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HO CHI MINH CITY TRANSPORT AND LAND USE

In March 2008 the People's Committee of Ho Chi Minh City approved a revised master plan designed to guide the development of the city through the year 2025. Ho Chi Minh City, often abbreviated as HCMC, was Vietnam's commercial capital, with a population nearly twice as large as Hanoi, Vietnam's political capital. Vietnam's economy had been growing at rates of 6 to 8 percent per year for nearly two decades, and much of that growth was located in its cities, and in HCMC in particular. Real estate prices were at all time highs, and development pressures threatened the historic French colonial core of the city and the wetlands to the west and southeast. Traffic congestion was growing rapidly as HCMC was registering 1300 new motorcycles and 150 new cars per day. The city, which the French had christened "the Pearl of the Orient" was now referred to by some as "the motorcycle capital of the world."

The new master plan designated areas where growth would be encouraged and included a list of transportation and other infrastructure projects and policies designed to support the desired developments. Not all the elements of the plan seemed consistent with its goals, however, and the list of projects was so ambitious—including four elevated expressways, six urban mass transit lines, and many bridges and tunnels—that it was unlikely that all would be built on schedule. The obvious question was what policies and projects should receive priority.

The Growth of the City

HCMC is located on the west bank of the Saigon River, 57 kilometers northwest of the point where the river empties into the sea (Exhibits 1 and 2). The city is divided into 22 districts including 12 "urban" districts (districts 1 through 12), 4 rapidly urbanizing "inner" districts (Binh Thanh, Go Vap, Tan Binh and Phu Nhuan) and 6 largely rural "outer" districts (Cu Chi, Hoc Mon, Thu Duc, Binh Chanh, Nha Be and Can Gio). The city's economic activity spills over into parts of three adjoining provinces and these areas and the city are sometimes collectively referred to as the Greater Ho Chi Minh Metropolitan Area.

The Vietnamese economy and HCMC grew only slowly in the first decade after the end of the war and the reunification of the country in 1975. Growth picked up after 1986, when the government adopted Renovation (Doi Moi) Policy to transform Vietnam from a centrally planned to a more market-oriented economy. Investment in private enterprises by individuals and foreigners was

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encouraged, some state-owned enterprises were privatized and the remainder were pressed to become more financially self sufficient, and the right to buy and sell land was established. Agricultural productivity improved, and Vietnam began to export light manufactured goods.

If Vietnam grew rapidly after the economic reforms, HCMC grew even faster. HCMC's regional product increased roughly 4 percentage points faster than the nation as a whole (Exhibit 3), and many Vietnamese migrated to the city in search of economic opportunity. According to official statistics the population of the HCMC increased from 4.7 million in 1995 to more than 6 million in 2007. But as many as 2 million migrants were thought not to be accurately registered with the city, so that the real population was much larger than officially reported. Rural provinces did not have an incentive to report their population losses accurately since the central government redistributed tax revenues from wealthy provinces to poor provinces with a formula that took population into account. And HCMC, as a wealthy area, wasn't highly motivated to report all the population it was gaining because the added services it would have to provide the migrants might cost more than the additional tax revenues it would be allowed to retain.

The city's rapid development provoked the World Bank in 1994 to fund the preparation of an urban master plan for the year 2020, which was approved in final form by the Prime Minister in 1998. The plan proved ineffective, however, in part because it provided only general guidance on where growth should be encouraged and lacked the specifics on permissible land uses and densities. This defect of vagueness was compounded by weak and confused implementation. The city's Office of the Chief Architect and Department of Land and Housing, which were nominally responsible for implementing the plan, had few qualified staff. And the land permitting process was very cumbersome, and involved controls at the district as well as city level. Lacking better guidance and control, development was often opportunistic, where real estate promoters and city officials believed the profits would be highest and resistance lowest.[1]

Much of the city's population and job growth was on the city's periphery, particularly to northwest of the city center in the Tan Binh and Go Vap districts near the airport but also to the west near the Binh Tan district and to the north around the Thu Duc district. But developers had begun to build office towers and residential apartment buildings in the downtown, on the west bank of the Saigon River in District 1, threatening the historic neighborhoods of French villas that surrounded the downtown in Districts 1 and 3.

A longer term threat was development on wetlands to the southeast and east of the city. Over 50 percent of the land within the city was less than 2 meters above sea level, and thus susceptible to flooding.[2] And the wetlands along the Saigon River were thought to perform a critical function in holding rain runoff and releasing it slowly into the river. The seminal project was the Saigon South New Town (also known as Phu My Hung), a 600 hectare residential and commercial development built on wetlands south of the Te Canal in District 7. The government leased the land in

[1] For criticisms of the 2020 plan see Urban Planning Institute of HCMC and Nikken Sekkki (consultants), "The Study on the Adjustment of HCMC Master Plan up to 2025", report to the Ho Chi Minh City People's Committee, 2008, pp. 2-23 to 2-34; and Houng Ha and Tai-Chee Wong, "Economic Reforms and the New Master Plan of Ho Chi Minh City, Vietnam: Implementation Issues and Policy Recommendations", *GeoJournal* 49 (1999), pp. 301-309.

[2] Urban Planning Institute of HCMC and Nikken Sekkki (consultants), "The Study on the Adjustment of HCMC Master Plan up to 2025", report to the Ho Chi Minh City People's Committee, 2008, pp. 1-1.

1996 to a Taiwanese real estate developer in return for a 30 percent interest in the development. Few believed that anything would come of the deal because the site was so difficult to build on and about 5 kilometers south of downtown. But the developer was experienced and had deep pockets, and gradually built an extremely high-quality master planned community with over 25,000 residents that became one of the most prestigious places to live in HCMC.[3] The success encouraged local developers to build on wetlands nearby. The government controlled much of the land in the area and thus received revenues from leasing the land. (From 2001 to 2004 roughly 15 percent of the HCMC government's budget came from sales of land use rights and buildings.[4]). Soon plans were being developed to build an additional bridge over the Te Canal to improve connections to the area.

About this time the government also decided that the downtown should ultimately expand on the east bank of the Saigon River in District 2, opposite the existing downtown. The area, known as Thu Thiem, had ample room and would relieve the pressure on the historic quarters of the city. But the site was wetlands and, unlike South Saigon, densely inhabited by poor families who would have to be resettled (Exhibit 4). The government planned to build four new bridges and a tunnel across the river at Thu Thien eventually, the first of which opened in January 2008. Meanwhile an international competition was held to plan the new downtown that was won by Sasaki Associates, an American firm.

