15-minute cities: a literature overview exploring international planning strategies

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Abstract: The 15-minutes city (15mC) concept is a contemporary trend in urban planning which aims to improve the quality of life within the urban areas. The basic underlying idea is that all citizens have equal access to their daily needs within a short walk or bike ride from their houses. The main component that differs the 15mC from other neighborhood-centered approaches is proximity; that is, the proposition of relocating activities and services to the neighborhood level, hence localizing city life. The 15mC is included in international textbooks as a tool for cities to withstand the climate change. This paper provides an overview of the 15mC concept by reviewing the planning strategies of cities worldwide that have adopted this city vision to increase the well-being and the sustainable development. Methodologically, the study focuses on four case cities and their strategy on becoming 15mC. The analysis focus on understanding how the 15mC can adjust to different urban environments, depending on their needs. Finally, the paper presents the basic attributes of the case-studies and the overall positive impacts resulting from the 15mC concept.

Keywords: 15-min city, x-minute city, proximity, land use planning

1. Introduction

The 15-minute city concept is a highly rising urban paradigm of policymaking which has gain global attention. This derives from the inability of contemporary cities to cope with the existing challenges of Covid-19 and other crises (Moreno et.al 2021; Pozoukidou and Chatziyiannaki 2021). Their vulnerability to managing the global "socks" brought in light long-standing structural problems to their organization, such as inequality in accessing urban amenities for population minorities, lack of basic services at a neighborhood level, much commuting time to and from work, and more (Pozoukidou and Chatziyiannaki 2021).

1.1. Policy texts

The ongoing global pandemic and climate crisis have brought the 15mC concept on the spotlight, as it has gotten the attention of the scientific community. Since the benefits include sustainability, health, and social cohesion, the 15mC is strongly promoted in planning and policymaking texts. Both the IPCC "Climate Change Impacts, Adaptation and Vulnerability" (IPCC, 2022) and the United Nations Habitat's "Envisaging the Future of Cities" (UN HABITAT, 2022), mention the 15mC as a practice for cities to response and deal with the existing challenges. Furthermore, the 15mC is included in the Agenda for Green and Just Recovery from the climate crises, as it is considered a practical tool for the transition to urban low-carbon environments (C40 Cities, 2021).

In accordance with the mentioned above, many cities have adopted the 15mC principles, in order to promote sustainability and well-being, by reducing car dependency in the city using human-scale planning techniques (EIT, 2022). As cities are complex and multidimensional systems, the need for planning guidelines is essential because unplanned settlements usually present insufficient land-use, transport inadequateness lack of inclusiveness and safety (UN HABITAT, 2022). Nevertheless, the "massive" implementation of the 15mC model in multiple cities is not feasible if it would not align with the unique conditions of each urban environment (EIT, 2022).

1.2. Principles of the ±15-Minute Cities and Key Points

In the literature this planning approach is referred as 10-, 15- or 20-minute city or neighborhood, thus the concept is widely named as "the x-minute city" (Logan et al. 2022).
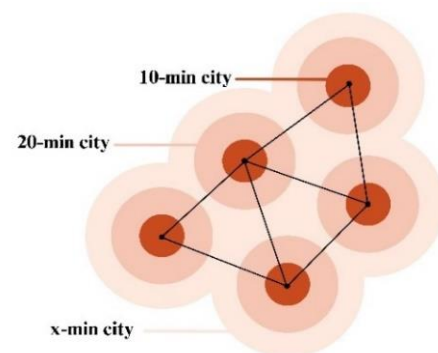

Figure1: Spatial organizational patterns of the 15mC. (authors)

Promoting the shift from car dependency to active transport and proximity-oriented development, the 15mC is a strategy for cities that reconnects people to the neighborhood in a compact urban structure (Pozoukidou and Chatziyiannaki, 2021). Its organization is based on two basic principles, namely, the proximity to urban amenities and the allocation of the basic services in local level (Ibid.).

The 15mC idea was initially introduced by Moreno (2016). The main idea is that people have equal access to their basic needs within short distance from their houses without using vehicles (Logan et al. 2022; Moreno et al., 2021; Pozoukidou and Chatziyiannaki, 2021).

