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## RESTRUCTURING THEORETICAL FRAMEWORK OF URBAN SUSTAINABILITY FROM THE HEALTH DIMENSION

## РЕСТРУКТУРИЗАЦІЯ ТЕОРЕТИЧНОГО ЗМІСТУ КОНЦЕПТУ СТАЛОГО МІСЬКОГО РОЗВИТКУ З УРАХУВАННЯМ АСПЕКТУ ЗДОРОВ'Я

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The environmental crisis caused by rapid global urbanization has led to many public health problems, which has gradually become the new normal in the process of achieving sustainable urban development. This study aims to reveal the relationships between health, environment, and urban sustainability from a multidisciplinary perspective. Based on the existing research dimensions of urban sustainable development, the necessity, rationality, and feasibility of introducing the health dimension are proposed, and the research framework of health and urban sustainability is integrated and reconstructed. It is pointed out that scholars and policy makers should take the urban environment as the platform, take the duality of health and sustainability as the starting point, reconstruct the research framework of urban sustainability based on the health dimension, and provide a new theoretical perspective for the realization of urban sustainable development under the new normal.

**Keywords:** health, environment, urban sustainability, public health, urban management.

Екологічна криза, викликана зростаючими темпами глобальної урбанізації, призвела до безлічі проблем в сфері громадського здоров'я, які поступово стали новою нормою в процесі досягнення цілей сталого міського розвитку. Дане дослідження має на меті розкрити сутність взаємозв'язків між концепціями здоров'я, навколишнього середовища, сталого міського розвитку, досліджуючи їх з міждисциплінарної точки зору. У статті акцентується увага на необхідності, доцільності і можливості розгляду аспекту здоров'я як складової концепції сталого міського розвитку. Запропоновано аналітичну рамку для інтерпретації та інтеграції питань здоров'я та сталого міського розвитку в дослідженнях і практичних розробках заходів із реалізації політики сталого розвитку міст. Зроблено акцент на тому, що в досягненні цілей сталого розвитку міст слід виходити з основи – міського середовища (в широкому розумінні), враховувати подвійність взаємозв'язку здоров'я і стійкості, а також розглядати стан стійкості міст через оцінку здоров'я. Так, міське середовище, у широкому розумінні, не обмежується природним середовищем, а й містить соціальний та економічний виміри, поведінку та результати, що генеруються людською діяльністю. Це – комплексний простір, що охоплює фізичне та гуманістичне середовище. Виходячи з цього, проблеми міського середовища та здоров'я населення можуть бути досліджені з позицій медичної географії, громадської гігієни, управління містобудуванням та ін., зосереджених на впливі різних аспектів навколишнього середовища на здоров'я, включаючи географічне середовище, екологічне середовище, соціальне середовище, політичне середовище. Вивчення взаємозв'язку між здоров'ям

та навколишнім середовищем має здійснюватися на різних просторових рівнях, включаючи глобальний, національний, регіональний, місцевий, громадський та індивідуальний рівні. Динамічний рівноважний зв'язок між здоров'ям людини та міським середовищем у широкому сенсі є фундаментальною відправною точкою реконструкції рамок дослідження сталого розвитку міст. Це, в свою чергу, відображає сутність нового напрямку концептуальних досліджень в сфері теоретичних аспектів сталого міського розвитку і є необхідним у сучасних умовах наростання екологічних проблем в містах

**Ключові слова:** здоров'я, навколишнє середовище, сталий розвиток міста, громадське здоров'я, міське управління.

Экологический кризис, вызванный растущими темпами глобальной урбанизации, привел к множеству проблем в сфере общественного здравоохранения, которые постепенно стали новой нормой в процессе достижения целей устойчивого городского развития. Данное исследование преследует цель вскрыть сущность взаимосвязей между концепциями здоровья, окружающей среды, устойчивого городского развития, рассматриваемых с междисциплинарной точки зрения. В статье акцентируются необходимость, целесообразность и возможность рассмотрения аспекта здоровья как составляющей концепции устойчивого городского развития. Предложена аналитическая рамка для интерпретации и интеграции вопросов здоровья и устойчивого городского развития в исследованиях и практических разработках мероприятий по реализации политики устойчивого развития городов. Сделано акцент на том, что в достижении целей устойчивого развития городов следует исходить из основы – городской среды (в широком понимании), учитывать двойственность взаимосвязи здоровья и устойчивости, а также рассматривать состояние устойчивости городов через оценку здоровья. Это, в свою очередь, отражает сущность нового направления концептуальных исследований в сфере теоретических аспектов устойчивого городского развития и является необходимым в современных условиях нарастания экологических проблем в городах.