The Transportation System

Motorcycles. The transportation system had managed to cope with the city's growth so far, but it was coming under increasing strain. HCMC differed from most large metropolitan areas in developing Asia in that it relied so heavily on the motorcycle and so little on public buses. The dominant mode of urban transportation changes as economies develop and per capita incomes increase. The usual trajectory is from human or animal powered forms of transportation—such as walking, bicycle or ox carts—to motorized public transportation—in the form of the bus or minibus—and finally to motorized private transportation—usually in the form of the automobile. HCMC had largely skipped over the motorized public stage, however, shifting directly from bicycles and walking to the motorcycle. In other cities at similar states of economic development the bus typically accounted for 50 to 60 percent of urban trips, walking and bicycle roughly 20 to 30 percent and the private automobile and motorcycle the remaining 20 or 30 percent. In HCMC, by contrast, motorcycles accounted for 74 percent of all non-walking trips with the bus only 1.7 percent, private auto 1.4 percent and most of the balance on bicycle (Exhibit 5).

Motorcycle ownership in Vietnam grew steadily during the 1990s but took off around 2000 (Exhibit 6). During this period not only were incomes growing rapidly but the government reduced the import tariffs on motorcycles and the Chinese began to export inexpensive motorbikes. Prices for a 100 cc Japanese motorbike fell by roughly half to a little over from over $2000 to a little over $1000 while one could buy a new Chinese bike for as little as $500. In the seven years between 2000 and 2007, the number of motorcycles in the country tripled from 6.4 million to 20.2 million[5], for a national ratio of one motorcycle for every 4 people. HCMC, being richer, had 3.4 million motorcycles by the

[3] Seventy percent of the land had been developed as of 2007, and a population of 100,000 was expected when fully built out.
[4] Institute for Economic Research and United Nations Development Program, *Paying for Urban Infrastructure and Services: A Comparative Study of Municipal Finance in Ho Chi Minh City, Shanghai and Jakarta*, UNDP, Hanoi, June 2007, pp. 16-18.
[5] Ministry of Transportation, National Committee on Traffic Safety

end of 2007, or one for every two persons. As early as 2002, 92 percent of all HCMC households owned one or more motorcycles, 2.6 percent owned cars and only 5 percent were entirely dependent on non-motorized transportation.[6]

A variety of theories were offered for why HCMC and other Vietnamese cities were so dependent on motorcycles. Motorcycles offered the same on-demand and door-to-door service as an automobile at a fraction of the cost. Many Vietnamese had more than one job and had to drop children off at school, and thus valued the flexibility of a motorcycle. The climate was also relatively moderate and favored year-round riding. Finally, the urban bus systems in Vietnam had been neglected to the point of near collapse for the first 25 years after reunification, so that the bus was not a competitive alternative when Vietnamese incomes reached the levels where many urban dwellers were ready to abandon their bicycles.

Motorcycles were so popular that they out-numbered cars and light trucks by at least 10 to 1 on the streets of HCMC. (Heavy trucks were not allowed on the streets of the city until after 9:30 at night and had to be gone again by 6 in the morning.). Most arterial streets in HCMC had two or three lanes in each direction and by law the curbside lane was reserved for slower moving vehicles, which meant motorcycles and bicycles, while the inner lane (or lanes) was for faster moving cars and trucks. Buses could use either lane. These rules were largely honored by cars and trucks, although in extreme traffic jams it was often difficult for cars turning onto a street to force their way into the inner lane. The motorcycles were a bit less disciplined, often ready to enter the inner lane if there was a gap in the auto traffic.

Motorcycles had their supporters and critics in Vietnam. Many Vietnamese could not imagine their lives without the convenience of the motorcycle. And traffic experts argued that motorcycles were fairly efficient users of street space, if perhaps not as efficient as buses. Traffic engineers measured the amount of street capacity different types of vehicles required relative to the capacity required by a passenger car. Thus, for example, a bus in mixed traffic typically required between 2 and 4 "passenger car equivalents" (usually abbreviated as PCEs) of capacity. A bus used more street capacity than a car not so much because it was physically larger as because it accelerated and decelerated more slowly and was less maneuverable. And the higher figure of 4 PCEs per bus applied to buses picking up or dropping off passengers at frequent intervals along the street, so that the buses often blocked traffic as they pulled in and out of curbside stops. The number of PCEs required by a motorcycle had not been extensively studied, but it seemed to vary depending upon the proportion of motorcycles in the traffic and the width of the traffic lanes. Where most of the traffic was cars and trucks with only a few motorcycles, studies suggested that a motorcycle required two-fifths or one- third of a PCE. On urban streets with a high proportion of motorcycles and lanes at least 3 meters wide, however, a motorcycle might require as little as one fifth to one tenth of a PCE.[7] In such conditions motorcycles often could ride several abreast in a lane and maneuver past a queue of cars stopped at a red light to wait in front of the stop line, ready to take off more quickly than a car

[6] HOUTRANS data as cited by Systra MVA, Ho Chi Minh City Metro Rail System Study, HCMC Master Plan Ridership and Revenue Forecast Study, Final Report, January 2008, p. 8.

[7] Ing Husu, Ahamad Frahan Mohd Sadullah, Nguyen Xuan Dao, "A Comparison Study on Motorcycle Traffic Development in Some Asian Countries: Case of Taiwan, Malaysia and Vietnam", paper prepared for the Eastern Asia Society for Transportation Studies, October 2003, pp. 38-39.

would when the light turned green (Exhibit 7). The municipal traffic engineer of HCMC believed that a motorcycle required about one-sixth of a PCE under local conditions.[8]

Critics argued that motorcycles were unsafe and polluting. Vietnam had one of the highest fatal accident rates in the world, thanks in part to its heavy reliance on motorcycles. While the rush hour traffic was mainly adults, in the evenings and on weekends it was common to see families of four or five on a motorbike, typically with one child standing in front of the driver or seated on the driver's lap and the remaining children squeezed in between the driver and the spouse. Traffic fatalities were disproportionately on rural roads, where speeds were higher. And a law requiring motorcyclists to wear helmets had been imposed in December 2007, with which almost all cyclists complied, the principal exceptions being children riding as passengers. Nevertheless, in HCMC roughly 100 people died a month in traffic accidents, mostly motorcyclists or pedestrians they hit. Pollution was also a problem, although less so because most of the motorcycles used four-stroke rather than two-stroke engines, and four-stroke engines were significantly cleaner burning. Virtually all Vietnamese motorcycles were 150 cc's or less, since larger motorcycles required a special permit and license. The smaller size of the cycles helped reduce emissions and fuel consumption and may have cut injuries as well.

Buses. HCMC's bus services were provided Saigon Bus Company, a public enterprise with two affiliates that operated about 900 buses, and 28 privately-owned cooperatives which operated about 2,300 buses, many of them small size. The mixed system was a legacy of the several private bus companies and the many owner-operators of lambros (a three-wheeled motorcycle with a tiny bus body on the back), bon banh (a four-wheeled lambro) and mini-buses that existed before reunification. All public transport operators were nationalized on reunification but services deteriorated and in 1988 the government returned the vehicles that had belonged to small owner-operators to their owners who were allowed to offer services as cooperatives. Neither the public enterprise nor the cooperatives received much support from the government, however, and bus service was extremely limited.

