

MINISTRY OF EDUCATION AND
TRAINING

MINISTRY OF CONSTRUCTION

HANOI UNIVERSITY OF ARCHITECTURE

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**RECONSTRUCTION OF OLD APARTMENT AREA
HANOI CITY**

ARCHITECTURE PROFESSIONAL

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SUMMARY OF DOCTORAL THESIS

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The thesis was completed at:

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The thesis can be found at: National Library and Library of Hanoi
University of Architecture

PREFACE

1) **The urgency of the subject:**

Apartment complexes /collective housing in Hanoi have appeared since the French colonial period and became an important part of settlement after 1954, when the North entered the socialist development stage. . For 40 years (1954-1994), Hanoi invested heavily in building residential areas (old public housing/OPH) to meet residential needs. However, after 1994, when housing policies changed, old public housing in Hanoi became overcrowded and seriously degraded. Although there has been a policy of reconstruction since 2005 and many research and implementation efforts, this situation has not been completely resolved. The renovation of OPH faces many difficulties, from complicated legal procedures to balancing the interests of related parties.

In that situation, researching the topic "Reconstruction of old apartment buildings in Hanoi's inner city" is urgent, clarifying perspectives on new residential areas after reconstruction that meet the set requirements and conditions. From there, establish implementation directions and principles, propose feasible spatial organization models (urban plan) and architectural solutions, bringing the reconstruction of OPH into reality soon.

2) **Research purposes of the thesis:**

a. Research purpose: Reconstruction of Hanoi inner-city public spaces in accordance with the orientation of sustainable urban and architectural development in terms of Environment, Economy, Culture and Society; harmony of interests; balance between the aspects of status (of location), quality (of the living environment), and the subject person (residential community).

b. Objectives of the study:

- Establish the viewpoint and principles of OPH reconstruction - clarify the goals and results to be achieved after reconstruction.
- Develop a set of criteria as a tool to evaluate the potential of OPHs,

as a basis for orienting reconstruction.

- Propose urban plan models and architectural solutions for new residential areas in accordance with the reconstruction orientation.

3) Subject and scope of research:

a. Research object: OPH architectural form; OPH reconstruction work

b. Research scope:

- About space: OPH architecture in Hanoi inner city area;
- Regarding time: until 2030, vision 2050 (according to general planning)

4) Research method: Data collection method; survey the current situation; structural analysis; inductive/synthetic; potential assessment; classification and systematization; compare; expert.

5) Research content:

- Clarifying the process of formation, development and change; Identifying inadequacies in the practice of reconstructing OPH in Hanoi
- Systematize the theoretical and practical basis for residential area reconstruction
- Proposing viewpoints and principles for reconstructing OPH in Hanoi
- Assess the reconstruction potential of OPH as a basis for classifying and establishing appropriate reconstruction directions.
- Propose urban plan and architecture models corresponding to established reconstruction orientations.

6) New contributions:

- Proposing a new approach to rebuild OPHs based on identifying, evaluating and exploiting potential factors of location, planning, economics and culture in accordance with each development context. OPH.
- Propose viewpoints and principles to guide reconstruction, establish an overall urban plan model and technical approval to improve the

position and upgrade the quality of the area after reconstruction.

7) Scientific and practical significance:

- *Scientific significance:* Contribution to theoretical basis and methodology for research on sustainable reconstruction/redevelopment of old residential areas in Hanoi's inner city.

- *Practical significance:* Contributes to improving the efficiency of reconstruction activities of public works in Hanoi. Contribute to realizing the Capital's planning, economic and social development orientations.

8) Thesis structure: In addition to the Introduction and Conclusion, the Content section includes 3 chapters:

- *Chapter 1.* Overview of reconstruction of old apartment buildings

- *Chapter 2.* Scientific basis for reconstruction of old apartment buildings in Hanoi city

- *Chapter 3.* Models and solutions for reconstruction of old apartment buildings in Hanoi city

CONTENT

3) OVERVIEW OF RECONSTRUCTION OF OLD APARTMENT AREA

a. Reconstruction of urban architecture around the world

Architectural

reconstruction projects are differentiated according to purpose and motivation:

- Change development goals;
- Scale and geographical location of the reconstruction area;



Figure 1.1: The influence of reconstruction on 5 aspects.

- Management system and project management methods
- Approach (focusing on material improvement or comprehensive upgrading and multi-disciplinary integration).

b. The process of forming old apartment buildings in Hanoi

According to each stage of development and expansion of administrative boundaries in 1961, 1978, 1992, with corresponding economic, cultural, social, and technological conditions - 3 stages of development of public spaces in Hanoi have been formed. Internal: 1954-1965, 1965-1975 and 1975-1986 (lasting until 1991).

In general, the housing subdivisions built during the subsidy period according to planning demonstrate the characteristics of socialist culture.

a. Reconstruction of old apartment buildings in Hanoi inner city

As of 2021, there are 76 OPH areas in Hanoi, of which 34 have a scale of 2 hectares or more; Popular construction of 2-5 floors with brick wall structure, panel floor (856 houses), or column-beam frame structure system (145 houses), reinforced concrete (193 houses), assembly of small panels / large panels (273 houses). Old apartment buildings (OAB) are concentrated mainly in 4 old inner-city districts, in areas with limited development.

