HEALTHY URBAN PLANNING APPLICATION IN HO CHI MINH CITY, A POTENTIAL FOR FUTURE DEVELOPMENT TOWARD SUSTAINABILITY

Vo Minh Phuc [1*], Vo Trong Cang [2]

[1] *IMALOG, Binh Duong University, Binh Duong, Viet Nam, vmphuc@bdu.edu.vn*

[2] *IMALOG, Binh Duong University, Binh Duong, Viet Nam, vtcang@bdu.edu.vn*

Abstract

Healthy Urban Planning (HUP) is an advanced urban planning approach promoting health factors' role in the existing urban planning paradigm, which is also a potential solution for current Ho Chi Minh City's (HCMC) problems. Recently, HCMC is facing several negative problems, as consequences of rapid urbanization decades, which are threating inhabitants' life, such as: pollution and related diseases, traffic congestions and accidents, urban sanitation and flooding, etc. Aiming to promote HUP and its principles, this article introduces HUP approach and Healthy Cities concept. Next, the recognition of health factor in sustainable urban development (SUD) goals are discussed through WHO publication and agenda. Next, problems and related adverse health impacts, relating to urbanization, are reviewed to highlight the current problems that HCMC inhabitants are struggled with. Finally, this research focuses on qualitative analysis on the potential of HUP application in term of problem solving and HCMC advantages in HUP integration into current sustainable development planning paradigm.

Keywords: *Healthy Urban Planning (HUP); Sustainable urban development (SUD); Ho Chi Minh city (HCMC)*

1. Introduction

1.1. Healthy Cities and Healthy Urban Planning concepts

A Healthy City is "one that continually creates and improves its physical and social environments and expands the community resources that enable people to mutually support each other in performing all the functions of life and developing to their maximum potential" (WHO, 2021a). The Healthy Cities approach is a city development method that puts health high on the political and social agenda of cities and to build a strong system for public health care at the local level. In addition, a Healthy City strongly emphasizes equity, participatory governance and solidarity, inter-sectoral collaboration and action to improve the health condition of its inhabitants. (WHO, 2021a)

Healthy Urban Planning (HUP) is planning concept that puts the needs of people and communities at the heart of the urban planning process and considers the implicates of decisions for human health and well-being (WHO, 2021b).

The similarity between healthy urban planning and sustainable urban planning is the key to accomplish the planning objectives is finding balances between social, environmental and economic pressures.

The healthy urban planning and healthy city have been developed and applied since 1986, as a result of Ottawa Charter for Health Promotion (WHO, 1986).

1.2. The recognition of health factor in sustainable urban development goals

Since the publication of Health of All also called "Health21", the public health has been recognized as one of major keys for sustainable development achievements. In SUD 2030 Agenda (UNO, 2018), 'Good Health' has a central place in Sustainable-Development-Goals 3, "Ensure healthy lives and promote well-being for all at all ages", underpinned by 13 targets and 17 goals that cover a wide spectrum of WHO's work. (Figure 1)

In the context of this research, HUP and Healthy City are introduced at beginning stages. Next, practical public health problems of Ho Chi Minh City (HCMC) are identified. Last but not least, HUP approach adaptivity potential in situation improvement is discussed.

Figure 1. 2030 Agenda: 17 goals for saving the planet (*Source: (United Nation Organization, 2018)*)

2. Research methodology

Due to objective and scale of the current paper is forming a literature-base study and fundamental knowledgebase for further study.

Therefore, the major applied methodology is literature review data collection method. Moreover, in order to form the statements, the gathered data from literature review is sorted and compared analysis internally.

In details, the literature review includes literature concepts, legislation and scientific relationship

between health risk exposure, health effects and urbanization-related issues; practical data about Ho Chi Minh City problems through scientific report, high-legit newspaper, such as: fine particles and chemicals pollutions; injuries due to traffic, traffic congestion; urban sanitation and flooding problem. Next, the input data is sorted, compared and summarized to form completed input data. Finally, the qualitative analysis is conducted on these input data; as the results, the conclusion on the HUP adaptability into current Sustainable Urban Planning approach of HCMC.

