



# THE INTERDEPENDENCE OF TRANSPORT AND HOUSING DEVELOPMENT IN THE TRANSITION OF HOCHIMINH CITY

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## ABSTRACT:

Together with the huge amount of foreign investment that flows into Viet Nam, that push the of transition in socio-economic and rapid increasing of urban poulation, Ho Chi Minh City has become the biggest city in Vietnam with the rapid increase in population of the city. Consequently, the increasing of transport volume and the requirement of housing have become the important issues of the city.

The interdependence of urban transport and housing development has been demonstrated in over the world. Theoretically, the capability of transport network affects housing development and in reversion, urban housing influences the planning of urban transport. Transport network structures the form of urban housing, creates the new residential area and allocates the size of apartment block. Meanwhile, housing area generates the traffic volume that makes pressure on the transport network. Basically, the capability of transport network and housing development have interacted each other.

In the transitional context of Ho Chi Minh City, this interaction robustly becomes a complicated problem. The existing transport network is overload by traffic volume increasing and substantially congestion with 20% growth rate per year. However, the capability of transport network, basically, has been insufficient for the urban development; in particular, the housing investment speed has been growing inadequately. In the inner city while the road network is complicatedly expanded, many high-rise buildings for housing are submitted and therefore will generate more traffic volume when they are constructed. In the suburban, the requirements of housing due to the increasing of population establish many new residential areas with inappropriate road network. The traffic volume is increasing a long every main corridor to the inner city and lead to the serious congestions every day. Generally, the unbalance of investments in transport network and urban housing happened in over the city, even in the suburban, that have threatened the overload of the network.

This paper will (i) explore the transportation and housing development issues in Ho Chi Minh City, (ii) discuss their interdependence and (iii) finally analyse the recommendations for planning and management process for sustainable development in Ho Chi Minh City.



## 1. Introduction

Recently, the transition in Vietnam's socio-economy has faced with the movement from a rural to an urban base and the evolution from central planning to a market-oriented economy. Those have caused many problems in urban development. Ho Chi Minh City (HCMC) has become the biggest city in Vietnam with the population of 7.3 million in 2006 and is estimated to increase up to 10 million by the year 2020. Two major matters are taking place in the transition of socio-economic in Hochiminh city – one is the requirement of housing for rapid increasing population and the other is the inadequate development of transport infrastructure.

The new Land Law coupled with Vietnam's rapid economic growth has provided incentives for property developers, the majority of which are still state-owned, to build planned developments. Mean while, It is estimates that there are still 300,000 people living in slums while the Ministry of Construction standards have set a target of 14 m<sup>2</sup> per person [20]. As such, the process for housing development in HCMC is speeding up.

In general, the city is characterized by a dense concentration of people, activities and infrastructure in the city center, by overloaded main transport corridors, and scattered sub-urban areas. Consequently, the rapid establishment of new housing area leads to many issues on urban planning and management, in particular, the urban area has sprawled into the suburbs without adequate infrastructure.

The planning and provision of transportation infrastructure for urban travel in HCMC has been largely oriented towards its serving for transport demands. National transportation policies and city development priorities have consistently been geared towards public transportation and increasing capability of road and transport constructions. Unfortunately, the capability of transport constructions has been insufficiently developed to serve for transport needs in consequence of the population explosion.

Transportation and housing development are always the major concerns in big cities, the impacts of which are not only interdependently interacted with each other but also affected on the planning process and urban development. This will be followed by a discussion on effective housing and transportation planning and suggestions to achieve the effectiveness.

## 2. The status of housing and transportation development

### 2.1. Housing development

In the city with rapid economic growth as Hochiminh City, housing development generates many major matters that need careful consideration.

**a. The housing demand:** The transition in Vietnam creates the increased disposable income, increased savings, changes in lifestyles such as a decline in the role of the extended family, and rapid inflation of housing and land prices. In Hochiminh City, the changing process happens rapidly with the diversity of housing needs in term of quantity and quality.



According to statistics, HCMC currently has approximately 1 million housing units and flats in urban areas. Since year 2000 the housing space (floorage) in HCMC has increased by over 3 million sqm/year on-average, particularly in 2004 the increase was nearly 4.2 million sqm., hence an increase of 65 million sqm of housing space [15]. However, the housing demand has not been supplied.