There are only 19 completed projects (accounting for ~1.2%, including 2 OAB in level D danger) and 14 projects are being implemented; Most are pilot, applied to each individual OAB; implemented according to 3 models: (1) Demolition and new construction of individual apartment buildings, (2) Local construction of new housing groups, (3) Planning to rebuild the entire old apartment complex.

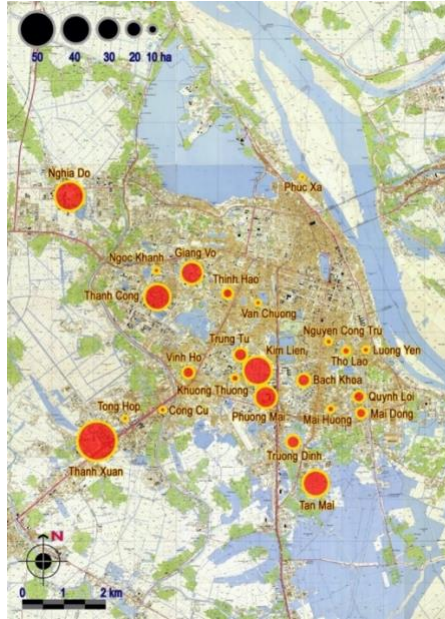


Figure 1.22: Distribution of economic zones in the period 1954-1986 in the city center. Hanoi

b. Studies on the reconstruction of old residential areas in urban areas

i. Worldwide

- The book "The Death and Life of Great American Cities" (Jane Jacobs, 1961) criticizes urban planning policy in the United States in the 1950s-1960s.
- Research by Naomi Carmon (Technion, Israel) focuses on the history and classification of three generations of urban reconstruction policies.
- Demolition or heritageization of urban architectural works (Maurice Blanc, France) comparing the urban reconstruction process in France and Germany.

ii. Vietnam.

Some dissertations research different angles on topics such as: "The problem of planning and renovating residential space in Hanoi according to sustainable development trends" (Nguyen To Lang, 2000); "High-rise housing architecture suitable for socio-economic conditions in Hanoi in 2020" (Nguyen Trong Khang, 2001); "Organizing public space in urban housing units in Hanoi" (Pham Trong Thuat, 2001); "Organizing landscape architecture in Hanoi's residential areas to improve the quality of the urban living environment" (Doan Thu Trang, 2003); "Research on renovation and upgrading of multi-storey apartment buildings in Hanoi in the period 1960-1986" (Vu An Khanh, 2003); "Combination of architectural space in new urban areas to improve land use efficiency in Hanoi" (Vuong Hai Long, 2009);

In addition, we can mention the research: "Adapting the "compressed urban area" model in the process of reconstructing urban space in Hanoi" (Science-Technology project code 126-2017/KHXD-TD, Tran Minh Tung & Phan Tien Hau, 2017); "Research on renovating and rebuilding old apartments in Hanoi to improve the quality of life of households from a policy perspective"

(Nguyen Van Luyen) “Renovating old apartments towards conservation” (Vu Hoai Duc, 2021); “Renovating, upgrading and expanding apartment buildings in the period 1970-1980” (Duong Duc Tuan, 1997)

c. Issues that need research

- Systematize and identify problems and values of OPHs in Hanoi.
- Develop criteria for evaluating and classifying public buildings in Hanoi's inner city as a basis for orientation for reconstruction models and solutions.
- Proposing viewpoints and principles for rebuilding OPHs in Hanoi's inner city
- Propose orientations and strategies for rebuilding urban areas in Hanoi towards sustainable architectural and urban development in accordance with the general planning.
- Proposing models for reconstruction of Hanoi's OPHs.

3) SCIENTIFIC BASIS OF RECONSTRUCTION OF OLD APARTMENT ZONES IN HANOI CITY

a. Legal basis

- System of legal documents of the Central Government as well as of Hanoi locality, including relevant Codes, documents issued by the Government and Ministries, local authorities at all levels... regulating issues on house renovation and reconstruction. apartment.
- Planning and architectural orientations such as: Hanoi spatial development orientation to 2030 with a vision to 2050; Orientation for reconstruction of old apartment buildings in Hanoi

b. Theoretical basis

- i. Some theories on the organization of architectural space in residential areas

The concept of housing unit is applied in public housing units

- The concept of "neighborhood unit" was proposed by Clarence Perry in 1923. It was not until after 1954 that the Soviet Union

adopted the neighborhood unit model and developed it into a theoretical system of "neighborhood unit". Microdistrict (Microraion / Microdistrict), with schools as the center

- The concept of sustainable housing units: The issue of sustainability at the "housing unit" level is raised to maintain a balance between physical, environmental, socio-cultural, economic and other factors. other relevant aspects of the structure of the residential area, now and in the future; considered in connection with aspects of the Sustainable Urbanism and Sustainable Architecture models

- Ecological architecture: started in the second half of the XX century and became an inevitable trend in the XXI century. It is seen as a comprehensive solution to deal with the widespread urban crisis as well as the crisis of contemporary architectural style.

ii. Theory of urban development models

- - Compact urban area: smaller than the new urban area (DTM), but a complete residential area ensuring at the same time (1) Providing housing for everyone, (2) Improving mechanisms management, business and residential environment (3) Land

use planning and management for sustainable development, (4) Providing synchronous technical infrastructure for residents,



Figure 2.1: Ability to overlap spatial layers in residential land

(5)Resource autonomy energy

- - TOD traffic development-oriented urban area: is an urban development model associated with traffic, taking the public transport system as the basis for urban development planning.

c. Factors affecting the reconstruction of public buildings in Hanoi's inner city

- Natural condition

- Socio-economic factors, including: (1) General socio-economic situation of Hanoi; (2) Real estate prices (3) Business and community benefits in socializing housing for OPH reconstruction (4) Subjects related to OPH reconstruction

- Cultural and social factors: OPH is an important link in the chain of evolution of the history of Hanoi's architectural development, contributing to making the modern architectural trend a popular reality in Vietnam, approaching to integration with the world.

