CCICED AGM Open Forum

Digitalization – Greening for Climate Adaptation and Sustainability of Cities

Part 1: Green Development and Climate Adaptation for Urban and Rural areas --- Climate Adaptation in a Changing World

Beijing, October 11, 2024
Co-organizers: China Urban Planning and Design Institute (CAUPD), Nankai University, C40 Cities, Climate Leadership Alliance, GIZ

Report by Marloes Dignum, Jan Bakkes and Frans van de Ven

The open forum was organized as two independent sessions, on Climate Adaptation and on Digitization respectively. This report summarizes the session on Climate Adaptation, structured around the presentation of the AGM version of the Special Policy Study (SPS) *Green Development and Climate Adaptation for Urban and Rural areas --- Climate Adaptation in a Changing World*. The SPS report was presented and placed in a broader perspective. The report proposes a framework to assess adaptation to climate change in the context of resilience. It analyses cases and makes recommendations to peers and, via CCICED, to the State Council of China. Speakers and panellists reflected on the SPS report, focusing on the significance of the theme, means to promote climate adaptation and resilience capacities of cities, and the insights for further research.

OPENING REMARKS TO THE FORUM

Gim Huay Neo *(CCICED Special Advisor; Managing Director of the Centre for Nature and Climate of the World Economic Forum)*

Cities are in the frontline of the changes in the next decades. Climate change is the new reality, with heat and extreme weather. The same holds for digitization. How should the cities respond? The need for innovation is evident.

Liu Shuijin *(President of the Development Research Center of the State Council)*

Liu Shijin placed the need for greening and adaptation to climate change in the context of longer-term development in China. Rural population moved to the city to work in industry, but this movement has ended. Now, millions of migrants move between cities, for example from smaller cities (in the Northeast of China) to the large cities. This means that urbanization is ongoing, with rapidly increasing housing prices.

Along with the increasing size of cities, there is an increasing need for services such as leisure activities and healthcare. City growth and the development of services need to be balanced in order to maintain a good, vibrant and resilient urban environment. Good functioning service levels such as healthcare in cities are essential in times of increasing extreme weather events, such as typhoons. Hence adaptation is closely connected to China's economic wellbeing at macro level. In fact, adapting to climate change is the greatest challenge.

Digitization, massive data availability and the increasing power of artificial intelligence can help to dramatically increase the efficiency of measures towards greening, thanks to much faster and detailed instrumentation.

Luo Hui *(CCICED Member; Director General of the Department of International Affairs (Hong Kong, Macao and Taiwan Exchange Office)*

China was hit by historic typhoons this year. The need for smart governance, CO_2 emission reduction and for adaptation to climate change is urgent, particularly in densely populated cities.
UN concluded that only 17% of the UN sustainable development goals are progressing well. There is a need for new engineering, e.g. for environmental pollution reduction. Cooperation of universities and enterprises, also international, is needed. We need to foster innovation ecosystems and cooperation to increase the realization of the UN SDGs. To this end, we need to establish more collaboration platforms.

Kevin Austin *(Deputy Executive Director of C40)*

C40 is a network of mayors of the world's leading cities that are united in action to confront the climate crisis. There are nearly 100 mayors connected to the C40 and they are committed to using an inclusive, science-based and collaborative approach to cut their greenhouse gas emissions in half by 2030. Thirteen of the C40 cities are in China.

The timing of this SPS studies is very good, as action need to occur. The era of 'global boiling' has arrived – succeeding the era of global warming. Today, 650 million people suffer from flooding and water shortage. And the most vulnerable communities pay the price. Green transformation, including strategic adaptation measures, is needed. For example, Freetown, featuring tree planting after a disaster, including community involvement to plant trees for heat stress control. China is ahead in this development. They turn their Sponge cities into Smart Sponge cities (e.g. Shenzhen with cloud monitoring).

Digital technologies are not a luxury; they enhance water safety of the city, also for smaller cities.Climate finance is one of the biggest challenges of all. Digital twins can show us that the costs of inaction will be even larger. Additionally, there is a need for synergy between mitigation, adaptation and digitization. For example, addressing the enormous energy use and heat production of datacentres. The bottom line is that we should leverage opportunities, including the participation of Chinese cities.

ADAPTATION SESSION

Ben Geurts (session moderator) *(International team leader of SPS Climate Adaptation; Director Strategy of the Netherlands' Ministry of Infrastructure and Water Management)*

Climate change is already here, and it is accelerating. Hence, it is critical and urgent to take action and to limit its impact on existing societies. Climate change such as the rise in average temperatures, stronger fluctuations in precipitation, increased occurrences of extreme weather events, rising sea levels, salinization of deltas and agricultural land, highly variable river flows, and shortages of

freshwater and drinking water during droughts—confronted us in recent years. Events like this occurred in China, Western Europe and around the world. The SPS on Climate Adaptation researched adaptation policies and practices globally.

