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An aerial photograph of a city street. In the foreground, a tall brick building with a glass facade has a green roof. To its right, another building has a rooftop pool. A parking lot with several cars is visible in the middle ground. The background shows more city buildings and trees.

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Cities and climate change: The great decarbonisation challenge

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We are in the midst of “the critical decade”. It is now that our decisions and actions in relation to mitigation of and adaptation to climate change will determine the success or failure of decarbonisation transitions needed to avoid severe impacts of climate change. This is not solely a technological, social, economic or governance issue. Addressing climate change demands fundamentally different practices in all these areas combined. Cities and urban areas are expected to play a significant role in the great decarbonisation challenge.

Cities have the potential to make a difference

All over the world, cities are rapidly expanding. In 1900, 13% of the global population lived in urban areas; today it is more than 50%. But as cities grow, so do the challenges. Urbanization is leading to problems of sustainability related to segregation and growing social tensions, congestion, air pollution, waste, and the large and often inefficient consumption of energy and materials. This means that cities are key drivers of climate change and global environmental degradation. Today, approximately 70% of total global energy-related carbon dioxide gas emissions are associated with what happens in urban areas and cities.

Although the growth of cities results in complex challenges, it also opens up opportunities. Cities are centres for creativity and invention that provide opportunities for technological and social innovations. Cities – through collaborative partnerships at different scales – are already acting pragmatically and proactively to respond to climate challenges. Many cities have more progressive sustainability and climate goals than nation-states. Cities are also competing to prove their credentials. Several indexes and competitions have been initiated to support sustainable city development and facilitate comparisons, learning and constructive competition. Examples of local

initiatives and experiments, targeting climate mitigation and adaptation include prohibiting cars in central urban areas, prioritizing bike lines, developing public transport, supporting innovative and sustainable buildings (both new and retrofits), green roofs and smarter water and waste management systems, and investing in renewable energy systems.

Governance and planning for a low carbon society

Realising urban transformation towards sustainability will require considerable intervention from governance and planning to achieve substantial reductions in greenhouse gas emissions, to reduce the use of natural resources, to support biodiversity, to introduce new innovative infrastructures and technologies, and to support inclusion and economic development. It is important to ask how it is politically, economically and administratively feasible to meet targets for sustainable, low-carbon, resilient and prosperous cities.

One way forward will be to harness existing processes of change in urban planning. In recent years, the dominant planning discourse has undergone a great change from a previous top-down approach towards collaborative and communicative planning in recent decades.

Through Agenda 21, participatory decision-making was highlighted as a key way to bring about sustainable development in urban contexts. Nevertheless, planning processes are to a large extent still divided and fragmented, power is unevenly distributed, and integration of sustainable development in planning is more ad hoc than strategic. To overcome these challenges, there is a need for urban planning to proactively address the transition towards a low carbon society and to develop new, collaborative approaches to plan-making and implementation.

A second, parallel, pathway towards low carbon urban development is to foster new sites and spaces in the city for engaging with the complex issues of sustainability. These include developing new forms of innovation and experimentation, establishing intermediary organisations and forums that act as “brokers” between established political, economic and social interests, and creating space for public dialogue and debate over urban futures and their implications for social and environmental justice.

Action towards effective sustainability strategies

Neither of these approaches is likely to succeed while sustainability, climate change and the notion of a low carbon

society remain marginal to urban development. In cities around the world the strategic importance of these issues – to economic, environmental and social well-being – is becoming increasingly apparent. Responding to climate change and the complex challenge of sustainability is no longer regarded as simply a matter of setting targets for reducing greenhouse gas emissions, but has come to be seen as an important way to achieve resilience, security, well-being and new forms of economic development.

Three key areas for action are as follows:

- Engaging strategic interests across diverse actors in the low carbon agenda to support and realise urban strategies and targets
- Establishing cultures of innovation and experimentation at the urban level to foster collaboration and the implementation of solutions
- Creating dialogue between municipalities, practitioners, universities and communities through which the challenges and opportunities of low carbon futures can be negotiated



WHAT IS THE QUESTION?

Cities and urban areas are today home for a majority of the global population. City expansion results in complex and multifaceted sustainability problems with linkages to climate change and environmental degradation, but also provides opportunities for technological and social innovations to find solutions. Rapid progress from local initiatives can be reached through actions taken in municipalities and by collaboration with various actors in society. New types of governance and policy instruments are needed to arrive at strategic planning of efficient actions, but clearly defined guidelines are today lacking. Experimentation and learning by doing are thus important tools to move forward.

ABOUT THE WRITERS

LENA NEIJ is a Professor and Director at the International Institute for Industrial Environmental Economics, Lund University, Sweden. Her research is focused on the dynamics of the energy system and the analysis of governance and policies for more sustainable development. The core issue has been development and assessment of methods for analyzing the dynamics of energy systems in view of technical change, i.e. development, introduction, and diffusion of new technology, and policy measures for effecting and accelerating technical change. The research, which has been system based and interdisciplinary, has covered energy for sustainable development in general, with a focus on renewable energy technologies, energy efficiency in buildings, and sustainable urban development. Lena Neij is the coordinator of Urban Arena at Lund University including more than 160 researchers engaged in research related to urban sustainability (www.urban.lu.se).

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KES MCCORMICK is an Associate Professor at the International Institute for Industrial Environmental Economics, Lund University, Sweden. With a background in political science and environmental science, he engages in a combination of research, education and innovation activities. Broadly speaking he works in the fields of sustainability and governance. Specifically, his main interests are how to accelerate the implementation of renewable energy technologies (focusing on bioenergy and biofuels for transport) and energy efficiency improvements (focusing on buildings), catalyze sustainable urban transformation, and promote education for sustainability.

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KLIMAT I FOKUS is a series of research briefs produced by Lund University Sustainability Forum. The purpose is to describe and explain current and central concepts in climate research. **SUSTAINABILITY FORUM** connects and supports climate, energy and sustainability research at Lund University, Sweden, and provides a bridge between society and academia within these fields. Sustainability Forum was launched in January 2014 and is coordinated by CEC, Centre for Climate and Environmental Research.

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