Efforts to revitalize the bus system began in 1994, when the government formed a joint venture between some Australian investors and the Saigon Bus Company to provide a skeleton network of four routes radiating out of the Ben Thanh, a large market in the center of the downtown. A further impetus for reform came a few years later, when the World-Bank-funded 2020 HCMC master plan concluded that the city had to develop a public transportation system. The Prime Minister endorsed the recommendation in 2000, and after two years of study the city's Transport and Urban Public Works Services (TUPWS) office implemented the "model bus" and "pilot route" reforms. The idea was to revitalize the bus system by helping to finance the purchase of a fleet of roughly 1,300 full-size, air-conditioned buses for both the Saigon Bus Company and the cooperatives and by establishing "pilot routes" which the company or a specific cooperative would agree to serve in return for government subsidies. The pilot route contracts specified the frequency of service to be provided and TUPWS used a formula to calculate how much the service should cost and the subsidy required. Approximately 1,500 buses operated on pilot routes as of early 2006. The rest of the buses,

[8] Interview with Le Minh Triet, Traffic Management Department, Transport and Urban Public Works Service, People's Committee of Ho Chi Minh City, May 9, 2007.

mostly owned by cooperatives, operated on regular routes and received no subsidy. At some point during the reforms the lambros and bon banhs were banned from the city.[9]

The model bus reforms resulted in a six-fold increase in bus passengers in just five years, from 57 million trips in 2002 to 380 million trips in 2007 (Exhibit 8). But the increase in the city's population and per capita trip making rates meant that the buses' share of trips in the city increased from 2 percent to only an estimated 5 percent.

TUPWS officials believed that the buses' role was limited in part by government budget constraints. The average bus fare (including transfers) was relatively affordable at 2,550 VND (US$0.16) compared to a monthly per capita income well above 1.2 million VND (US$ 75).[10] Fare revenues covered less than 50 percent of the bus operators' costs, however, with the government paying the balance and government subsidies had increased from 40 billion VND (US$ 2.5 million) in 2002 to 528 billion VND in (US$ 33 million) in 2007. The average bus had a capacity of 50 passengers and was carrying nearly 37 passengers per trip for a utilization rate of 73 percent (Exhibit 8). TUPWS officials argued that further government support would be needed to expand the fleet. Fares typically covered only 25 percent of public transportation costs in developed countries and they thought a similar level of support should be provided in HCMC.

Officials also blamed motorcycle congestion for slowing the buses. Buses had to maneuver around swarms of motorcycles in the curbside traffic lanes. There were no statistics available on the relative speeds of buses and motorcycles, but the popular impression was that a trip on a bus took twice as long as the same trip on a motorcycle because the motorcycle was faster and did not have to stop to pick up passengers. As a result busses tended to be used mainly for longer trips, where riding a motorcycle might be too stressful. And 37 percent of bus riders were students, some of whom were probably too young to drive or to afford to buy a motorcycle.[11]

TUPWS had experimented with exclusive lanes for buses to protect them from congestion nearly 10 years earlier. The traffic police had been opposed on the grounds that the lanes might cause safety problems. But the fatal objections came from the general public, which protested when traffic congestion on the remaining lanes became substantially worse. Of the several bus lanes tried, only one short lane at a bottleneck in District 5 remained in operation.

Automobiles. Only a small fraction of HCMC households owned an automobile, and many of the automobiles on the streets were official vehicles. Private automobile ownership was discouraged by heavy import duties and registration fees, which roughly tripled the landed price of an automobile. A new Toyota Camry that might cost US$ 20,000 to land at the dock would cost nearly $60,000 after taxes and registration fees.[12] But automobile registrations were beginning to pick

[9] The reforms are described in more detail in MVA Asia Limited, "Technical Assistance for Consolidation and Development of a Bus System in Ho Chi Minh City, Vietnam; Task 1 Report: Review of Status of Bus System", March 2006. The pre-reform system is described in Japan Bank of International Cooperation, "Urban Public Transportation in Vietnam: Improving Regulatory Framework" JBIC Research Paper no. 4, December 1999, p. 18 on

[10] Systra MVA's "willingness to pay" survey revealed that on average commuters between District 1 and 2 would be prepared to pay 6,100 VND for a better transport mode

[11] Systra MVA, Ho Chi Minh City Metro Rail System Study, HCMC Master Plan Ridership and Revenue Forecast Study, Final Report, January 2008, p. 11.

[12] New automobiles are subject to import, special consumption, and value-added taxes whose rates were 70, 50, and 10 percent respectively. These three taxes are imposed in a cascading structure, for an overall tax rate of 180.5 percent

up and if the current rate of economic growth continued it would not be too long before Vietnamese incomes reached the levels where auto ownership would take off. And small Chinese cars were beginning to be imported priced around US$ 20,000, including duties.

Taxis. Finally, HCMC had about 8,000 conventional taxis plus an unknown number of motorcycle taxis. The conventional taxis were licensed by TUPWS and there was no limit on the numbers, although taxis had to pay the same high import duties and registration fees as a conventional car. Taxi riders had quadrupled in the last five years, but starting from a tiny base (Exhibit 8). Motorcycle taxis were probably more numerous but were unlicensed and thus less well documented. Young men with motorcycles waited for passengers on the corners of many busy streets.

Transportation Plans for 2025

The growing traffic in the city provoked the government to explore the possibilities for increasing the capacity of the transportation system by building rail transit lines or new highways. At first these initiatives were evaluated piecemeal[13], but eventually the government asked local and international consultants to prepare an overall transport plan and a more detailed rapid transit plan for the year 2025, which were completed in 2007 and 2008, respectively. In parallel the government hired Nikken Sekki, Japanese planning and architectural consultants, to prepare a new HCMC master plan for 2025.

Mass Rapid Transit (MRT). Much of the attention focused on the development of new mass rapid transit MRT rail lines. The German rail equipment manufacturer Siemens had signed a memorandum of understanding (MOU) with the government in 2004 to study the feasibility of two MRT lines and the Japanese government had signed a similar MOU for a third line in 2005. Proposals for other MRT lines, tram lines and even a monorail emerged from other quarters. The 2025 transport master plan included 6 MRT lines plus a tram line and a monorail in its plan, and the subsequent MRT study rationalized the alignments of the 6 MRT lines (Exhibits 9 and 10).

Lines 1 and 2 had the highest forecast patronage in 2025 and both ran east-west, beginning in the heavily developed areas in the west, passing through the downtown and then crossing the Saigon River to east-bank districts the government was planning to develop. Line 1 started in the southwest and crossed the Saigon River in the northeast, serving the Suoi Tien and Ben Hoa areas, the sites of a government-owned amusement park and a new industrial park and where the government planned to move the university. Line 2 started in the northwest and crossed the river to serve Thu Thiem, the proposed site of the new downtown.