- Architectural spirit and form: Most OPHs are formed on old agricultural land of inner-city or peri-urban villages; is the entity that preserves the memory of the city; coexist and develop in harmony, with a relatively balanced population density; Share/coordinate the use of technical and social infrastructure.

- The need for reconstruction of public buildings: Expired, degraded/damaged, dangerous to humans, etc. is the direct cause leading to clearance/demolition for rebuilding.

d. Basis for evaluating and classifying old apartment buildings in Hanoi inner city for reconstruction

Factors that create value of OPHs

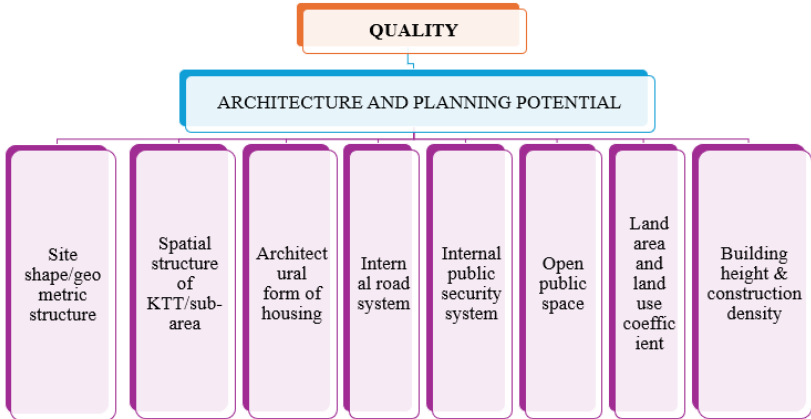


Figure 2.12: Diagram of the criteria system for the Economic Position group

- - Architectural and planning value:
- - Real estate value

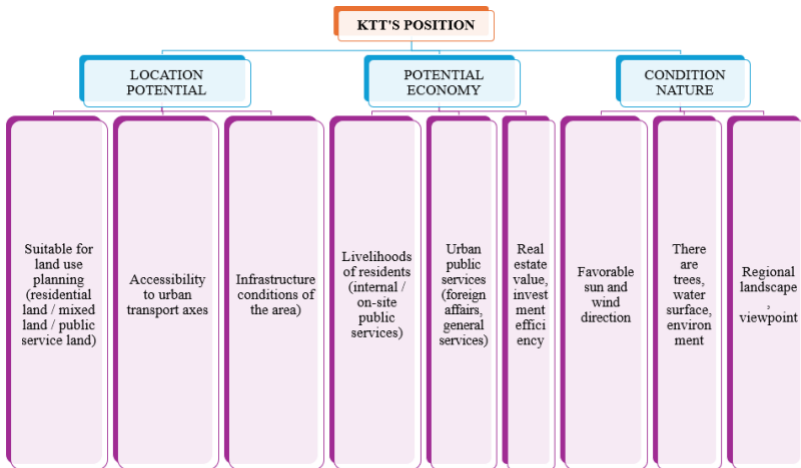


Figure 2.14: Diagram of the criteria system for the Economic Position group

- Historical value
- Cultural values
- Social value
- Value of place

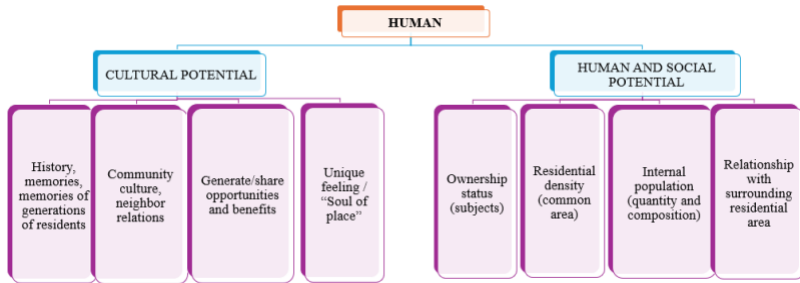


Figure 2.15: Diagram of criteria system for evaluating the Human value group

4) MODELS AND SOLUTIONS FOR RECONSTRUCTION OF OLD APARTMENT ZONES IN HANOI

- a. Viewpoints and principles for reconstructing public health facilities in Hanoi's inner city**
- i. Opinion

The thesis is based on the following research perspectives:

1. Viewpoint 1: "Rebuilding OPH" is to create a new, civilized and modern residential area on OPH land (demolition of structures that are no longer of use) - in the direction of restructuring usage criteria land, recreating the unique feelings of apartment buildings (the "collective" / "soul of place" spirit), reestablishing and redeveloping the apartment buildings residential community (people are resettled on the spot).

2. Viewpoint 2: Use resources reasonably and effectively in OPH reconstruction, to create new residential areas that meet the criteria of sustainable architecture and urbanism (BV), on environmental, cultural, social, economic, and legal aspects.

