

SUMMARY

R20AWS Breakout Session

Sustainable Cities: Carbon-neutral housing and mobility

Background

Cities and Regions are a major focus at the R20 AUSTRIAN WORLD SUMMIT. They belong to the most affected areas of climate change and, at the same time, are drivers of a sustainable transition. Around three quarters of global greenhouse gas emissions are produced in urban areas. The organisation of urban infrastructure has a significant impact on the balance of emissions and may affect long-term emissions by a factor of 10. Housing and mobility are of particular interest when it comes to designing the transition to a carbon neutral society. Social aspects need to be integrated into strategies. Cities and regions can and will make a difference and hold powerful keys in their hand, because brainpower, economic activity and infrastructure are concentrated here. Many examples prove that solutions already exist and a variety of technological and structural options are available. Based on some of these examples the session discussed solutions, instruments and strategies, from integrated energy and urban planning to sustainable buildings and transport solutions.

Current status: Renewable energy in cities

In the Breakout Session on Cities, the current report on "Preliminary Findings of the Renewables in Cities Global Status Report" (<https://www.ren21.net/cities/>) was presented by REN21 Executive Director, Rana Adib. The report illustrates how cities are using renewable energy in the electricity, heating, cooling and transport sectors. Although cities occupy less than 2% of the world's landmass, 4.2 billion people, over half the world's population, reside within them. Today, cities, their residents and businesses consume two thirds of the world's energy, while in 1990 this amounted to less than half (45%). Rapid urbanisation, coupled with population growth, has led to rising energy demand at the municipal level: The final report will be published in September 2019. Most (final) energy is consumed for heating, cooling and transport: 48% for heating and cooling, approximately a third for transport and 20% for electricity. 39% of total annual energy-related CO₂ emissions come from heat consumption. Cities are also important drivers of the global economy.

In the power sector, the number of cities powered by at least 70% renewable electricity more than doubled between 2015 and early 2018 (from 42 to 101). In their efforts to advance renewable energy, cities are driven by a wide range of objectives, including reducing air pollution and carbon emissions, reducing energy costs, providing energy access and creating local jobs, as well as energy security and governance goals. By the end of 2018, more than 200 cities worldwide had committed to 100% renewable electricity in the power sector, with target years ranging between 2020 and 2050. In the United States alone, more than 100 cities and towns established targets for 100% renewables.

The report describes several successful instruments in the implementation of renewable energy. Among these are financial incentives such as rebates, tax incentives and low-interest loans for renewable energy, public investment and procurement policies, business models driving renewables in cities, or the mobilisation of finance.

Outcomes

In presentations and discussion, several key elements for the successful implementation of solutions in the housing and transport sector were identified.

Citizen engagement: Collaborate on the right level and scale

The transformation can only be sustainable when the citizens are on board. Therefore the awareness and activation of people, along with support for bottom-up initiatives, can become drivers behind accelerating the transition. Nevertheless, without top-down instruments (such as regulation, objectives and guidelines) bottom-up processes are destined for failure. It is the combination of these approaches that can result in the success factor. The design of urban energy systems affects urban residents in direct ways by defining how energy is produced, transmitted and consumed. Citizens can have an impact by partnering with others to create community-based energy projects.

New thinking: integration of sectors and policies

We need to rethink our approach to sectors (sector integration), budgeting and investing. The integration of spatial planning processes and energy planning will be a fundamental component, not only in cities, but also in the exchange between cities and their surrounding areas. Urban district heating and cooling networks provide an opportunity for cities to integrate renewables into the heating and cooling sector.

Fiscal reforms: aligning with the Paris Agreement

Fiscal reforms are crucial. Not only is the integration of technologies and sectors necessary, but also policies on national, subnational and municipal levels. Beside governance and the dissemination of examples and experiences also relevant budgeting are crucial. At the end of the day, aligning 25 or 50% of the budget to meeting the Paris Agreement goals will not be enough, but needs to be 100%. Cities can increase the pressure on governments to implement the necessary reforms. Carbon taxation is highly effective and can be integrated into trade agreements. Also at local and regional levels, tax credit plays a role. Higher renovation rates to existing buildings can be increased through measures such as the availability of subsidies and tax credit.