The line with the third highest forecast patronage, Line 5, was a circumferential route that connected the Tan Binh area south of the airport with Thu Thiem, South Saigon, and Chinatown (District 5). Close behind in patronage were Lines 3 and 4 which ran from the northeast to the southwest and from north to south, respectively, crossing in District 3 to the west of the downtown. Line 6, which ran north-south to the west of the airport, had the lowest MRT ridership. The tram line

[13] Among the studies were the "HOUTRANS" study funded by the Japan International Cooperation Agency, the "UMRT Line 1" study funded by the Japan Bank for International Cooperation, the 2003 and 2005 "Feasibility Study for the Two Priority Lines in the Metropolitan Rail System (METRAS)" study funded by the German government, the "MRT Lines 1, 2 and 3" study financed by the Russian government, a tramway study financed by the French government, a 1998 demand model financed by Britain's Department for International Development, and a bus rapid transit study sponsored by the World Bank.

had as many riders as Line 3 but it seemed to be taken less seriously, perhaps because it operated at grade and thus might be the victim of (or cause of) much traffic congestion. The monorail, northwest of the airport, was forecast to attract only a few riders.

The MRT plan consultants offered an "order-of-magnitude" cost estimate that the entire network of 161 kilometers could be built for US$ 9.7 billion, or an average of US$60 million per kilometer (Exhibit 11). Forty-eight kilometers would be in tunnel (at an estimated cost of US$90 million per kilometer) while 98 kilometers would be elevated (at US$ 50 million per kilometer) and only the 15 kilometers of tram at grade (at US$ 20 million per kilometer). These figures presumably included rolling stock and equipment as well as civil works. The government had experienced substantial delays and cost overruns in previous infrastructure construction projects, which gave rise to fears that these estimates might be optimistic.[14]

The consultants produced forecasts that showed that public transportation might capture 44 percent of all trips in 2025 if the 161 kilometer rail system were built. They noted that only 21 percent of the public transportation trips would be by rail, however, so that substantial improvements would have to be made to the bus system. They also warned that strong policies to discourage the growth in auto ownership, the efficient integration of bus and rail services and the concentration of development around rail corridors would be needed to achieve the forecasts. In their detailed report on ridership the consultants explained that the "parameters of the [demand] model have been have been adjusted" to conform to the master plan's target of a 45 percent public transport share by 2025.[15] Public transit's share would be only 22 percent using less aggressive "trend" assumptions about bus speeds, parking charges and auto ownership (Exhibit 10).

In 2007 the HCMC People's Committee announced that construction would begin in early 2008 on the eastern part of Line 1 and established a special Urban Railway Management Unit to oversee the development of the network. The priorities for construction seemed to be influenced by the availability of funding more than immediate traffic needs. The eastern half of line 1 connected the downtown at Ben Thanh market with the still developing eastern bank, and thus would not offer great congestion relief. But it was the segment that the Japanese had studied and their government had offered a US$ 1 billion low-interest loan to build the 19 kilometer segment.[16] The Urban Railway Management Unit was hoping that the western portion of Line 2 (stopping at the bank of the Saigon River) would be next since that was one of the lines the Germans had studied. The total cost was US$ 1.2 billion, however, and the German government had offered only US$ 400 million in low-interest loans which was enough to cover the rolling stock and equipment (which German firms would supply) but not the civil works. The government had approached the Asian Development Bank and others for loans to cover the balance.

The Urban Railway Management Unit recognized that the MRT lines were unlikely to recover their full costs out of fares, and thus would ultimately require some form of government subsidy. They were hoping that fares would cover operating expenses and the interest and depreciation on the

[14] Institute for Economic Research and United Nations Development Program, *Paying for Urban Infrastructure and Services: A Comparative Study of Municipal Finance in Ho Chi Minh City, Shanghai and Jakarta*, UNDP, Hanoi, June 2007, pp. 16-18.
[15] Systra MVA, "Ho Chi Minh City Metro Rail System Study, HCMC Master Plan Ridership and Revenue Forecast Study, Final Report", January 2008, p. 36.
[16] The Japanese loan covered 83 percent of the cost with the remainder to be funded by the government.

rolling stock. This would leave the civil works, which were roughly 65 percent of the investment costs, to be covered by tax revenues.

Elevated Expressways. The transportation plan included a variety of highway improvements but most were outside the second inner ring road and thus did not directly affect the urbanized heart of the city. Indeed, the transportation plan deleted some of the to-be-built segments of the first ring road on the grounds that there had been so much development along the projected right of way that the relocation costs were prohibitive. The main innovation inside the second ring was a system of four elevated toll expressways, inspired by the elevated expressways that Bangkok had built during the 1990s. The elevated expressways were designed to complement existing roads that could not be widened and provided both a bypass around the Districts 1 and 3 as well as additional capacity from outlying districts to the center (Exhibit 12). They would have two lanes in each direction with a likely maximum capacity of around 2000 cars per lane per hour.

In 2007 and 2008 the government had signed memoranda of understanding with three big construction firms from South Korea, Malaysia and Vietnam to develop feasibility studies for the four expressways (Exhibit 13). The idea was that the construction companies would propose the final alignment and a scheme for financing the road. If the expected toll revenues were insufficient, as was thought likely, the construction companies would ask the government to give them land that they could develop for housing or commercial uses along the right of way. The government estimated the construction cost at roughly US$40 million per kilometer, excluding land assembly and relocation costs, which it would cover from its own funds. The proposed alignments were largely over existing streets and canals, so the government hoped that the land acquisition would be at a minimum. But in some places the roads were too narrow or the canals too serpentine to avoid significant land takings.

Bus Rapid Transit (BRT). One option that did not make it into the transportation plan was bus rapid transit, or BRT. BRT systems attempt to provide service comparable in quality to MRT by operating high frequency buses on exclusive bus lanes and stations. In many BRT systems boarding and dwell times are reduced by collecting fares in stations before boarding, raising the station platform to the level of the bus floor and buying buses with multiple doors. The World Bank had been pushing Vietnam to consider BRT as a cost-effective alternative to MRT and arranged funding for a study to identify pilot BRT lines in HCMC and Hanoi. The suggested line in HCMC was a little north of the alignment of the western half of MRT Line 2, running 17.5 kilometers from Ben Thanh market northwest to the airport and then beyond to An Suong. The estimated cost was US$ 58 million, which included US$ 7 million for a fleet of 30 specially designed buses. On most of the route the streets were wide enough to fit in BRT and still maintain two lanes in each direction for general traffic. When the line approached the downtown, however, it had to use some streets that had only two traffic lanes in both directions. The planners proposed a one-way loop that would maintain a lane for local access by general traffic but the city rejected the idea as too disruptive.[17]

The 2025 Land Use Plan

[17] MVA Asia Ltd, "Bus Rapid Transit", task 2 report of "Technical Assistance for Consolidation and Development of a Bus System in Ho Chi Minh City, Vietnam", March 2006.

