

SUSTAINABILIZATION OF HANOI MOBILITY APPROACHED FROM NEW RESIDENTIAL AREAS: WILL IT BE A CITY WITHOUT MOTORBIKE?

Tran Minh Tung^{a,*}

^a*Faculty of Architecture and Planning, National University of Civil Engineering,
55 Giai Phong road, Hai Ba Trung district, Hanoi, Vietnam*

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Abstract

Due to the policy of the Doi moi in Vietnam started in 1986, Hanoi has undergone many important changes. Currently, Hanoi's traffic is characterized by seemingly continuous motorcycle flows - a representative of high personal mobility in the context of rising incomes. Congestion, dust, pollution, insecurity, overload, etc., they are important keywords to describe Hanoi's urban traffic. Hanoi has put in place a number of policies to improve the transportation system. In 2017, in Hanoi's new mobility improvement project, there is a regulation on motorcycles: "The municipality will zone by limiting the activities of motorcycles according to the infrastructure and the service capacity of the public transportation system to stop motorcycle activities in the central districts in 2030" that becomes controversial. This article, based on the results of surveys assessing the level of satisfaction and desires of people about traffic at the KDTMs of Hanoi, analyzes the differences between the wishes of the municipality and the practices of Hanoi, through habits, modes of mobility of KDTM residents - the new residential areas of Hanoi that bring a different atmosphere of habitat compared to existing neighborhoods, by changing the mode of (re)making of the city. How will the traffic of KDTM residents be affected by this decision as well as how KDTMs will participate in the sustainable transportation of Hanoi?. It is the KDTMs with their "novelties" that will have to become pioneers creating opportunities of the changing of Hanoi traffic.

Keywords: Hanoi; sustainable mobility; efficient transportation; motorcycle; KDTM (new residential area).

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1. Introduction

1.1. Urbanization and improvement of circulation in Hanoi

Due to the policy of the Doi Moi in Vietnam started in 1986, Hanoi has undergone many significant changes. These changes are most noticeable in the city's traffic over the last 30 years: the fast passage of bicycles (before 1986) to motorcycles (in the late twentieth and early twenty-first century), and the current trend of private cars with the expansion of urbanized areas through the creation of KDTM (new residential area - Khu Do Thi Moi in Vietnamese) and new functional peri-urban areas of the city. In Hanoi particularly and in Vietnam generally, not only for economic reasons but also because of the cultural conception, the ownership of a private transport vehicle is considered a symbol of social status of the inhabitants behind their property of a house [1]. Hanoi's traffic is characterized

*Corresponding author. *E-mail address:* tungtm@nuce.edu.vn (Tung, T. M.)

by apparently continuous motorcycle flows - a representative of high personal mobility in the context of rising incomes [2]. Congestion, dust, pollution, insecurity, overload, etc., these are essential keywords describing the urban traffic of Hanoi, then all the debates conclude that these questions are mainly caused by the personal vehicles, especially the motorcycles very popular in Hanoi because of their economic advantage and high mobility for travels in the city. Even, there are still more extreme opinions “Motorcycles are the enemies of urban traffic.”

In parallel with the acceleration of urbanization and urban growth, the face of Hanoi has changed considerably since 1986 with many new problems to be solved. Recent years have seen the emergence of urban development initiatives aimed at minimizing the adverse effects of urbanization [3]. Regarding urban traffic, Hanoi has put in place some policies to improve the transportation system.

1.2. No motorcycle in Hanoi since 2030?

Since 2000, the central government and the Hanoi government have introduced many measures, including legislation forcing and encouraging people to implement, in which motorcycles are considered a means of transportation to be adjusted, for example, “Only one motorcycle per person” in 2003, “Stop to the registration of the new motorcycles in 7 central districts of Hanoi” in 2004 (abandonment of these regulations năm 2005), “Instant solutions for the traffic accident and congestion reduction” in 2007, “Regulation on the activities of the vehicle in the city” and “Priority to the development of municipal public transport” in 2013, etc. The characteristics of these regulations are the limitation and prohibition of the operation of motorcycles in the city, although it is currently one of Vietnam’s most popular personal transportation means.