3. Viewpoint 3: Planning and economic solutions to reconstruct public buildings harmoniously meet the interests and needs of

stakeholders, including the government (in terms of management) - investors (in terms of economic efficiency) - people people (about livelihoods and living environment). The government has the role of regulating the relationship between the community and businesses, protecting the legitimate interests of the people.

4. Viewpoint 4: Solution (GP) of reconstruction respects and adequately deals with the intangible aspects/values of apartment buildings. Reconstruction is an inevitable development aimed at renewing material & physical elements, but at the same time ensuring the preservation of memories of the past and history - by recreating the characteristic images & feelings of apartment buildings.

5. Viewpoint 5: Improving the living environment of people in OPHs.

Residential areas are stable and sustainable when they simultaneously meet the 5 criteria of hospital urban development in terms of policy, economics, culture, society, and environment.

ii. Rule

- Principle 1 - Mix of functions:

URBAN PLAN designed the reconstructed residential area in the direction of mixed functions on all 3 levels (Residential Area - Land Lot - Construction) to improve exploitation efficiency and create an urban space with unique identity. Mixed-use multi-residential area, multi-type. Plot of land with mixed functions and mixed-use buildings

- Principle 2 - Compliance with standards:

Optimize the efficiency of OPH land use on the basis of flexibly exploiting the relationship between planning and economic indicators within the allowable range - in the direction of reducing land area, increasing height, and keeping appropriate land use coefficients. with technical regulations. Respect the implementation plan to connect inter-regional transport systems and urban

infrastructure; Meet the requirements for planning and economic management and controlling urban development in specific areas.

- Principle 3 - Balance & harmony:

Balanced development of economic, cultural-social and economic-economic aspects, harmoniously meeting the needs and interests of investors as well as the community; transforming the relationship between businesses and people from opposition to partnership, a cooperative/symbiotic relationship, sharing the potential and opportunities of the place - with the regulatory role of the government.

- Principle 4 - On-site resettlement:

Prioritize ensuring the legitimate rights and interests of APARTMENT BUILDING people. Meeting the maximum need for on-site resettlement and maintaining existing livelihoods, with reasonable compensation/conversion levels - is the premise for maintaining the community, contributing to limiting cultural disruption and inequality. social equality.

- Principle 5 - Integrating TOD:

Planning-KT planning takes advantage and exploits the possibilities of accessing the public transportation system (TOD) to improve the value and efficiency of urban land use - creating compensation opportunities for investors to reconstruct public areas and increase source of revenue for the budget, contributing to improving and upgrading the area's infrastructure conditions and bringing convenience to people.

- Principle 6 - Diversity of public service spaces:

URBAN PLAN public services are diverse in scale, form, nature, and content, with convenient accessibility - both to maintain people's livelihoods and at the same time create opportunities for business enterprises to attract investment and develop socio-economic activities in the residential area.

- Principle 7 - Intangible elements:

The spatial environment and architectural form of the new residential area after reconstruction need to reflect and organically continue the intangible cultural elements of the existing residential community (resettled on site), recreating special images. represents and feels the "collective spirit" / "soul of place" of OPH

- Principle 8 - Open space:

Increase the area of green trees and open public spaces to improve the environment and landscape of residential areas, promote communication and collective activities, and contribute to connecting and strengthening community relations.

- Principle 9 - Foreign relations:

Strengthen the linkage between the new residential area and neighboring residential areas, on the principle of jointly exploiting infrastructure and traffic connections, sharing benefits and development opportunities after reconstruction (improving conditions). environmental conditions, business/employment opportunities, enhancing regional position, etc.).

b. Classification and evaluation of OPHs

i. Develop criteria for evaluating OPH

Includes 6 criteria, with 25 specific indicators evaluated with levels: 0 VND/1 VND/2 VND/3 VND/4 VND, corresponding to 5 assessment levels: None/Slightly/Average/Quite a lot/Very much - or similar levels for each indicator.

The direction of

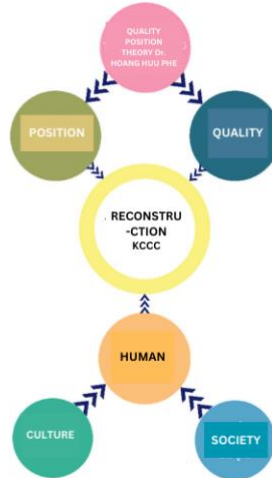


Figure 3.3: Diagram of factors affecting OPH reconstruction

reconstruction should be determined according to the correlation between scores between groups of criteria - supplementing/strengthening weak elements (for indicators with low scores) to create a relative balance between economic aspects, economic, cultural-social and economic-economic relations, harmoniously meeting the interests/concerns of stakeholders, creating conditions for sustainable development. The set of criteria can also be used to evaluate the effectiveness of reconstruction and subsequent development (through improvement in the overall score of the entire area).

The reconstruction orientation is common for the entire area, but for each component area, the principle solutions may be different. OPH structures should be divided into equivalent areas/groups of works; Effective scale is about 6-8 hectares; There may be another solutions for small scale (2-6 hectares), or "compression" of functional blocks to make them more compact.