**Ключевые слова:** здоровье, окружающая среда, устойчивое развитие города, общественное здоровье, городское управление.

**Introduction.** With the transformation of the international social and economic new normal, urban and regional development is confronted with such problems as aggressive urbanization, land loss and resource and environmental damage [1]. Problems such as insufficient environmental carrying capacity, resource bottlenecks and so on have forced the transformation of economic growth mode, intensified pollution, frequent urban environmental disasters, and the gap between the recovery speed of environmental quality and the needs of residents have caused many public health problems. For instance, particulate matter 2.5 (PM2.5) pollution ranks the fourth among the major mortality risk factors, causing 40% of deaths from cardiovascular and cerebrovascular diseases and 20% of deaths from lung cancer [2]. The lag of environmental impact on health makes more health damage exposed in the future. So, environmental and social problems caused by rapid urbanization have become the key factors to damage public health, which makes healthy city an important way to deal with the health problems of urbanization and pursue sustainable development in the world. In this context, the relationship between sustainable urban development and public health needs to be explored in detail.

**Literature review.** The research on the relationship between health and environment is mainly carried out from the perspectives of medical geography [3–5], public health [6] and urban

planning and management [7; 8], which provides a theoretical basis for the construction of the relationship between health and sustainability. Medical geography research on the relationship between health and environment is mainly focused on the field of disease ecology and its geographical distribution [3; 4], while the research on the relationship between socio-economic factors and health is not paid enough attention, so it is urgent to cooperate with economics, environmental science, sociology and other interdisciplinary [5]. Public health research involves all health-related contents with the aim of achieving health promotion and preventing disease transmission at the individual and group levels, focusing on disease control, control of environmental pollution's impact on human health, health policy, health planning, health management and supervision, health economics and engineering, etc. [6]. The relationship between urban environment and human behavior has always been a research hotspot in urban planning and management discipline but is explored mostly from the perspective of urban function and efficiency, while there are few studies on the relationship between environment and health [7; 8]. To sum up, the relationship between health and environment is the common concern of the three disciplines. The spatial distribution of health status and health care services and facilities is a unique perspective of medical geography. Both medical geography and public health have turned to the research of the relation-

ship between social environment and health, but the research on social factors in medical geography and urban planning and management is still insufficient.

Therefore, **the purpose** of this study is to interpret and reconstruct the theoretical framework of urban sustainable development from the perspective of health, based on the in-depth analysis of the relationship between environment and health theory from the multidisciplinary perspective.

**Main results.** In terms of the dimension of sustainability research framework, firstly, scholars agree that "economy, society and environment" are the three pillars of sustainability, and their coordinated development is a necessary condition for the realization of the overall sustainable development of cities [9]. The economic dimension involves the research of profit, cost saving, and economic growth. The social dimension involves the improvement of life quality, equal access to public services such as education, and sustainable development of community and social capital. The environmental dimension focuses on the sustainable use of natural resources, efficient environmental management, and pollution prevention (air, water, soil), etc. Secondly, the three overlap and interweave each other, forming the second dimension of urban sustainability [10], namely, social environmental sustainability (environment of social fairness, natural resource management, the relationship between localization and globalization, etc.), environmental and economic sustainability (energy saving subsidy mechanism, reduce the consumption of natural resources incentive mechanism, etc.), economic and social sustainability (business ethics, fair trade, etc.) of laborer's rights and interests. And environmental sustainability is not only a necessary condition for urban sustainable development, but also a basic premise for social and economic sustainable development [8; 10].

From the perspective of the causes of health and sustainability problems, the root causes of the two problems overlap to a certain extent, both of which originate from the excessive occupation of natural resources by human development and the excessive use of environmental services [11], such as traffic jams and accidents, environmental pollution, excessive energy consumption and other issues [12]. Therefore, based on the homology of health and sustainability issues, it can be deduced that health and sustainable development are two in one, that is, health is both a key determinant of sustainable develop-

ment and a necessary resource to achieve sustainable development. Healthy and sustainable development are mutually determined and interdependent [13].