On 04/07/2017, the Hanoi Municipal People’s Council approved a project for strengthening the road traffic management, which aimed at reducing traffic congestion and environmental pollution from 2017 to 2020, vision for 2030 with significant targets like [4]: Giving priority to the development of the public transport system to ensure 30-35% of the total transport demand of the inhabitants of the central agglomeration of Hanoi in 2020, and 50-55% in 2030; Developing the transport infrastructure attached to urban planning so that the traffic surface can reach 20-26% of the total surface of the central agglomeration, etc.

According to this project, Hanoi will “zone by limiting the activities of motorcycles according to the infrastructure and the service capacity of the public transport system to stop the motorcycle activities in the central districts in 2030” [4]. This controversial idea has sparked many debates. Thus, with particular attention to motorcycles and inattention to personal cars in this project, it seems that Hanoi is a special case that wants to become a city without motorcycles (as the cases of Chinese cities) instead of a car-free city like the cases of developed cities [5].

1.3. Problematisation and methodology

The traffic situation in Hanoi is very different and challenging compare to the traffic situation in other countries of the world. Narrow development areas with a high population density, a large number of motorcycles occupy a large part of the transport needs of the inhabitants. In addition to the rate of possession of motorcycles stably increasing, the number of cars also increases regularly. The transformation into mixed traffic, the slowness of the development of the road network, the drivers of the vehicles which do not respect the rules of the traffic, all aggravate the questions of the traffic in the city. Although public bus transport has been expanded, its impact is still limited [6]. The city has experienced rapid motorization of transportation for 15 years: 90% of trips made in 1990 by bicycle and public transportation, then 65% of trips in 2005 on a motorcycle [2]. Hanoi currently has 5.3

million motorcycles, 560 thousand cars, and 10 thousand electric bicycles. The growth of cars is 17% per year and motorcycles 11%. In 2017, Hanoi had 95 thousand new cars. That equates to about 30% of new cars that should be sold in Vietnam [7].

Industrialization in the manufacture of housing and new residential neighborhoods has also changed the modes of transport of Hanoi. The efficiency of transportation systems is closely linked to the characteristics of the territories they serve. Is it almost certain that the peri-urban crowns of large cities, formed in the era of mass motorization, are currently not likely to function economically without a massive recourse to private transport [5]? The suspension of motorcycles in Hanoi from 2030 will systematically solve the current problem of the uncontrollable development of personal means of transport, and in 2030, Hanoi will continue to ban other personal vehicles, such as the car? So, banning motorcycles will also have to be a reasonable solution for sustainable transportation in Hanoi? Motorcycles are the enemies of Hanoi traffic, so what means of transport will be friends of Hanoi?

This article aims to find answers to the questions “How will the traffic of KDTM residents be affected by this decision as well as how KDTMs will participate in the sustainable transportation of Hanoi?” according to the particular context and current mode of development of the urban space of this city through the viewpoint from the KDTMs with a survey according to 2 groups and with the same content of the questionnaire: (1) 221 people selected randomly in 4 typical KDTMs of Hanoi - Viet Hung (46 people), Linh Dam (46 people), Van Quan (60 people) and Ecopark (69 people) (Table 1); (2) 50 experts (including 29 residents and 21 non-residents of a KDTM) who are working in the areas of expertise in urban planning and architecture of training institutions, research institutes and design offices. In this survey, we do not exploit information on the advantages and disadvantages of motorcycles compared to other modes of transport. We put the surveyor in a futuristic perspective with questions about the attractiveness of KDTMs concerning traffic through our hypothesis about future traffic patterns associated with the place-making ways of KDTMs, which means ignoring the motorcycle story, the interviewer will envision the role of KDTMs in the sustainabilization of city’s mobility.