The city government has decided many solutions for investment housing, those lead to the operation of many investment projects, property development and the establishment of new residential area in the city. These solutions are mentioned below:

- Incentive investor to build houses for low - income people and resettlement, hence is facilitating the attraction of capital and making the real estate market healthy.
- Publicly calling for foreign investment in developing new urban areas (Thu Thiem, Northwest Cu Chi, South Rach Chiec, Binh Chanh suburb...), those developments are required to be carried out from the beginning by land zoning and infrastructure installation.
- Promoting effective implementation of ODA projects for urban infrastructure development and improvement (East-West Highway, water environment, canals of Hang Bang, Tau Hu – Ben Nghe and Nhieu Loc – Thi Nghe, Urban Upgrading, etc...) to gradually meet people’s living demand and upgrading the slum areas in districts 11, 6, 8, 4, Tan Phu, Tan Binh and Binh Thanh.



**Illustration 1: Housing status in HCMC – Source: Author 2006**

a. Apartment development at Binh Thanh District ; b. The narrow street at District 3 (Very density area of housing without sufficient infrastructure)

**b. Housing for low – income people**

The fact is that increasing numbers of poor people are moving to cities and their housing needs is an important issue. However, the provision of appropriate housing for low-income people, including students and those requiring resettlement arising from development projects, remains a major challenge for Government.



The too low incomes of urban dwellers in poor class have made them unable to afford for the housing. The workers' houses in the industrial parks & export processing zones and students' dormitories have not been reached the quantity and quality as expected demands. The living quality in poor residential area must be considered as the bad condition in density, environment situation, disposal, and infrastructure. It is reported that there are more than 300.000 people in Hochiminh city living in slums and up to 25% of dwellers is living lower than standard while most of new housing projects recently served the higher income people.

Moreover, many housing programs for low – income people generated by the Government still have not been operated because of the limitation in capital, the insufficient management and the underdeveloped infrastructure system.

### **c. Housing planning and management of planning**

The most important issue in housing development in Hochiminh City is the management of planning. The construction of new apartments, high-rise building and new residential area are currently facing with obstacles in permission procedure, construction management and insufficient infrastructure, etc.

Department of Planning and Architecture are being under pressure of huge amount of submissions for obtaining construction permission, most of them located in the city center where has been supposed good condition in land use value and infrastructure. The investors always require the best profit with high-rise and high density building that must be increasing the population in the inner city and put the pressure on the transport network. Event though, many planning projects currently at the new urban area have been submitted in very high density so that it is very hard to conduct the implementations.

The contradiction happens when the transport network capability does not meet the demand, so that it is very difficult for both the investor and the officer in management of planning. Because of the inappropriate infrastructure, the officer may refuse the submission while the rapid inflation of housing and land prices requires investment of the high-rise and high density building.

## **2.2. Transportation development status**

The transportation development status in Hochiminh City has been seriously considered, particularly in congestion, road extension and railroad development etc. The followings are some facts of Transportation development status in Hochiminh City:

**a. The rapid growth of private cars and motorcycles:** the number of cars and motorcycles are increasing day by day and is claimed to be the reason for traffic congestion. The total number of registered motorcycles and cars in the city in 2005 was 3 million (412 vehicles per 1000 people) and 220.000 (29 cars per 1000 people). Car and motorcycle ownerships in the city are increasing to an average of 9.5% and 13% per year, respectively and the total number of private vehicles registered in the city is doubled between 2000 and 2005.



**Illustration 2: Motorbike is the major Transport mode in HCMC – Source: Author 2004**

**b. Transport demand:** it has been estimated that the residents of HCMC make more trips than other cities do. Similarly, the trip rate of HCMC people is 2.57 trips per person per day (3.0 including walk trips); while in Hanoi, trip rate is only 2.0 (2.6 including walk trip). The trend of trip rate is increasing, particularly to households own more than 01 motorcycle, trip rate is 3.2. The increasing number of motorcycles has raised the total trips from 19.3 million per day by the year 2002 to 26.5 million per day in 2020 (as estimated population by 10 million). As a result, the travel time is getting longer and congestion is increasing.

**c. The limited public transport capacity:** poor reliability and quality of public transport facilities in HCMC is a major determinant of choice for transport mode. Buses are less competitive than motorbikes because of the flexibility. While bus users complain about delays and missed schedules, bus operators are frustrated by the fact that buses are unable to follow fixed schedules due to traffic congestion during peak hours. Meanwhile, motorbikes are easily to move while buses are often stuck in traffic jam.

