

Keynote 'Green Districts: The City as a Powerstation' at SET2009, 01 Sep. 2009
Professor Steffen Lehmann

Honourable Ministers, Excellencies, Distinguished Ladies and Gentlemen,
Sehr geehrte Damen und Herren,

This is a significant **international** conference, so please allow me to address you in English today.

Firstly, I would like to say how honoured and delighted I am to be delivering this speech at such an important conference.

I would like to complement and thank the organisers, the University of Duisburg-Essen and the government of the State of NRW, for putting together such an excellent programme over the next 3 days, in the historic city of Aachen.

This city is over 1200 years old. I am currently living in Sydney, and for Australian conditions, where no city is older than 200 years; this is a very long history.

I invite you to see the famous cathedral of Aachen, which has been designated as a UNESCO World Heritage site.

Indeed, some of our cities have existed over a very long time and I would like to suggest that we can learn a great deal from their history, for instance, how cities have become resilient against extreme situations and challenges.

Today we stand at a crossroads in history. The warnings from our most respected scientists are loud and clear.

The SET 2009 international conference is an important platform for focusing on solutions for both, adaptation and mitigation of climate change challenges. Over the next days, you will exchange ideas and think about how our cities can become more resilient to the changing conditions of global warming.

I was asked to speak for 70 minutes on 'Green Districts' and how cities themselves will become the powerstations of the future, creating their own energy, cleaning water, and growing food locally.

As the holder of the UNESCO Chair in Sustainable Urban Development for Asia and the Pacific, my main focus is on the rapid (and often traumatic) urbanization processes in Asia.

No doubt, it is in Asian cities where we will see most urban development over the next 20 years, and therefore serious concerns are increasing regarding energy security, water management, and food supply; not only in regard to Asian cities – but in particular to the Asian situation.

Cities are resource-intensive.

By 2030, we will need to produce 50 per cent more energy and 30 per cent more food on less land, with less water and less pesticides – if we want to avoid catastrophic consequences. The world situation is deteriorating faster than we previously anticipated.

If global mean temperature increase is to be stabilized between 2.0 to 2.4° Celsius, then CO2 emissions must peak by 2015.

However, we need to consider whether the effort to limit increase in global mean temperature to about 2° Celsius would be adequate because sea level rise due to thermal expansion alone would be between 0.4 to 1.2 meters, by the end of this century.

Add to this the melting of ice bodies, and we would have serious effects of sea level rise on low lying coastal areas and small island states.

It is clear that our increasing energy needs must be covered to a large degree by renewable energy sources!

It is not as if this is a sudden or unexpected crisis; we have known the damaging consequences of fossil-fuels for forty years.

However, it appears that some government leaders continue to ignore the scale of the threat, and want to see the impact of Climate Change still as distant and undefined, not giving it the adequate attention.

The fact is: Climate change has created a sense of urgency for all of us in the design and engineering disciplines! This is why we need to rethink urbanism and architecture, and the way how we design, build and manage cities in the future.

We are now engaged in nothing less than a peaceful cultural revolution, where all our standards and values in architecture and urban design are getting transformed and redefined. Climate change offers us now the opportunity to embark on a renewable energy revolution.

Cities are in constant change.

But are they heading in the right direction? My presentation will suggest they (we) are not. At the same time I would like to remain positive – pointing, through reference to numerous examples of what cities around the world are currently doing, to a more viable urban form that we can – and must - create now.

Luckily, there are now many innovative and exciting developments all over the world, which give hope, for instance: organic photovoltaics are a new technology that could make energy from solar cells very soon as cheap as energy from fossil fuels; and research, that studies how we can harvest energy from civil infrastructures such as road surfaces and bridges, which heat up and have the capacity to store energy; or solar cooling technology which runs off-grid and has the potential to replace mechanical (electrical) air-condition systems in the very near future.

Cities need to be re-engineered to become more resilient.

This is an age where we need to engage in yet more change in order to adapt to our real-time social, economic and environmental dilemmas. 'Resilience', with its broad connotations, is a handy word, pointing out the necessarily holistic nature of the task ahead. Critically, it is about optimism and hope, not fear.

Cities are systems already under stress.

The need for urban areas to be resilient is not new. The anthropologist and early ecologist Gregory Bateson advocated flexibility when writing about sustainability and urbanism for New York city planners in 1970.

My presentation is to put the all-important flesh on the bones of such concepts. Most of what I am saying is about doing it.

Green districts require strategies on the neighbourhood scale.

District infrastructure systems will feature in the sustainable neighbourhoods of the future. No longer will resources such as power, water and waste be provided by centralised systems and managed by large distant companies.

Instead, district systems will supply energy and water and manage waste locally, which will be recycled and reused at the neighbourhood and district scale, turning the existing districts themselves into **self-sufficient powerstations**.

Let's look at some design scenarios and at the built environment principles of a 'resilient city district':

- Urban areas powered by renewable energy – at all scales from the district-level to individual buildings;
- Every home, business and neighbourhood is carbon neutral;
- Power, water and waste systems are small-scale and neighborhood-based, not large and centralized;
- Renewable energy is harnessed locally at the point of consumption, by building-integrated PV and other measures;
- A high proportion of energy and material needs are provided from re-used waste, in closed-loop systems;
- Urban food production helps to grow vegetables and fruits locally, through urban farming;
- Such actions contribute to building local economies and a sense of place; and
- Urban layouts allow transport to be by walking, cycling and public mass transit, supplemented by electric vehicles.

The transport elements of a sustainable city are:

- Public mass transit which is faster than vehicle traffic in all major urban corridors;
- Viable centres within these corridors, dense enough to support good mass public transport; and
- Areas that allow easy non-motorized access, such as walking and cycling, especially within centres.

I strongly urge the implementation of these principles. These ideas need to become mainstream public policy for all urban design, and all cities; especially for high-speed urbanism of Asian cities.

Many good initiatives are happening already – a point of my talk today is to show that all of this is eminently do-able and achievable, as most of the technology is already on the market.

The challenge is to build cities that are, at the same time, green, transit-orientated and pedestrian-friendly, therefore more resilient to climate change.

Sustainable development is after all an on-going learning process. Those communities which are most responsive to change will best survive the challenges of the future. The type of urban change described is necessary for all sorts of reasons, including simply the creation of more pleasant places and public spaces to live.

This means that in an ideal world, every development, every building is energy-efficient, using the best know-how to avoid the wasting of energy, water and materials.

Concluding

My plea to this audience is to please listen to and reflect on the voices of science and to the valuable expertise available at this conference, and act with determination and a sense of urgency.

The United Nations do not prescribe any specific action, as there are various ways we can take action, but action is a must. Business as usual is not good enough anymore.

Climate change is no longer just an environmental issue: it touches every part of our lives: peace, hunger, health, security, human rights, poverty, mass migration and economics.

Sustainable development of cities must happen along the principles of 'international best practice' in urban design, architecture and engineering.

Europe is part of a larger system, and part of a globalized world. We cannot look at Germany, or the UK, or at Europe, as an isolated case.

Similar developments are happening now everywhere and only an internationally coordinated, combined effort will be strong enough to combat Climate Change.

I would like to finish by concluding: With the Copenhagen meeting approaching fast in December, there is no time for further excuses or postponement. This is a time for leadership and immediate action.

Thank you for your attention.

Professor Dr. Steffen Lehmann