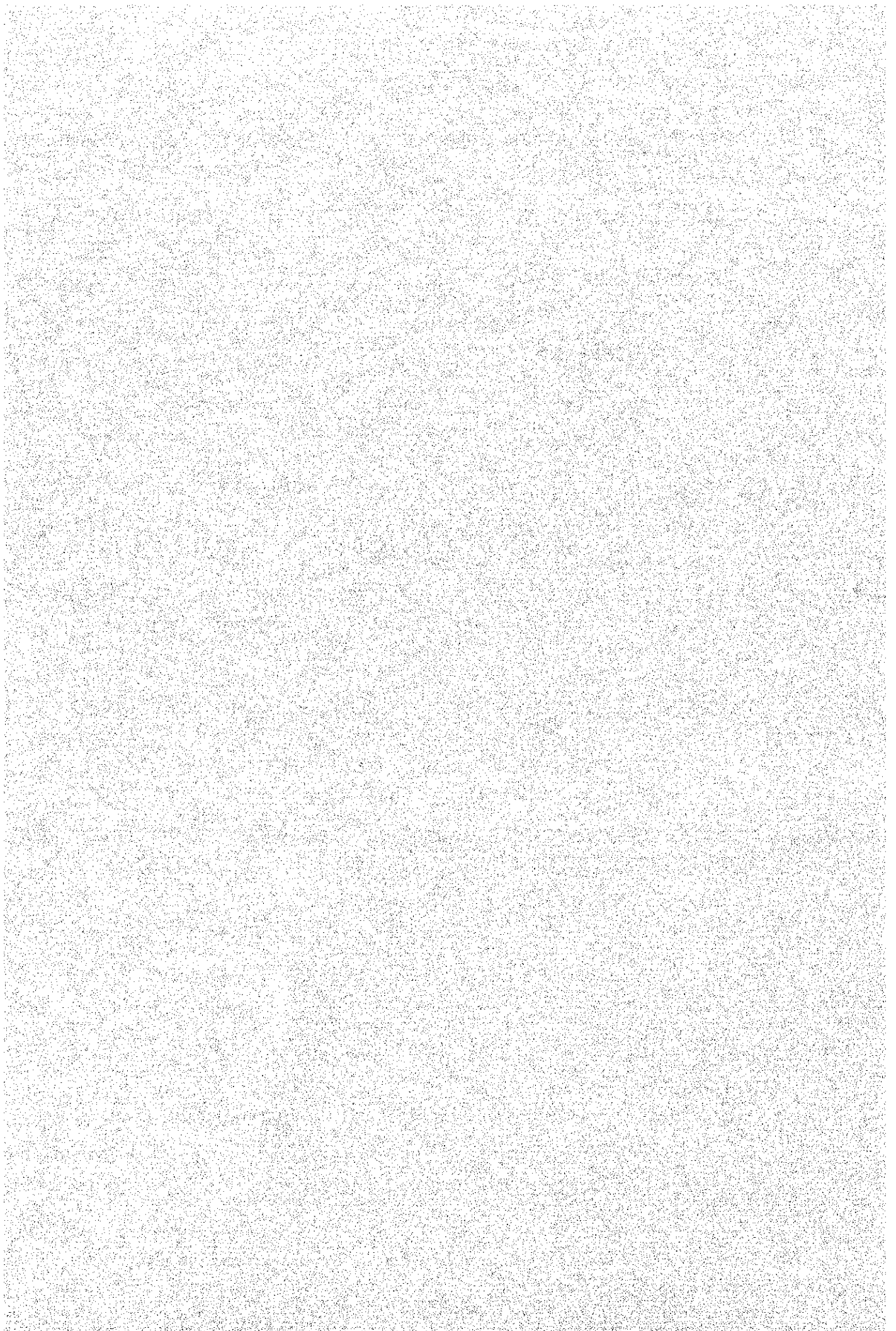


**CHAPTER 2**  
**SOCIO-ECONOMIC CONDITIONS**



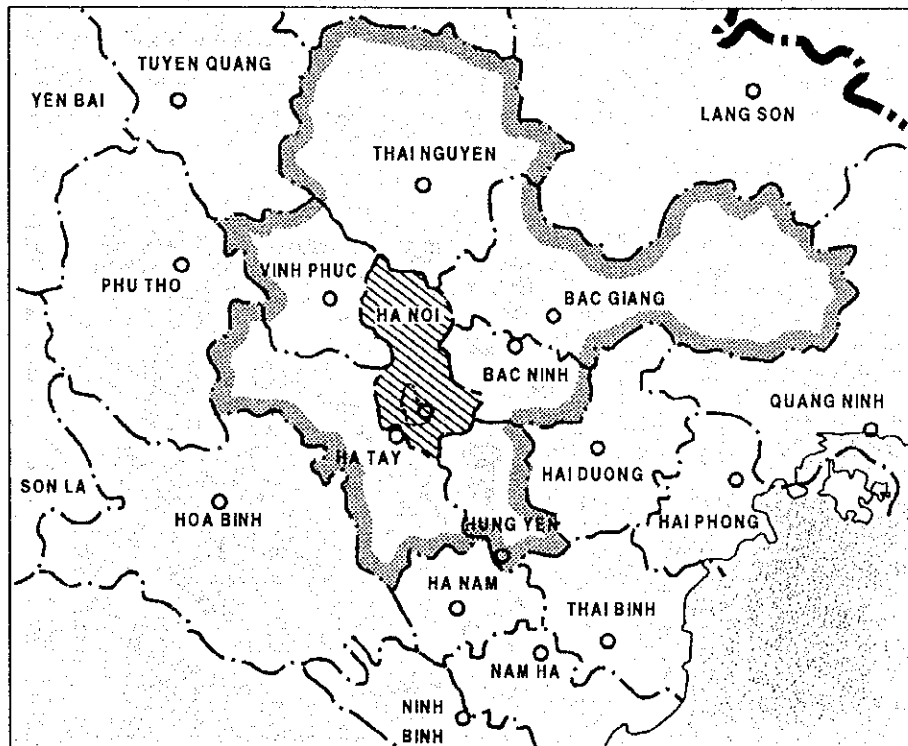
## CHAPTER 2 SOCIO-ECONOMIC CONDITIONS

### 2.1 Definition of the Study Area and its Influence Area

#### 2.1.1 Study Area

Though the objective of the Study is to study the feasibility of the construction of the southern section of Ring Road No. 3 in Hanoi, including Thanh Tri bridge, the Study Area for the general condition as a socio-economic background of the Project should cover all the directly/indirectly influenced area by the proposed Ring Road No. 3; that is, Hanoi City and its surroundings, since the Ring Road No. 3 has a role of arterial road in the regional road transport network as well as for the dispersal function of urban traffic in and around Hanoi City. Study Area, therefore, includes Hanoi City and its surrounding six provinces; Ha Tay, Vinh Phuc, Thai Nguyen, Bac Giang, Bac Ninh and Hung Yen in 1997 administrative unit system as shown in Figure 2.1.1.

Meanwhile, there might be various constraints in data availability for the analysis by area/province because of insufficient statistical data arrangement in Vietnam.



Source: General Statistics Office

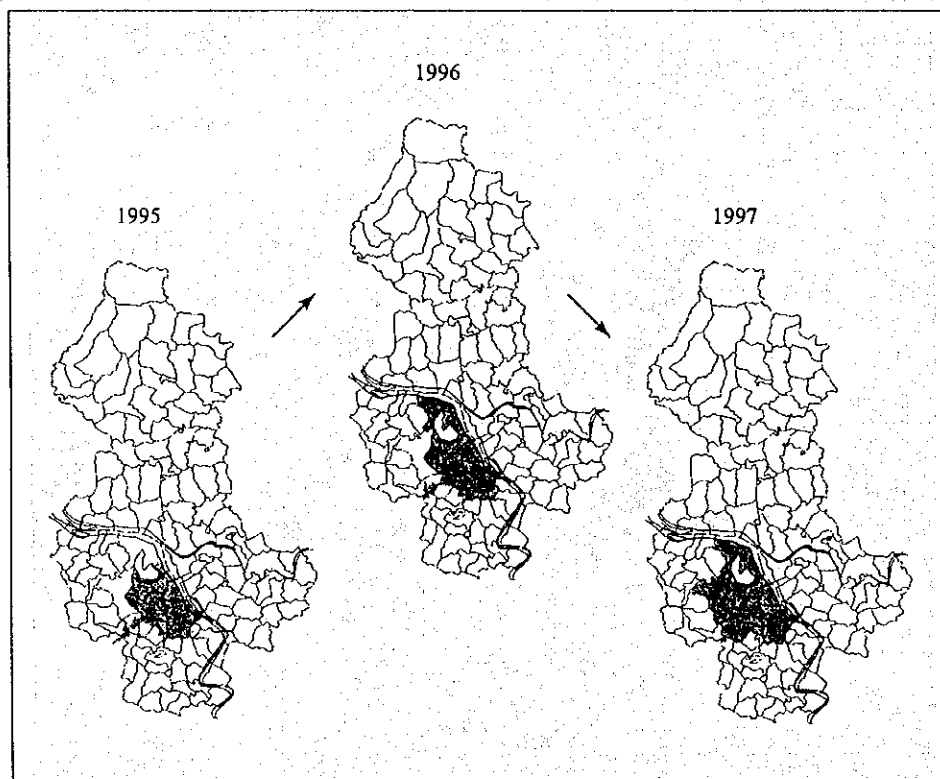
**Figure 2.1.1 Study Area in 1997 Administrative Unit System**

### 2.1.2 Administrative Unit (Jurisdiction)

In Vietnam, the country is divided into small administrative units in accordance with a hierarchic jurisdiction system; that is, Region, Province/City (*Tinh/Thanh pho*), District (*Quan/Huyen*), Commune/Subdivision (*Phuong/Xa/Thi tran*) and the smaller units of *Cum/Xom*.