Regarding the physical planning, the 15mC are heavily based on planning features that have been used as planning milestones in the past, namely proximity, accessibility, mixed land-use, walkability, and diversity (Pozoukidou and Chatziyiannaki, 2021).

According to Pozoukidou and Angelidou (2022), the most important urban planning conditions to formulate the 15mC model are the following (8) key components:

✓ The appropriate size and amenities that constitute the neighborhood depends on the urban structure and the neighborhood itself. Since, there is not an optimal timeframe that fits all cities, it is dependent mainly on the building density and the available space and infrastructure.
✓ Also, the allocation of the amenities and resources across the city, should be hierarchical as each type of amenity is required in different radius influence.
✓ Accessibility through proximity, because the concept of self-sufficient neighborhoods means, providing a wide range of services within walking distance and not the access through the transport network to reach these services further away (Pozoukidou and Chatziyiannaki, 2021).
✓ Flexibility of working remotely and localization of workplaces gains particular value, as significant socio-economic benefits arise from the reduction of the commuting time to and from work.
✓ Promoting the active transport by increasing the connectivity of the pedestrian and cycling network. This action presents benefits both to the mental and physical health but also to the environment.
✓ Inclusive and social just city that increases the socio-cultural mixture by providing equal opportunities to all citizens to housing and working regardless their socio-economic background.
✓ Of great importance to the 15mC approach, is the bottom-up wellbeing with peoples' engagement to the governance having a strong impact to the planning policies.
✓ The innovative planning provides improved strategies to maximize the user's experience in public spaces, utilizing the smart technologies.

It is important to underlying that creating independent and sustainable neighborhoods, should be a part of an overall resilient urban system and not individual entities (Pozoukidou and Angelidou 2022; Pozoukidou and Chatziyiannaki, 2021). Additionally, neighborhoods are the smaller unit in the urban core where people connect and interact, thus, they should be considered as "Places" and not only as spatial planning unit (Pozoukidou and Angelidou, 2022).

In addition, defining the necessary type of urban services depends on the residents' needs of each neighborhood, due to multidimensional factors (Gil Solá and Vilhelmson, 2019). Hence the catalog of the basic urban services (i.e., schools, healthcare, leisure, green areas, work) is indicative and flexible in order to adjust to the specific needs of diverse urban environments. Therefore, the 15mC should be able to provide to all the socio-economic groups, equal access to their daily needs (EIT, 2022).

2. Methodology

2.1. Selection of case-studies

This paper presents a literature review of four cities around the globe, that have adopted this new vision of becoming 15mC and the planning strategies to achieve their goals. Initially, the review of the case studies took place in March 2023 and included only cities that own an open-source report of their strategy. Only the keywords that are strongly related to the research topic were used to search and identify the most representative cases of strategic policy that promote the paradigm of the 15mC or the 20-minute neighborhood (20mN). The number of cities around the world that have their strategic planning report is growing rapidly, the last 5 years. Indicatively examples from Asia, North America, South America, Europe, and Oceania are:

•Barcelona's superblocks	•Paris's quarter-hour city
•Bogotá's Vital Neighborhoods	•Portland's 20mN
•Dublin 15mC	•Singapore's 30-min towns
•Edinburgh 20mN	& 45-min city
•Houston's Walkable Places	•Shanghai 15-min Community
•Melbourne's 20mC	Life Circles
•Milan's 15mC	•Sydney's 30mC
•Ottawa 15mN	•Utrecht 10mC

From this dataset of cities, the cases of Dublin, Edinburgh, Ottawa, and Melbourne were selected. The selection criteria included: (a) The report to be English written paper, (b) The cities must use either the 15mC or the 20mN, as a key aspect for their spatial and functional organization on their reports, and (c) The applicability of the concept to be in the entire city.

2.2. Evaluation Attributes of the concept

All the cities have common goal to increase the well-being of citizens and improve the access to their daily needs. It is also important to mention that the selected strategies consider as modes of active transport both walking and cycling.

Melbourne

The plan Melbourne 2017-2050 has placed the framework that promotes the human scale development and is guided by the 20-minute neighborhoods. It is motivated by the idea of "living locally" and creating inclusive, vibrant, and healthy communities. The main idea is based on walkable compact and safe places (Plan Melbourne, 2019).