The 2020 land use plan had been rendered obsolete by the rapid gains in income and population and unexpected patterns of development (Exhibit 14). Some areas of the city, such as Tan Binh and Go Vap, had by 2008 more population than had been forecast for 2020; while other areas that had been expected to grow, such as Thu Thien and south of District 7, had not.

The new 2025 plan established several laudable objectives. The plan should accommodate the growing population and the higher income lifestyles that city residents could increasingly afford. New developments should be located on land appropriate for building, avoiding low-lying wetlands. The historic core of the city in Districts 1 and 3 should be protected, so that the city remained the Pearl of the Orient. And the plan should be more specific and implemented more conscientiously.

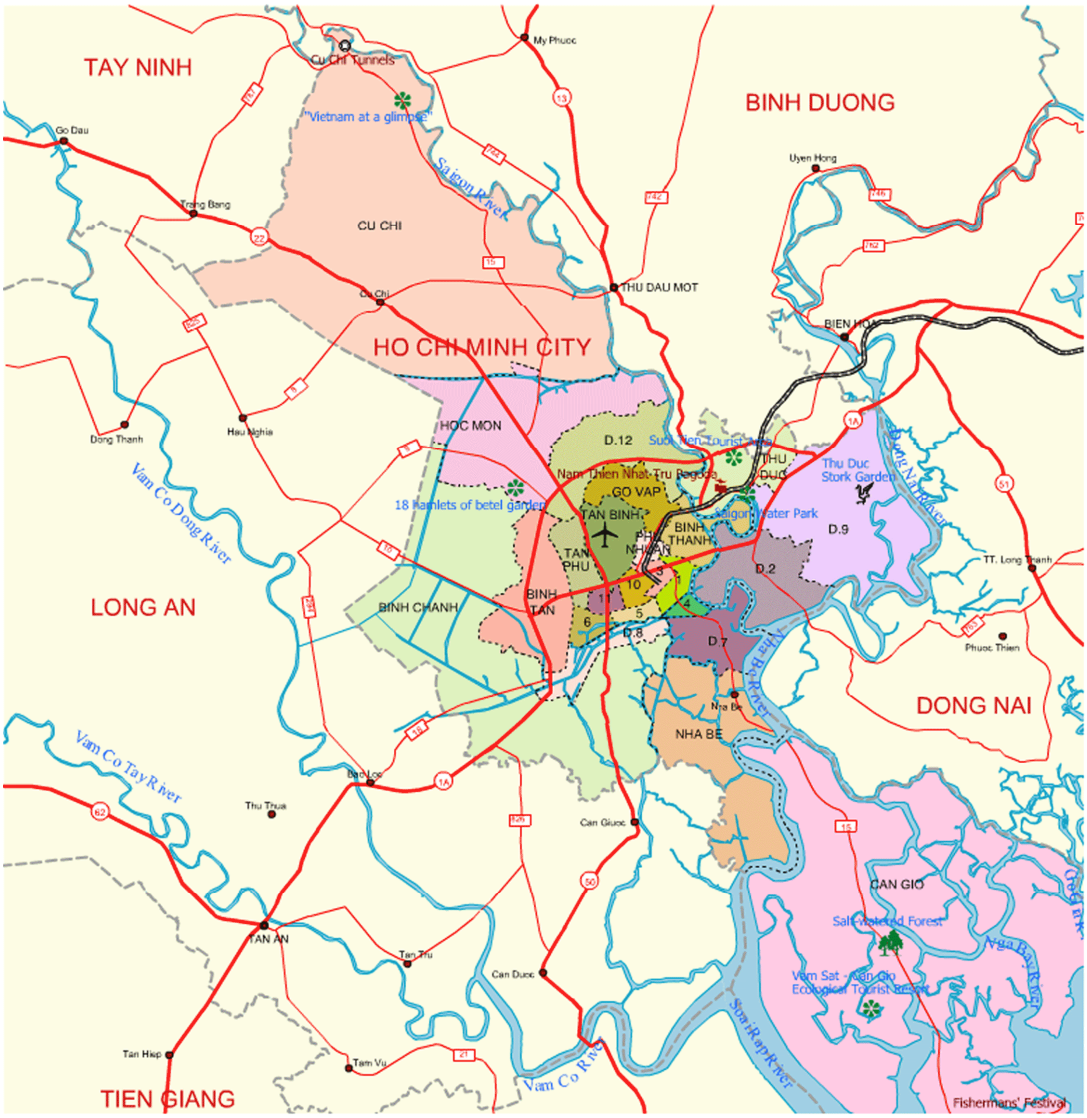
Toward those ends, the plan proposed the development of satellite centers to disperse central business district functions and reduce pressure on the historic neighborhoods. The traditional downtown, Thu Thiem, the Chinatown business area in District 5 and South Saigon would together function as the new "extended" central business district, despite the fact that the areas were not adjacent (Exhibit 15). Other suburban business districts would be developed on the periphery of the city, outside the second ring road. And manufacturing would be encouraged in "growth corridors" with good transportation mostly located along major intercity highways leading out of the city.

But the plan seemed to compromise some of its principles. The development of Thu Thien and South Saigon as new business centers clearly required building on wetlands. The MRT and elevated highway systems that were adopted as part of the plan were centered on Districts 1 and 3, practically inviting high-rise development in the historic districts. And while the plan explained how the general guidelines should be translated into specific zoning standards, it remained a concept plan to be detailed by others.

Some of these defects were being addressed in a more detailed plan for the historic central area also being prepared by Nikken Sekki, the consultants who had drafted the 2025 master plan. The main idea was to concentrate office and residential high-rise development along the river, and keep it from encroaching on the historic area behind. Toward that end, the consultants were proposing to move MRT lines 3 and 4 further east in the central area, so that their stations were closer to the river instead of in District 3 and the western part of District 1. Equally important was their suggestion to convert the obsolete port facilities immediately to the north and south of the traditional downtown into downtown uses. A four-lane boulevard that ran along the western bank of the river would be put underground in spots to strengthen the link between the downtown and the river and increase the road's capacity. Whether the new port areas and the MRT and road improvements would support enough development to alleviate the pressure to develop Thu Thiem seemed doubtful.

HCMC clearly stood at several crossroads. How should it cope with the expected explosion in car ownership given that its streets were already crowded with motorcycles and that efforts to increase public transit patronage had been disappointing so far? And where should central business district functions be located so as to make the transportation and flooding problems reasonably manageable?