The administrative units have been sometimes revised following this division system; for example, the total number of province/city in the country was 44 in 1989 census year, 53 in 1996 and they are 61 in 1997 (refer to Table 2.1.1). This is found also in Hanoi City and its vicinity provinces; the territory of Hanoi City in 1989 was wider than now including some districts of present Vinh Phuc and Ha Tay provinces, and urban districts in Hanoi have been expanded from the original 4 districts (Ba Dinh, Hoan Kiem, Hai Ba Trung and Dong Da) to 5 in 1996 (adding Tay Ho) and to 7 in 1997 (adding Cau Giay and Thanh Xuan), as shown in Figure 2.1.2.

They cause some difficulties in case of socio-economic analysis by jurisdiction in time sequence.



**Figure 2.1.2 Expansion of Urban Districts in Hanoi City**

**Table 2.1.1 Changes of Administrative Units (Province/City) in Vietnam**

Region	No. 1997	No. 1996	No. 1989
North Mountain and Midland	1 Ha Giang	1 Ha Giang	1 Ha Noi
	2 Tuyen Quang	2 Tuyen Quang	2 Ho Chi Minh
	3 Cao Bang	3 Cao Bang	3 Hai Phong
	4 Lang Son	4 Lang Son	4 Cao Bang
	5 Lai Chau	5 Lai Chau	5 Ha Tuyen
	6 Lao Cai	6 Lao Cai	6 Lang Son
	7 Yen Bai	7 Yen Bai	7 Lai Chau
	8 Bac Can	8 Bac Thai	8 Hoang Lien Son
	9 Thai Nguyen		9 Bac Thai
	10 Son La	9 Son La	10 Son La
	11 Hoa Binh	10 Hoa Binh	11 Vinh Phu
	12 Quang Ninh	11 Quang Ninh	12 Ha Bac
	13 Vinh Phu	12 Vinh Phu	13 Quang Ninh
	14 Phu Tho		14 Ha Son Binh
	15 Bac Giang	13 Ha Bac	15 Hai Hung
	16 Bac Ninh		16 Thai Binh
Red River Delta	17 Ha Noi	14 Ha Noi	17 Ha Nam Ninh
	18 Hai Phong	15 Hai Phong	18 Thanh Hoa
	19 Ha Tay	16 Ha Tay	19 Nghe Tinh
	20 Hung Yen	17 Hai Hung	20 Quang Binh
	21 Hai Duong		21 Quang Tri
	22 Thai Binh	18 Thai Binh	22 Thua Thien-Hue
	23 Ha Nam	19 Nam Ha	23 Quang Nam-Da Nang
	24 Nam Dinh		24 Quang Ngai
	25 Ninh Binh	20 Ninh Binh	25 Binh Dinh
North Central Coast	26 Thanh Hoa	21 Thanh Hoa	26 Phu Yen
	27 Nghe An	22 Nghe An	27 Khanh Hoa
	28 Ha Tinh	23 Ha Tinh	28 Thuan Hai
	29 Quang Binh	24 Quang Binh	29 Gia Lai-Kon Tum
	30 Quang Tri	25 Quang Tri	30 Dac Lac
	31 Thua Thien-Hue	26 Thua Thien-Hue	31 Lam Dong
South Central Coast	32 Quang Nam	27 Quang Nam-Da Nang	32 Song Be
	33 Da Nang		33 Tay Ninh
	34 Quang Ngai	28 Quang Ngai	34 Dong Nai
	35 Binh Dinh	29 Binh Dinh	35 Long An
	36 Phu Yen	30 Phu Yen	36 Dong Thap
	37 Khanh Hoa	31 Khanh Hoa	37 An Giang
	38 Ninh Thuan	32 Ninh Thuan	38 Tien Giang
	39 Binh Thuan	33 Binh Thuan	39 Ben Tre
			40 Cuu Long
Central Highlands	40 Gia Lai	34 Gia Lai	41 Hau Giang
	41 Kon Tum	35 Kon Tum	42 Kien Giang
	42 Dac Lac	36 Dac Lac	43 Minh Hai
	43 Lam Dong	37 Lam Dong	44 Vung Tau-Con Dao
North East South	44 TP. Ho Chi Minh	38 TP. Ho Chi Minh	
	45 Binh Phuoc	39 Song Be	
	46 Binh Duong		
	47 Tay Ninh	40 Tay Ninh	
	48 Dong Nai	41 Dong Nai	
Mekong River Delta	49 Ba Ria-Vung Tau	42 Ba Ria-Vung Tau	
	50 Long An	43 Long An	
	51 Dong Thap	44 Dong Thap	
	52 An Giang	45 An Giang	
	53 Tien Giang	46 Tien Giang	
	54 Ben Tre	47 Ben Tre	
	55 Vinh Long	48 Vinh Long	
	56 Tra Vinh	49 Tra Vinh	
	57 Can Tho	50 Can Tho	
	58 Soc Trang	51 Soc Trang	
	59 Kien Giang	52 Kien Giang	
	60 Bac Lieu	53 Minh Hai	
	61 Ca Mau		

## 2.2 Present Socio-Economic Condition

### 2.2.1 Population

According to the 1989 population census, the total population was 64.77 million in whole country. More recent statistical data estimated 73.96 million in 1995 and 75.36 in 1996, respectively. The annual growth rate shows 2.4% to 1.9% during these 7 years and the ratio of urban population is almost stable; around 20% of the total.

The population of the Study Area is summarized by province (1996 administrative unit system) as shown in Table 2.2.1. Each province had 1.2 to 2.7 million population and population density varied from 2 to 24 persons per hectare in 1994. The share of urban population was quite high in Hanoi in comparison with other provinces, because it is one of the most urbanized area in the country. The population growth by province indicated almost same rate from 1993 to 1994.

**Table 2.2.1 Population of Study Area, 1993 and 94**

Province	Area (km <sup>2</sup> )	Population in 1994				Population in 1993 (1,000 pers.)	1994/93
		Population (1,000 pers.)	Density (pers./km <sup>2</sup> )	Urban (1,000 pers.)	Rural (1,000 pers.)		
Ha Noi City	921	2,194.4	2,383	1,150.8	1,043.6	2,160.8	1.016
Ha Tay	2,148	2,256.7	1,051	173.1	2,083.6	2,216.6	1.018
Vinh Phuc	4,827	2,248.7	466	163.5	2,085.2	2,202.9	1.021
Bac Thai	6,503	1,168.0	180	219.6	948.4	1,143.4	1.022
Ha Bac	4,616	2,308.2	500	114.8	2,193.4	2,276.7	1.014
Hai Hung	2,550	2,708.6	1,747	140.9	2,567.7	2,662.5	1.017
<b>Study Area Total</b>	<b>21,565</b>	<b>12,884.6</b>	<b>597</b>	<b>1,962.7</b>	<b>10,921.9</b>	<b>12,662.9</b>	<b>1.018</b>
<b>Whole Country</b>	<b>330,991</b>	<b>72,509.5</b>	<b>219</b>	<b>14,139.3</b>	<b>57,325.5</b>	<b>71,025.6</b>	<b>1.021</b>

Source: Statistical Year Book, 1995

Meanwhile, in Hanoi City, which is the capital city and one of the most urbanized cities in the country, total population accounts for 2,335.4 thousand in 1995 and 2,397.6 thousand in 1996, according to the Statistical Year Book of Hanoi 1996 (Table 2.2.2); that is 3.2% share to the whole country. Through those figures, it is very clear that the population increase has accelerated in the recent years and a heavy concentration is found in urban areas with gradual reduction towards the west and south. The acceleration was more conspicuous in all the urban districts such as Ba Dinh, Hoan Kiem, Hai Ba Trung and Dong Da, of which Hoan Kiem is the old center of Hanoi with the net density of population is over 1,000 people per hectare. A large part of Hoan Kiem is the so-called 'Ancient City'.

In rural areas the trends diverged by district. In Tu Liem and Gia Lam districts, the population increase accelerated during 1989 to 1995 while in Soc Son, Dong Anh and Thanh Tri districts, the rate of increase slows down. Thanh Tri is a district located south-east corner of Hanoi and the major area of the proposed road section. This area reveals rather low population density although next to the urbanized districts, since it is subject to frequent flooding and lakes/fishery ponds comprise a large proportion of the district.

**Table 2.2.2 Population Trend in Hanoi**

District	Area* (sq.km)	Population (thousand)				Average Annual Growth (%)			Pop. Density (per ha, 1996)
		1979**	1989**	1995*	1996*	79 - 89	89 - 95	95 - 96	
<i>Urban Dist.</i>	42.99	743.6	905.9	1,082.4	1,150.3	2.0	3.0	6.3	268
Ba Dinh	8.77	150.5	185.3	218.7	179.4	2.1	2.8	-18.0	205
Hoan Kiem	4.47	153.6	163.0	179.2	181.0	0.6	1.6	1.0	405
Hai Ba Trung	13.53	220.7	291.5	323.2	333.1	1.9	1.7	3.1	246
Dong Da	16.22	218.8	266.2	361.3	374.2	2.9	5.2	3.6	231
Tay Ho	24.26	-	-	-	82.6	-	-	-	34
<i>Rural Dist.</i>	860.14	883.2	1,090.6	1,253.0	1,247.3	2.1	2.3	-0.5	15
Soc Son	313.86	144.5	199.2	227.3	231.3	3.3	2.2	1.8	7
Dong Anh	184.16	164.6	213.1	239.7	244.6	2.6	2.0	2.0	13
Gia Lam	175.79	221.2	260.7	301.1	308.1	1.7	2.4	2.3	18
Tu Liem	85.53	190.1	227.0	279.2	253.5	1.8	3.5	-9.2	30
Thanh Tri	100.8	162.8	190.6	205.7	209.8	1.6	1.3	2.0	21
<b>Hanoi Total</b>	<b>903.13</b>	<b>1,626.8</b>	<b>1,996.6</b>	<b>2,335.4</b>	<b>2,397.6</b>	<b>2.0</b>	<b>2.7</b>	<b>2.7</b>	<b>27</b>

Note: Parts of Ba Dinh and Tu Liem shifted to Tay Ho, in 1996.

Source: \* Land Administration Dept., HPC

\*\* Population Census

## 2.2.2 Employment

The labor structure in Vietnam was almost stable from 1990 to 1994; 73% for primary sector, 13% for secondary and 14% for service sectors as shown in Table 2.2.3.