3. Healthy Urban Planning (HUP) In Modern Urbanization

As many adverse health effects from industrial urbanization during 18th Century, the urban planning has evolved continuously. As results, several urban planning schools are established and develops their own concept and system, notably there is the concept of sustainability and Sustainable Urban Development (Duhl and Sanchez, 1999).

Based on urban sustainability theory, The New Urbanism or Neo-traditional Planning is emerged. This primary design ideas of this New Urbanism are to form pedestrian-centered neighborhood where most of social and economic amenities are located within 5-minutes-walking range and inhabitants' settlement is planned surrounding public transportation hub and set up mix-used land blocks instead of single land-use areas, like an old planning paradigm (Duhl and Sanchez, 1999).

The new urban planning paradigm has improved living quality since it encourages positive and active lifestyle as well as enhance economic activities through shifting the urban land use planning, from mobility planning to accessibility planning, limiting private motorization demand while encouraging non-motorized transport and public transport enhancing.

As the development of urban study and social recognition on the importance of health, HUP is emerged and promoted by WHO, first in European Region, now throughout the world; currently, the Alliance for Healthy Cities (AHC) are formed in 2003 to connect Healthy Cities together (AHC, 2021a). Healthy Cities integrated principles of HUP into their planning system, which aim to cope the adverse effects of an urban environment over health. Up till 2021, there are 9 Full members Nations joined in the Alliance, with more than 60 participated cities (AHC, 2021b), including Hue, the tourism and cultural city in the central of Vietnam.

In the next section, related health problems occurring in HCMC is identified: air pollution and respiratory diseases, traffic accident and congestion, sanitation and urban flooding. Last but least, the HUP approach for improvement is proposed as a potential solution.

4. Ho Chi Minh Urbanization – Related Health Problems

For decades of rapid urbanizing, Ho Chi Minh City (HCMC) is now facing many problems, such as: environmental pollution, traffic accidents, congestion, over exploitation of natural resources… Particularly, transport activity is considered as the major source causing aggressively adverse health impacts. (Phuc and Cang, 2021)

4.1. Air pollution and respiratory diseases

Air pollution is one of the most notable problem in HCMC recently (Figure 2). First of all, the density of PM2.5 particle recorded as reached 40μg/m^3 (2017), 4 times higher than WHO suggestion at 10μg/m^3. The air pollution leads to the spread of respiratory diseases in community, especially youth, over 90% of less-than-5-years-old children in HCMC were infected to respiratory disease (2012) (Bang et al., 2017).

Figure 2. Air Pollution in areas HCMC in 2019 (*Source: VnExpress*)

The reason for the condensed pollutant fog is combination of low-temperature weather and the high amount of emission sources, such as: transport

vehicles, industrial and daily life activities. Amongst many sources, transport activities emit a large number of emissions overall, especially CO, NOx and NMVOC (figure 3) (Bang et al., 2017).

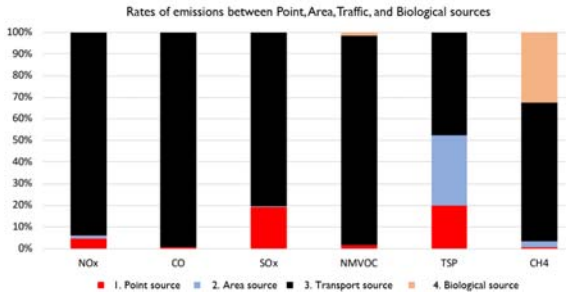

Figure 3. Rates of emissions between Point, Area, Traffic and Biological sources of emissions. *Source: Bang et al. (2017)*

4.2. Traffic accident and congestion

Another public health threats of HCMC are traffic congestion and accident.

Firstly, the traffic congestion harms health greatly, since it multiplies the vehicle pollution rate through multiple interactions (Le et al., 2012). Basically, the traffic congestion lowers the travel speed which mean: increase travel duration and human exposure rate to pollution. Furthermore, congestion condenses vehicle – related pollutants alongside the road since the density of the pollutant gas depends on the movement of the traffic flow, or it can be said that the speed of vehicles traveling on the road (Zhang and Batterman, 2013). Thus, the congestion area is crowded with vehicles; therefore, the pollution at the intersection will rise dramatically. Last but not least, driving patterns are change during congested time, which leads to an increase in number of speedups, slowdowns, stops and starts, which increase emissions compared to "cruise" conditions, especially with high power acceleration engines (Benson, 1989).

