO_2 emissions, RES investments, RES promotion, climate change adaptation, energy savings, air pollution, etc.), as well as establishing comprehensive reporting systems.

One of the biggest challenges in Europe seems to be the difficult access to financing of the EIB for small and medium sized cities. The steering of the whole process through the regions has been identified as a possible solution. However, this might be challenging for more centralised administrative models. Another option for cities lies in bundling their initiatives, however, this implies a huge burden for the coordinating city that takes responsibility for the whole project and often acts as a disincentive to undertake the coordinating role.

In terms of climate financing, subnational actors point to a lack of knowledge within EU financial institutions on climate adaptation measures – areas that go beyond the traditional energy and transport sectors. Therefore, environment and adaptation need to be better integrated in public funding and the investment portfolio of financing institutions.

What is needed to succeed?

Subnational climate diplomacy is a vital tool for scaling up climate ambition and mobilizing multi-stakeholder action on the ground. Therefore, empowering cities and regions is essential for implementing climate policy measures that depend very much on territorial policies on mobility, buildings, transport, green infrastructures, agriculture, forestry and behavioral change of citizens. It is essential that cities and regions are able to channel their feedback early in the decision-making

process. In addition to energy, green infrastructures and adaptation should also be integrated as complementary pillars of the implementation of the Paris agreement.

Since city networks can accelerate funding and investments, climate financing mechanisms at local and regional level could provide a valuable support to cities in delivering their low-carbon infrastructure pipelines, setting ambitious climate mitigation targets and implementing targeted sustainable action plans to reach the objectives. It is estimated that over 2/3 of climate action is funded by cities' own revenue.

However, in order to succeed, cities and regions need to shift from relying primarily on public financing and engage also private actors and civil society networks. In this context, the C40 network, for example, also contributes actively to facilitating access to finance through better creditworthiness, developing long-term economic strategies and engaging the private sector for green growth. The C40 Cities Finance Facility, which has emerged as a major project by C40, Germany and the Inter-American Development Bank (IADB) to provide the skills, technical assistance and connections to funding opportunities, aims to unlock up to 1 billion US dollars worth of green infrastructure in cities across low and middle-income countries by 2020.[3] As part of this facility, C40 is working on a new tool to underpin capacity building.

Legal certainty and stable intuitional frameworks for promoting renewable energy policies, sustainable transport and climate adaptation measures are vital for endorsing subnational climate action measures and scaling up innovative solutions.

Finally, in order to achieve a global impact, successful policy models have to be exchanged across border and scaled up.

EU-China climate cooperation

The EU-China climate cooperation has gained significant momentum with the EU-China joint statement on COP21 in 2015 and China's increasing role in global energy governance. China's shift to a less energy-intensive economic model and the recent signs of decoupling economic growth from CO_2 emissions could have major implications for EU-China sectoral dialogues in the field of technology, green innovations and energy. The green economic turn in China is one of the major priorities in its 13th Five-Year plan that aims to boost clean energy investments, in particular in the areas of solar and wind capacity, electric vehicles, R&D plan and low-carbon infrastructure. The major priorities for both partners are to accelerate the transition to low-carbon economy, promote sustainable urban development, speed up the deployment of renewable energy sources and help China come up with innovative solutions to its urbanization challenge. The Chinese government has recently announced its plans to close down thousands of coalmines and relocate coal mine workers to other jobs.

The Sustainable Urbanization Dialogue launched in 2012 in the framework of EU energy dialogue has been strongly driven by China and its shifting domestic and external priorities. Given the growing pace of urbanization in China (300 million additional urban residents are expected within the next 15 years), the scope of the dialogue has enlarged to a much wider cooperation on R&D, low-carbon technologies and smart cities. The launch of low-carbon pilots in China and its shift to a more service-oriented economy are expected to accelerate this development and lead to a more extensive low-carbon technology transfer and exchange of know-how.