Table 1. Four KDTMs of survey

KDTM (year of commencement)	Area size (ha) and population scale (people)	The actual distance of road to the city center (km)	Estimated travel time by (private) car (min)	Estimated travel time by bus (min)
Linh Dam (1997)	200 / 25.000	9.7	32	56
Viet Hung (2003)	210 / 26.000	9.5	27	53
Van Quan (2004)	61 / 14.000	11.0	36	61
Ecopark (2009)	500 / 40.000	17.0	36	-

Note: distance and travel time calculated by Google Maps

Four KDTMs selected were relatively big, complete and independent, closed neighborhoods, considered as new “sub-cities” of Hanoi with increasing distance to the city center along with the expansion of the city over time. We have also established a link with the Hanoi circulation policies and research of domestic and foreign experts, with our experiences from other KDTM to put the survey in a more comprehensive, more objective context to better understand the problems of Hanoi city traffic around controversies related to the motorcycle.

2. Urban morphology associated with the process of transport in the city

2.1. From the culture of alleys and the culture of motorcycles

The ancient quarter of Hanoi - the epitome of the city's spontaneous spatial development - is characterized by narrow winding streets, with shops located in front of the tube houses along the streets that make up the traditional market town. Then, when Hanoi was enlarged during the colonial phase and the phase of socialist independence since 1954, the new streets of Hanoi were laid out in Western style with square chess islands and large straight streets planted with green trees and equipped with the traffic support facilities that made Hanoi's transport more modern. One of the peculiarities of Hanoi's spatial expansion is the integration of peri-urban villages in the heart of the city that creates urban villages. However, these urban villages have a traditional village-style road network, reserved for pedestrians and non-motorized means of transport (narrow streets, without a sidewalk and dead ends, cul-de-sacs). Thus, behind the newly developed streets, there were the historic small streets and alleys which constitute a particular type of culture of alleys of this city. Moreover, "by applying self-help alternatives - the solutions people use themselves in terms of technology and social behavior - Hanoians play an active role in the process of adaptation with the conditions in which they live" [8].

At the sub-street level, in Hanoi, there are three levels of branching: the alleys, the small alleys and the very small alleys, which mean *ngo*, *ngach*, *hem* in Vietnamese, respectively. The small alleys and the very small alleys are even narrow, enough for two people, one of which can make way for the other. In such living conditions, the Hanoians are always adapting as the city gradually modernizes its modes of transport. Increase rapidly, and almost all Vietnamese adult uses motorcycles to displace or at least each has a bike. The motorcycles show a high level of pragmatism when this vehicle can "park anywhere, stop anytime," corresponding to the activities of small informal mercantile economies and shophouses in urban streets. In the current urban structure and the number of motorcycles so well, the mobility and accessibility of the inhabitants are very high, and they can go from door to door for a short period [6]. Today this mode of displacement is anchored in Vietnamese habits. Its first advantages lie in its financial accessibility for the majority of Vietnamese and its adaptation to urban morphology including small alleys [9].

Initially, the use of a motorcycle was the only modernization of traffic in the morphological context of old urban spaces with the existing structure of alleys. However, gradually, more actively, even in the territories of new developments, especially those created spontaneously by the inhabitants, these spaces are set up only for motorcycles, which means that alleys continue to be prolonged (but their section is not extended). The new houses are multiplying on both sides of alleys, creating a tendency of development without end according to the march of motorcycles. Thus, from the passive role, to respond to the specificity of existing urban spaces, the motorcycle becomes the active factor in the development of new urban spaces. The culture of motorcycles often referred to as popular culture with respect to the relatively low-income classes of society, is the characteristics of Hanoi's traffic, but also distorts the social values of this historic city and civilized because of the casual habit of traffic participant.