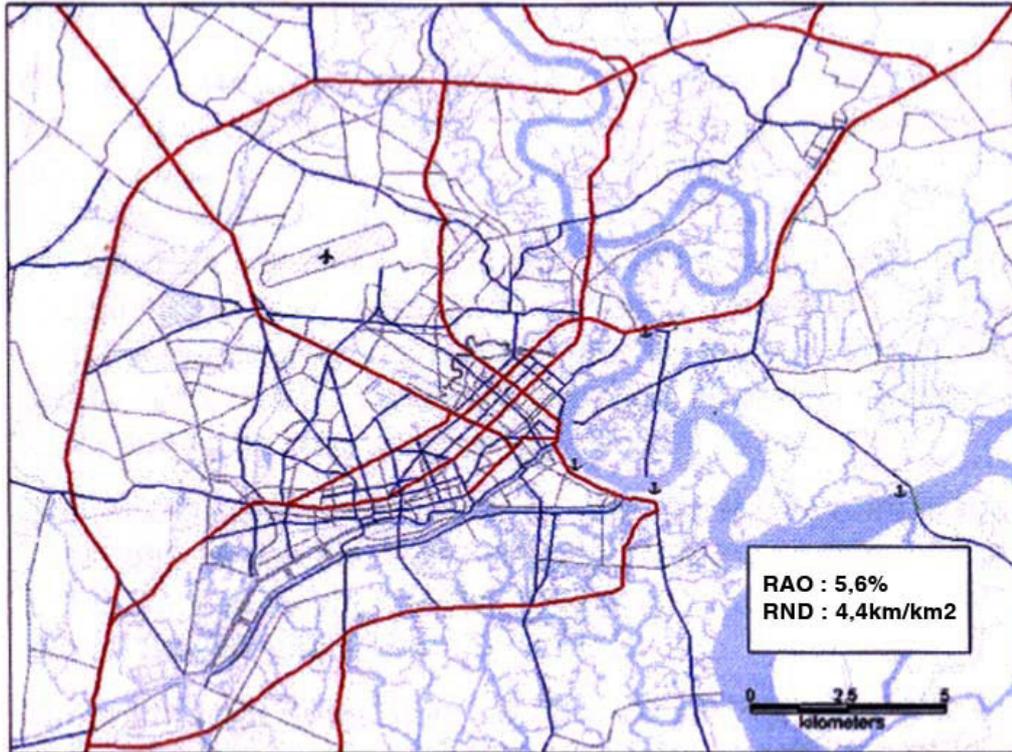
**d. Low capability Road Infrastructure:** The major infrastructure of transport in HCMC is road, which provides 98% of the needs and the other 2% is waterway. However, the existing indicators of road network have been very low such as the ratio of road area occupancy (RAO) and ratio of road network density (RND). The statistics of surveys shows that, in the inner city, the RAO is only 5.6 % and RND is 4.4km/km<sup>2</sup> [1]. The structure of road network is one of the most important reasons for low network capability. Unclassified and badly – arranged network creates the equal advantage for every transport mode, the situation will be worse because there is no distinguish between high and low speed demands. All of transport demands, means of transport... have been running in the same route of network.



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**Illustration 3: Existing road network, very low capability with low RAO and RND**

Source: JICA 2003.

**e. Accessibility of the network:** motorcycle is the highest accessible mode because of its flexibility and convenience, yet the accessibility is a consequence of the road network and structure of the grid. Highly accessible motorbikes and serving road network make passengers conveniently approach every building along the streets. The contiguous accessibility is very easy and convenient and have established the retail commercial housing and variety of street activities in HCMC. Those make many vitality spaces and special characteristics of HCMC.

### **3. Analyse on the interdependence of transport and housing development in HCMC**

#### **3.1. The interdependence of transport and housing development**

The interdependence of urban transport and housing development has been analysed in many researches, which generates many impacts on the development of cities and urban planning process.