More focus on social aspects and fairness

Carbon neutrality and social justice are not a contradiction but go hand in hand. Many examples (e.g. Vienna) have showcased that buildings with low energy consumption provide better living conditions and a contribution to the reduction in fossil fuel usage. We want cities in which no one must stay home because it is too hot outside. Elderly people and children are much more affected by climate change. Current numbers show an increase in heart-strokes within elderly people during hot summers which can also result in social isolation. Even the yellow jackets don't want to be seen as being against climate change measures but don't accept that driving car get additional taxes while business flights don't.

The role of regulation

Regulation and legislation are absolutely crucial. Standards have to be made compulsory, in the transport sector as well as in the energy sector. E.g. in housing laws, a majority of inhabitants instead unanimity to allow energy related measures would help. Moreover, it would be better to spend money on quality aspects than building parking space in the underground.

We need better data

Gaps currently exist in municipal policies/incentives to promote renewable energy deployment in power, heating and cooling, transport, and on generation capacities (RES), as well as RES share in public transportation, municipal fleets and the renewable energy share in urban district heating.

Electric vehicles as part of the solution

By continuously improving our public transport system and bicycle infrastructure, we can reduce the amount of traffic and lower pollution and greenhouse gas emissions. Electric vehicles can play a role in the solution, but cannot solve associated traffic problems (such as lack of space, pedestrian hazards and traffic jams).

CO₂-neutral fuels might emerge but capacity will remain a limiting factor. No further investment should be made in fossil fuels if we are to meet the Paris goals.

Examples

Example of Arnheim/Nijmegen: regional collaboration for phasing out natural gas

The motivation behind developing plans for a step-based phase-out of natural gas is not only climate policies, but also due to earthquakes related to natural gas exploitation. Local and regional energy strategies have two components: citizen engagement and expanding district heating. Possible approaches include exploring geothermal energy sources, electrical heat pumps and a neighbourhood energy supply.

Example California: leading by ambitious legislation

California has 40 million people and about 25 million cars (not including trucks). California predates standards and has more stringent emissions standards than the federal government. The current Trump administration is a rolling-back on air pollution. 15 other states have adopted CA tailpipe standards and many cities have implemented them.

In California, the cap on emissions has been incredibly effective. 40% of all energy comes from clean resources. Part of the strategy is to replace natural gas and electrify as much as possible. No further natural gas power plants will be built in California not only because citizens have demanded this.

California does not produce energy from coal power plants but received it from surrounding states. Citizens are making the choice not to purchase coal power from other states. In the future the focus will be on Renewables and EVs.

Example Stuttgart: integrating energy supply, planning and transport

Stuttgart has strategically integrated energy and urban planning to include energy supply, mobility and buildings. Mixed housing is important (business, residential, commercial, social infrastructure, schools). In finding potential sources of energy production, waste heat can provide the basic heating needs for many buildings. Buildings in Stuttgart are built to high standards. Rooftops are green and provide solar energy. Another approach has been the reduction of parking spaces.

The city is adapting to counter the effects of climate change and provides a model for greener cities of the future with more water, parks, and preparations for an increasing number of inhabitants. The idea that every family lives in a house is no longer possible. The buildings of tomorrow need to be built today.

Examples Vienna: combining the energy transformation and social aspects

Vienna serves as an international example of successfully implemented social housing with high standards, but also faces the challenges caused by urbanisation trends and the need for rapid decarbonisation. Vienna passed a reform to construction regulations that demonstrates the city's commitment to affordable housing with the aim of lowering emissions. Climate protection was added as a new objective and the city banned oil heating, whilst forming zones to minimise gas connections to new residential buildings. The same amendment additionally required an immediate increase in the construction of new subsidised affordable housing. There remain investments in fossil fuels, such as gas boilers, in new buildings, but building codes state that RES must be used with a gas boiler.

Many examples show energy innovation projects in Vienna, from the renovation of existing buildings to new Plus Energy building and solutions in energy supply, transport and neighborhood energy. A new app has been programmed and will be available in app stores in the near future titled "Energy Ahead".