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X-Minute City Concept

Infrastructure is never neutral – it shapes how we live. Designing urban infrastructure means designing the city from with a responsible attitude. Can we stimulate active mobility modes and strengthen community life in the neighbourhoods of our car-dominated cities? Which strategies does the X-minute city concept suggest?

PURPOSE – Concepts – like ‘complete community’ and ‘integrated community’ (Calthorpe et al., 1991), and the concepts of the 30-, 20-, 15-, 10-, and 5-minute cities – claim to redesign cities of the future by the reduction of passenger transport and the improvement of living and working conditions in local communities. The concepts aim to reduce reliance on cars, promote sustainability, and enhance the quality of life by creating compact, well-connected, and locally-oriented neighbourhoods.

Currently, passenger vehicles – particularly cars – account for a sizeable part of transport-related emissions, worsening environmental pollution and creating public health risks in metropolitan and suburban areas. Eliminating and shortening commuting distances drastically contributes to decreased travel time and noise and environmental and mobility injustice. Reducing traffic congestion in residential communities strengthens quality of life as well as social engagements in the public space. The related emissions decline further, which improves public health and environmental sustainability. As such, applying the ‘x-minute city’ concept contributes effectively to the creation of sustainable, climate-neutral cities for diverse urban populations – through rethinking urban mobility, while keeping cities connected and open for all people. Yet, while current actions contribute to the x-minute city by focusing on inner cities – usually already compact and with a lot of amenities and facilities – the approach needs to consider different urban condition and demographics across the whole metropolitan area, including periphery and suburban areas. Through a diversified approach to address challenges across different urban areas and demographics, this concept can contribute to sustainable, liveable, and inclusive cities.

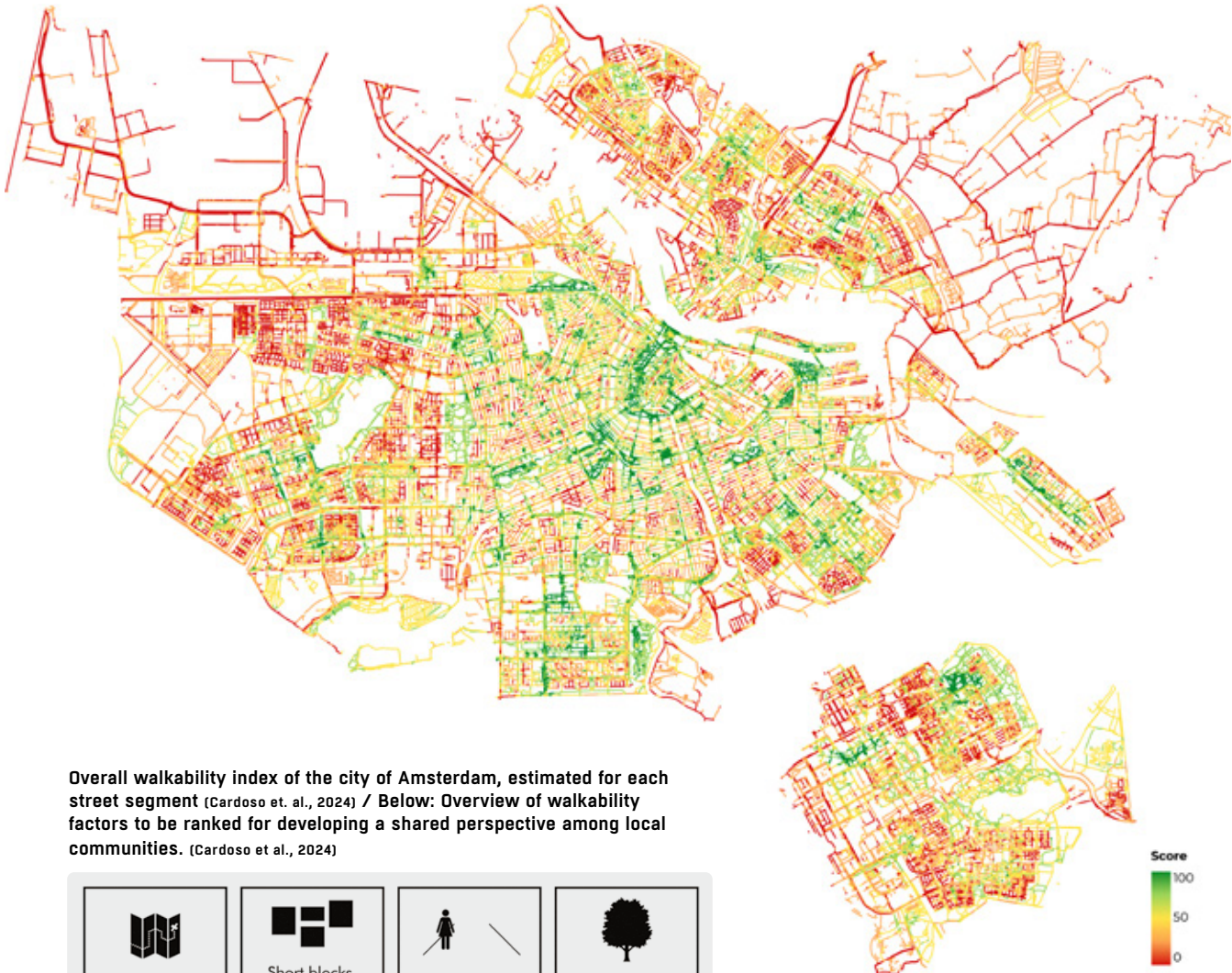
APPROACH – Underlying this concept, literature names *six key assumptions* which are supportive to change: (a) The energy transition to renewable-energy vehicles promotes climate-neutral mobility. (b) Rising energy costs will influence urban mobility choices. (c) Active mobility modes promote health. (d) Digital transitions will reduce travel frequency and emissions. (e) Shared economies will shift mobility patterns. (f) Community-based regeneration fosters local ownership of facilities and domestic public spaces.