Health and sustainability studies share many hot topics, which constitute the background for integrating health dimensions and sustainable development research frameworks. Urban environment is a key element linking health and sustainability and can be used as a theoretical bridge to integrate the research framework of health and sustainability. Multi-disciplinary studies on the relationship between health and environment show that physical environment and social environment have a significant impact on human health, and physical and social environment are also important dimensions of sustainability. A more sustainable society should be a healthier society [14]. Therefore, it is necessary and reasonable to introduce the health dimension into the research framework of urban sustainability due to the similar roots of problems, the two-in-one relationship, and the common concerns and media [15].

Hancock (1993) made pioneering contributions to the construction of the conceptual framework of health promotion and urban sustainable development [16]. Hancock (1993) regards human health as a kind of social well-being, which is mainly created by human survival ability on the material, social, environmental, and economic conditions on which human survival depends [16]. Kjargard et al. (2014) emphasizes the dual interaction of health and urban sustainable development in society, economy, and environment [17]. Although different scholars have different emphasis on the construction of the relationship between health and sustainability, they all agree that the realization of urban sustainable development must be considered from the perspective of health, and human health development must be evaluated from the perspective of urban sustainability.

Based on the research on the relationship between environment and health in different disciplines, the decisive role of environmental sustainability on the overall sustainable development, and the root influence of environmental issues on the generation of health and sustainability problems, urban environmental system is a key platform to introduce and integrate the health dimension into the research framework of urban sustainability. Different from the relatively narrow understanding of environment in current urban sustainability studies (that is, focusing on the effective use of natural environment

and resources), urban environment, as a broad way of understanding, is not limited to the natural environment, but also emphasizes the social and economic behaviors and results generated by human activities. Its connotation includes two aspects: the first is the physical environment related to the quality of the place, that is, the natural and built environment including housing, employment, transportation, urban form, and other physical space elements [18]; the second is the humanistic environment involving all human activities, namely the social, cultural, and economic environment [19]. On this basis, the research dimensions of urban environment and public health can be obtained from the research perspectives of medical geography, public hygiene, and urban planning management focused on the impact of multiple dimensions of the environment on health, including geographical environment, the built environment, the social environment, the policy environment. These studies on the relationship between health and environment are carried out at multiple spatial levels, including global national, regional, local, community, and individual level. The components of urban environment and the spatial level of urban environment converge and jointly exert effects on public health (Figure 1).

Based on this, we propose a research framework for introducing the health dimension into urban sustainability by taking the generalized urban environmental system as a bridge and platform (Figure 2).

Human beings are both creators and consumers of cities, and human-oriented is the fundamental principle of urban sustainable development. Therefore, the dynamic equilibrium relationship between human health and urban environment in a broad sense is the fundamental starting point of reconstructing the framework of sustainable urban development research. Based on the existing three dimensions of urban sustainability research framework and the dual characteristics of health and urban sustainability, the study introduces health as the fourth dimension, and integrates and reconstructs the urban sustainability research framework in three-dimensional space on the platform of generalized urban environmental system which integrates natural environment, society, and economy. The reconstruction of urban sustainability research framework is realized through the spatial integration of "health, environment, economy and society".

**Conclusions.** Restructuring the research framework of urban sustainability based on the health dimension is conducive to coping with the