Urban transport system and its elements such as modes, infrastructures and users, have a spatial imprint, which defines the urban form. Therefore, urban transportation affects the urban land development patterns and urban transportation and land use interactions and have often been described as a chicken-and-egg problem:

*"You can start with land use, or you can start with transportation; in either case, the basic feedback lead inevitably to a hierarchy of central places and transportation links connecting them" [17].*



Particularly, transportation and housing development interdependence has recognised similarly. Transportation has impacts over housing development as well as housing development has impacts over transportation systems. Urban transportation aims at supporting transport demands generated by the diversity of urban activities in a diversity of urban contexts while housing area is the most important area with living activities. In term of land use planning for housing, this area is a major function of the city, from which transport demands generate to others. The interactions are analysed as following:

Housing area is the most important origin and destination in the city, which generates the most of transport demands, therefore planning the location and size of housing definitely affects the transport planning. The increasing of population leads to the growth of transport demands. Furthermore, the location of housing area affects the contiguous accessibility and the travel distance, and hence it affects the choice of transport mode as well the structure of network. The rapid growth cities always face with the increasing population that raising the numbers of housing area or higher density, therefore those cities have to overcome the difficulty of increasing transport demand.

On the contrary, transportation system provides the convenience and benefit for housing area. The accessibility and connectivity advanced by the transport affect the building style, public and private design, main entrance and many elements of housing construction.

In other words, transportation and housing development are mutually interdependent. For instance, the construction of a highway favours the concentration of residential and service activities, which will generate supplementary transport demand, which in turn will favour the location of new activities and a reorganization of the regional spatial structure.

### **3.2. Issues of transport and housing development in HCMC**

As many transition cities, HCMC has been facing with many difficulties in transport and housing development, however, their interdependence has emphasised these issues more and more difficulty. The highest priority issues of transport and housing development in HCMC are discussed as following:

(a) High concentration in central areas with highly different density between central area and the others makes the travel distance short and many choices for motorcycle. The underdeveloped transport network except the city center has created more advantages for the central area than other areas as well as made the construction pressure in this area.

(b) The rapid inflation of housing and land prices requires investment of the high-rise and high density building not only in the inner city but also in the new urban area or the suburban where the transport network is inadequate. The increasing number of housing put the pressure on transport network thus generates the congestion.

(c) High-density urban area but low-rise building has made land use ineffective. The low capability of road network has affected the housing land use; the low systematic accessibility has made the division of many small pieces of land use (very small plot). Moreover, low-rise and small size buildings have stimulated the use of motorcycles.

(d) Good topology accessibility has just occurred along streets while the other sites of city such as areas have low RND and RAO, residents find it difficult to approach their houses. Badly developed and inefficient transportation system offers very low levels of systematic accessibility.



Thus, systematic accessibility is leading to bad opportunities and socio-economic issues. The dramatically different values between the road front houses and others have caused non-proper land use planning.

(e) Urban planning and transportation planning are mutually incompatible: Low-density sprawling in the fringe area and illegal development in the sprawling area get ineffective infrastructure provision, especially the service for transport demands.

(f) The structure of network planning is unclassified and badly – arranged, therefore, land use along the road, particularly the land use for housing has not been adequately planned. For example, many high – rise building are designed in narrow street while row houses with low floor area ratio (FAR) are planned in main road.

(g) The contradiction between the investor and the officer occurs in management of planning because of the inappropriately development of transportation system and housing. Those create many difficulties in management process and hence delay the implementation process.

All the issues mentioned above have created the bad existing situation of transport as well the management of housing development in HCMC. There are so many explanations that have been studied, nevertheless, the major problems in HCMC are the insufficient development of transport network in urban development process and the lack of co-ordination between transport and housing development.

#### **4. Recommendation for housing development and increasing the transport capability**

The interdependence of transport and housing development in HCMC causes the extremely bad situation in the city, in the order hand; this relation is the best solution for overcoming the difficulties. The followings are recommendation based on the interdependence of transport and housing promotionally housing development and increasing the transport capability:

##### **a. Building the urban form aims at increasing the transport capability**

Based on the Master plan, discussion on the housing and transportation existing status, the urban form should be divided into four categories:

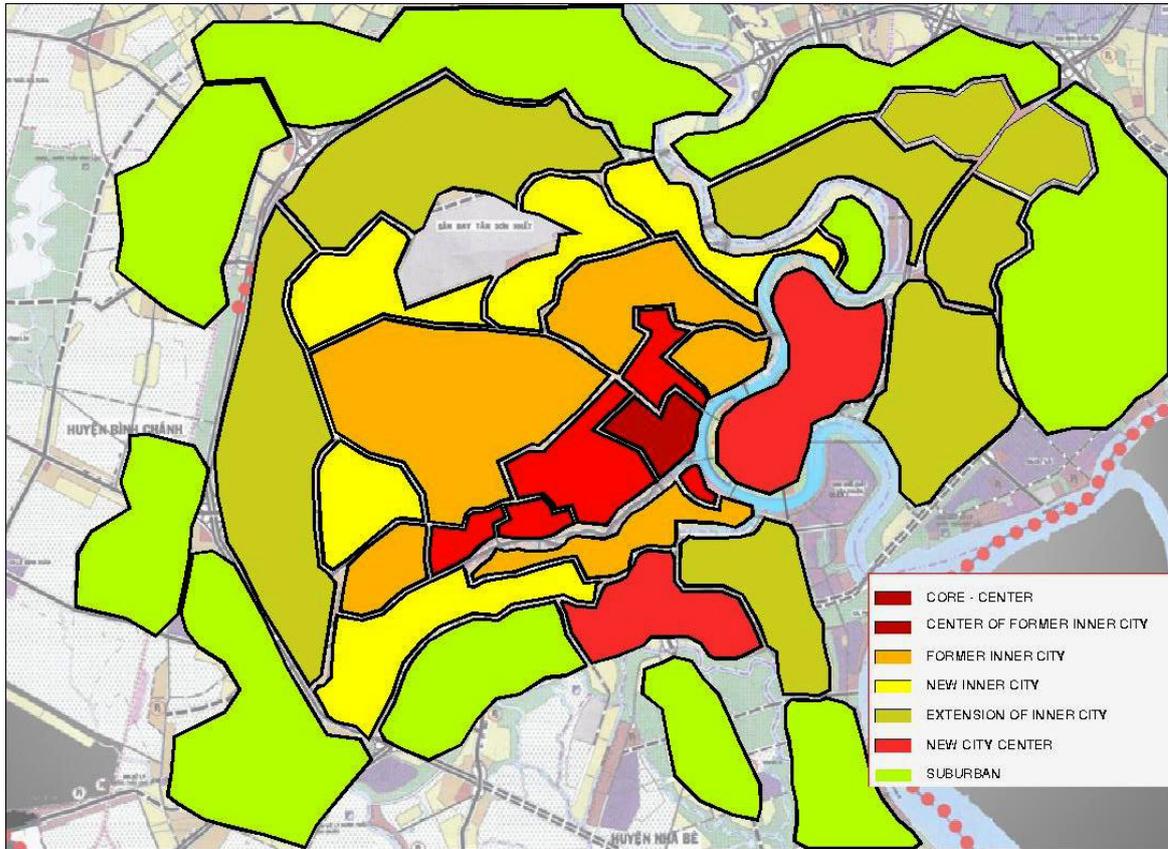
+ The core – center: The core center is characterized by high density, transport network capability has been contemporarily meet the needs, limited expansion of transport network, under pressure of development because of many investment projects (commercial, housing, office, etc). There will be several transport development projects such as the metro line system promoting for the increasing of transport network capability.

+ The former inner city: High density with low-rise building, lack of open space, transport network capability has not been contemporary meet the needs, limited expansion of transport network; some housing development projects have been located.

+ The new inner city, extension of inner city and new city center: partly developed area with high-density housing area, some area has not been constructed, low capability transport network. There are many housing projects have been decided to invest but hard to implement because of many difficulties in planning and management. Furthermore, the speculation generates the slow implementation process, hard compensation and rapid inflation of housing and land prices.



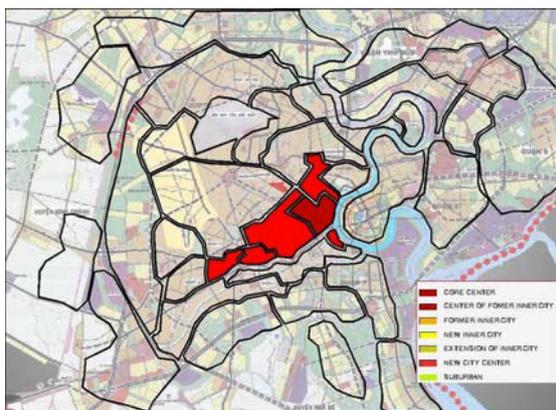
+ The suburban: mainly underdeveloped area, very low capability transport network, some new residential areas have been decided to locate with hard to implement.