These events, from all over the world, form learning experiences as they provide insights in best practices to handle extreme weather events. Climate adaptation requires support on the national level for a location-specific approach. A local, tailormade approach is required as the geography, habitation and use of land and space are different from place to place.

A large part of the population lives in cities and a large part of economic is concentrated there. However, climate adaptation measures that solely focus on urban areas is too narrow. The city and the surrounding rural areas interact. Hence, climate adaptation requires a comprehensive approach at watershed level. Regionally cohesive climate adaptation policy is necessary to protect vulnerable populations including those in rural areas. The vulnerable and poor face the greatest risks but have the least capacity to invest in adaptation actions.

Although China and Western Europe in many aspects differ there are many similarities when it comes to climate adaptation challenges. Just like in China, climate adaptation in Western Europe requires collaboration among different levels of government. Rivers and watersheds disregard jurisdictional and administrative borders. Climate change necessitates policy at a different geographical scale than we are used to in water management.

Adaptation also requires policy across very different timescales. Sea-level rise occurs slowly, but the associated salinization of deltas and agricultural land happens much more rapidly. In recent years, we have faced a so-called "waterbomb" of extreme rainfall which the water systems in Belgium, the Netherlands, and Germany could not handle. This called for immediate action, as we saw during our field visits in the Netherlands, Belgium and Germany. Moreover, climate change needs to be considered when infrastructure is maintained, renovated or replaced.

KEYNOTE SPEECHES

Li Xiaojiang *(CCICED Special Advisor; Chinese team leader of SPS Climate Adaptation; former president of CAUPD)*

Prof. Li Xiaojiang summarized the findings of the special policy study and its recommendations. He reminds of the team's basis in earlier work on cities and river basins on which this study builds. The most important result of this year is a framework to assess preparedness to climate change in the context of longer-term resilience. The backbone of the framework are five capacities (see box).

- **Threshold capacity**

The capacity to avoid damage by extreme conditions by constructing a threshold against environmental variation.

- **Coping capacity**

The capability of a neighborhood, city, river basin or country to deal with extreme weather conditions and reduce damage during such conditions.

- **Recovery capacity**

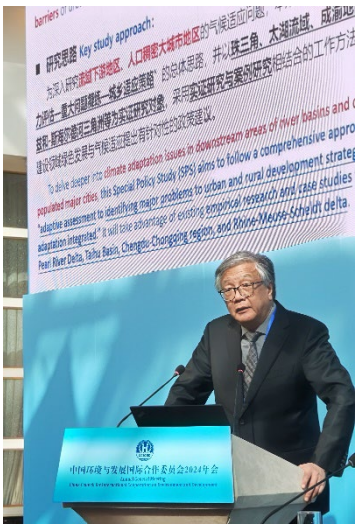
Society's capability to bounce back to a state equal to, or even better than, before the extreme event.

- **Adaptive capacity**

Society's capability to anticipate uncertain future developments and timely adapt.

- **Transformative capacity**

Society's capability to create an enabling environment, strengthen stakeholder capacities, and identify and implement catalyzing interventions to transition proactively to a climate-resilient society.



In applying the framework in practice, it should be customized to local specifics. Consideration should be given to enabling factors such as governance, finance, and a systemic, multi-scale, rather than piecemeal approach. Another important finding was that cases from all over the world illustrate the existence of significant gaps in climate resilience and the requirement to act now. In this action there is a need to pay close attention to gender and equity.

The SPS resulted in five key recommendations:

1. National, regional and local governments should urgently elevate the political and governance priority of climate adaptation.
2. A systematic approach for short- and long-term action is needed, from the central to the local level; from urban areas to river basins, for all sectors of society of society, and involving all stakeholders. The national government should take the lead on this.
3. National government should also provide an assessment framework to identify gaps in climate resilience for urban and rural areas. The five capacities can be a good starting point for this assessment.
4. Social equity and gender are important considerations in adaptation planning.
5. CCICED can be developed into an international platform for international knowledge sharing and peer-to-peer learning on the subject on climate adaptation and resilience.

The recommendations emphasize the important role of central governments. Synergy between stakeholder action is essential, this includes cross-disciplinary and international cooperation. As Mr. Geurts mentioned in his introduction, attention is needed for the spatial and time scales of the adaptation challenges. Moreover, the socio-economic differences and relations between the rural and the urban environment are to be considered when designing adaptation policies, keeping equity and the protection of vulnerable groups in mind.