Cities and provinces in China have been the testing ground for low-carbon policies and scaling up sustainable production, consumption and mobility patterns at national level. China adopted cap-and-trade pilot programmes in 7 provinces and cities and low-carbon development pilots in 42 provinces and cities to test a new model for regional and urban low-carbon development encompassing various sectors: power sector, industrial sector, transport, residential area, individual consumption and sustainable lifestyle. The pilot projects have been seen as a way to decouple economic and urban growth from CO_2 emissions through developing a low-carbon urban plan, setting a control target amount of local greenhouse gas (GHG) emissions, improving GHG emissions statistics and management system, building a low-carbon industrial system, promoting sustainable consumption patterns, as well as reinforcing capacity and know how. To illustrate the scale of the low-carbon experiment, China's 42 low carbon pilots covered approximately 54% of GDP, 21% of total land area and 54% of carbon emissions in 2013.[4]

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3   C40/BMZ/IDB/CIFF Press release 2015: C40, Germany & IADB Achieve Major Breakthrough For Developing Cities: $1 Billion In Green Infrastructure Unlocked Within Four Years, 4th December 2015.
4   Hu Min, Yang Li, Li Ang, Liu Shuang, Chen Lingyan 2015: Low Carbon Cities in China: National Policies and City Action Factsheets, iGDP Policy Mapping.

Case study 1: Zhenjiang low-carbon city

Zhenjiang, a city in the Jiangsu province selected for the 2nd batch pilot low-carbon cities in China, is an illustrative example of how the concept of low-carbon development was integrated into the urban planning, the local investment strategy and the city's international cooperation agreements. Zhenjiang was among the cities that declared a target to peak carbon emissions in 2020, i.e. 10 years earlier than the national target of 2030. To implement this goal into its spatial planning, the city was divided in four regions, based on its environmental capacity and local natural resources, with their own roadmap for reducing GHG emissions to optimize spatial use. With the support of ICT-based solutions, the city launched the first flower eco-cloud and pioneered the country's first urban CO_2 emissions accounting, monitoring and management platform. The carbon platform is supported by IT tools such as cloud computing, Geographic Information System (GIS), intelligent analysis, networking and the integration of multi-sectoral data resources (land, environment, agriculture, energy, transportation, conservation and other data) to optimize the integrated use of ICT and spatial planning. In addition, the city developed carbon assessment based on a fixed asset investment project with various economic, energy, environmental and social indicators. As a result, Zhenjiang's CO_2 emissions per unit GDP fell by 19.08%, the total energy consumption decreased by 19.8% per unit GDP and the pollution was reduced by 21.9%.

Zhenjiang has been promoting its low-carbon policies and best practices through its international climate partnerships with other cities and cities alliances. Noteworthy, Zhenjiang became one of the cities of the Alliance of Peaking Pioneer Cities – a strong group of nine pioneer cities that was initiated at the China-US Climate Summit in September 2015. In addition, Zhenjiang and California endorsed a bilateral cooperation action plan for strengthening their low carbon development strategy. Zhenjiang had a strong presence during COP21 in Paris, during which it shared its practice and experience of low-carbon urban construction with the rest of the world and showcased how a Chinese city responds to climate change.

The bilateral partnerships between European and Chinese provinces and cities could be seen as a complementary tool for fostering collaboration on climate mitigation and adaptation through joint R&D projects, training programmes for young professionals and start ups, green technological innovations and driving eco demand. An example of such cooperation is the bilateral exchange between NRW and Chinese cities Beijing, Shanghai and the province Jiangsu not only on science, research and culture, but also on green energy technologies.

Case study 2: The climate partnership Bonn-Chengdu

The city of Bonn stands out with its unique and dense sustainability cluster of 150 international NGOs active in development cooperation and sustainability, as well as 18 UN organizations that it is currently hosting. Bonn has formulated also ambitious climate targets – to reduce GHG emissions by 40% until 2030, and by 90% to 95% until 2050 compared to the 1990 levels. The city is currently designing its own integrated Climate Protection Concept, as well as defining its own local standards for energy efficiency in new buildings. Climate protection and sustainable development has always been a major pillar of Bonn's city partnerships and at the heart of its cooperation with the cities of Chengdu, La Paz and Cape Coast.

The city partnership between Bonn and Chengdu has been embedded in a regional partnership between the State of North Rhine-Westphalia and the Sichuan province. The cooperation started out with a close cultural exchange and evolved to a climate partnership over the years. The mutual exchange among technical experts in the fields of environment and climate protection in 2007, 2009 and 2011 laid the foundations of a more technically oriented collaboration between both cities that focused on the prevention of water and air pollution, as well as a more efficient waste management.