The set of criteria can be adjusted and supplemented accordingly as follows:

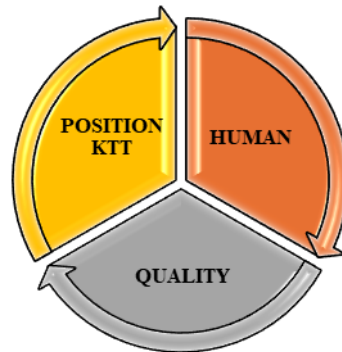


Figure 3.4: Balance diagram between groups of evaluation criteria according to the scoring scale

STT	Criteria group	Criteria	Targets
1	Position KTT	Location Potential	1- Suitable for land use planning (residential land / mixed land / public service land) 2- Accessibility to urban transport axes 3- Infrastructure conditions of the area
		Economic potential	4- Livelihoods of residents (internal / on-site public services) 5- Urban public services (foreign affairs, general services) 6- Real estate value, investment efficiency
		Natural condition	7- Favorable sun and wind direction 8- There are trees, water surface, and environment 9- Regional landscape, viewpoint
2	Human	Cultural Potential	10- History, memories, commemorations of generations of residents 11- Community culture, neighbor relations 12- Giving birth / sharing opportunities and benefits 13- Characteristic feeling / "Soul of place"
		Human potential and Society	14- Ownership status (subjects) 15- Residence density (common area) 16- Internal population (quantity and composition) 17- Relationship with surrounding residential areas
3	Quality	Architectural & Planning Potential	18- Site shape / geometric structure 19- Spatial structure of KTT/sub-area 20- Architectural form of housing 21- Internal road system 22- Internal public security system 23- Open public space 24- Land area & land use coefficient 25- Building height & construction density

Table 3.1: OPH evaluation criteria table

- Group the criteria into 3 groups that are relatively balanced in quantity: Economic Position group (ability to attract investment) - 9 criteria / 36 points; People group (ability to respond to the community) - 8 indicators / 32 points; Economic-QH Quality group (ability to meet management requirements) - 8 indicators / 32 points.
- For each group, if the total score is lower than or equal to 50% of the total score, it will be considered as failing.

- The way the above groups of criteria are called can be related to the theory of the trade-off of status and quality, which is applied to apartment building reconstruction.

- ii. Evaluate the current status of OPHs in the inner city of Hanoi based on criteria

EVALUATION TABLE OF KCCC ACCORDING TO A SET OF CRITERIA				
District	Position KTT	Human	Quality	KCCC
HAI BA TRUNG DISTRICT	28	25	22	KCCC Nguyen Cong Tru
	18	20	20	KCCC Quynh Mai
	15	20	20	KCCC Dai La
	26	30	28	KCCC Bach Khoa
	20	22	20	KCCC Quynh Loi
	25	22	22	KCCC Minh Khai
	15	18	15	KCCC Mai Huong
	20	25	15	KCCC Ve sinh dich te (Tho Lao)
DONG DA DISTRICT	25	25	20	KCCC Thanh Nhan
	26	22	29	KCCC Nam Dong
	28	20	25	KCCC Khuong Thuong
	26	20	25	KCCC Hao Nam
	25	18	20	KCCC Phuong Mai
BA DINH DIS.	20	20	20	KCCC Vinh Ho
	28	25	28	KCCC Giang Vo
CAU GIAY DIS.	28	25	25	KCCC Ngoc Khanh
	16	18	20	KCCC Nghia Do
HOANG MAI DIS.	17	19	18	KCCC Nghia Tan
	20	15	20	KCCC Tan Mai
	18	16	18	KCCC Tuong Mai
THANH XUAN DIS.	20	17	25	KCCC Truong Dinh
	20	20	18	KCCC Kim Giang
	20	15	20	KCCC Thuong Dinh

Table 3.2: Evaluation table of OPH according to a set of criteria

- From the table above, it can be seen that OPHs are divided into 3 groups:

- - Reconstruction group 1: OPHs have one component that fails.
- - Reconstruction group 2: OPHs have two failed components.
- - Reconstruction group 3: All three components of OPH failed

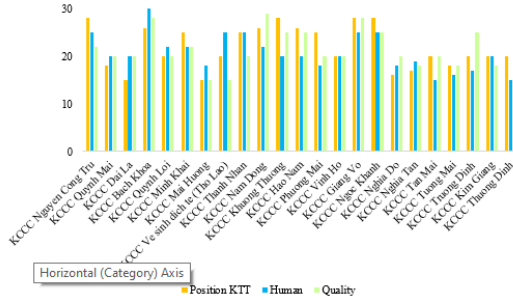


Figure 3.5: Comparison table of correlation between OPHs

c. Models and solutions for reconstructing old apartment buildings in Hanoi

- From the classification of 3 OPH groups to provide direction for GPs:

- - In the Position criteria group, location factors and natural conditions rarely change. Therefore, the GP group is oriented towards improving Status, focusing mainly on enhancing economic potential: developing small public services to ensure livelihoods for residents; develop commercial services/urban public services to attract secondary investment; Increase profitable real estate thanks to TOD connection (meeting the interests of the State and businesses). Improved environmental landscape elements also contribute to enhancing the position of the area after reconstruction.