2.2. To the KDTMs - new neighborhoods designed for cars

The fragmented development of existing residential areas in the form of a petrol spill, as well as the extension of the network of alleys, consume much of Hanoi's land for housing but do not improve urban amenities, especially the displacement of the inhabitants who still have to rely on motorcycles. In addition to the requirements of city governance and improving the quality of urban housing, the

desire to change usage patterns and modes of travel in the city is also a significant demand in the search for a new model of urban housing manufacturing - these are prerequisites for KDTM training. The KDTM is considered a Vietnamese type of large-scale urban development, encouraged since the late 1990s, first in Hanoi and then to other provinces, after the policy Doi Moi. So, until now, this model was officially present in Vietnamese cities more than 20 years ago - put in an idea in 1993-1994, staged since 1997-1998 [10–13]. Despite numerous shortcomings, incomplete staging and continuous adjustments over time, this model demonstrates the potential for creating new urban social environments [14]. The novelty is considered an asset of the KDTMs to attract and persuade citizens to move to peri-urban areas where the land is (more) spacious, housing (more) practices attached new modes of mobility and connection with the city. Cars become more mentioned personal transports associated with the appearance of KDTMs in the city.

The first KDTMs of Vietnam (and of Hanoi) were built in 1997-1998. During this time, Vietnam's economic growth has made significant achievements after ten years of Doi Moi, and also some people began to think of owning a private car with their own house. So they often choose KDTMs to live in to ensure their "new" life. Thus, the KDTM's space structure was designed for car access - a means of transport that represents the "new life" of urban residents in Vietnam. As a result, cars are increasingly seen as an indispensable means of transport for the inhabitants of the actual KDTMs (expressed through the integration of private garage, basement parking in apartment buildings) compared to the first KDTMs did not integrate parking space inside the building, causing parking lots in the streets. On the one hand, the internal traffic structure of KDTMs is mainly wide roads surrounding the housing blocks and almost no alley. On the other hand, KDTMs are distributed along the spatial development belts and the radial main traffic axis of the city to facilitate the movement of cars.

3. The connections between KDTMs and the city

3.1. The new life and the old city

KDTM residents work, study, and relax in the old center of Hanoi due to the absence or incompleteness of non-residential functions, services in the territory or near KDTM. Moreover, the KDTM are newly established, the social relations (friends, colleagues, congregations...) of the KDTM residents are mainly outside the KDTM territory, concentrated in the old existing center of Hanoi where the social structures were formed relatively stable for a long time. For these reasons, there are daily shuttles of KDTM residents between the KDTM and the old center of Hanoi, that means between home and the place of other urban functions. These shuttles are particularly reinforced in the early morning and late afternoon, when KDTM residents go to work and return home, resulting in traffic congestion between the old center of Hanoi and the KDTMs, especially the polarization by the concentration of many KDTMs which will further aggravate the circulation. Therefore, at the entrance of KDTMs, there is often congestion of motorcycles and cars.

The emergence of a series of KDTMs surrounding the core of the city center made the problem of increasing the flow of motorbikes toward the inner city become more serious. However, motorcycles cause the four most obvious effects can immediately be identified and persuade everyone of the restriction of motorcycles in the city: (1) Traffic accidents - the result of many reasons such as not obeying traffic laws, not respecting speed in the city, not guaranteeing the quality of vehicles, etc.; (2) Fossil fuel consumption - experiments show that if a day moving about 30km in the city, we will cost about 1 liter of gasoline; (3) Environmental pollution - by exhaust smoke, sound (horn, engine, etc.); (4) Emergent behaviors - crowds who follow simple rules without a central leader can randomly

create complex systems and operations. These adverse effects have led to Hanoi’s decision to stop using motorbikes and skepticize about the rationality of motorcycles in the (inner) city.