The Bonn-Chengdu climate partnership deepened to a Sustainable Low-Carbon Development Partnership in 2013. The cooperation between both cities encompasses five major areas: low-carbon economic development, environmental protection, sustainable and smart mobility, energy efficiency, renewable energies in buildings, as well as sustainable urban development and planning. Various stakeholders, including the respective departments of both cities, experts from the municipal utilities and civil society actors, were involved in the development of the specific programme planning and activities. The partnership was anchored in the institutional framework of the EU-China Urbanization Partnership and included some high-level expert meetings, as well as more technical visits, dialogue forums and exchange of experience. One concrete project that emerged from this partnership is the Sustainable Bonn/Chengdu Project that aims at promoting sustainability measures in the hotel, conference and restaurant sector, with a special emphasis on energy efficiency in buildings. The major goal of the project is not only to provide technical solutions through consulting, technical workshops and support in the implementation process, but also to raise awareness and induce behavioral patterns among managers, staff and guests. Another cooperation initiative between the cities of Bonn and Chengdu on the development of nature-based solutions is currently underway. The initiative is being developed jointly with the Federal Office for Nature Protection (Bfn) and foresees Bonn's contribution to a study on Green Cities and a joint workshop on Metropolitan Solutions during the Sustainable Urban China Conference in Berlin in May 2016.

The climate partnership between the city of Bonn and the city of Chengdu sets an illuminating example not only for its strong focus on climate solutions and sustainable urban development but also for involving local civil society actors and their networks. A broader approach including grassroot organizations and community initiatives is absolutely necessary for successful city partnerships. It is therefore essential to train activists on the ground, build up grassroot capacities and promote better understanding between Chinese and European public and private actors working in the sustainability sector through NGO twinning programmes or training for young entrepreneurs.

Adaptation is another important aspect of climate change that should be featured more prominently in EU-China climate partnership and funding programmes to enhance the resilience of cities in Europe and China. The large inequality in carbon footprint in China, in particular considering the high carbon footprint of middle-class residents in large urban centers, is another issue that should be incorporated in high-level political dialogues.

A major challenge to implement sustainable urban solutions at large scale in China lies in the insufficient financial resources of cities, which sometimes hampers the undertaking of large projects without the support of the central government. Other challenges include the accuracy of emissions data, the different methodologies applied to measure carbon footprint, the different approaches to regional policy in the EU and China, as well as the limited dialogue between Chinese and European NGOs at local level.

Regional climate cooperation in a transatlantic context

Climate cooperation between the EU and the US is expected to intensify further both at supranational and regional level. The EU-US Joint Energy Council will be exploring ways to enhance cooperation on sustainable energy in the context of the Paris agreement. The merging of the EU Covenant of Mayors with the Compact of Mayors in a joint platform to facilitate the exchange between mayors and to maximize the synergy between different initiatives could be one of the outcomes of subnational climate cooperation in a transatlantic context. Urbanisation is a megatrend not only in emerging economies but also in many African and Latin American countries where urban concentration is a predominant feature. The delivery of the NDCs would require 13.5 trillion US dollars between 2020 and 2030, which would have implications not only for transforming the energy supply system but also for the urban restructuring planning. One of the concrete contributions of the big players, including G7 and G20, could be the transfer of knowledge and technology for sustainable urban planning to support developing countries that lack the financial means to implement those measures.

The majority of the climate-related activities in the NDCs cover energy efficiency, renewable energies, transport and infrastructure. The implementation of these measures requires not only central government actions but also a broad support from cities, regional governments and stakeholder involvement. For example, the integration of renewables in the grid has become much more decentralised and driven by cities and regional entities. Examples for these trends are the German energy transition process that transformed the domestic energy market from a vertical to a more horizontal structure, as well as the California regional imbalance market, which enabled the absorption of a high influx of renewable energy in a flexible and efficient way. The latter has led to huge cost savings over time and reinvestment of the benefits in grid extension and fostering regional interconnections. Political target setting at international, national and regional level is essential to the transformation and its long-term success.

A standout example of political leadership that originated from the transatlantic regional partnership between the federal state of Baden-Württemberg and California is the Under2MOU initiative. Central to it is the commitment of subnational governments to reduce GHG emissions by 80-95% by 2050 (compared to 1990), or to maintain a limit of 2 CO_2 metric tons per capita until 2050. The partnership has been driven by two regional leaders that have galvanized an important momentum and support at all levels of government. 128 subnational governments representing 25% of the GDP of the world have joined the platform so far. As a concrete commitment, 44 States and regions reported cumulative emissions reductions of 12.4 $GtCO_2e$ by 2030 and 47 $GtCO_2e$ by 2050 through the Compact of States and Regions. The initiative focuses on technical aspects, such as the development of decarbonisation strategies, GHG accounting and inventories, as well as common MRV standards.