In case of HCMC, the congestion occurs throughout the City, especially at main transport route during rush hours. In 2009, there are more than 61 30-minutes-or-longer congested point, especially 12 40-minutes-or-longer cases[1]. The result recorded in 2009 is higher than the 200 recorded result, 23 cases increased. During time, the traffic congestion has improved continuously due to the efforts from municipality. In 2016, the city had 37 points of traffic congestion, in 2018 it decreased to 28 points and in 2019, the number dropped to 22 points of traffic congestion (Tien Luc, 2020).

Secondly, the traffic accident is the next notable traffic – related problem, which causes 315,000 deaths in 2010 and 316,000 in 2013 due to traffic accident in South – East Asia region (JICA, 2008). In Vietnam, traffic accident and injury are concerned as a severe problem, which must be solved aggressively in order to archive the sustainable development. In 2007, the statistical survey, conducted by JICA (UNESCAP, 2014), shows that there are 14,727 traffic accidents cases which lead to 12,757 deaths and 11,288 injured people. More details, fatality ratio and injury ratio (per 10,000 residents and 10,000 vehicles) are still at high number when comparing with the motorization rate of Vietnam during the same period of time. In positive side, the record shows the huge improvement compared to the previous period of time.

In case of HCMC and Ha Noi, the number of accident cases recorded is much higher than the others city in Vietnam. Therefore, HCMC government has implemented many solutions aiming to improve the situation. Noticeably, the comprehensive solutions have been implemented throughout the city and on many development sectors. As result, in 2019, the city recorded 3,427 accidents, killing 641 people and injuring 2,406 people; compared to 2018, it reduced 213 cases, decreased 74 deaths and decreased 69 people injured. (Tien Luc, 2020), (Tu Giang, 2020)

4.3. Urban sanitation and urban flooding

In Viet Nam, the urban sanitation and urban flooding are degrading living environment, in Southern region especially. First, in Viet Nam, less than 10% urban wastewater is treated centrally by public infrastructure (ADB, 2015). The most of urban household-used wastewater is treated using on - site sanitation, such as septic tanks. As results, contamination of groundwater and surface water is inevitable (Yen and Anh, 2021). Facing the sanitation problem, Viet Nam government, especially HCMC municipality, has cooperated with international organizations for implementing wastewater treatment - environmental improvement projects in the sustainable development manner, such as Asian Development Bank, World Bank. Particularly, up to June 2020, Viet Nam government has cooperated to conduct 39 projects, on sanitation and water supply sectors, with World Bank Organization since 2013 (WB, 2021). One of the most

[1] Mr. Tran Quang Phuong, Director of Ho Chi Minh City Department of Transport, stated at the meeting to discuss solutions to prevent traffic jams in Ho Chi Minh City in October 2009.

well-known projects is Nhieu Loc – Thi Nghe Basin Project in 2001 for its success and positive effects.

Next, urban flooding, as a consequence of climate change, has strongly affected HCMC inhabitants' living environment. In detailed, flooding affects HCMC's environment, public health, economy, and traffic aspects. During flood, the urban wastes are drifted by flood water, leading to water pollution and many diseases such as skin allergy, cholera, dysentery, especially dengue fever. The level of flooding has worsened through years despite of efforts from HCMC municipalities; detailed, municipalities pay VND7 trillion ($304 million) for the 2016-2020 period to fight urban flooding. Since 2016, HCMC has implemented the VND10-trillion anti-flooding project, which is the hope against this climate change phenomenon. Last but not least, the urban flooding will get worsened in the future if the implementing solutions are not worked as expected, due to the increase of climate change effects (Ha An, 2020), (Mook et al., 2016) and (Ha Mai, 2021).