Exhibit 1:
Map of Ho Chi Minh City



Source: Government of Vietnam Tourism Office

Exhibit 2:
Map of Ho Chin Minh City's Inner Districts



Source: Government of Vietnam Tourism Office

Exhibit 3:
Growth in Gross Regional Product, HCMC Province and Vietnam

Year	HCMC	Vietnam
1997	14.6%	8.2%
1998	12.1%	5.8%
1999	6.2%	4.8%
2000	9.0%	6.8%
2001	9.5%	6.9%
2002	10.2%	7.0%
2003	11.2%	7.2%
2004	11.6%	7.5%
2005	12.2%	8.4%
2006	12.0%	8.2%
2007	12.0%	8.0%

Source: HCMC website as cited by Systra MVA, p. 6

Exhibit 4:
View of Downtown from Thu Thiem



Photograph by Nguyen Xuan Thanh

Exhibit 5:
Percentage of Trips in Ho Chi Minh City by Mode Used, 1996 and 2002

	1996, without walking		2002, without walking	2002, with walking
Walking	---	Walking	---	17.1%
Bicycle	20.4%	Bicycle	17.4%	14.4%
Bus	0.2%	Bus	1.7%	1.4%
Motorcycle	76.5%	Motorcycle	74.5%	61.8%
Car	2.2%	Car	1.4%	1.2%
Truck	0.7%	Conventional taxi and other	4.1%	3.4%
All modes	100%	Motorcycle taxi (Xe Om)	0.8%	0.7%
		All modes	100%	100%
Trips per weekday (millions)	8.2			11.9

Sources: 1996 figures from DFID 1998 Ho Chi Minh City Transportation Study as cited by Japan Bank for International Cooperation, "Urban Public Transportation in Vietnam: Improving Regulatory Framework, JBIC Research Paper no. 4, December 1999, pp. iii and 12. 2002 figures estimates from Almec Corporation, "The Study on Transportation Modes and Feasibility Study in HCM Metropolitan Area (HOURTANS)", vol. 1, Summary, June 2004, p. 2-17.

Exhibit 6:
Population and Motor Vehicle Registrations in Ho Chi Minh City

Year	Population (thousands)	Motorcycles (thousands)	Cars (thousands)
1990	4,118	n.a.	12.3
1991	4,259	500	13.5
1992	4,426	n.a.	14.7
1993	4,531	n.a.	16.1
1994	4,582	844	17.5
1995	4,640	n.a.	19.4
1996	4,749	n.a.	38.0
1997	4,853	1,200	n.a.
1998	4,958	n.a.	n.a.
1999	5,064	n.a.	n.a.
2000	5,249	1,571	131.0
2001	5,449	1,970	
2002	5,659	2,285	158.2
2003	5,867	2,306	221.7
2004	6,063	2,429	253.0 (115.0 private)
2005	6,240	2,623	267.8
2006	6,425	2,903	296.1
2007	6,602	3,406	399.0 (202.0 private)

N.a. indicates not available.

Sources: Population figures from Ho Chi Minh City Statistical Office, "Ho Chi Minh City Statistical Yearbook 2006", pp. 22 and its website http://www.pso.hochiminhcity.gov.vn. Vehicle registrations for 1990-1996 from Japan Bank of International Cooperation, "Urban Public Transportation in Vietnam: Improving Regulatory Framework" JBIC Research Paper no. 4, December 1999, pp. 5 and 8. Vehicle registrations for 2000-2007 from Ho Chi Minh City Road Traffic Police Department.

Exhibit 7:
Motorcycles in Traffic and Stopped at a Traffic Light in Ho Chi Minh City





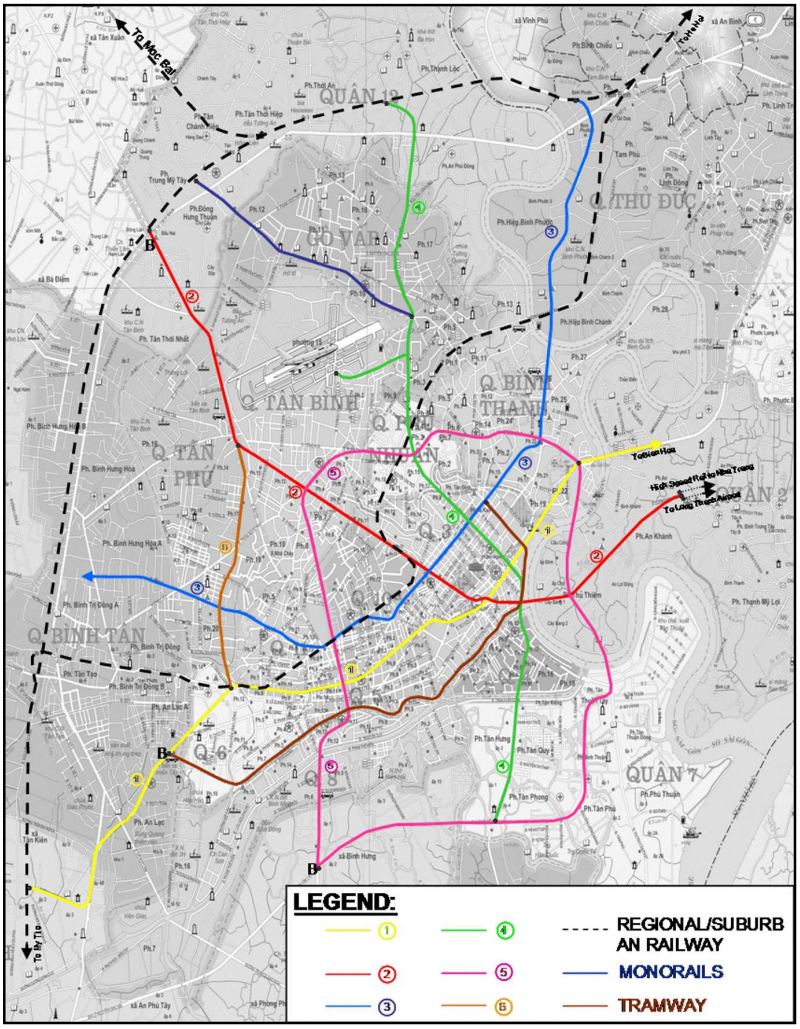
Photographs by Nguyen Xuan Thanh

Exhibit 8:
Bus and Taxi Services in Ho Chi Minh City, 2002-2007

	2002	2003	2004	2005	2006	2007
Bus passengers (millions)						
Subsidized routes	18.45	60.16	106.18	187.69	220.98	256.12
Unsubsidized	14.80	6.73	4.02	5.92	16.52	25.53
Special	2.94	6.47	7.48	12.03	15.91	14.52
Total	57.30	89.02	163.32	254.60	308.88	380.22
Taxi passengers (millions)	21.12	15.68	45.63	48.96	55.47	84.04
Bus fleet by size						
12-16 seat	1,513	1,296	1,236	1,050	1,007	824
17-25 seat	199	138	204	242	252	257
26-39 seat	68	305	644	835	825	846
>39 seat	320	306	756	1,121	1,206	1,279
Double deck	0	0	0	2	2	2
Total	2,100	2,045	2,840	3,250	3,292	3,208
Bus fleet by operator						
Saigon Bus	68	179	595	648	646	667
Joint venture	58	61	65	75	84	80
Other affiliate	40	60	75	121	138	116
Cooperative	1,934	1,745	2,102	2,406	2,424	2,345
Total	2,100	2,045	2,840	3,250	3,292	3,208
Number of bus vehicle trips (thousands)	944	2,260	4,189	5,635	6,385	7,001
Average route length (kilometers)						
Average passengers per trip	19.5	26.6	25.3	33.5	34.6	36.6
Average seats per bus	20.2	29.2	36.5	46.8	47.1	49.9
Percent capacity utilization	97%	91%	69%	72%	73%	73%
Government subsidy (VND billions)	39.6	102.3	208.4	423.5	488.7	527.7
Subsidy as a percent of cost	68%	61%	52%	54%	47%	50%