**Table 2.2.3 Labor Structure of Vietnam**

Sector	(Thousand Persons)				
	1990	1991	1992	1993	1994
<b>Total</b>	<b>26,021 100%</b>	<b>30,294 100%</b>	<b>30,975 100%</b>	<b>31,818 100%</b>	<b>32,718 100%</b>
<b>Primary Industry</b>	<b>19,024 73.1%</b>	<b>21,925 72.4%</b>	<b>22,513 72.7%</b>	<b>23,238 73.0%</b>	<b>23,929 73.1%</b>
Agriculture	18,979	21,895	22,483	23,208	23,898
Forestry & Fishery	45	30	30	30	31
<b>Secondary</b>	<b>3,631 14.0%</b>	<b>4,210 13.9%</b>	<b>4,214 13.6%</b>	<b>4,275 13.4%</b>	<b>4,370 13.4%</b>
Industry	2,800	3,392	3,394	3,450	3,522
Construction	831	818	820	825	848
<b>Service</b>	<b>3,366 12.9%</b>	<b>4,159 13.7%</b>	<b>4,248 13.7%</b>	<b>4,305 13.5%</b>	<b>4,419 13.5%</b>
Transportation and Telecommunication	479	513	527	534	549
Trade	1,117	1,681	1,719	1,735	1,776
Finance, Banking and Insurance	76	91	118	114	117
State, Science, Education, Health	1,354	1,443	1,449	1,478	1,509
Housing, Tourism & Consumer goods	340	431	435	444	468

Source: HUTMP

However, there is no current data on labor structure of Hanoi. An estimation indicates 884.0 thousand employment in 1989 and 1,133.2 thousand in 1996. Composition by sector in 1989 reveals a quite different feature from that of whole country; 51.6% for primary, 20.4% for secondary and 28.0% for service sector, respectively.

Total number of employment by province is shown in Table 2.2.4, generally increasing employment ratio is seen in every province.

**Table 2.2.4 Employment by Province**

Province	Employment (thous.)			Population (thous.)			Employment/Population		
	1979	1989	1996	1979	1989	1996	1979	1989	1996
Ha Noi City	749.2	884.0	1,133.2	1,732.1	1,931.6	2,268.4	0.43	0.46	0.50
Ha Tay	742.2	950.9	1,161.8	1,708.0	1,950.9	2,330.5	0.43	0.49	0.50
Vinh Phuc	302.3	434.2	525.6	745.3	913.3	1,066.3	0.41	0.48	0.49
Thai Nguyen	296.6	423.5	493.4	720.0	876.5	952.0	0.41	0.48	0.52
Bac Ninh	262.0	394.9	471.3	661.1	794.2	925.1	0.40	0.50	0.51
Hung Yen	319.5	456.4	569.0	847.1	926.7	1,083.5	0.38	0.49	0.53
<b>Study Area Total</b>	<b>2,671.8</b>	<b>3,543.9</b>	<b>4,354.3</b>	<b>6,413.6</b>	<b>7,393.2</b>	<b>8,625.8</b>	<b>0.42</b>	<b>0.48</b>	<b>0.50</b>
<b>Whole Country</b>	<b>23,035.5</b>	<b>28,791.4</b>	<b>35,791.7</b>	<b>52,742.0</b>	<b>64,375.8</b>	<b>75,355.2</b>	<b>0.44</b>	<b>0.45</b>	<b>0.47</b>

Source: General Statistical Office

### 2.2.3 Gross Domestic Product (GDP)

Trends of gross domestic product (GDP) in Vietnam are summarized in Tables 2.2.5 (at current prices) and 2.2.6 (at 1989 constant price), as key indices of macroscopic growth of national economy.

The trends shows tremendous growth in every sectors and drastic shifts of composition from primary sector to secondary and tertiary sectors. Real growths in every sector also can be seen, especially in industry, construction, finance and trade sub-sectors, as shown in Table 2.2.6.

The economy of Hanoi constituted 5.9% of the national economy in 1990 and 6.5% in 1993 (Table 2.2.7), in terms of gross regional domestic product (GRDP) with annual growth rate of 7.5% to 12.3% from 1990 to 1993. Some sub-sectors in service sector indicate very high growth such as tourism and finance. The composition by sector was also different from that of whole country; significant share was occupied by industry, commercial and culture sub-sectors.



**Table 2.2.5 GDP of Vietnam by Sector (1)**

**GDP by Sector (at current price)** (Bill. VND)

Sector	1991	1992	1993	1994	1995	1996*
<b>Total</b>	<b>76,707</b>	<b>110,535</b>	<b>136,571</b>	<b>170,258</b>	<b>222,840</b>	<b>258,609</b>
<b>Primary Sector</b>	<b>31,058</b>	<b>37,513</b>	<b>40,796</b>	<b>48,865</b>	<b>63,219</b>	<b>70,334</b>
Agriculture	27,061	32,573	24,737	41,838	53,713	59,892
Forestry & Fishery	3,997	4,940	6,059	7,027	9,506	10,442
<b>Secondary Sector</b>	<b>18,252</b>	<b>30,135</b>	<b>39,472</b>	<b>50,481</b>	<b>66,804</b>	<b>79,501</b>
Industry	15,193	23,956	29,371	37,535	50,912	61,409
Construction	3,059	6,179	10,101	12,946	15,892	18,092
<b>Service Sector</b>	<b>27,397</b>	<b>42,887</b>	<b>56,303</b>	<b>70,912</b>	<b>92,817</b>	<b>108,774</b>
Transport & Telecomm.	2,860	4,662	6,036	6,924	8,747	10,634
Trade	9,742	15,281	17,549	23,072	29,198	33,974
Finance, Banking and Insurance	1,108	1,567	2,318	3,450	5,314	6,127
State, Science, Education, Health	6,807	9,718	14,402	18,270	22,770	27,694
Housing, Tourism & Consumer goods	6,880	11,659	15,998	19,196	26,788	30,345

**GDP Growth to Previous Year (at current price)** (%)

Sector	1991	1992	1993	1994	1995	1996*
<b>Total</b>	-	<b>44.10</b>	<b>23.55</b>	<b>24.67</b>	<b>30.88</b>	<b>16.05</b>
<b>Primary Sector</b>	-	<b>20.78</b>	<b>8.75</b>	<b>19.78</b>	<b>29.37</b>	<b>11.25</b>
Agriculture	-	20.37	-24.06	69.13	28.38	11.50
Forestry/Fishery	-	23.59	22.65	15.98	35.28	9.85
<b>Secondary Sector</b>	-	<b>65.11</b>	<b>30.98</b>	<b>27.89</b>	<b>32.33</b>	<b>19.01</b>
Industry	-	57.68	22.60	27.80	35.64	20.62
Construction	-	101.99	63.47	28.17	22.76	13.84
<b>Service Sector</b>	-	<b>56.54</b>	<b>31.28</b>	<b>25.95</b>	<b>30.89</b>	<b>17.19</b>
Transport & Telecomm.	-	63.01	29.47	14.71	26.33	21.57
Trade	-	56.86	14.84	31.47	26.55	16.36
Finance, Banking and Insurance	-	41.43	47.93	48.84	54.03	15.30
State, Science, Education, Health	-	42.76	48.20	26.86	24.63	21.62
Housing, Tourism & Consumer goods	-	69.46	37.22	19.99	39.55	13.28

**Composition by Sector** (%)

Sector	1991	1992	1993	1994	1995	1996*
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0
<b>Primary Sector</b>	<b>40.5</b>	<b>33.9</b>	<b>29.9</b>	<b>28.7</b>	<b>28.4</b>	<b>27.2</b>
Agriculture	35.3	29.5	18.1	24.6	24.1	23.2
Forestry/Fishery	5.2	4.5	4.4	4.1	4.3	4.0
<b>Secondary Sector</b>	<b>23.8</b>	<b>27.3</b>	<b>28.9</b>	<b>29.6</b>	<b>30.0</b>	<b>30.7</b>
Industry	19.8	21.7	21.5	22.0	22.8	23.7
Construction	4.0	5.6	7.4	7.6	7.1	7.0
<b>Service Sector</b>	<b>35.7</b>	<b>38.8</b>	<b>41.2</b>	<b>41.6</b>	<b>41.7</b>	<b>42.1</b>
Transport & Telecomm.	3.7	4.2	4.4	4.1	3.9	4.1
Trade	12.7	13.8	12.8	13.6	13.1	13.1
Finance, Banking and Insurance	1.4	1.4	1.7	2.0	2.4	2.4
State, Science, Education, Health	8.9	8.8	10.5	10.7	10.2	10.7
Housing, Tourism & Consumer goods	9.0	10.5	11.7	11.3	12.0	11.7

\* : Estimated

Source: Statistical Year Book, 1996

**Table 2.2.6 GDP of Vietnam by Sector (2)**

GDP by Sector (at 1989 constant price) (Bill. VND)

Sector	1990	1991	1992	1993	1994	1995	1996*
<b>Total</b>	<b>29,526</b>	<b>31,286</b>	<b>33,987</b>	<b>36,735</b>	<b>39,982</b>	<b>43,797</b>	<b>47,888</b>
<b>Primary Sector</b>	<b>12,003</b>	<b>12,264</b>	<b>13,132</b>	<b>13,634</b>	<b>14,169</b>	<b>14,892</b>	<b>15,551</b>
Agriculture	N.A	10,288	11,074	11,574	12,063	12,643	13,238
Forestry & Fishery	N.A	1,976	2,058	2,060	2,106	2,249	2,313
<b>Secondary Sector</b>	<b>6,629</b>	<b>7,228</b>	<b>8,238</b>	<b>9,324</b>	<b>10,631</b>	<b>12,113</b>	<b>13,861</b>
Industry	5,500	6,042	6,921	7,766	8,771	9,998	11,448
Construction	1,129	1,186	1,317	1,558	1,860	2,115	2,413
<b>Service Sector</b>	<b>10,894</b>	<b>11,794</b>	<b>12,617</b>	<b>13,777</b>	<b>15,182</b>	<b>16,792</b>	<b>18,476</b>
Transport & Telecomm.	744	792	842	897	960	1,066	1,183
Trade	3,486	3,654	3,877	4,109	4,478	4,981	5,559
Finance, Banking and Insurance	368	448	496	578	710	906	961
State, Science, Education, Health	2,628	2,841	3,040	3,322	3,760	4,144	4,537
Housing, Tourism & Consumer goods	3,668	4,059	4,362	4,871	5,274	5,695	6,236