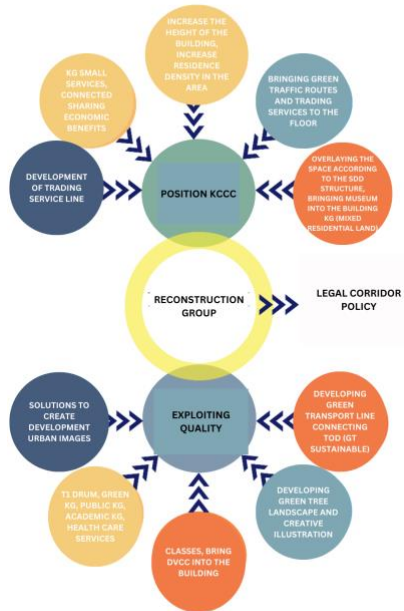
Figure 3.6: Balancing triangle of three factors: Economic position (Economic factors), People (Social factors), Quality (Planning and Architecture)

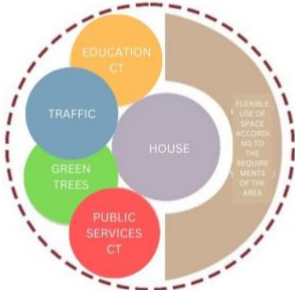


- Slution architecture are oriented towards upgrading Status and meeting Humanity, proposed on the basis of exploiting economic and planning potential in accordance with the requirements of urban management and controlled hospital development while also improving High quality of tangible and intangible environment of the area after reconstruction.

- The group slutions is oriented towards improving the efficiency of serving people, exploiting and promoting socio-cultural factors: maintaining & developing the existing community (on-site resettlement, forming mixed/multi-family housing areas). composition, multi-ownership), enhancing and consolidating neighborly relationships (open spaces for communication and community activities); creating neighborhood identity (recreating unique feelings/preserving memories of the OPH); Improve relations with surrounding residential areas, etc. Upgrading the environmental landscape and economic development also contributes to improving the efficiency of serving people.

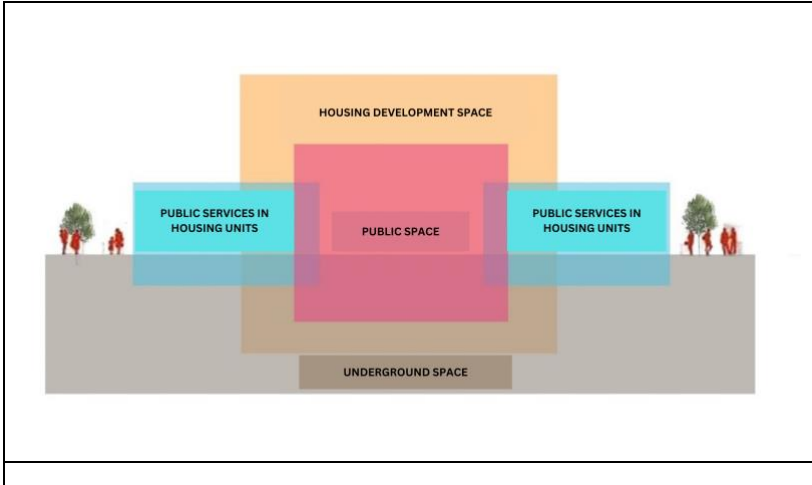
- i. The model of overlapping functional spaces in OPH creates surplus funds for reconstruction

Models of spatial integration include:

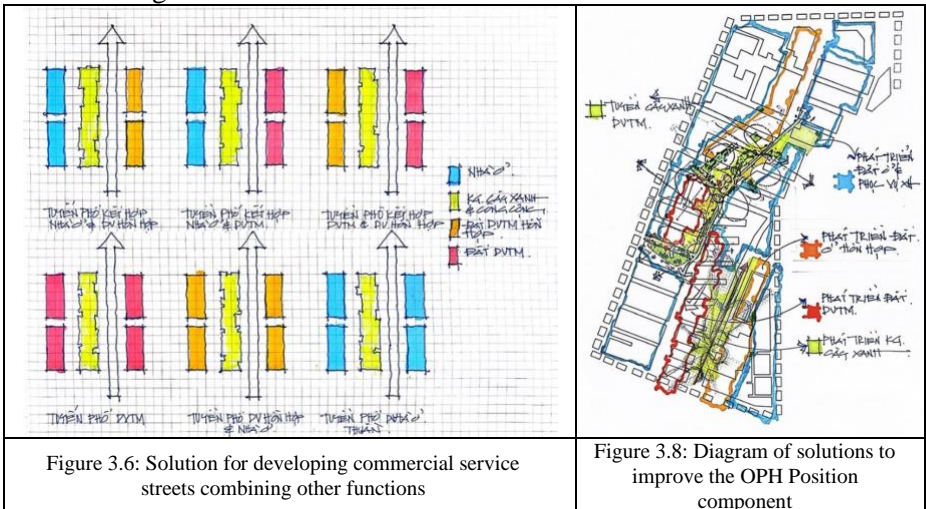


<p>MODEL 1</p>		<p>Public function spaces in OPH combine together</p>
<p>MODEL 2</p>		<p>Residential space combined with other functional spaces in OPH</p>
<p>MODEL 3</p>		<p>Combine both cases above</p>

In addition to overlaying above-ground spaces, OPH can still exploit underground spaces to increase usable area and create surplus land funds.



- ii. Reconstruction solutions according to OPH construction components
 - a. Solution group for the OPH Position component (Element 1), including



- (1) Development of Commercial Service Street
- (2) Developing small service spaces to connect and share residents' economic benefits, enhancing connections between residents.