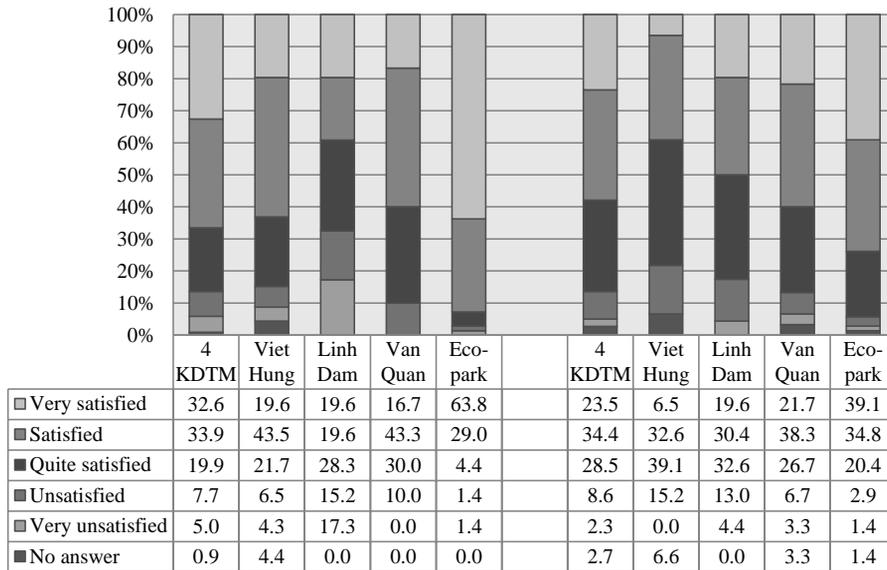


Figure 1. Assessment of the satisfaction of KDTM residents: inner-KDTM traffic (chart group on the left) and external connectivity to the city (chart group on the right)

It can be said from Fig. 1 that the level of satisfaction for inner-KDTM traffic at the Ecopark is the highest because it has intra-bus, and the remaining three KDTMs are nearly equal. As for the connection to the city, Ecopark, although it is located far from the city center and there is no municipal bus to the city, this KDTM also has its own bus service to bring residents back to the center. The lowest rating is for Viet Hung because of crossing the river.

The Vietnamese, with their cultural and economic conceptions, usually fix and stabilize their home (trying to buy a house instead of renting it) and accept the great distance to public services. This habit increases the flow of traffic in Vietnamese cities, primarily as the conditions, the well-improved traffic infrastructure resulting in the “generated traffic” and “induced travels” [15]. For small and medium-sized cities, this distance is short, but for massive cities like Hanoi and Ho Chi Minh City, the distance between a KDTM resident’s home and other functions in the city is very large, perhaps be doing 20-30 km and 1-2 hours of traveling [16].

3.2. Motorcycles or cars in the city?

According to interviews with the KDTM residents of the survey, due to many trips, KDTM residents often use various vehicles actively depending on their situation (Table 2). So most KDTM residents have their own cars, but their everyday mobility is still based on motorcycles. Cars are usually only used on bad weather days, on weekends or off-peak hours when traffic on the street and pressure on car parks are lower. The structure of the alleys causes the more difficult use of personal cars, rather than being faster and more convenient, due to congestion and lack of parking in the city. Therefore, either KDTM residents use their own motorcycle, or rely on the enthusiastic team of taxi available all day long. Thus, even without using personal motorcycles, locals also tend to use motorcycle taxi (when weather conditions are unfavorable, they use the taxis resulting in a worsening

congestion problem) instead of using public transport which are typically 20 to 50-seater buses, bulky in Hanoi's ancient narrow streets full of traffic jams affecting the duration of the trip.

Table 2. Preliminary comparison (made by the author based on interviews with KDTM residents) of 4 widespread vehicles in Vietnamese cities

	Bicycle	Motorcycle		Car		Bus
		Private	Motor taxi	Private	Taxi	
1. Personal flexibility - initiative of moment, distance, duration of the trip	2	6	5	4	3	1
2. Dissipation time at peak times - the capacity of leaving traffic jams	2	5	6	3	4	1
3. Comfort and privacy - against adverse weather, privacy of the trip	1	4	3	6	5	2
4. Space-saving per person (vehicle in full of people)	5	4	3	1	2	6
5. Space-saving per vehicle (on the moving)	6	4	5	2	3	1
6. Adaptation to urban morphologies and existing infrastructures	1	6	5	4	3	2
7. Adaptation to the habit of city dwellers - practice, profitability, point of view	1	6	5	4	3	2
8. Energy saving (fuel consumption)	6	4	3	2	1	5
9. Road safety - accident creation, impacts	3	2	1	5	4	6
10. Respect for the environment (exhaust gases, industrial waste, etc.)	6	2	1	4	3	5
Totality	33	43	37	35	31	31
Average	33		40		33	31