5. Healthy Urban Planning for Sustainable Ho Chi Minh City

The potential for healthy urban planning application in HCMC is evaluated using qualitative analysis method on different sectors.

First of all, HCMC development orientation, aiming to achieve sustainability and improve quality of life, is the fundamental advantage for HCMC to adapt HUP into its current planning system. Moreover, the similarities between SUD and HUP are the huge advantages for HCMC municipality to adopt profitable HUP principles into its SUD mechanism. Some notable similarities are: (1) the human-centric development that provide the synchronized policies and infrastructure that can save up resources and maximize its use; (2) shared resources for SUD could be used for improving public health and social welfare system. Last but not least, the process reaching healthy state could help HCMC municipality achieve its sustainable development goals (WHO, 2021a and 2021b).

Second, the healthy urban planning concept and its principles are the perfect fill in order to improve the holes of current development of HCMC in term of solving current problems. The new planning would be more comprehensive than it used to be by putting health factor at the center for decision-making process, which used to be considered as a separated or supplement factor of traditional urban planning procedure. The Healthy Urban Planning binds the key health objectives into all of development actions of current city area that will make the decision-making calculation change aggressively (UNO, 2018). The changes have multiple positive impacts on City quality of life: (1) economic and social enhancement by reducing payment for illnesses cure and health care, increasing happiness and wellbeing which increase social productivity, etc.; (2) improve sustainability of living environment as well as urban environmental quality which are the fundamental for good health and wellbeing; (3) emissions reduction overall which decrease the pollution-related diseases and slowdown climate change effects, etc.

Finally, the Healthy Cities and HUP concept are not completely new to Viet Nam government, that would be an advantage for HCMC municipality to adopt HUP principles to current development mechanism through learning current case study. More details, Hue City, a culture and tourism hub in the middle region of Viet Nam, has participated in AFHC network since 2003. Afterward, local government and AFHC's experts cooperated to implemented some successful healthy development projects: healthy market at Thong market, healthy public office, healthy community (Phu Mau settlement), etc. (AHC, 2014).

6. Conclusions and Recommendations

6.1. Conclusions

HCMC is struggling with problems from its rapid urbanization and City inhabitants is facing severe health problems days by days. Environmental pollution, pollution-related diseases, traffic accidents, congestions and flooding are identified as main threats for public health and City quality of life. The current urban planning mechanism, which based on SUD concepts and principles, is the right direction but unfortunately is not enough to solve existing health problems. As results, HUP appears as a perfect fit for the current situation.

HUP places public health factor at the center of decision-making, providing positive solutions forward Healthy state. Therefore, urban development projects based on HUP principles will improve the health problems of HCMC directly. Fortunately, HCMC has some advantages in adopting HUP principles into its current planning mechanism: (1) the similarity in City development orientation as well as similarities between SUD and HUP concepts; (2) HCMC facing problems can be solved by implementing Healthy projects; and (3) the existing case studies provides knowledgebase and practice experience for HUP adaptivity in HCMC context.

6.2. Recommendations

This scientific article is the first step that provide the knowledgebase in the context of HUP adaptability to

urbanizing areas. Therefore, in order to conduct the comprehensive knowledgebase about HUP topic and its implementation into Vietnamese cities, more and 'further' studies are required in the future.

Within the limited scale of this article, the research describes very briefly current problems of HCMC as well as its advantages in term of HUP implementation into practice. The future researches and scientific articles with more practical experience and statistical data would be a great contribution to current knowledgebase of HUP, SUD and urban development in general.

Some future scientific topics for our topics are:

(1) Relationship between inhabitants' health effects and HCMC's urban form, as well as transport sectors;

(2) Health development integration into Vietnamese urban development planning and legislation system;

(3) Modification of conventional urban transport into a health-oriented transport system.

Reference

WHO (2021a). What is a healthy city?. Retrieved date: March 22nd, 2021a, from WHO: Regional Office for Europe, https://www.euro.who.int/ru/health-topics/environment-and-health/urban-health/who-european-healthy-cities-network/what-is-a-healthy-city.

