

Urban planning is key to achieving the two-degree target and urban infrastructure can reduce emissions by half, says study in Nature Climate Change by AIT author

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Bangkok, 24 November 2016: The design of today’s transportation systems, buildings and other infrastructures will largely determine tomorrow’s CO2 emissions. Climate smart urban infrastructure and buildings could cut future emissions in half or about 10 Gt CO2 per year from 2040 onwards. These core findings have emerged from a new study that has been jointly published by Dr. Shobhakar Dhakal of Asian Institute of Technology (AIT) in the prestigious journal “Nature Climate Change.” The study is led by Felix Creutzig from the Mercator Research Institute on Global Commons and Climate Change (MCC) and other international colleagues.

Published on 24 November 2016, the journal article titled “Urban infrastructure choices structure climate solutions” adds that urban planning is key to achieving the two-degree target. The study aggregates existing data to show that the highest emission reduction globally potential is from the use of new energy-efficient infrastructures. The annual global reductions that may be achieved by the year 2040 when using new infrastructures is three to four times higher than that of upgrading existing urban infrastructures. Moreover, the very act of building these new infrastructures will invariably involve introducing new CO2 emissions into the atmosphere.

It is important to appreciate that buildings have lifelines longer than 40 years, while transport structures can span centuries, Dr. Dhakal says. The challenge for urban planners is to provide citizens with shorter travel distances, using low-carbon transport modes, establishing inner-city tolls, higher gasoline taxes, and incorporating architectural and technological upgrades of buildings, especially in Asia, Africa and the Middle East.

The importance of cities in limiting a global temperature rise to two degrees is stressed by the lead author of the paper Dr. Felix Creutzig from Mercator Research Institute on Global Commons and Climate Change (MCC) who says: “If the world made a dedicated effort to seize the existing opportunities within the next 15 years to upgrade its cities’ infrastructures, urban planning will become a key arena for achieving ambitious climate change.”

Most climate protection plans consider the transport and building sector as separate identities that are addressed only at the national or federal level. However, this study takes a closer look at the municipal level. It assesses a city's climate change mitigation potential on the basis of three parameters, namely, the emissions savings following upgrades to existing infrastructure, emissions savings from using energy-efficient new infrastructure, and additional emissions generated by the construction of this new infrastructure.

To embark on this “green” path, cities around the world need to incentivize the construction of higher-density, energy-efficient housing and implement new mobility concepts such as car sharing, electric cars and bicycles, and bike paths, says Dr. Dhakal. “Even in cities such as Bangkok considerable emissions reductions can be achieved through the energy-efficient refurbishment of existing infrastructure and the development of new mobility schemes”, adds Dr. Dhakal.

The research is jointly authored by Felix Creutzig of Mercator Research Institute on Global Commons and Climate Change, Berlin, Germany; Peter Agoston of Technische Universität Berlin, Germany; Jan C. Minx of Hertie School of Governance, Berlin, Germany; Josep G. Canadell of Commonwealth Scientific and Industrial Research Organisation, Canberra, Australia; Robbie M. Andrew of Center for International Climate and Environmental Research, Oslo, Norway; Corinne Le Quéré of Tyndall Centre for Climate Change Research, University of East Anglia, UK; Glen P. Peters of Center for International Climate and Environmental Research, Oslo, Norway; Ayyoob Sharifi of National Institute of Environmental Studies, Japan; and Shobhakar Dhakal of Asian Institute of Technology, Thailand.