To reach most impacts, the Climate Group works at the leadership level of companies and regional governments. However, the initiative emerged as a result of citizens and consumers' demands. The recently launched initiative between the Climate Group and the federal state of North-Rheine Westphalia – the Energy Transition Platform – focuses on sharing knowledge between regional governments facing similar challenges, in particular governments who feature similar industry base and high energy reliance on fossil fuels, as well as share similar political commitments. The new initiative aims to bring together regional governments and different non-state actors across North America, Europe and Australia to stimulate innovation.

Case study 3: Québec

Sustainable development and knowledge innovation have been major priorities for the regional government of Québec in the past 15 years. Québec's target for 2020 is to reduce CO_2 emissions by 20% compared to the 1990 levels and for 2030 - by 37.5% respectively.

The Carbon Market Initiative launched in 2013 is Québec's main mechanism to lower emissions. It was preceded by a carbon tax legislation introduced between 2007 and 2014 as a starting point and transition period for developing a Carbon Market. Previous consultations of the Québec government with EU and US officials reinforced the conviction that a carbon market mechanism is the tool that could allow them to reach their CO_2 emission targets in the most efficient way, especially considering the predominant share of RES (99%) in Québec's power sector. After discussions with the Western Climate Initiative (a group of states in the US and Canada that aims at setting a framework for a regional carbon market), Québec decided to develop its carbon legislation simultaneously with California. This led to the creation of the largest carbon market in North America and the first in the world based on a cross-border cooperation of subnational entities. The money earned from emission allowances was reinvested in local funds that aimed to green the regional economy.

The electrification of transportation is another major pillar of the energy transition and emissions reduction strategy in Québec. The transition includes changing consumption patterns, especially in public and private transport. To learn from the European experience, Québec is collaborating with Germany and the Netherlands on the decarbonisation of the transport sector.

Case study 4: California

Integrating renewables in the grid is becoming more a regional and a cities' driven issue. Grids are becoming more important in transferring humankind to the carbon-free system of the future and cities are driving the policies that promote such transformation. Renewables represent 65% of all new US electricity capacity and smart grid development is becoming more crucial for their integration. The California Independent System Operator (ISO) is one of the nine grid operators in North America and the one with the highest renewable energy portfolio.

The California ISO has proposed an energy imbalance market for the region as an elegant way of integrating more balancing authorities (currently 39) without complex regulation. Being completely voluntary, it has worked very successfully as a technical solution to absorb the high influx of renewables in the past 5 years without curtailment. Interconnections on regional basis facilitated the transfer of electricity to California´s eastern neighbours and the import of power from the West when needed, resulting in an overall reduction of the fossil fuel supply. Several entities are now involved in this voluntary imbalance market, which extends to over 7 US States.

Regional cooperation is thus key to managing surplus power. As a result, 45.7 million US dollars savings have been achieved since the start of the market operation. While the startup costs will be paid back after a year, the benefits will be invested in grid extension and storage options. The efficient operation of an existing market will lead to benefits that could allow California to integrate more and more renewables in the future. The major challenge there is related to the governance structure and the question how much autonomy each region should be granted in managing and shaping the regional energy system.

Some of the most visible advantages of regional coopera- tion that the case study of California has showcased are the more efficient renewable energy integration into the grid, coping with over-capacity, the economic savings for end-use customers through automated efficient unit dispatch, taking advantage of the geographical and resource diversity, and the potential for further savings through reserve sharing or flex- ibility reserve sharing.

A key lesson learned from the California case study is that energy transition is driven bottom-up by entities and re- gions deciding to interconnect and mitigate emissions. The transatlantic regional cooperation provides valuable learning potential for regional governments, cities, private actors and civil society through cross-border examples and exchange of know-how. Due to the highly technical and IT character of grid management and balancing issues, California could collaborate with other European regions on sharing its technical exper- tise and grid management experience. The EU can also learn a lot from Québec's technical expertise on grid stability, grid management, storage and applying innovative IT solutions in the electricity sector. Québec, in its turn, can make progress by cooperating with its European counterparts in the field of sustainable transport and mobility, as well as by learning from the EU experience on public consultations with civil society.

The regional case studies illustrated that policy is crucial for the support of renewable energy developments, in particular the reinforcement of ancillary services and balancing support, and sustainable mobility patterns.

The social dimension

Finally, the energy transition is not only a technical process but also a social and communication process. Without commu- nication, capacity-building and civil society involvement, the energy transition could not succeed.

With the increasing decentralisation of the energy system and the democratisation of energy supply, citizens are empow- ered to become prosumers and produce their own energy. Thus, the energy transition process in many countries also contributes to alleviating social inequalities and decreasing the dependence on monopolistic structures.