Dublin

The city of Dublin aims to become a socially inclusive city based on the principle of the 15mC. The city's governance is keen of using the 15mC idea in order to increase the

building sustainability, economic growth and desirable neighborhoods, in a human-scale environment (Hassell and Irish Institutional Property, 2021).

Edinburgh

The city of Edinburgh includes the 20mN in the transport plan as a key goal. The city plan (2030) aims to ensure net-zero development, resilience to climate change, quality places and working opportunities, endorsing the 20mN principles in the citywide. Additionally, the plan incorporates the place-based approach, creating quality, mix-used and walkable communities for the citizens (The City of Edinburgh Council, 2021).

Ottawa

Canada's capital city characterized the 15-minute neighborhoods as compact, walkable and well-connected places with a clustering of diverse mix of land-uses. Additionally, the idea is founded upon the concept of "complete communities" (City of Ottawa, 2021).

The table below summarizes the key attributes of the reviewed cities as well as their initial planning strategy. Most of the goals are repeated in the four cities which is normal as they are the main aspects of sustainable development. Furthermore, this repetition indicates the importance of these aspects in formulating the strategies to address the current urban issues.

Table1: The four case-studies & their planning goals. (authors)

City	Strategy	Flagships - Goals
Melbourne Australia	20-minute neighborhoods - Creating a more liveable Melbourne	Safe, accessible & well connected active transport Offer high-quality public open spaces Provide services and destinations that support local living Access to quality public transport that connects people to jobs & services Facilitate thriving local economies Housing-population densities that make local services & transport viable
Dublin Ireland	Close to home exploring 15-minute city urban living in Ireland. 15-minute City Dublin	Community Density & Diversity, intervations to increase the volume of people Amenity Richness including vertical mixed-use buildings, urban green public spaces and integrated climate adaptation Sustainable access, superblocks, smart & connected streets
Edinburgh United Kindom	20-minute Neighborhood Strategy: Living Well Locally	Design green and people-focused local centres Afforable houses Delivering multiple services from a single location Increasing community engagement, co-design & stakeholder involvement No need for car ownership with more accessible-sustainable public transport & safe active travel networks Supporting people to access the services they need locally
Ottawa North America	15-Minute Neighbourhoods	Afforable houses High quality, human-scale design creating the sense of the "place" Residential densities supporting local shops, services & access to fresh food Providing jobs & other economic opportunities A public realm that fosters social connections Safe & convenient pedestrian - cycling networks that provide viable alternative to the use of private automobile

3. Conclusion

Following the rapid socio-economic, technological, and environmental changes, cities must adapt new planning approaches in order to become more resilient and enable them to address the growing demands. The idea of the 15- or x- minute city is not a radical planning concept. Although, given the challenging circumstances, it is increasingly being encouraged by experts and politicians as well as citizens for creating walkable, mixed-use and compact neighborhoods where the residents can meet most of their daily needs.

Supporting the fundamental principles of the 15mC, provides multiple benefits. By improving the accessibility though walkability and cycling, increases the social cohesion. Additionally, the mixed land-uses and proximity to services, both contribute to the higher perception of safety and the sense of the "place", as the neighborhoods become more vibrant and interactive.

Concurrently, these active modes of transport provide many co-benefits to health, equity, and the environment. The 15mC is considered environmentally friendly planning approach as it contributes to the mitigation of the fuel demands and carbon emissions.

The concept is being developed as a human-scale designing approach, for the following reasons:

- ✓ Engaging people to the local governance
- ✓ Seeks to reconnect people to their neighborhoods reestablishing vibrancy, inclusiveness, and equality in them.

Although the concept seems ideal, there are some limitations that should be taken into consideration during the implementation. Such limitation is the risk of gentrification of the neighborhoods which results to the opposite of the inclusiveness and affordability that the 15mC initially proposes. Thus, rent policies and land-use regulations should support the 15mC concept. Another limitation could occur to the suburban areas where morphological challenges and low densities, make the implementation of the 15mC difficult.

In conclusion, urban planning and policymaking is moving in the direction of more sustainable and viable cities. Through the four case studies, the paper highlights the innovative elements, and the requirements of the 15mC concept, based on the unique urban and social form and the governance structure of each city. This implies a turn in urban planning towards proximity to amenities within the neighborhoods along with governance changes and allocation patterns of resources in the citywide.

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