GDP Growth to Previous Year (at 1989 constant price) (%)

Sector	1990	1991	1992	1993	1994	1995	1996*
<b>Total</b>	-	<b>5.96</b>	<b>8.63</b>	<b>8.09</b>	<b>8.84</b>	<b>9.54</b>	<b>9.34</b>
<b>Primary Sector</b>	-	<b>2.17</b>	<b>7.08</b>	<b>3.82</b>	<b>3.92</b>	<b>5.10</b>	<b>4.43</b>
Agriculture	-	-	7.64	4.52	4.22	4.81	4.71
Forestry/Fishery	-	-	4.15	0.10	2.23	6.79	2.85
<b>Secondary Sector</b>	-	<b>9.04</b>	<b>13.97</b>	<b>13.18</b>	<b>14.02</b>	<b>13.94</b>	<b>14.43</b>
Industry	-	9.85	14.55	12.21	12.94	13.99	14.50
Construction	-	5.05	11.05	18.30	19.38	13.71	14.09
<b>Service Sector</b>	-	<b>8.26</b>	<b>6.98</b>	<b>9.19</b>	<b>10.20</b>	<b>10.60</b>	<b>10.03</b>
Transport & Telecomm.	-	6.45	6.31	6.53	7.02	11.04	10.98
Trade	-	4.82	6.10	5.98	8.98	11.23	11.60
Finance, Banking and Insurance	-	21.74	10.71	16.53	22.84	27.61	6.07
State, Science, Education, Health	-	8.11	7.00	9.28	13.18	10.21	9.48
Housing, Tourism & Consumer goods	-	10.66	7.46	11.67	8.27	7.98	9.50

\* : Estimated

Source: Statistical Year Book, 1996

**Table 2.2.7 GRDP of Hanoi by Sector**

(Bill. VND at 1989 constant price)

Sector	1990	%	1991	%	1992	%	1993	%
Industry	418.4	23.8	438.5	23.2	517.8	24.3	588.4	24.6
Construction	90.9	5.2	68.1	3.6	90.6	4.2	119.0	5.0
Agriculture	126.4	7.2	119.5	6.3	138.2	6.5	154.2	6.4
Transport and Comm.	76.7	4.4	78.8	4.2	94.1	4.4	102.7	4.3
Commercial	423.9	24.2	425.7	22.6	485.7	22.8	544.3	22.7
Other productive sectors	24.0	1.4	25.9	1.4	15.4	0.7	15.8	0.7
Finance	33.4	1.9	43.5	2.3	52.9	2.5	66.3	2.8
State and Education	62.4	3.6	71.7	3.8	98.6	4.6	107.5	4.5
Science	79.6	4.5	94.6	5.0	116.0	5.4	124.1	5.2
Culture	277.4	15.8	320.5	17.0	336.8	15.8	353.0	14.7
Tourism	29.4	1.7	35.1	1.9	49.3	2.3	71.8	3.0
Utility	66.6	3.8	93.3	4.9	58.9	2.8	55.9	2.3
Non profit	9.5	0.5	21.6	1.1	24.4	1.1	27.8	1.2
House services	36.5	2.1	49.6	2.6	54.9	2.6	64.3	2.7
<b>Total</b>	<b>1,755.1</b>	<b>100.0</b>	<b>1,886.4</b>	<b>100.0</b>	<b>2,133.6</b>	<b>100.0</b>	<b>2,395.1</b>	<b>100.0</b>

Source: HUTMP

Hanoi reveals an advantageous feature among the Study Area in its share and growth of GRDP as shown in Table 2.2.8

**Table 2.2.8 GRDP and per Capita GRDP by Province**

(1) GRDP at 1989 constant price (Bill. VND)

	1989	Share(A)	Share(B)	1996	Share(A)	Share(B)
<b>Whole Country</b>	<b>28,093</b>	<b>100%</b>		<b>47,888</b>	<b>100%</b>	
Ha Noi	1,669	5.9%	44.8%	2,990	6.2%	48.8%
Thai Nguyen	297	1.1%	8.0%	440	0.9%	7.2%
Bac Giang	363	1.3%	9.8%	558	1.2%	9.1%
Bac Ninh	275	1.0%	7.4%	422	0.9%	6.9%
Hung Yen	269	1.0%	7.2%	375	0.8%	6.1%
Ha Tay	575	2.0%	15.4%	923	1.9%	15.1%
Vinh Phuc	274	1.0%	7.4%	413	0.9%	6.7%
<b>Study Area Total</b>	<b>3,722</b>	<b>13.2%</b>	<b>100%</b>	<b>6,121</b>	<b>12.8%</b>	<b>100%</b>

(2) Per Capita GRDP at 1989 constant price

	1989 (thousand VND)	1996 (thousand VND)
<b>Whole Country</b>	<b>436.4</b>	<b>635.5</b>
Ha Noi	546.1	1318.1
Thai Nguyen	288.3	462.1
Bac Giang	287.8	384.0
Bac Ninh	342.4	456.2
Hung Yen	282.0	346.0
Ha Tay	312.7	396.1
Vinh Phuc	331.2	387.3
<b>Study Area Total</b>	<b>380.9</b>	<b>607.3</b>

(3) Growth

	GRDP		GRDP per Capita	
	1996/89	AGR (%)	1996/89	AGR (%)
<b>Whole Country</b>	<b>1.70</b>	<b>7.92</b>	1.46	5.52
Ha Noi	1.79	8.69	2.41	13.41
Thai Nguyen	1.48	5.78	1.60	6.97
Bac Giang	1.54	6.33	1.33	4.21
Bac Ninh	1.53	6.31	1.33	4.18
Hung Yen	1.39	4.86	1.23	2.96
Ha Tay	1.61	6.99	1.27	3.43
Vinh Phuc	1.51	6.04	1.17	2.26
<b>Study Area Total</b>	<b>1.64</b>	<b>7.37</b>	1.59	6.89

Source: General Statistical Office

Note: Share (A) and Share (B) denote share to whole country and share to the Study Area respectively.

## 2.2.4 Land Use

Table 2.2.9 shows land use condition by province based on the agriculture census result in 1993 and 1994.

**Table 2.2.9 Land Use by Province in 1993 and 94**

Province	Land Use in 1993 (thousand ha)						Land Use in 1994 (thousand ha)					
	Total	Agriculture	Forestry	Special	Residential	Waste	Total	Agriculture	Forestry	Special	Residential	Waste
Ha Noi City	92.1	44.2	6.7	18.1	11.6	11.5	88.7	39.8	10.8	16.1	9.1	9.7
%	100.0	48.0	7.3	19.7	12.6	12.5	100.0	44.9	12.2	18.2	10.3	10.9
Ha Tay	214.8	124.2	9.9	31.5	16.9	32.3	201.7	109.5	5.9	33.2	18.3	27.0
%	100.0	57.8	4.6	14.7	7.9	15.0	100.0	54.3	2.9	16.5	9.1	13.4
Vinh Phu	482.7	140.2	151.3	28.7	37.0	125.5	458.1	124.6	153.3	30.8	36.5	107.0
%	100.0	29.0	31.3	5.9	7.7	26.0	100.0	27.2	33.5	6.7	8.0	23.4
Bac Thai	650.3	74.8	133.3	20.0	37.0	385.2	608.5	75.6	258.8	16.5	17.7	236.1
%	100.0	11.5	20.5	3.1	5.7	59.2	100.0	12.4	42.5	2.7	2.9	38.8
Ha Bac	416.5	146.7	139.9	62.5	26.6	85.5	454.6	133.7	84.1	47.6	27.8	155.8
%	100.0	35.2	33.6	15.0	6.4	20.5	100.0	29.4	18.5	10.5	6.1	34.3
Hai Hung	255.0	158.7	11.6	36.5	16.7	31.5	253.6	142.4	11.4	38.8	19.5	32.2
%	100.0	62.2	4.5	14.3	6.5	12.4	100.0	56.2	4.5	15.3	7.7	12.7
Study Area Total	2,111.4	688.8	452.7	197.3	145.8	671.5	2,065.2	625.6	524.3	183.0	128.9	567.8
%	100.0	32.6	21.4	9.3	6.9	31.8	100.0	30.3	25.4	8.9	6.2	27.5
Whole Country	33,099.1	7,348.4	9,641.2	1,117.7	774.0	14,217.8	32,835.9	6,342.7	12,055.2	12,186.2	732.8	12,168.2
%	100.0	22.2	29.1	3.4	2.3	43.0	100.0	19.3	36.7	37.1	2.2	37.1

Source: Statistical Year Book

Meanwhile, land use by different category was estimated by traffic zone in HUTMP, the total figure is as shown in Table 2.2.10.