**Illustration 4: Zoning for reflecting the interdependence of transport and housing development**

– Source: Author 2006

**b. The options for particular area in urban form**



**Illustration 5: The Core - center, Source: Author 2006**

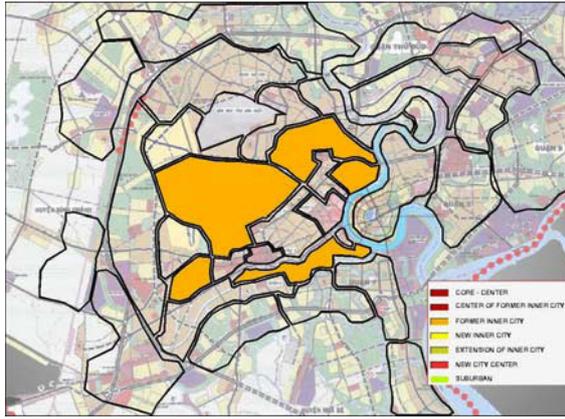
+ The core – center: Theoretically, the increasing of transport capability is able to develop more housing in this area, however, the city center currently is very high density; there is not enough land use for social infrastructure (school, public space, etc). Fore those, housing should not been developed in this area. Office building or commercial center could be built in condition of ensuring that transport network capability meets the needs, particularly, ensuring the connectivity and accessibility.



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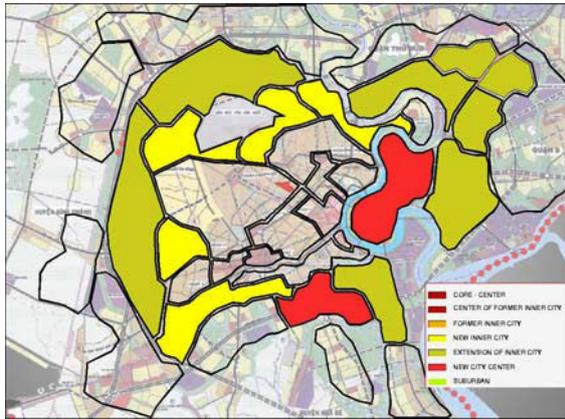


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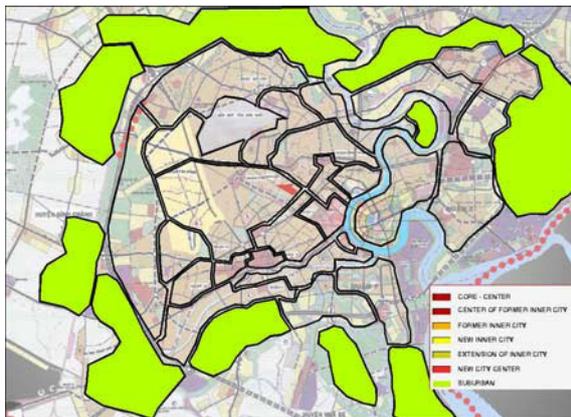
**Illustration 6: The former inner city,**  
Source: Author 2006

+ The former inner city: the increasing of transport capability is the most important objective of this area: expanding the land occupation of road and open space. The solution is priority upgrading the main road with the adjustment of the land use along that creates the opportunities to regenerate not only the housing along the road but also whole the residential area.



**Illustration 7: The new inner city, extension of inner city and new city center,**  
Source: Author 2006

+ The new inner city, extension of inner city and new city center: The connectivity between the new area and the former part of inner city is the most significant for the development of the new inner city, extension of inner city and new city center as well. This is the mandatory condition for the new establishment of housing area. For instance, new residential area is obligated to connect with the city center, there fore, the investors must invest the road that connect their development to the other parts of the city.



**Illustration 7: The suburban,** Source: Author 2006

+ The suburban: The local authority is responsible for a comprehensive development that means the development of housing have to rely on the capability of the transport network and in converse the transport network must be developed sufficient with the housing investment.

## 5. Conclusion

The problems of transportation and housing development in Ho Chi Minh City are rapidly becoming as serious as other large cities. It is clear from the above discussion that the



interdependence between transport network and housing development is a core theme in urban planning; and is a key solution to gain the comprehensive development.

The division of land use relies on the existing situation of housing and transportation development that offers four categories, for which, specific solutions have been assigned for each area. The solutions focus on the development of housing aiming to meet the living needs while promote the sufficient transport network with increasing capability.