This SPS underlined that systematic climate adaptation measures are urgently needed. Therefore, we recommend that subsequent SPS-es are mandated. They should study approaches and solutions to improve climate resilience in urban areas, neighbourhoods, counties and rural areas. They should focus on infrastructure (during 2025) and on good governance, spatial planning and design at increasingly finer scale and including social aspects (during 2026).

Dominic Waughray *(Executive Vice President, World Business Council for Sustainable Development)*

Mr. Waughray underlines the urgency of adaptation and congratulates the SPS for its important recommendations. He reminds the EU Climate Risk Assessment report (2024), with partly similar conclusions. His comments focused on the business dimensions of climate resilience, financing and expertise. Mr. Waughray sees these issues as potential angles for future research.

Business dimension:

The relevance for businesses is only implicitly addressed in the SPS. The business community- including the CEOs of large enterprises- is very concerned about climate change and is acting in multiple ways. Significant vulnerabilities for these enterprises are located 'upstream' in their supply chain. Actions to handle climate change such as risk reduction in transport or production are seen as costs instead of as an investment. As a result, it is difficult to urge private enterprises to take climate change adaption measures. This results in a double challenge for global business in relation to climate adaptation: increased costs due to the adaptation measures and decreasing revenues due to climate-induced production problems.

In spring this year, the World Business Council published the *Business leaders guide to climate adaptation* for CEOs, CFOs, CROs CsHR, etc. Each of them has a different role and perspective in making the company climate resilient. The Guide concisely spells out their responsibilities, in plain language. An exciting next stage would be to create a similar guide with Chinese businesses and realizing an exchange of experiences between businesses inside and outside China.

Financing

As adaptation measures are typically seen as a cost without resulting revenues, and not an investment an essential question emerges: What type and format of information would be needed to convince the capital market to finance a company's adaptation measures? How to reframe or rephrase the business-case? While resilience officers typically have the long-term view, asset managers need different 'language', especially quantitative language, to convince the financial investors.

Expertise

When considering climate adaptation, against a backdrop of finance and digitization, it is helpful to think of the role of human expertise and human resources management in the coexistence of these domains. Currently, it is difficult to switch careers from one domain to another, or to combine positions in these different fields. This implies that talent is missed. Currently there is a gradual change, but more is needed. For example, considering the domains discussed in this open forum, mid-career well-earning finance market data experts sometimes move to institutes, academia, consultancy and government and vice versa. Secondment programs can facilitate this very effective way of knowledge transfer.

PANEL DISCUSSION

Xiao Lijun *(Vice president, Western Branch CAUPD)*

Mr. Xiao explains the importance of resilience assessment framework to ensure meaningful action. In the SPS the Five Capacities framework was used to identify the problems of each case, tuned to context and local conditions. In each assessment, climate risks and opportunities of adaptation are identified. The five capacities help to identify who should be acting: The government, business sectors and/or the participating public.

A periodic evaluation of the resilience gaps is recommended, at least once every 5 years, and 'real time' after each catastrophic event. The Five Capacities framework offers an innovative, effective evaluation method, providing results that are ready for application. He considers the framework an important step towards an integrated nation-wide climate adaptation policy.

Frans van de Ven *(Strategic Advisor and Senior Expert, Deltares; Associate Professor (emeritus) of Delft University of Technology)*

Three points were brought up by Mr. van de Ven:

(1) Nowadays, there is a strong plea for greening the cities. However, we have to realize that nature-based solutions (NBS) are insufficient to address the challenges of climate change. If the weather conditions exceed the design standards, NBS fail, just like the grey solutions we applied in the past. For good reasons people started to distrust the reliability of NBS in extreme weather conditions. We must find solutions that minimize the damage when extreme weather events exceed the design standards. By making innovative, smart combinations of blue, green and grey solutions – so called green-grey infrastructure - this can be achieved.

(2) People are aware of climate change and experience weather extremes, but they are generally not aware of the many *solutions* that can be used to solve or reduce risks. Awareness of these many options, partly low-cost and attractive, is needed to make them act.

(3) The use of the Five Capacity framework comes *in addition to* the regular risk assessment (hazard – exposure – vulnerability assessment). The risk assessment results are input for the assessment of the climate resilience gaps with the five capacities and their enabling conditions.