**Table 2.2.10 Land Use of Hanoi, 1995**

	Commercial	Industrial	Institutional	Residential	Others	Total
Area (ha)	163	202	262	2,729	90,335	93,691
%	0.2	0.2	0.3	2.9	96.4	100.0

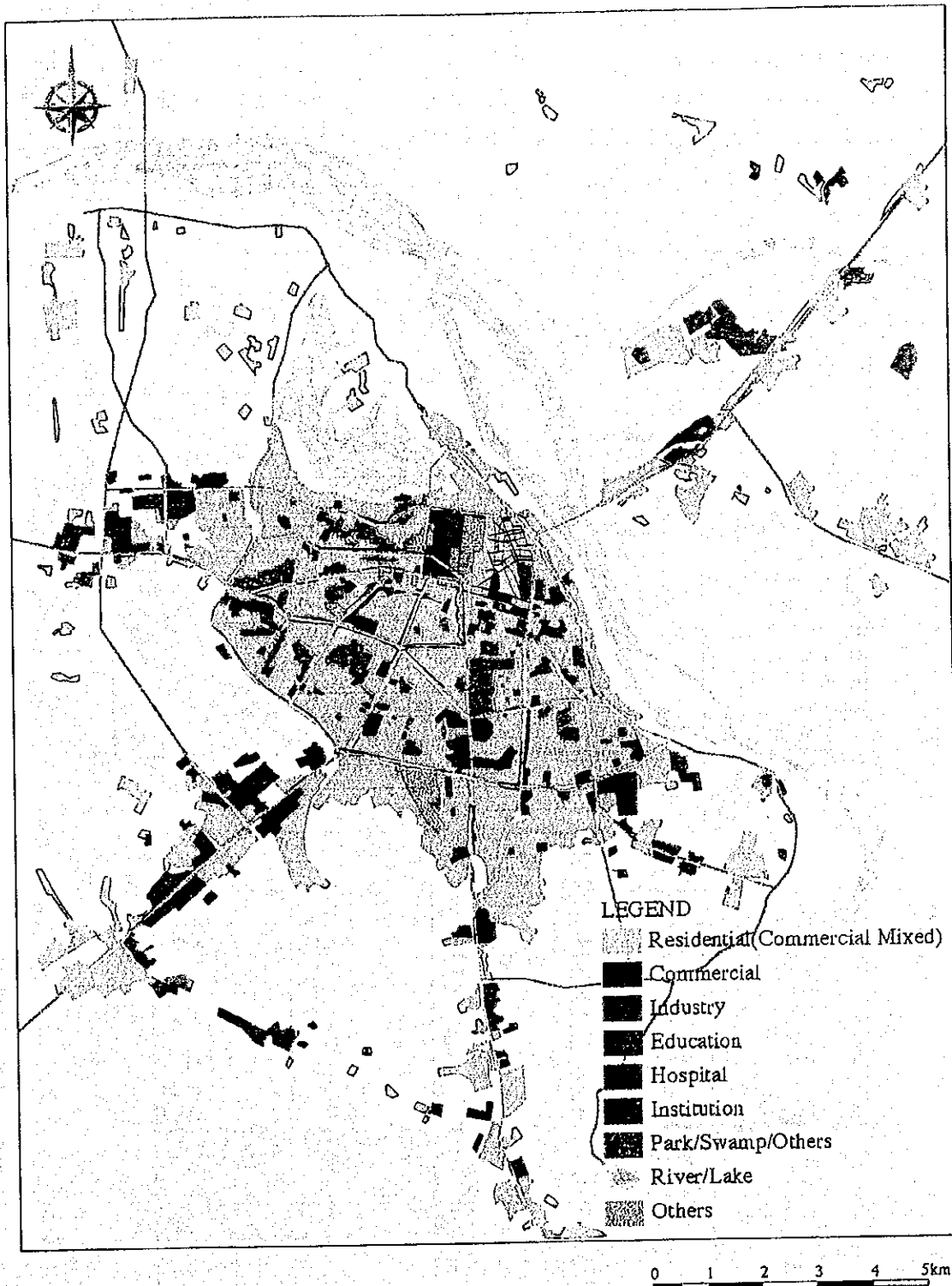


Figure 2.2.1 Present Land Use of Hanoi

## 2.3 Socio-Economic Framework

As the transport demand, in general, has a very close relationship with the potential of various economic activity, some socio-economic features of the Study Area will be summarized in this section as basic information for feasibility analysis of the project as well as traffic demand forecast.

### 2.3.1 Future Socio-Economic Framework

A projection of GRDP for the year 2000 is carried out by General Statistical Office, and the results are summarized in Table 2.3.1.

**Table 2.3.1 Projection of GRDP**

(1) GRDP Projection at 1989 constant price (Bill. VND)

	1996	Share(A)	Share(B)	2000	Share(A)	Share(B)
<b>Whole Country</b>	<b>47,888</b>	<b>100%</b>		<b>66,972</b>	<b>100%</b>	
Ha Noi	2,990	6.2%	48.8%	4,340	6.5%	50.2%
Thai Nguyen	440	0.9%	7.2%	580	0.9%	6.7%
Bac Giang	558	1.2%	9.1%	777	1.2%	9.0%
Bac Ninh	422	0.9%	6.9%	589	0.9%	6.8%
Hung Yen	375	0.8%	6.1%	488	0.7%	5.6%
Ha Tay	923	1.9%	15.1%	1,285	1.9%	14.9%
Vinh Phuc	413	0.9%	6.7%	582	0.9%	6.7%
<b>Total Study Area</b>	<b>6,121</b>		<b>100%</b>	<b>8,641</b>		<b>100%</b>

Share (A) : against whole country

Share (B) : against total study area

#### (2) Per Capita GDP

	1996		2000	
	Population (thous. persons)	GDP per capita (thousand VND)	Population (thous. persons)	GDP per capita (thousand VND)
<b>Whole Country</b>	<b>75,355.2</b>	<b>635.5</b>	<b>81,523.8</b>	<b>821.5</b>
Ha Noi	2,268.4	1318.1	2,310.0	1,878.8
Thai Nguyen	952.1	462.1	1,050.3	552.2
Bac Giang	1,453.0	384.0	1,593.7	487.5
Bac Ninh	925.1	456.2	1,046.7	562.7
Hung Yen	1,083.9	346.0	1,141.0	427.7
Ha Tay	2,330.5	396.1	2,496.1	514.8
Vinh Phuc	1,066.4	387.3	1,230.0	473.2
<b>Total Study Area</b>	<b>10,079.4</b>	<b>607.3</b>	<b>10,867.8</b>	<b>795.1</b>

#### (3) Growth of GDP

#### (4) Growth of GDP per Capita

	1996/1989	2000/1996	1996/1989	2000/1996
	AGR (%)	AGR (%)	AGR (%)	AGR (%)
<b>Whole Country</b>	<b>7.92</b>	<b>8.75</b>	<b>5.52</b>	<b>6.63</b>
Ha Noi	8.69	9.76	13.41	8.00
Thai Nguyen	5.78	7.15	6.97	4.55
Bac Giang	6.33	8.63	4.21	6.15
Bac Ninh	6.31	8.69	4.18	5.39
Hung Yen	4.86	6.81	2.96	5.44
Ha Tay	6.99	8.62	3.43	6.77
Vinh Phuc	6.04	8.95	2.26	5.13
<b>Total Study Area</b>	<b>7.37</b>	<b>9.00</b>	<b>6.89</b>	<b>6.97</b>

Source: General Statistical Office

## 2.3.2 Urban Development Plan and Major Highway Projects

### (1) Hanoi Master Plan 2020

The general urban development plan for Hanoi was established in 1992, entitled as “*Hanoi Master Plan 2010*”, and various projects such as transportation infrastructures, industrial estates, residential developments have been planned and implemented, following the direction of the Master Plan 2010. Since recent progress of urban developments in and around Hanoi are quite rapid and drastic, a necessity of overall revision of the Master Plan has been recognized by the Hanoi People’s Committee. The responsible agency in Hanoi City, Chief Architect Office, has prepared a new master plan for the year 2020. As the revised master plan will be authorized soon, the prospected future city structure is summarized as follows, in accordance with a draft of *Hanoi Master Plan 2020*.

#### 1) Population Framework

Total planned population of the greater Hanoi metropolitan area is 4.5 million in 2020, of which 2.5 million is for Hanoi City (1.5 million in the right bank area of Red River and 1.0 million in the left bank area), 1.0 million for the western suburbs, 0.5 million each for the northern and southern suburbs.

The urban area of Hanoi will be expanded to 25 thousand hectares from 8 thousand in 1997, in order to control the densely inhabited urban area into a more moderate density of 100 persons per hectare. Therefore, the population within the existing urbanized area which is surrounded by Ring Road 2, will be reduced to 800 thousand by 2020.

#### 2) Land Use

Based on the proposed population allocation, a schematic land use plan is drawn out in the scale of 1:10,000. Major urban development directions are;

##### i. Western Urban Development Corridor: Xuan La, Yen Hoa, Dai Kim

The area extending along the ring road No. 3 from Thang Long bridge to National Highway No. 6, including Ciptra, South Thang Long City, Trun Yen, Nghia Do Village, Linh Dam-Dinh Cong projects.

ii. Northern Area of Red River: Dong Anh

The area between the river and the railway, composed of urban centers, residential area, large regional parks and industrial estates, including New Van Tri Town, Thang Long North Industrial Estate, Dong Anh Estate.