Note: 1 - the worst, and 6 - the best

Thus, it can be said that a large number of Hanoi's motorcycles will come from KDTMs. If the city bans motorbikes, it seems that new urban residents will be affected when their daily life is still closely linked to the old Hanoi. In the future, if motorbikes will be banned, individual cars will undoubtedly be the means by which Hanoians think to take the initiative of moving in the context of the slow development of the municipal public transport system. Also, in an online survey [17], until 05/11/2018, there are 8050 respondents: 6707 respondents (83%) think that cars are the primary cause, and motorcycles can make only congested traffic, not clogged.

4. Hanoi without motorcycle: utopia?

4.1. The future of motorcycle

It is essential to determine that stopping a vehicle does not simply disallow a type of transport in the city, but instead must be a policy to change mobility ways and habits of Hanoians. However, it seems that the policy to ban motorbikes of Hanoi has not yet taken into account:

- Inequality between ownership of motorbikes and other assets: a person, who can own more than one motorbike, uses only one motorbike of them for each traffic;
- Harmonization between restrictions of motorbike ownership and non-incentive, non-support mechanisms for motorbikes that can be provided as an alternative;
- Using motorcycles that do not or affect lowly the purpose of the ban, for example, the use of motorcycles in areas or in times that do not cause traffic jams;
- Using motorcycle for go to places where there are no restrictions on motorcycles;
- Opening up opportunities for other means, and establish future forecast scenarios when stopping of a vehicle may lead to rapid development, lost control of alternative others.
- Transport development plan not yet integrated into land use plan for changing habits and ways of movement of (new) city.

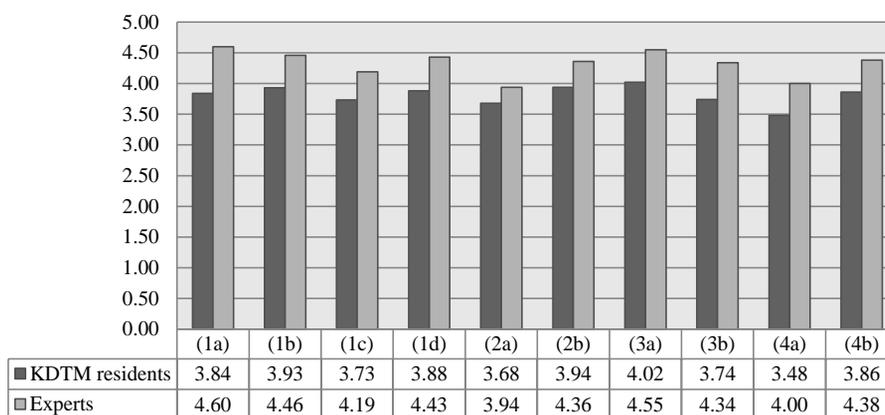
Obviously, with the above analyzes, the motorcycle itself is not entirely “guilty” and must be solely responsible for the traffic problems in Hanoi. On the contrary, it is still considered as a reasonable solution for the current situation of infrastructures, circulation and habits, and the culture of space use of Hanoi. In addition, motorcycles are a way to make a living for the many of them, as well as motorcycles are completing and participating in urban services, developing the informal economies of a metropolis such as cheap transportation (private motorbike-taxi, Grabike, etc.), delivery of goods and food, pick-up of children, etc. So the next ban is for what means? Besides, if the public transport of Hanoi develops according to the forecast, so in 2030 (where there will not be motorcycles in the central agglomeration of Hanoi), it is responsible for 50 to 55%, more than half of the needs of mobility. Then the other half will possibly be taken by personal vehicles, and it is likely that individual cars will occupy a large proportion. While other countries are beginning to examine new modes of car-free urban governance, Hanoi does not mention this vehicle. Are cars, at the moment, representing urban growth, housing progress of Hanoi, especially attached to KDTM? It seems that Hanoi still needs a reason to shift the blame on motorcycles rather than real changes towards sustainable mobility.