WHO (2021b). Healthy urban design. Retrieved date: March 22nd, 2021b, from WHO: Regional Office for Europe, https://www.euro.who.int/en/health-topics/environment-and-health/urban-health/activities/healthy-urban-design.

WHO Regional Office for Europe (1986). Ottawa Charter for Health Promotion. WHO Regional Office for Europe, Copenhagen.

UNO - United Nation Organization (2018). Sustainable Development Goals. Retrieved date July 6th, 2021, United Nations: Department of Economic and Social Affairs, https://sdgs.un.org/goals.

L.J. Duhl and A.K. Sanchez (1999). Healthy Cities and The City Planning Process – A Background Document on Links Between Health and Urban Planning. WHO Regional Office for Europe.

Alliance for Healthy Cities (AHC, 2021a). About The Alliance. Retrieved date July 6th, 2021, Alliance for Healthy Cities: http://www.alliance-healthycities.com/htmls/about/index_about.html

Alliance for Healthy Cities. Members (AHC, 2021b). Retrieved date July 6th, 2021, Alliance for Healthy Cities, http://www.alliance-healthycities.com/htmls/members/index_members.html.

Vo Minh Phuc, Vo Trong Cang (2021). Review on Urban Transportation System and Its Adverse Impacts to Public Health of the Cities. *International Journal of Transportation Engineering and Technology. Special Issue: Transportation Engineering Technology and Education. Vol. 7, No. 1, 2021, pp. 24-28*. doi: 10.11648/j.ijtet.20210701.14

Ho Quoc Bang, et al (2017). *"Thực Trạng Ô Nhiễm Không Khí Tp.HCM Và Dự Đoán Xu Hướng Trong Thời Gian Tiếp Theo"* – The Situation of Air Pollution in Ho Chi Minh City and Prediction of Future Trends. Ho Chi Minh City National University and Institute of Environment and Resources (IER).

Le TG., Ngo L., Mehta S., et al. (2012). Effects of Short-term Exposure to Air Pollution on Hospital Admissions of Young Children for Acute Lower Respiratory Infections in Ho Chi Minh City, Vietnam. Health Effects Institute, Boston, MA.

Zhang K, Batterman S (2013). Air pollution and health risks due to vehicle traffic. *Sci Total Environment 2013*; 450-451:307-316. doi: 10.1016/j.scitotenv.2013.01.074.

Benson P (1989). CALINE4 — A Dispersion Model for Prediction Air Pollutant Concentrations Near Roadways. *FHWA-CA-TL-84-15*. Sacramento, CA: California Department of Transportation.

Tien Luc (2020). *"Cải thiện giao thông TP.HCM: Xóa dần "điểm đen" giao thông"* - Improving traffic condition in Ho Chi Minh City: Gradually removing traffic 'black spots'. Retrieved date July 6th, 2021, Ho Chi Minh City Media Center (HMC), https://ttbc-hcm.gov.vn/cai-thien-giao-thong-tphcm-xoa-dan-diem-den-giao-thong-13587.html.

JICA research group (2008). Study on Master Planning of Traffic Safety for Road Traffic in Vietnam – Midterm report. National Traffic Safety Committee (NTSC) and Japan International Cooperation Agency (JICA).

UNESCAP Transport Division (2014). Road Safety in Asia Pacific Region. Regional Expert Group Meeting on Sustainable and Inclusive Transport Development. Ahmedabad, India.

Tu Giang (2020). *"Chiến lược quốc gia bảo đảm trật tự an toàn giao thông đường bộ"* - National strategy to ensure road traffic order and safety. Retrieved date 19/1/2021, *Communist Party of Vietnam Online Newspaper*, https://dangcongsan.vn/thoi-su/chien-luoc-quoc-gia-bao-dam-trat-tu-an-toan-giao-thong-duong-bo-570029.html.

ADB (2015). Viet Nam Urban Environment Program - Urban Sanitation Issues in Viet Nam.