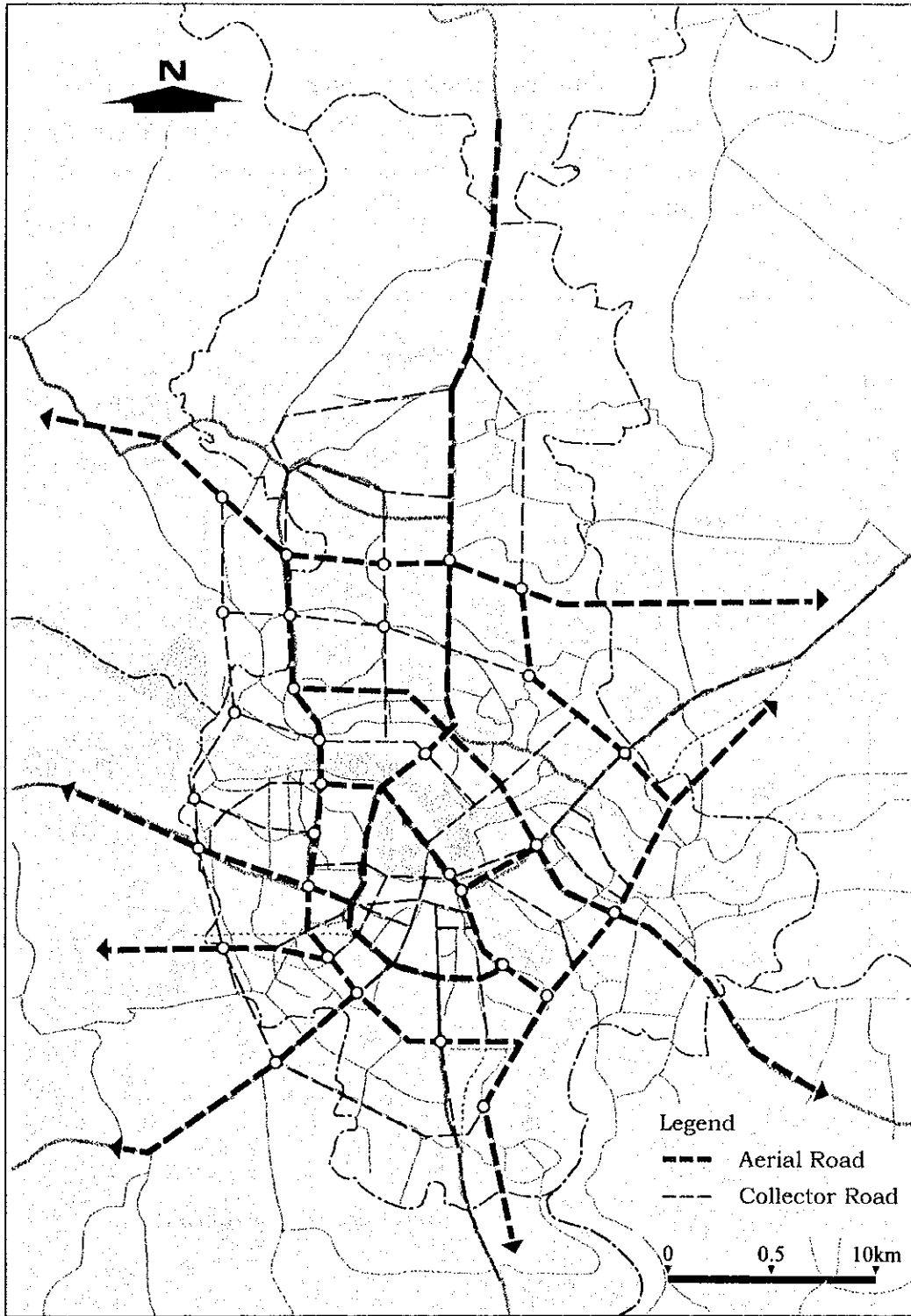
iii. Gia Lam Area:

The area including some industrial estates already in operation, composed of Gia Lam I.E., Taiwan I.E., Daewoo I.E. and the surrounding residential development areas.

3) Transportation Network

The proposed road network consists of radial and circumferential roads as illustrated in Figure 2.3.1.





**Figure 2.3.1 Proposed Road network in Hanoi Master Plan 2020**

(2) Other Regional Development Idea

In the northern region of Vietnam, Hanoi is located as the center among the strategic triangle area connecting with Hai Phong and Ninh Binh. Since other urban development cores, such as Xuan Mai - Hoa Lac, Phuc Yen, etc., are also planned towards western and northern directions from Hanoi, inter-regional transportation network would have more important role in future.

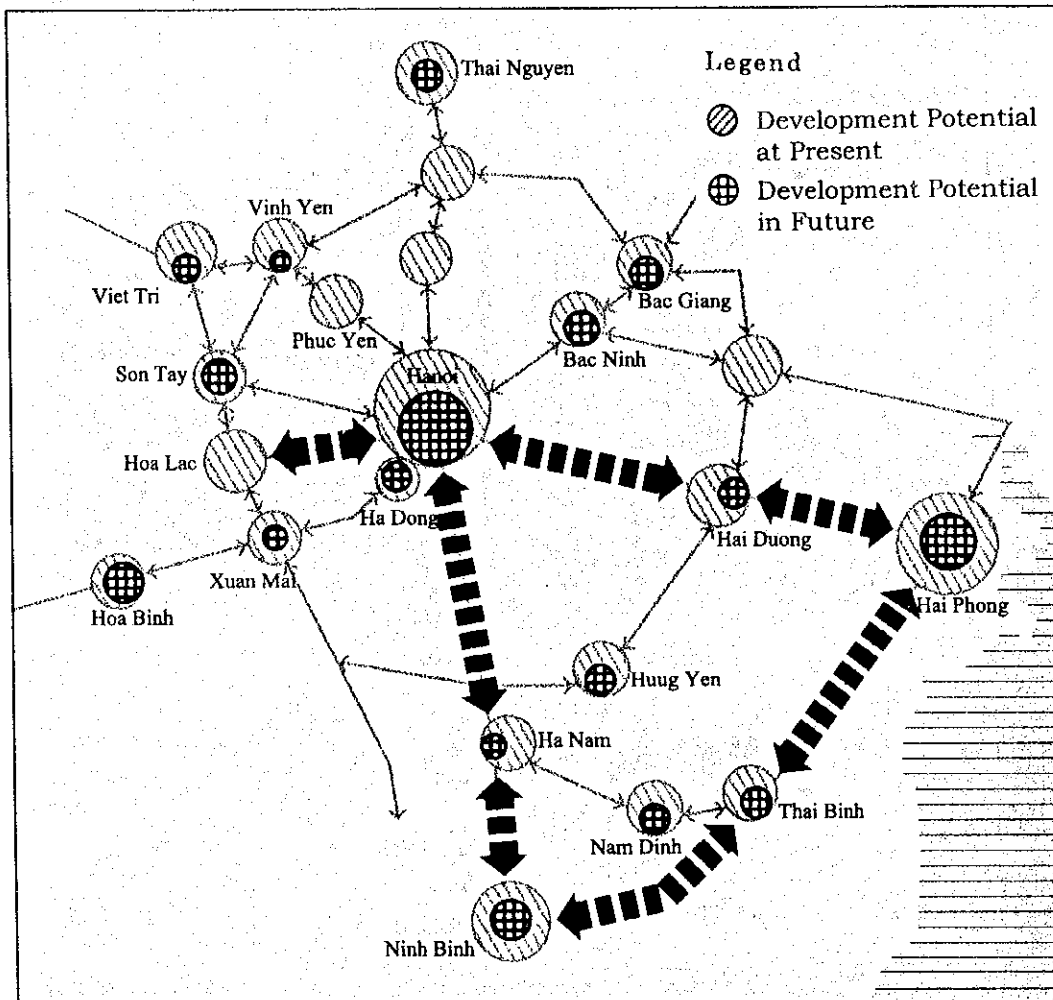


Figure 2.3.2 Development Urban Cores in Northern Region

(3) Hanoi Third Ring Road (RR 3)

1) Background

As the northern area of Hanoi is planned for new socio-economic development projects, the road network requires to construct RR3 not only to solve existing

traffic problems but also to support the national highway network. The objectives of the development of RR3 are, among others, as follows:

- To improve and strengthen the road network in Hanoi capital region;
- To support development projects in north of Hanoi;
- To promote the expansion of urbanization and industrialization in the region; and
- To handle heavy traffic and cargo movement outside the urban area of Hanoi.

## 2) Road Segments

Road segments are shown in the following together with approximate road length and required number of through traveled way lanes in the year 2010.

<u>Road Segment</u>	<u>Approximate Length (km)</u>	<u>Number of Lanes</u>
NH2 – NH32	16	4
NH32 – NH1/SHTRR	11	4
NH5 – NH1 North	10	4
NH1 North – NH2	20	-

## (4) Duong Lang – Hoa Lac Expressway

### 1) Background

This expressway is planned between Hanoi and the proposed technology and university town in Ba Vi. The new town is one of the satellite cities planned around Hanoi. The objectives of the development of this expressway are;

- To support development of the new technology and university town;
- To promote the expansion of urbanization and industrialization to the western areas; and
- To serve the increasing transport demand between Hanoi and western provinces.

### 2) Expressway Length and Number of Lanes

Length of the expressway is approximately 32 km and the number of lanes is

planned 4-lane in 2010 and 6-lane in 2020.

(5) Improvement of National Highway No. 1

Presently the improvement of NH 1 is under way as shown in the following table, but the highway stretches immediately concerned with the Project are i. New NH 1 North (30 km segment length with 4-lane traveled way); and ii. New NH 1 South (30 km segment length with 4-lane traveled way).

Highway Section and Financing Agency	Length (km)	Name of Project
Lang Son – Hanoi (NH 1 North) * ADB * OECF	164	Second Road Improvement Project National Highway No. 1 Bridge Rehabilitation Project (2)
Hanoi – Vinh (NH 1 South) * World Bank * OECF	285	Highway Rehabilitation Project National Highway No. 1 Bridge Rehabilitation Project (1)