Currently, Hanoians also tend to use personal electric vehicles, especially electric two-wheelers (electric scooters, electric bikes) are considered an appropriate response to the economic conditions and transport infrastructure of Vietnamese cities. Electric two-wheelers can be considered as an alternative when they take the strengths of motorcycles (high maneuverability, small spatial occupancy, higher space saving, etc.) and improve some weak points (energy consumption, environmental pollution, etc.). In the future, (re)orientations on the culture of two-wheelers must reduce the risk of insecurity and affect the urban civilization of this personal vehicle. However, are the Vietnamese cities repeating transportation problems of Chinese cities when it is intended to continue banning electric two-wheelers after the ban on motorcycles due to the rapid growth in the number of this vehicle? That means the prohibition on motorcycles has been merely successful in terms of the change in energy use, but the situation of the use, even of personal two-wheeler accidents and the culture of traffic unchanged.

4.2. Desires on KDTM traffic limiting motobike

In our survey, we have provided an attractive traffic scenario for KDTM residents, experts in urban planning and architecture (who are or aren't KDTM residents): the mobility of KDTM residents in the future will be charged mainly by means of public transport (bus, BRT, urban railway...), non-motorized traffic (walking, bicycles...) and by personal car (the trend is generally unavoidable). This survey aims to assess the importance of our hypotheses and to confirm complement measures to limit motorbikes using of KDTM residents (Fig. 2):

- On inner-KDTM traffic safety: (1a) Limiting traffic unexpected (of non-KDTM residents) crossing through KDTM; (1b) Limiting speed and vehicles by area; (1c) Division of the lane for different vehicles of transport; (1d) Wide sidewalks enough to enhance street activities;
- On convenient public transport: (2a) Intra-KDTM connections, like ordinary bike, particular bus inside the KDTM, etc.; (2b) Extra-KDTM connections, like the bus, BRT, urban railway, etc. connecting to the city;
- On design of dedicated areas for soft traffic (non-motorized traffic): (3a) Walking (with the reserved area, secure); (3b) Bicycling (private lanes, bicycle parking, secure);
- Static traffic areas: (4a) Parking along the roads; (4b) Yards, garages of buildings for parking concentrated.



Note: (1a) Limiting traffic unexpected, (1b) Limiting speed and vehicles by area, (1c) Division of lane for different vehicles, (1d) Wide sidewalks, (2a) Intra-KDTM connections, (2b) Extra-KDTM connections, (3a) Design for walking, (3b) Design for bicycling, (4a) Parking along the roads, (4b) Yards, garages for parking

Figure 2. Comparing the appreciation of importance (0 - no answer, 1 - very unimportant, 2 - unimportant, 3 - quite important, 4 - important, 5 - very important) of KDTM residents and experts on the hypothesized traffic factors related to the attractiveness of KDTM