Yet, while technological advancements like electric vehicles (EVs) offer partial solutions, they do not tackle the underlying issue:

APPLICATION
The concept addresses the increasing strain on urban accessibility and connectivity caused by rapid, irreversible urban expansion, which under current planning and design strategies results in long-distance commuting, traffic congestion, and rising greenhouse gas emissions. It is expected that governance, planning, and design towards the concept, addresses these issues effectively by prioritising the alignment of infrastructure with diverse population needs and by improving neighbourhood live-work conditions.

LIMITATIONS
Applying this concept faces three threats:

1. Persistent top-down approaches may continue to lead to a mismatch between urban structures, public spaces, facilities and amenities and people’s lifestyles, perpetuating high-emission mobility.
2. Knowledge needed to diversify urban transformation strategies is fragmented across cities, professions, and academia. It needs to come together.
3. Additionally, integrated, multi-scalar strategies and designs are currently hardly diversified. This hinders effective carbon-neutral transitions in peripheral and suburban areas.



Overall walkability index of the city of Amsterdam, estimated for each street segment (Cardoso et al., 2024) / Below: Overview of walkability factors to be ranked for developing a shared perspective among local communities. (Cardoso et al., 2024)

 Proximity to amenities	 Short blocks, frequent intersections	 Wide sidewalks	 Trees and bushes on the street			
 Crime safety	 Urban furniture	 Proximity to public transport stops	 No parked vehicles on the street		 Interesting buildings	 A densely populated street
 Street lighting	 A quiet environment	 Little / no obstacles on the sidewalk	 Presence of other people on the street	 Many shops and restaurants open towards the street	 Traffic safety	 Low speed for vehicles
 Shade	 Well maintained sidewalks	 Narrow streets	 Wayfinding signs	 Canals, lakes or rivers next to the street	 Strong neighbourhood identity	 Presence of plazas and parks

human behaviour. The overuse of private vehicles, especially in peripheral areas, drives long-distance commuting and the mismatch between urban structures and lifestyles. The introduction of *proximity* and *density* reduces reliance on transport modes. However, different population groups have distinct needs across the city, which requires careful contextualization of the urban mix. In this context, light commercial vehicles (LCVs) – used for essential logistics and trade services like deliveries and tradespeople – must also be integrated into the application of x-minute cities.

The path to inform planning and policymaking for more sustainable, liveable, and inclusive cities based on incentives for behavioural change involves the following actions:

1. *Measure* the main sources of transport emission, including the impact of fuel and Li-ion battery vehicles and long-distance commuting among diverse populations and in different locations.
2. *Analyse* and localize origins and destinations and the differentiation in travel behaviour, needs, desires, and purposes.
3. *Map* walkability and bikeability with respect to the availability and accessibility of local amenities and facilities, as well as of sustainable interlocal transport systems.
4. *Examine* the diversification possibilities, strategies and incentives in integrated urban design for the x-minute city, as well as in urban governance, planning, and policymaking in order to embed the concept.

Maurice Harteveld, TU Delft

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Right-top: Workshop 'De Branderij', Amsterdam Centre: craft and creativity in a former coffee-roasting house, nestled in the inner city that earlier functioned as a 15-minute neighbourhood. Since 1976, the workshop – founded by carpenters and furniture makers displaced by metro construction in the Nieuwmarkt district – was combined with housing, in an area where most daily needs are just around the corner. [© Maurice Harteveld]

Right-bottom: Bosrankstraat, Buiksloterham Amsterdam North: here, infrastructure has been intentionally scaled down and integrated with hybrid programmes, including home offices, co-working spaces, and a training centre, on a former industrial site. Since 2011, residents have built their homes through collective self-build initiatives, designing their own car-light, green street: a made-to-measure living environment. [© Maurice Harteveld]



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Backcover: Harderwijk, Gelderland: Aqueduct Veluwemeer crossing the N302 motorway. [© Sébastien Nagy]

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