

Urban emissions could be cut by 70 percent

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Wouter van Heeswijk has developed a mathematical model that determines the optimal conditions for sustainable urban distribution. The model can reduce logistical pressure in cities and make goods transport more sustainable. In some cases, it may be possible to reduce emissions in cities by seventy per cent. Van Heeswijk is a member of the Industrial Engineering and Business Information Systems research group at the University of Twente, where he successfully defended his doctoral dissertation on 19 May.

Ongoing urbanization, combined with fragmented goods flows and ever-shorter delivery times, mean that cities throughout the world must cope with a higher volume of freight traffic. Inefficient urban [transport](#) leads to atmospheric pollution, congestion and noise nuisance.

Mathematical model

Wouter van Heeswijk has designed a [mathematical model](#) that will reveal the ideal combination of factors to ensure efficient and sustainable urban distribution. Input variables include subsidy arrangements, local regulations and transport schedules, as well as information sharing and collaboration between transport companies.

Consolidation centres

Van Heeswijk calls for more extensive use of '[consolidation](#) centres'. Almost every town and [city](#) has a location at which goods vehicles are unloaded and consignments sorted for further distribution. "We often

see large trucks entering the city carrying just a few items," says Van Heeswijk. "You only have to look around on Google Street View." The consolidation centre enables goods to be distributed in a far more efficient manner. "In practice, however, the consolidation centres have yet to achieve their full potential. To do so calls for government interventions," says Van Heeswijk.

According to Van Heeswijk's calculations, the right government measures could reduce emissions in cities by up to seventy per cent. He proposes subsidies to encourage the use of the consolidation centres and cut the number of vehicles entering the city with only a partial load. "It is important to have a national or European policy so that all cities adopt the same measures. If you leave everything to the market, the consolidation centre approach will not have the desired effect. However, if you make it financially unattractive for transport operators to enter the city with a half-laden vehicle while also subsidizing the use of the consolidation centres, it becomes possible to achieve the aims. In some cases, emissions can be cut by seventy per cent."

Policy

The standard policy applied by many local authorities can actually be counter-productive, suggests Dr Martijn Mes, supervisor of Van Heeswijk's research project. "By-laws may state that delivery trucks can only enter the city in the early morning, before the commuter rush hour begins. That seems logical enough. But if several cities apply the same restrictions, operators who would otherwise plan a route to take in several delivery points will be forced to deploy extra vehicles. The overall transport mileage will therefore increase, as will total emissions. That's not what we want. Using Wouter van Heeswijk's model, however, we can identify the mix of public sector incentives and private sector initiatives which will achieve the desired results."

Provided by University of Twente

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