In summary, the interdependence between transport network and housing development has been studied and applied in many countries. HCMC is in the development process, the interdependence between transport network and housing development is the priority Sustainable resource for urban planning and management in HCMC.

## REFERENCE

1. Vietnamese Ministry of Transportation, People community of Ho Chi Minh City, Japanese International Cooperation Association – JICA, 2003, *The research on Urban Transport Master Plan and Feasibility study in HCMC Metropolitan Area –Houtrans: Final report*, HCMC.
2. Nguyen Trong Hoa, Le Anh Duc, 2003, “The Research on planning and improvement the Hochiminh city traffic system with suitable function”, *Final Report of the Scientific research theme of Vietnamese Ministry of Construction*, HCMC
3. Nguyen Trong Hoa, Le Anh Duc, 2005, “The research on the proposals of planning solutions and upgrading the effective management to reduce the congestion in HCMC”, *Final Report of the Scientific research theme of Vietnamese Ministry of Construction*, HCMC.
4. Nguyen Trong Hoa, Le Anh Duc, Truong Trung Kien, 2003, “*Enhance the effectiveness of these improvement projects of HCMC transportation system*”, *Final Report of the Scientific research theme of Ho chi Minh People community*, HCMC.
5. Le Anh Duc, 2006, “Development of transport network and effectiveness of land use in HCMC”, PhD Thesis, Degree of Doctor of architecture and planning, University of Architecture of HCMC.
6. HCMC Department of Transportation and Infrastructure – DTI, 2004, *Final report of Planning the bus network in HCMC period 2003 –2005 –2010*, HCMC.
7. HCMC Department of Transportation and Infrastructure – DTI, 2006, *Transport and infrastructure development Statistics 2005 report* , HCMC.
8. People community of Ho Chi Minh City, Center of Transportation development research – TEWET, 2003, *Final report of The Feasible study on two priority Urban Metro routes in HCMC*, HCMC.
9. Geerlings, H & Dominic S., 2003, “The integration of land use planning, transport and environment in European policy and research”, *Transport Policy*, Vol.10, pp.187–196.
10. GB Arrington, 2004, *TOD In The United States: The Experience With Light Rail*, Principle Practice Leader PB Place Making.



11. Hokao Kazunori & Mohamed Shihana, S., 1999, "Traffic impact mitigation for new developments: a way to reduce traffic congestion in major cities", *Transport and communication bulletin for Asia and the Pacific* Vol.68, United Nation
12. Ieda Hitoshi, 2002, "Orientation of City and Transport Development" in Asian Context, *The international Workshop on The Role of Planning Practices toward Sustainable Urban Environmental in Asia 11/3/2003*, Seoul
13. Kenworthy Jeff, 2001, *Sustainable Urban Transport and Land Use Patterns for more Sustainable Cities in Australia: Some key Policy Implications from An International Comparative Study*, A Submission to The House of Representatives Standing Committee on Environment and Heritage Inquiry into Sustainable Cities 2050, Australia
14. Nguyen Van Hiep, 2007, The track records and challenges of housing problem in Ho Chi Minh City at present and up to 2010, Ho Chi Minh City Department of Construction.
15. Rasagam Ganesh, 1999, "A step toward sustainable transport: a case study of Penang Malaysia", *Transport and communication bulletin for Asia and the Pacific* Vol.68, United Nation
16. Robert Cervero, 1988, *Land-Use Mixing and Suburban Mobility*, Transportation Center, University of California.
17. Rodrigue Jean Paul, 2004, "Chapter 1 – Transportation and Geography", *The Geography of Transport system*, Hofstra University Press, New York.
18. Robert Cervero 2003, "Road Expansion, Urban Growth, and Induced Travel A Path Analysis", *Journal of the American Planning Association*, Vol. 69, No. 2, American Planning Association, Chicago, IL.
19. SAPROF Team, 2006, *Ho Chi Minh City Urban Transportation Improvement Project (Urban Mass Rapid Transit (UMRT) Line 1 (Eastern Section))*, SAPROF Team Parsons Brinckerhoff International (PBI) & Japan Railways Technical Services (JARTS)
20. The World Bank in Vietnam, 2006, *Urban Development Strategy - Meeting the challenges of rapid urbanization and the transition to a market oriented economy*, Vietnam's infrastructure challenge Workshop Edition.