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Assessment of physical and ecological space consumed by transport modes: A case of Rajkot city India

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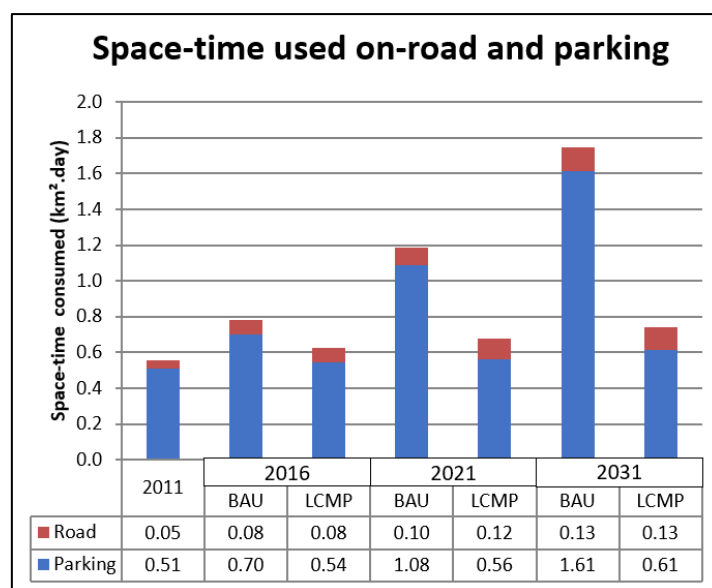
1: Transport DTU, DTU Management Engineering

2: Transport DTU, DTU Management Engineering

3: UNEP DTU Partnership, DTU Management Engineering

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The space needed by various urban passenger transport modes varies greatly depending on the size and the speed of the vehicle. Past studies have shown that public transport and non-motorized transport can be up to 20 times more space-efficient compared to a typical car. This is of particular relevance in urban context where space is a constrained resource. Yet space used by transport modes is rarely assessed in the transport planning practice and there exists no standard method for quantifying the use of space in complex urban settings like that of developing cities. This study proposes a method based on the space-time concept for quantifying the transport, parking and ecological space and compare them by modes. This is done with the purpose to showcase the spatial benefits of promoting non-motorized transport (NMT) and public transport modes. Transport planning scenarios developed for the Low-carbon Comprehensive Mobility Plan (LCMP) (1) prepared for the city of Rajkot are used to demonstrate the method. The indicators show that significantly less space is used by transport in a scenario that promotes higher use of public transport and NMT mode in comparison to business-as-usual scenario. This provides evidence that could contribute to alleviating chronic congestion expected from a car- and motorcycle-based transport development only. This research participates in creating an assessment framework for low carbon transport development that would include spatial efficiency concerns.



(1) Munshi, T., K. Shah, A. Vaid, V. Sharma, K. Joy, S. Roy, D. Advani, and Y. Joseph. *Low-Carbon Comprehensive Mobility Plan: Rajkot*. 2014.