Source: MOT

(6) New National Highway No. 18 Improvement Project

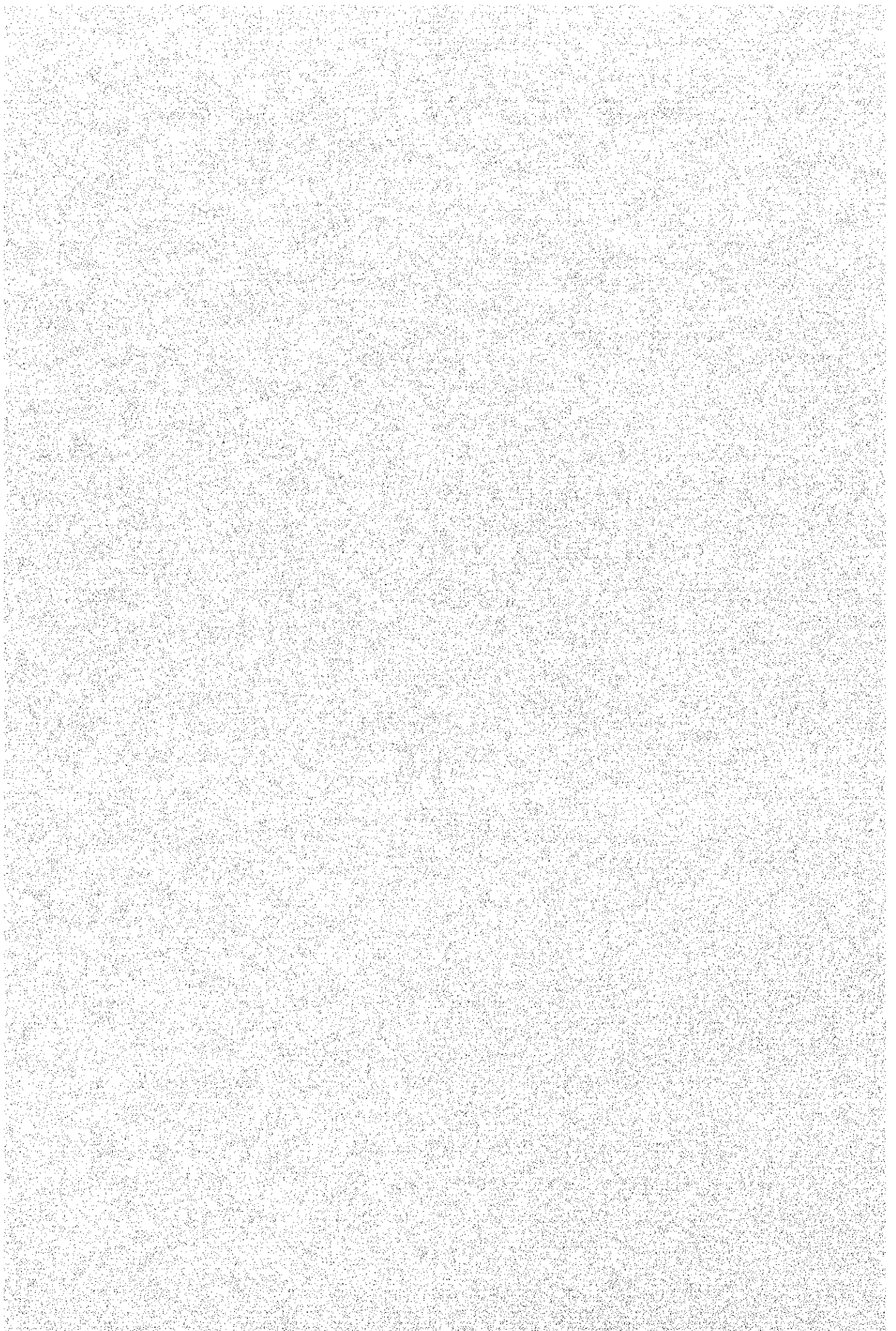
The highway starts at Noi Bai International Airport and terminates at Bac Luan border gate. It is an important trunk road in highway network in the northern region and connects planned northern Hanoi industrial zones to a deep seaport of Cai Lan and to China.

The highway section which is immediately concerned with the Project is Noi Bai – Bac Ninh, 31.3 km length with 4-lane traveled way (final stage).

The road at present is sub-standard, unpaved and new alignments is required. A feasibility study to upgrade and improve the road alignment was carried out and as a result, the section between Noi Bai – Bac Ninh was recommended to be constructed as a 2-lane highway before the year 2001 with another 2-lane carriageway to be constructed before the year 2013.

## **CHAPTER 3**

# **CURRENT ROAD TRANSPORT PROFILE**



## CHAPTER 3      CURRENT ROAD TRANSPORT PROFILE

### 3.1      Transportation in General

#### 3.1.1      Overall Features

General transport condition in the country is reviewed based on available data mainly from Statistical Yearbooks by General Statistical Office.

Total volume of freight and passenger transport in the country is summarized in Table 3.1.1. Yearly trend shows steady increases since 1990 reflecting sharp growth of national economy.

**Table 3.1.1      Trend of National Transportation in General**

Year	Freight			Passenger		
	thous. tons	mill. ton-km	ave. length	mill. person	mill. pers-km	ave. length
1990	53,889.0	12,544.2	232.8	326.8	11,829.7	36.2
1991	56,431.0	17,209.5	305.0	436.5	12,915.1	29.6
1992	64,903.0	17,002.2	262.0	493.0	14,599.6	29.6
1993	70,463.7	18,419.0	261.4	516.4	15,271.9	29.6
1994	76,455.0	20,126.7	263.2	555.5	16,575.0	29.8
1995	87,220.0	21,858.9	250.6	593.8	20,431.6	34.4
1996	98,168.0	28,611.0	291.4	648.7	24,331.0	37.5

**Comparison to previous year**

Year	Freight			Passenger		
	thous. tons	mill. ton-km	ave. length	mill. person	mill. pers-km	ave. length
1991	1.047	1.372	1.310	1.336	1.092	0.817
1992	1.150	0.988	0.859	1.129	1.130	1.001
1993	1.086	1.083	0.998	1.047	1.046	0.999
1994	1.085	1.093	1.007	1.076	1.085	1.009
1995	1.141	1.086	0.952	1.069	1.233	1.153
1996	1.126	1.309	1.163	1.092	1.191	1.090

Source: Statistical Year Book

There is close relationship between economic and traffic growth and this suggests the greater traffic demands both in freight and passenger as national/regional economy is accelerated in future.

Traffic volume by transport means indicates rather stable pattern of modal share; significant role of maritime transport for freight and increasing share of road transport for passengers (Table 3.1.2).

**Table 3.1.2 Traffic by Mode**

Freight Traffic by Mode (mill. ton-km)							Passenger Traffic by Mode (mill. pass-km)						
Year	Total	Rail	Road	In. Water	Maritime	total	Year	Total	Rail	Road	In. Water	Maritime	total
1986	12,156	961	1,785	2,264	7,139	12,148	1986	15,353	4,196	9,744	1,048	73	15,061
1987	13,272	1,001	1,750	2,369	8,145	13,265	1987	16,917	4,854	10,587	1,073	88	16,602
1988	13,004	1,015	1,771	1,308	7,906	12,000	1988	15,177	3,505	10,240	1,051	80	14,876
1989	13,233	743	1,656	1,923	8,906	13,229	1989	11,720	2,098	8,209	1,014	50	11,370
1990	12,544	847	1,631	1,749	8,313	12,540	1990	11,830	1,913	8,352	1,014	93	11,372
1991	17,210	1,103	1,815	1,765	12,519	17,202	1991	12,915	1,767	9,438	1,186	55	12,446
1992	17,002	1,077	2,075	1,817	12,016	16,985	1992	14,600	1,752	10,621	1,145	70	13,588
1993	18,419	978	2,437	2,335	12,650	18,400	1993	15,272	1,921	10,601	1,311	37	13,869
1994	20,127	1,370	2,646	1,971	14,104	20,091	1994	16,757	1,796	11,150	1,412	29	14,387
1995	21,859	1,751	2,968	2,248	14,804	21,770	1995	20,432	2,133	12,775	1,428	29	16,366
1996	28,611	1,770	3,238	2,316	21,164	28,488	1996	24,331	2,360	14,919	1,460	32	18,771

Modal Share							Modal Share						
Year	Total	Rail	Road	In. Water	Maritime	total	Year	Total	Rail	Road	In. Water	Maritime	total
1986		7.9%	14.7%	18.6%	58.8%	100.0%	1986		27.9%	64.7%	7.0%	0.5%	100.0%
1987		7.5%	13.2%	17.9%	61.4%	100.0%	1987		29.2%	63.8%	6.5%	0.5%	100.0%
1988		8.5%	14.8%	10.9%	65.9%	100.0%	1988		23.6%	68.8%	7.1%	0.5%	100.0%
1989		5.6%	12.5%	14.5%	67.3%	100.0%	1989		18.5%	72.2%	8.9%	0.4%	100.0%
1990		6.8%	13.0%	13.9%	66.3%	100.0%	1990		16.8%	73.4%	8.9%	0.8%	100.0%
1991		6.4%	10.6%	10.3%	72.8%	100.0%	1991		14.2%	75.8%	9.5%	0.4%	100.0%
1992		6.3%	12.2%	10.7%	70.7%	100.0%	1992		12.9%	78.2%	8.4%	0.5%	100.0%
1993		5.3%	13.2%	12.7%	68.8%	100.0%	1993		13.9%	76.4%	9.4%	0.3%	100.0%
1994		6.8%	13.2%	9.8%	70.2%	100.0%	1994		12.5%	77.5%	9.8%	0.2%	100.0%
1995		8.0%	13.6%	10.3%	68.0%	100.0%	1995		13.0%	78.1%	8.7%	0.2%	100.0%
1996		6.2%	11.4%	8.1%	74.3%	100.0%	1996		12.6%	79.5%	7.8%	0.2%	100.0%

Source: Statistical Year Books

### 3.1.2 Transport in the Study Area

As there are all kinds of transportation services in the Area, such as road, railway, inland water and air transport, each mode has a different role and significance.

Network of National Highways composed of NH Nos. 1, 2, 3, 5, 6, 18, 21, 32, etc. contributes a significant land transportation in the Area. Vietnamese National Railway (VNR) links from Hanoi to major regional centers of the whole country such as Hai Phong (102 km), Ho Chi Minh City (1,726 km), Thai Nguyen (75 km), Lang Son (148 km) and Lao Cai (283 km). There are 11 stations within Hanoi City. Inland water is also one of the major transport modes, especially for bulk cargo in the Red River region, and air transport is important both for domestic and international transport.

The modal share of local transport in the Study Area reveals slight differences from that of the rest of the country. Road transport, in general, occupies dominant share in passenger transport, but inland water transport has a certain role in freight transport among the Study Area (Table 3.1.3).