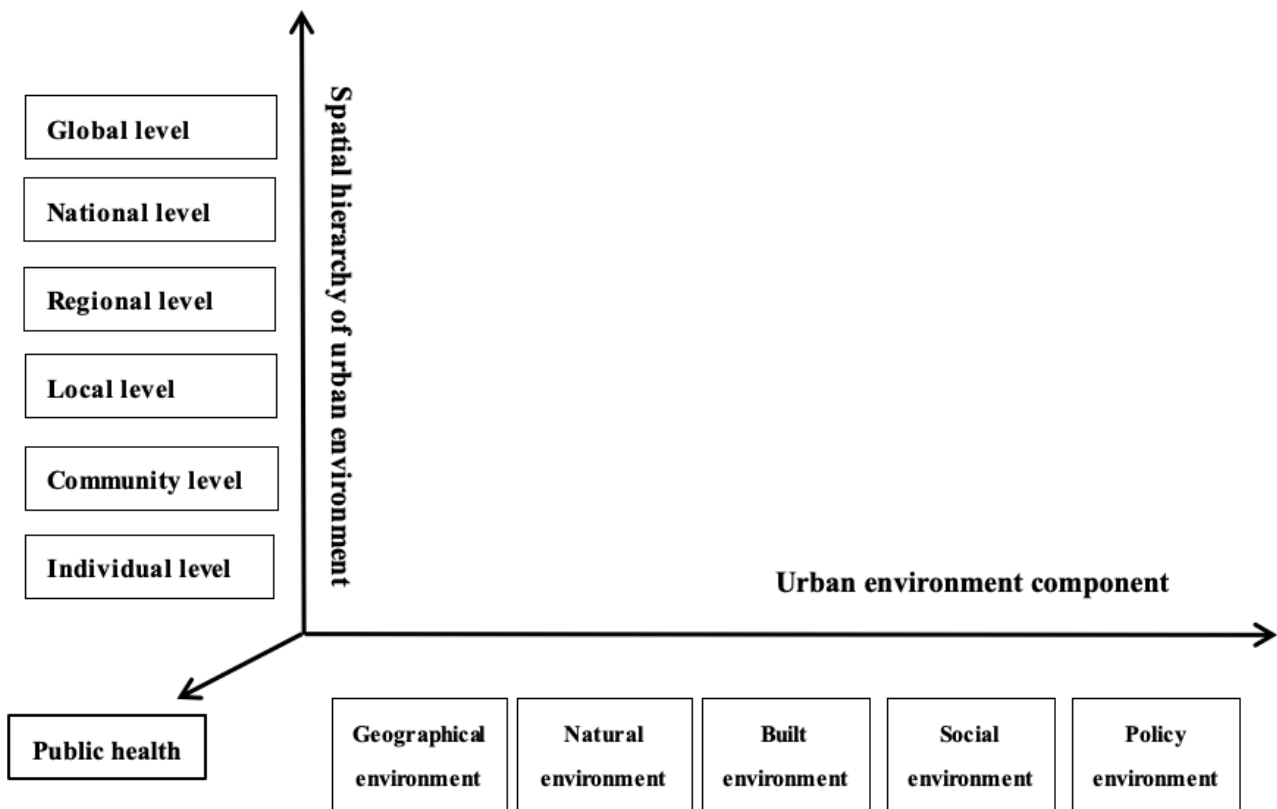
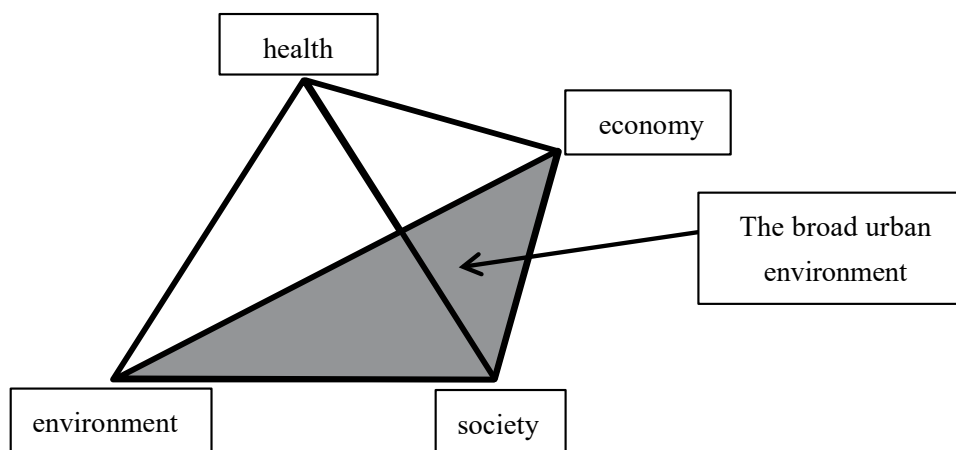


Figure 1. Analytical dimensions of urban environment and public health

Source: Wang Hongyue's development



**Figure 2. Integration of health and sustainability analytical framework**

Source: Wang Hongyue's development

existing or possible conflicts between development and health in future urban development, ensuring individual and collective health, and realizing sustainable urban development. Under the new normal of increasing health threats caused by rapid urban development, the construction of a city environment that promotes public health is an important aspect that the government should consider when making urban policies. In the formulation of public policy, the integration of health, environmental, social, and economic factors is conducive to promoting the strategic innovation of urban sustainable development. In the practice of urban development and urban management, the

recognition of the duality of health and urban sustainable development is conducive to promote the application of principles and methods of healthy urban planning and management, innovative sustainable planning and design principles. In different levels of city management and operation, public health impact assessment should also be strengthened in the process of assessing sustainability. In future research, it is urgent for urban studies to learn from the existing research of multiple disciplines, develop and innovate the theory of health and urban sustainable development, and provide a more solid theoretical basis for human health and urban development practice.

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