(3) Increase height, create highlights in the architecture and landscape of the area (Increase redundant area)

(4) Develop green transportation routes combining commercial services and connecting traffic between buildings

(5) Overlapping spatial functions in the same building to serve residents and regional economic development.

b. Solution group for the OPH Quality component (Element 2)

Includes:

(1) Create a developed urban image in the architecture of buildings

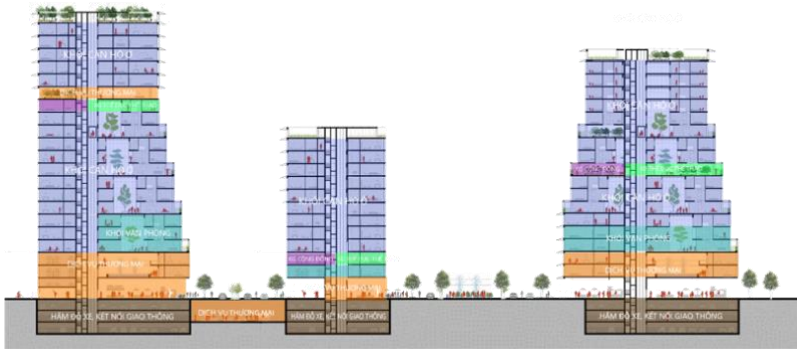
(2) Low-floor KG drum converted into public space, creating community relationships, inheriting and developing regional culture

(3) Bring green spaces, community spaces and creative arts to high floors in OPH

(4) Bringing small commercial service spaces, economic development of on-site resettlement residents to public spaces on floors

(5) Develop academic spaces, health care services, and community spaces in buildings that inherit and develop the soul values of the place





Bringing small commercial services to the floors

c. The solution group for the OPH Human component (Element 3), includes:

- (1) Construction of green streets in residential areas
- (2) Develop landscape and spiritual space
- (3) KG meets the needs of all ages of the population
- (4) Create memories and souls of places in the residential area

d. Group of other solutions, including:

- (1) Solution for reconstructing OPH according to TOD orientation
- (2) Construction of a sustainable transportation network system
- (3) Create a comfortable living space in small apartments

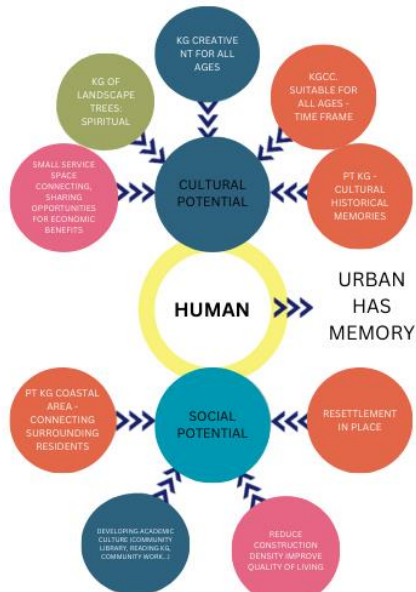


Figure 3.9: Diagram of relationships with human components

d. Experimental design

Take OPH Kim Lien as the location to apply the proposed principles and solutions. The study area is located in the south of Dong Da district



Figure 3.13: Current status of Kim Lien OPH

Reconstruction orientation:

After evaluating the points on the criteria table, Position 17, Quality 15, People 20. Evaluating the research area, it is necessary to apply Model 2 for area B and Model 3 for area C.

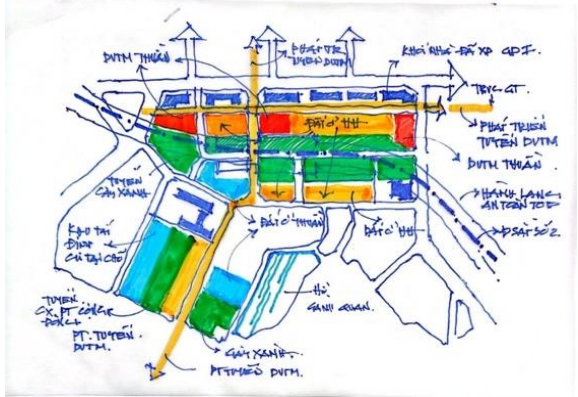


Figure 3.15: Reconstruction model of Kim Lien area selected

From the selected Models, apply solutions to the reconstruction area based on the components that are lacking points (APARTMENT BUILDING Position and Quality)

Area B:
 Increase height, develop and bring commercial service lines to high floors, develop green traffic routes,



Figure 3.16: Overall plan of Kim Lien area after reconstruction

connect TOD (DSDT line 2 and have a connecting station), use underground KG to connect buildings. Arrange two commercial service buildings combined with offices to create revenue for businesses. Develop the green landscape axis, increase the area of green landscape and water surface of the area as a connecting space. Construction density: 49% Floor height: 24 floors Of which: 5 commercial service floors & 19 residential floors.

Area C: Maintain height according to master plan, 24 floors. Trees are arranged throughout the area as connection spaces, playgrounds, and sports fields to serve the community and surrounding areas. Construction density: 36% Floor height: 24 floors Of which: 3 floors serving public spaces including small commercial service spaces, artistic creative spaces, cultural and academic spaces, medical stations, preschools, and other services Serving residents and 21 residential floors.

e. Discuss

- i. Viewpoints on the heritage value of OPHs in Hanoi's inner city

The value of architectural

heritage not only includes historical

and artistic aspects but is also seen in scientific and social aspects.

For OPHs, the value of conservation lies in the fact that it marks an important stage in Vietnam's socio-economic development. Demonstrates the State's great efforts in difficult circumstances during and after the war. Reflects the humanity of the NEU model, the urban development process, progress in awareness, design perspectives and construction technology levels. In terms of art, there are still certain hidden values that can be exploited. The image of



Figure 3.19: Overall perspective of the central park landscape axis connecting TOD

public buildings from a cultural and social perspective has created a unique feature for Hanoi urban area during the transition period.