Source: Figures supplied by the Transport and Urban Public Works Service

Exhibit 9:
MRT Plan as of 2008



Source: p. 13

Exhibit 10
Demand Forecasts for 2025 with 160 Kilometer Rail Transit Network

	Forecast consistent with master plan goals		Forecast consistent with trends	
Share of trips by mode	All modes	Public only	All modes	Public only
Motorcycle and bicycle	38%		49%	
Car	18%		29%	
Public transport				
Rail	9.2%	21%	6.8%	30.7%
Bus	30.8%	70%	12.9%	58.5%
Ferry	0.4%	1%	0.1%	0.4%
Intercity rail and bus	3.5%	8%	2.3%	10.4%
Subtotal public	44%	100%	22%	100%
All modes	100%		100%	

	Forecast consistent with master plan goals		Forecast consistent with trends	
Riders by line	Weekday	Peak load per hour	Weekday	Peak load per hour
Line 1	863,000	29,200	716,000	28,300
Line 2	551,000	24,900	405,000	27,900
Line 3	474,000	14,300	313,000	11,200
Line 4	366,000	12,000	260,000	11,600
Line 5	525,000	8,000	320,000	5,500
Line 6	69,000	2,700	52,000	2,000
Tram	386,000	9,100	225,0000	5,800
Monorail	22,000	1,500	20,000	1,400
Total	3,256,000		2,310,000	

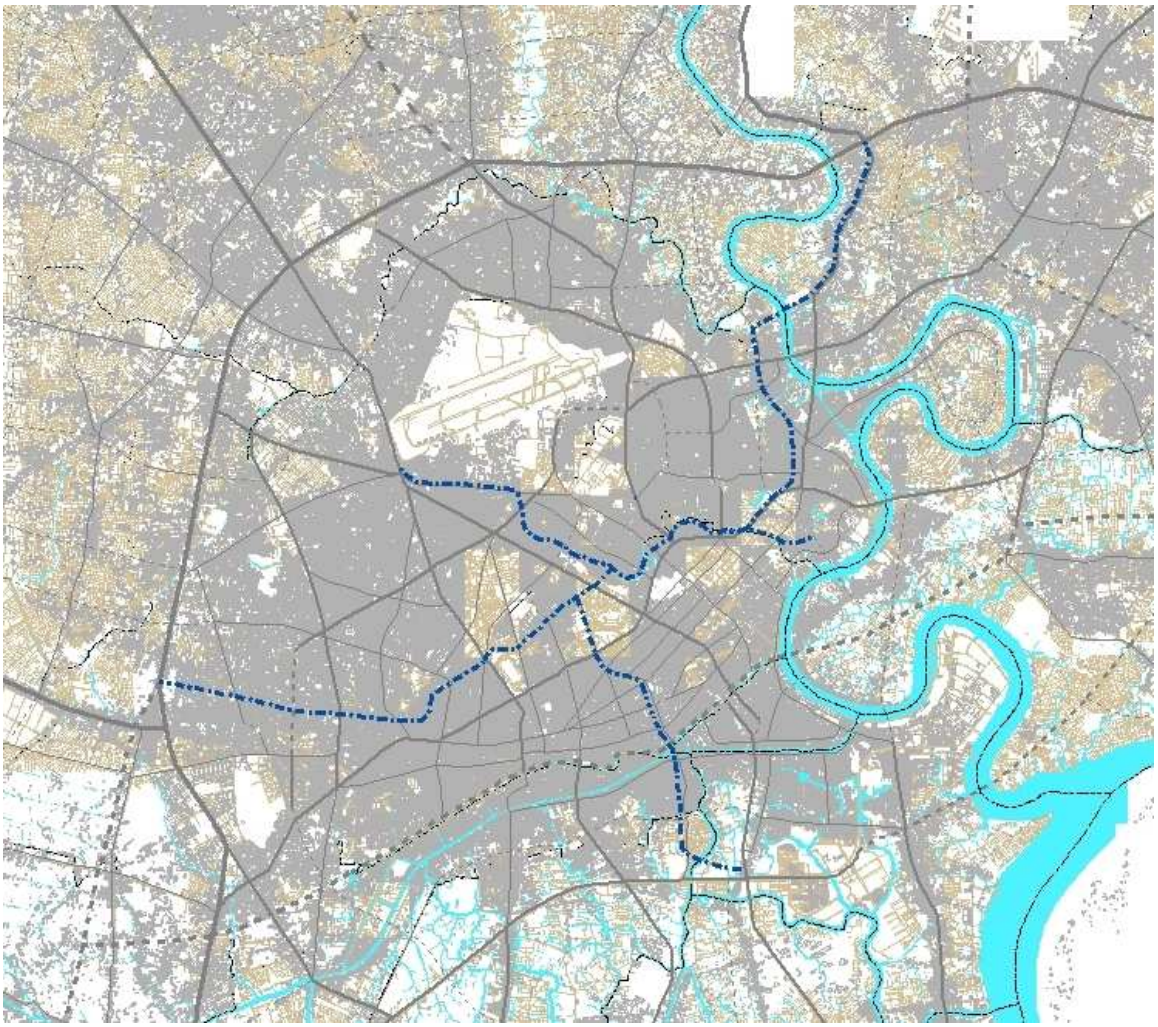
Source: Systra MVA, "Ho Chi Minh City Metro Rail System Study, HCMC Master Plan Ridership and Revenue Forecast Study, Final Report", January 2008,pp. 47,60, 63, 66

Exhibit 11:
Order of Magnitude Investment Cost Estimates for Possible Future Rail Network

Line-phase	Route	Cost (US$ millions)	Kilometers				Average cost $ per kilometer
			Tunnel	Elevated	At grade	Total	
1-1	Suoi Tien-Ben Thanh market	1,091	2.6	17.1		19.7	55
1-2	Ben Thanh market-Mien Tay Station	669	4.1	6.0		10.1	66
1-3	Suoi Tien-Bien Hoa	275		3.5		3.5	79
2-1	An Suong-Ben Thanh market	1,190	10.4	2.9		13.3	89
2-2	Ben Thanh-Thu Thiem	555	3.0	3.7		6.7	83
3-1	Binh Tan-Line 2	668	3.2	7.6		10.8	62
3-2	Line 2-Mien Dong Station	435	4.0	1.5		5.5	79
3-3	Mien Tay Station-Tan Kien	225		4.5		4.5	50
3-4	Mien Dong station-Binh Phuoc	315		4.3		4.3	73
4-1	Thanh Xuan-District 4	1,038	13.0	3.2		16.2	64
4-2	District 4-Ng. Van Linh	260		3.2		3.2	81
5	Ng. Van Linh-Binh Thanh	1,315	8.0	8.9		16.9	78
6	Ba Queo-Phu Lam	300		6.0		6.0	50
T-1	Mien Tay Station-Ng. Hue	250			12.5	12.5	20
T-2	Ng. Hue-Dien Bien Phu	46			2.3	2.3	20
DX2-1	Binh Hung-Thu Thiem	561		13.2		13.2	43
DX2-2	Thu Thiem-Binh Thanh	222		3.5		3.5	64
DX3	Monoraíl Go Vap-Trung My Tay	297		8.5		8.5	35
	Total	9,713	48.3	97.6	14.8	160.7	60

Source: MVA in conjunction with Systra and others, "Ho Chi Minh City Metro Rail System Study, Project Context and MRT Master Plan Report", December 2007, p. 20.