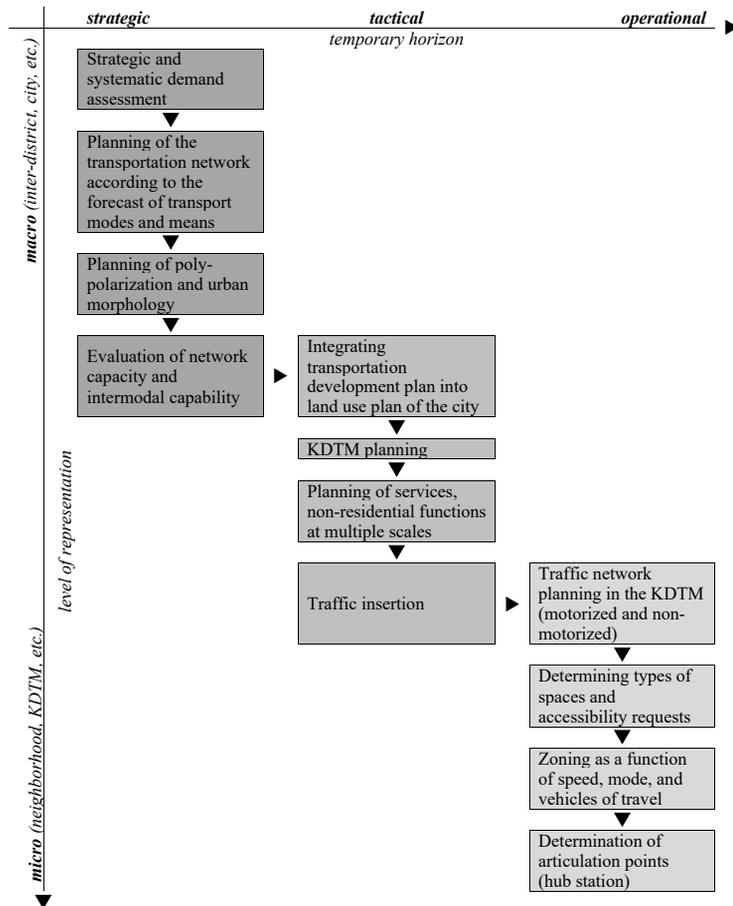
The survey results show expectation of experts that KDTMs can solve the existing traffic problems more than KDTM residents want. The 3 factors that are most concerned by KDTM residents are “Design for walking” (4.02/5), “Extra-KDTM connections” (3.93/5) and “Limiting speed and vehicles by area” (3.93/5). Meanwhile, the experts rated the three most factors “Limiting traffic unexpected” (4.60/5), “Design for walking” (4.50/5) and “Limiting speed and vehicles by area” (4.46/5). Thus, there are 2/3 factors that are both most concerned by the KDTM residents and the experts (“Design for walking” and “Limiting speed and vehicles by area” in the KDTMs).

5. Conclusions

When the KDTMs participating in changing the mode of traffic operation. Hanoi has launched various measures to reduce the motorcycle in particular and limit the overload of urban traffic in general. So, such a series of actions, Hanoi has expressed its willingness in the sustainability of urban transport. However, these measures seem to be the short-term answer, rather than the strategy, the long-term policy depending on the different phases. Thus, Hanoi should take the strategic initiative of sustainable mobility with the practical action plan rather than the passive solutions. Choosing transportation that supports mobility in the city is considered freedom for every citizen. Instead of

banning any vehicle, the city should offer its citizens various vehicle choices as well as strategic improvements to change user habits based on the nature of the problem, proposing alternatives without reducing their mobility opportunities.

Table 3. The crossing of various actions on several scales concerning the sustainability of the approximate mobility of KDTMs



Through case studies, the novelty of KDTMs will set up traffic systems in new ways to drive effective mobilities. As the consequence, the transport development plan (inside and outside KDTM) has become an essential part of the spatial structure, functional zoning, and architectural morphology of KDTMs in order to change the traffic ways and habits of KDTM residents.

KDTMs are considered new models of population development in Hanoi and new opportunities can change the habits of Hanoi, including the habit of mobility. These KDTMs, with its role in the modernization of housing, must be pioneers to launch and confirm new trends in urban transport. They are also places to introduce solutions to the (re)making of a safer and more convenient city regarding traffic, based on the group of factors (Table 3):

- Safe and quality facilities for non-motorized transport - expressed through calculations and forecasts from the initial design of spaces in KDTMs (public/residential spaces/buildings and their surroundings);

- High(er) quality public transport for intra-KDTM and extra-KDTM connections - at different scales (intra-city, inter-district, city) with various means, including appropriate transfer solutions be-

tween these various means (private/public, personal/common) synchronized projects of the city;

- Mixed uses - transforming each KDTM into a multifunctional territory (rather than simply monofunctional housing) and relatively independent of multi-scale urban services and facilities (intra-district, inter-district, city) to create an urban polarization, minimize the distance and duration of trips;

- Management of personal vehicles and their parking - have various scenarios of the growth of each vehicle by actively planning management modes corresponding to the characteristics of each type of vehicle;

- Community participation - based on the support and supervision of the community in controlling traffic and traffic culture.

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