Jan Bakkes *(Vice President of the Integrated Assessment Society)*

Mr. Bakkes highlighted findings by this SPS on (i) the economics of adaptation, and on (ii) formats for collaboration between government entities. Both are important, and not yet elaborated in depth.
(i) During its work visit in Europe, the SPS team discussed economic aspects of adaptation with financial regulators and managers of on-the-ground adaptation projects. They underlined that the economics of climate adaptation is essentially different from green finance --- as in, for example, production of non-fossil energy. Adaptation is aimed at minimizing the risk of damage and human misery, while maximizing the social benefits and ecosystem services of the required interventions. Most adaptation projects in populated areas are implemented by public authorities, on public land. Their economic value in terms of the reduced risk - for example, risk of flooding – may be a significant benefit but does not generate a cash flow in the books of a company. As Mr. Waughray said, referring to private companies, investment in adaptation is essentially a 'defensive outlay', and not something you do to earn money. This is different from other CCICED work on green finance.

Renewal of aging infrastructure is an opportunity in the light of adaptation to climate change. Both in China and in the Western countries many elements of the built environment and important infrastructure are up for major maintenance, renewal or replacement in the decades to come, as the existing facilities get worn out. In the face of increasing climate change at least parts of these huge portfolios need critical revision, and perhaps re-decision. But how to organize that? This could be a timely and appropriate subject to focus on in a next study.
(ii) Assessing and addressing the challenges of adaptation to climate change in a given area typically requires collaboration between multiple entities – neighbouring jurisdictions, multiple ministries or layers in government, as well as public and private parties. Different formats are seen in China and throughout the world to organize this effectively and transparently. The cases analysed by the SPS feature an interesting variety of collaboration formats, each tailored to local needs and preferences. Examples include the Delta Programme in The Netherlands; the Greater Bay area collaboration between Chinese jurisdictions, and the EU's research programming to support its Mission on Adaptation. Surely any further work will encounter more examples. Wouldn't it be interesting to evaluate these formats and identify particularly effective and inspiring ones?

Two of our recommendations in the report relate to this issue. They include the recommendation to lift the responsibility for adaptation to climate change to cabinet level, above individual ministries. And at the level of assessments, as emphasized by Mr. Xiao, it is recommended to make the Five Capacities framework an element of the regular Health Examinations of the Chinese cities—also known as City Checkup.

Xu Huaqing *(Director-General, MEE - National Center for Climate Change Strategy and International Cooperation)*

The work of the National Center for Climate Change Strategy and International Cooperation is very much related to this SPS. DG Xu would appreciate further contact.

MEE, WMO and many others are calling for improving early warning systems to improve climate resilience. Additionally, COP28 has formulated an integrated assessment framework, that also includes planning. The incorporation of solid planning is key to solid implementation.

Climate adaptation requires high quality monitoring data. Big data and data sharing are critical to the adaptation planning work that is to be done.

Li Xiaojiang *(CCICED Special Advisor; Chinese team leader of SPS Climate Adaptation; former president of CAUPD)*

We hope that DG Xu will support this SPS, including the need for big data and in-depth research in

case studies. We hope to be able to use a few of MEE's 39 pilot cities on climate adaptation as living labs for testing the proposed climate resilience planning approach in practice.

CONCLUDING REMARKS

Ben Geurts summarized his main conclusions of this first part of the Open Forum:

The discussion on the SPS report was very insightful and enriching. Several speakers stressed the urgency of climate adaptation. Climate change is here now, visible in weather extremes, and is directly affecting vulnerable people. Adaptation is needed now, in addition to our full commitment to mitigation efforts.

Cities are an important focal point for adaptation. Not the least in China, with its many mega-cities still increasing in number and size. The dense population and the existence of dense city planning with high concentrations of buildings and infrastructures make climate adaptation measures both urgently needed and difficult. The capacity framework of threshold, coping, recovery, adaptive, and transformative capacity proved helpful in identifying climate resilience gaps. Much action needs to be taken to overcome these resilience gaps. The framework also helps assessing the relevant time span of a particular measure, which is dependent on the life span of a building or an infrastructural facility combined with the expected climate change in that life span.

The SPS demonstrates the opportunity to learn from climate adaptation measures around the globe. Adaptation is so important and urgent that it should have the attention of the governments of all levels. Support of the national government helps local governments to take specific action. Experts in the financial sector are to be involved in adaptation planning, as no direct cashflow results from investments in adaptation measures. Green-grey infrastructure should be developed to minimize the damage of extreme events while continuing to harvest the benefits and ecosystem services of the green, nature-based solutions. It was mentioned that making better use of data, and digital skills is necessary when planning for climate adaptation. Another important point was to focus adaptation measures on the needs of the people, particularly the most vulnerable. To get the public at large on board we should give more attention to the interests of those who are already suffering from the consequences of climate change.

This open forum provided valuable insights for a next phase of this SPS, particularly the possibility towards business and adaptation financing and/or infrastructure resilience.

--- end of report ---