Exhibit 12:
Plan for Four Elevated Expressways



Source: Urban Planning Institute of HCMC and Nikken Sekkki (consultants), "The Study on the Adjustment of HCMC Master Plan up to 2025", report to the Ho Chi Minh City People's Committee, 2008.

Exhibit 13:
Proposed Elevated Expressways

	Alignment	Length	Cost	Width and design speed	Date of MOU	Contractor
1	From second ring road in northwest (at Tan Bin) to just north of downtown (along Nhien Loc-Thi Nghe canal)	9.0	VND 4.7 trillion (US$ 294 million)	17,6 m (90 kph)	December 2007 (feasibility study due September 2008)	GS Engineering and Construction (South Korea)
2	From second ring road in southeast to connect with expressway 1 in District 10	10.0			February 2008 (feasibility study due September 2008)	Wijaya Baru Group (Malaysia)
3	From south (Saigon South) to connect with expressway 2 at To Hien Thanh street	7.3			December 2007	GS Engineering and Construction (South Korea)
4	From north (Thu Duc) connecting to expressway 1 just north of the CBD (at Nhieu Loc-Thi Nghe canal)	9.6	VND 6 trillion (US$ 375 million)	17.0 m (80 kph)	March 2008	Construction Corporation 1

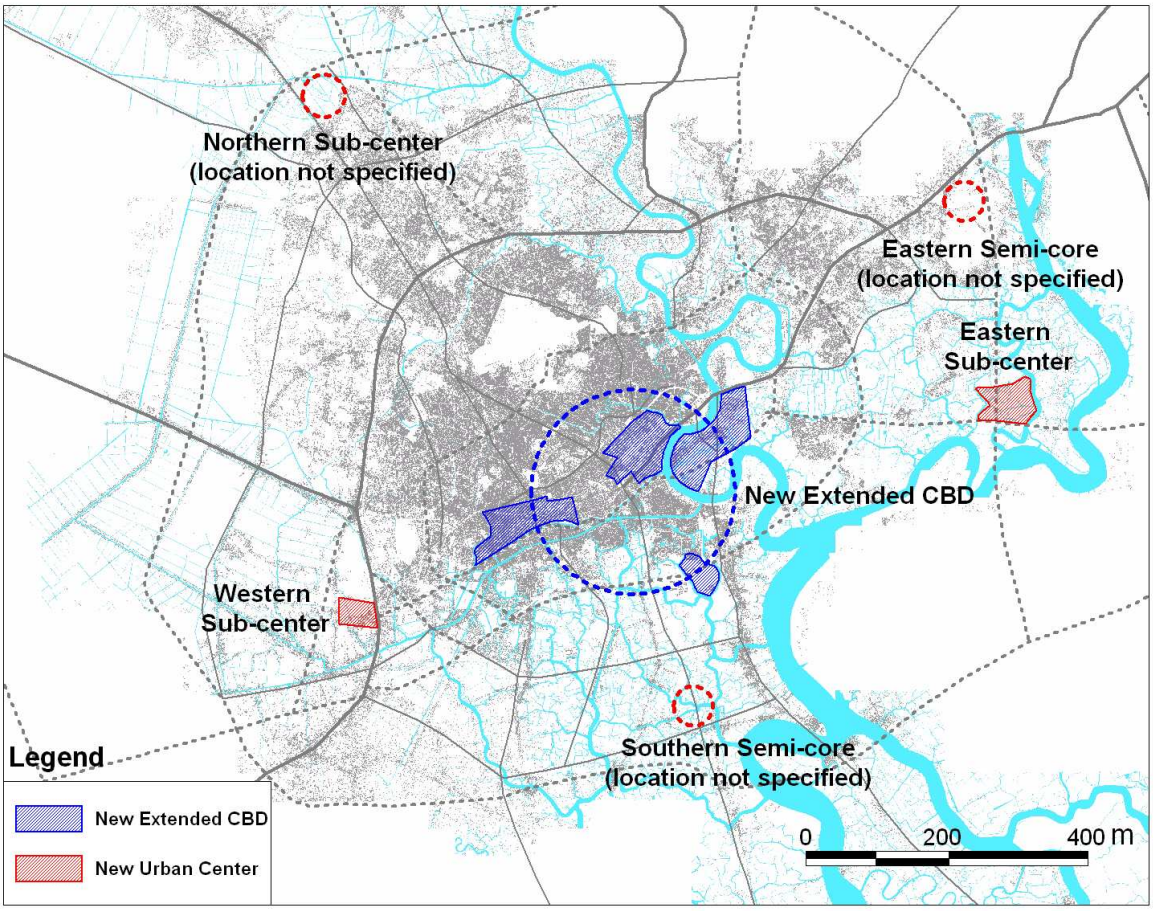
Sources: Saigon Times, March 21, 2008
Costs exclude site clearance and compensation to be paid by government

Exhibit 14:
Projections of Population and Gross Regional Product in 2025 Master Plan

	HCMC city	HCMC metro area	HCMC region (inc. SE & Mekong)	Vietnam
Avg. annual growth 2006-2025				
Population	+2.4%	+2.1%	+1.4%	+1.1%
GDP	+9.5%	+8.5%	+7.5%	+6.7%
Population (thousands)				
2001	5,449	13,439	28,412	77,635
2005	6,240	14,860	30,728	83,120
2010	7,200	16,462	32,893	92,121
2025	10,000	22,778	40,500	103,000

Source: Urban Planning Institute of HCMC and Nikken Sekkki (consultants), "The Study on the Adjustment of HCMC Master Plan up to 2025", report to the Ho Chi Minh City People's Committee, 2008,, pp. 3-1 and 3-2.

Exhibit 15:
Location of Business Centers in 2008 Master Plan



Source: Urban Planning Institute of HCMC and Nikken Sekkki (consultants), "The Study on the Adjustment of HCMC Master Plan up to 2025", report to the Ho Chi Minh City People's Committee, 2008.