Logically, it is impossible to raise a part of the current state of OPH for conservation (thus "freezing" the outdated and degraded situation, going against/impeding redevelopment). Note that the interesting and progressive values of OPH following the housing subdivision model are only temporary and belong to the past; Spiritual and intangible cultural values can be maintained, continuously promoted and reproduced in new forms, in new ways, in new residential architecture.

ii. Connecting/linking OPH with surrounding residential areas

To create effective connections between OPHs and the surrounding area, a comprehensive and integrated architectural design approach is needed. During the reconstruction process, OPH can also pay attention to the following issues to promote this connection:

- Connected by transportation system
- Connect through open spaces and green spaces
- Connect through public works, services and utilities systems
- Create cultural and social connections

Through the integration of the above architectural solutions, it is possible to create a rich and multi-dimensional living and working environment, promoting connection and exchange between apartment buildings and surrounding areas.

CONCLUSION - REQUIREMENTS

1. CONCLUSION

Based on scientific arguments and arguments, the thesis has proposed a new approach to the reconstruction of Apartment buildings / OPH, with feasible perspectives, principles and solutions, in accordance with the requirements. and new conditions. The results achieved by the thesis have met the research purposes set out -

specifically:

1. Proposed 4 viewpoints and 9 principles for reconstructing OPHs.

1.1. Four perspectives on reconstruction of OPH include:

- Reconstruction of OPH is to create a new residential area in the direction of restructuring land use criteria, recreating the unique feelings of Apartment buildings, and strengthening the resettled residential community on the spot.
- Reconstruction of OPH uses resources reasonably and effectively, meeting the criteria of sustainable architecture and urbanism in environmental, cultural, social, economic, and legal aspects.
- Reconstruction of OPH harmoniously meets the interests and needs of relevant parties, including the government - investors - people.
- Reconstruction improves the quality of people's living environment while respecting and adequately dealing with the intangible aspects/values of OPH.

1.2. Nine principles for rebuilding public health facilities in Hanoi's inner city:

- Principle 1 - Mix functions on all 3 levels (Residential Area - Land Lot - Construction) to improve the efficiency of urban land use.
- Principle 2 - Comply with standards on the basis of flexibly exploiting the relationship between planning and economic indicators in specific areas.
- Principle 3 - Balance & harmoniously meet economic, cultural and social aspects, and share the potential and opportunities of the location.
- Principle 4 - Maximum satisfaction of on-site resettlement needs, maintenance of inherent livelihoods, reasonable compensation and conversion levels to maintain the community.
- Principle 5 - Take advantage and exploit the accessibility of public transportation systems (TOD) to improve the value and efficiency of urban land use.

- Principle 6 - Diversify public service spaces to maintain people's livelihoods, create opportunities to attract investment and develop socio-economic activities in residential areas.
- Principle 7 - Organic continuation of intangible elements, recalling the feelings of "collective spirit" / "soul of place" of the old APARTMENT BUILDING.
- Principle 8 - Increase green areas and open public spaces to improve the natural environment and social environment in residential areas.
- Principle 9 - Strengthen friendly and sustainable connections with neighboring residential areas, sharing benefits and development opportunities.

2. A set of criteria has been developed including 3 groups OPH Position - People - Quality with 25 specific criteria to determine the potential as well as the proportion of components to create balance of OPH. From there, divide the OPHs in Hanoi's inner city into reconstruction groups to orient adaptive reconstruction solutions.

3. Proposed two models of overlapping functional spaces in OPH to create surplus funds for reconstruction. On that basis, four groups of reconstruction solutions are proposed, including:

- Solution group for OPH Position component (Element 1)
- Solution group for the OPH Quality component (Element 2)
- Solution group for the OPH Human component (Element 3)
- Group of other solutions

2. REQUIREMENTS

1. Hanoi is a unique urban area, so the reconstruction of public buildings in the inner city area requires new concepts and approaches based on balancing elements of interests. From the thesis's proposals, further research is needed to define the structure and form of reconstruction of OPH clearly, suitable for each inner-city area, creating favorable conditions for management, construction and management. urban housing development.

2. It is necessary to promulgate a system of Standards, Regulations, and Codes to be able to control and guide the reconstruction and construction of OPH in accordance with the development of society, specifically:

- Hanoi and big cities need to have detailed planning for the inner city area, including specific regulations to exploit the position of public parks in the inner city and effectively use resources.

- Issue specific standards and indicators on the proportion structure of housing types, construction density, land use coefficient, average height, and population density within the carrying capacity of each location. , in accordance with the Government's housing development orientations and future sustainable development.

3. Create a legal corridor for reasonable mechanisms and policies to encourage businesses to invest in applying the model of reconstruction of public buildings to improve the quality of the residential environment, thereby improving socio-economic efficiency. society and sustainable development of urban housing./.

**List of author's published scientific works
related to the thesis**

1. Nguyen Viet Ninh (2023), *Current status of old dormitories in Hanoi in the period 1954 - 1990*, Architectural Magazine - Vietnam Association of Architects, No. 12/2023. ISSN: 0866-8617
2. Nguyen Viet Ninh (2023), *Reconstruction of old dormitories in Hanoi's inner city area*, Architectural Magazine - Vietnam Association of Architects, No. 1/2024. ISSN: 0866-8617