Long Hai Yen and Nguyen Thi Ngoc Anh (2021). Urban Flooding in HCMC. Retrieved date 30/3/2021, ADPC – Asian Disaster Preparedness Center, https://www.adpc.net/igo/contents/iPrepare/iprepare-news_id.asp?ipid=235#:~:text=The%20first%20reason%20of%20urban,than%20countries%20from%20other%20areas.&text=Additionally%2C%20ICEM%20predicts%20that%20sea,60%25%20of%20HCMC%20in%202050.

World Bank (2021). Projects and Operations. Retrieved date 29/3/2021, World Bank, https://projects. worldbank.org/en/projects-operations/projects-list?countrycode_exact=VN&sector_exact=Sanitation^Public%20Administration%20-%20Water%2C%20Sanitation%20and%20Waste%20Management^Water%20Supply.

Ha An (2020). Saigon vulnerability to flooding worsens. Retrieved date 30/3/2021, VnExpress, https://e.vnexpress.net/news/news/saigon-vulnerability-to-flooding-worsens-4181112.html.

Mook Bangalore, et al (2016). Climate Change and Poverty in Vietnam: Exposure to Floods, Climate Change, and Poverty in Vietnam. Climate Policy Team, World Bank.

Ha Mai (2021). *"Hơn 4 tỉ USD cho giao thông TP.HCM*" – More than 4Billions USD for HCMC transport development. Retrieved date July 6th, Thanh nien Magazine, https://thanhnien.vn/tai-chinh-kinh-doanh/hon-4-ti-usd-cho-giao-thong-tphcm-1351855.html.

AHC (2014). Members of the Alliance for Healthy Cities. Alliance for Healthy Cities Directory 2014. Retrieved date Apr 26th, 2021, Alliance For Healthy Cities, http://www.alliance-healthycities.com/htmls/resources/index_resources.html.

HEALTHY URBAN PLANNING APPLICATION IN HO CHI MINH CITY, A POTENTIAL FOR FUTURE DEVELOPMENT TOWARD SUSTAINABILITY

Vo Minh Phuc [1*], Vo Trong Cang [2]

[1] *Viện IMALOG, trường Đại học Bình Dương, tỉnh Bình Dương, Việt Nam, vmphuc@bdu.edu.vn*

[2] *Viện IMALOG, trường Đại học Bình Dương, tỉnh Bình Dương, Việt Nam, vtcang@bdu.edu.vn*

Tóm tắt

Quy hoạch đô thị lành mạnh (Healthy Urban Planning - HUP) là một cách tiếp cận quy hoạch đô thị tiên tiến thúc đẩy vai trò của các yếu tố sức khỏe trong mô hình quy hoạch đô thị hiện tại, đây cũng là một giải pháp tiềm năng cho các vấn đề hiện tại của Thành phố Hồ Chí Minh (TP.HCM). Gần đây, TP.HCM đang phải đối mặt với một số vấn đề tiêu cực do hậu quả của quá trình đô thị hóa nhanh hàng thập kỷ đang ảnh hưởng đến cuộc sống của người dân như: ô nhiễm và các bệnh liên quan, ùn tắc và tai nạn giao thông, vệ sinh đô thị và ngập lụt, ... Nhằm thúc đẩy HUP và các nguyên tắc của nó , bài viết này giới thiệu cách tiếp cận HUP và khái niệm Thành phố lành mạnh. Tiếp theo, việc công nhận yếu tố sức khỏe trong các mục tiêu phát triển đô thị bền vững được thảo luận thông qua ấn phẩm và chương trình nghị sự của WHO. Tiếp theo, các vấn đề và tác động xấu liên quan đến sức khỏe, liên quan đến đô thị hóa, được xem xét lại để làm nổi bật những vấn đề hiện tại mà người dân TP.HCM đang phải đối mặt. Cuối cùng, nghiên cứu này tập trung vào phân tích định tính về tiềm năng ứng dụng HUP trong giải quyết vấn đề và lợi thế của Thành phố Hồ Chí Minh trong việc tích hợp HUP vào mô hình quy hoạch phát triển bền vững hiện nay.

Từ khóa: *Healthy Urban Planning (HUP- Quy hoạch đô thị lành mạnh); Sustainable urban development (SUD - Phát triển đô thị bền vững); Tp Hồ Chí Minh city*