**Table 3.1.3 Local Transportation by Province**

Freight traffic of local transport (mill.ton-km)							Modal Share in 1995						
Province	1990	1991	1992	1993	1994	1995	Total	Road	%	I. Water	%	Maritime	%
Ha Noi	287.0	245.0	312.0	324.0	337.0	390.0	390.0	128.0	32.8	39.0	10.0	223	57.2
Ha Tay	103.5	82.4	81.0	89.0	74.8	95.9	95.9	52.9	55.2	43.0	44.8	0	0.0
Vinh Phu	46.0	44.0	42.0	43.0	58.4	70.1	70.1	30.6	43.7	39.5	56.3	0	0.0
Bac Thai	16.0	17.0	18.0	20.0	36.2	43.1	43.1	40.1	93.0	3.0	7.0	0	0.0
Ha Bac	45.0	52.0	48.0	61.0	58.2	67.8	67.8	40.8	60.2	27.0	39.8	0	0.0
Hai Hung	74.0	144.0	166.0	234.0	193.2	217.8	217.8	144.2	66.2	73.6	33.8	0	0.0
<b>Total Study Area</b>	<b>571.5</b>	<b>584.4</b>	<b>667.0</b>	<b>771.0</b>	<b>757.8</b>	<b>884.7</b>	<b>884.7</b>	<b>436.6</b>	<b>49.4</b>	<b>225.1</b>	<b>25.4</b>	<b>223</b>	<b>25.2</b>
<b>Whole Country</b>	<b>4,060.1</b>	<b>4,364.2</b>	<b>4,834.4</b>	<b>5,171.5</b>	<b>5,555.1</b>	<b>6,260.6</b>	<b>6,260.6</b>	<b>2,709.1</b>	<b>43.3</b>	<b>1,609.9</b>	<b>25.7</b>	<b>1941.6</b>	<b>31.0</b>

Passenger traffic of local transport (mill.pass-km)						Modal Share in 1995				
Province	1992	1993	1994	1995		Total	Road	%	Water	%
Ha Noi	206.0	267.0	263.8	372.0		372	360	96.8	12	3.2
Ha Tay	149.0	150.0	157.4	187.0		187	186	99.5	1	0.5
Vinh Phu	84.0	83.0	101.6	126.0		126	125	99.2	1	0.8
Bac Thai	69.0	69.0	79.5	106.0		106	106	100.0	0	0.0
Ha Bac	102.0	109.0	121.9	166.0		166	166	100.0	0	0.0
Hai Hung	66.0	69.0	79.4	94.0		94	93	98.9	1	1.1
<b>Total Study Area</b>	<b>676.0</b>	<b>747.0</b>	<b>803.6</b>	<b>1,051.0</b>		<b>1,051</b>	<b>1,036</b>	<b>98.6</b>	<b>15</b>	<b>1.4</b>
<b>Whole Country</b>	<b>11,618.0</b>	<b>11,856.0</b>	<b>12,430.0</b>	<b>14,074.0</b>		<b>14,074</b>	<b>12,613</b>	<b>89.6</b>	<b>1461</b>	<b>10.4</b>

Source: Statistical Year Book

## 3.2 Road Network and Number of Vehicles

### 3.2.1 Road Network in the Study Area

Transport network in this region consists of three modes; road, railway and inland water, of which road transport plays a dominant role both for inter-regional and intra-regional transportation. Arterial roads run to and from Hanoi City in radial directions, connecting all major cities in the country through surrounding provinces as illustrated in Figure 3.2.1.

Road network in Vietnam consists of three categories; National, Provincial and District roads, and each length is 10,800 km, 15,300 km and 25,300 km in total, respectively. The network density as a whole is 0.32 km per square km, not inferior to other Asian countries such as 0.20 in Thailand and 0.25 in Malaysia. Though over 30 percent of the total length of national roads are paved with asphalt concrete, other roads are still in poor surface condition.

Road lengths in Hanoi City are summarized in Table 3.2.1 by administrative authority and in Table 3.2.2 by surface condition.

**Table 3.2.1 Road Length by Administrative Authority**

Road Type	Road Length (km)			
	VRA	TUPWS	District	Total
National Road	71.7	28.4	-	100.1
Special Road (State)	12.3	14.0	-	26.3
Provincial Road	-	134.6	-	134.6
Special Road (TUPWS)	-	90.5	-	90.5
District Road	-	19.8	-	19.8
District/Municipal Road	-	-	427.0	427.0
<b>Total</b>	<b>84.0</b>	<b>287.3</b>	<b>427.0</b>	<b>798.3</b>

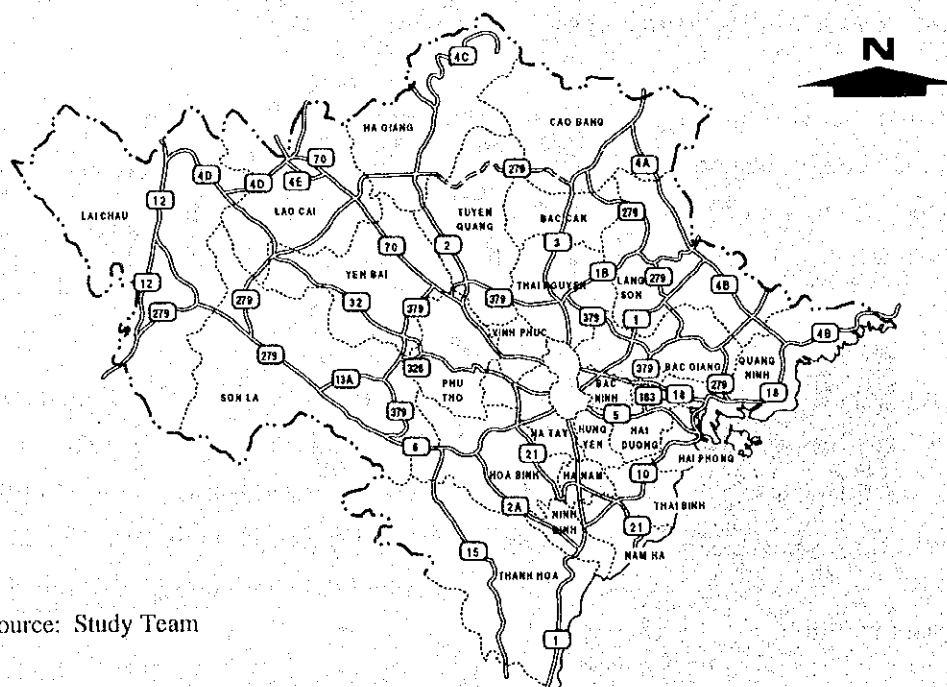
VRA: Vietnam Road Administration, MOTC

TUPWS: Transport and Urban Public Works Services, HPC

**Table 3.2.2 Road Length by Surface Condition**

Road Type	Asphalt Concrete	Macadam Penetration	Gravel	Earth/Gravel	Total
National Roads (km)	100.0	21.0	0.0	0.0	121.0
%	82.6	17.4	0.0	0.0	100.0
Provincial Roads (km)	0.0	332.0	104.0	0.0	436.0
%	0.0	76.1	23.9	0.0	100.0
District Roads (km)	0.0	0.0	500.0	882.0	1,382.0
%	0.0	0.0	36.2	63.8	100.0
<b>Total (km)</b>	<b>100.0</b>	<b>353.0</b>	<b>604.0</b>	<b>882.0</b>	<b>1,939.0</b>
%	5.2	18.2	31.2	45.5	100.0

Source: VRA



Source: Study Team

**Figure 3.2.1 Major Road Network**

### 3.2.2 Number of Vehicles

As there are only insufficient data on number of vehicles by province, an existing condition would be assumed from various different information.

The latest data obtained from traffic police of Hanoi indicates both total number of automobiles and motorcycles by province, and Hanoi occupies a dominant share in the Study Area in 1997 (Table 3.2.3).

**Table 3.2.3 Registered Vehicles by Province**

Province	1995		1996	
	No. of cars newly registered	No. of motorcycles Newly registered	No. of cars newly registered	No. of motorcycles Newly registered
Ha Noi City	2,723	69,700	14,700	68,000
Ha Bac	771	61,000	976	8,600
Ha Tay	2,450	6,600	1,260	8,800
Bac Thai	300	3,500	246	3,500
Hai Hung	997	9,300	400	11,000
Vinh Phuc	710	5,400	418	5,650

Province	1997 (first half of 1997)			
	No. of cars newly registered	Total No. of cars	No. of motorcycles Newly registered	Total No. of motorcycles
Ha Noi City	1,332	68,000	36,300	592,600
Bac Giang	393	3,400	8,950	50,000
Bac Ninh	139	2,380	3,200	27,300
Ha Tay	313	8,400	4,560	55,300
Hung Yen	77	361	1,640	15,400
Thai Nguyen	96	5,200	2,650	47,000
Vinh Phuc	71	429	906	995

Source: Traffic Police of Hanoi

There is other detailed information for Hanoi City as shown in Table 3.2.4 and 3.2.5. There can be found discrepancies among the data due to different categorization.

**Table 3.2.4 Number of Vehicles Registered in Hanoi**

Year	Number of Vehicles					Composition (%)					Ownership Ratio (Veh./1,000Pop.)	
	Pass. Car	Bus	Truck	Others	Total	Pass.Car	Bus	Truck	Others	Total	total pop.	urban pop.
1990	4,783	461	9,603	6,651	21,498	22.2	2.1	44.7	30.9	100		
1991	8,302	784	12,564	10,082	31,732	26.2	2.5	39.6	31.8	100		
1992	10,120	993	13,323	11,304	35,740	28.3	2.8	37.3	31.6	100		
1993	12,251	1,218	14,198	11,563	39,230	31.2	3.1	36.2	29.5	100		
1994	14,061	1,482	15,506	11,684	42,733	32.9	3.5	36.3	27.3	100		
1995	15,272	1,598	18,097	12,293	47,260	32.3	3.4	38.3	26.0	100	20.2	43.7
1996*	20,795	3,103	23,667	13,667	61,231	34.0	5.1	38.7	22.3	100	25.5	53.2
1997**	24,937	4,231	27,845	14,697	71,710	34.8	5.9	38.8	20.5	100		

\* : Estimated

\*\* : Estimated until Sep.

Source: Traffic Police of Hanoi

**Table 3.2.5 Number of Motorcycles in Hanoi**

Year	50cc		50 < <125		175 <		Total No.	Growth
	No.	Newly Reg.	No.	Newly Reg.	No.	Newly Reg.		
1980	8,450	-	772	-	436	-	9,658	-
1981	11,910	3,460	874	102	563	127	13,347	1.38
1982	13,524	1,614	875	1	563	0	14,962	1.12
1983	15,896	2,372	1,727	852	597	34	18,220	1.22
1984	20,093	4,197	2,081	354	623	26	22,797	1.25
1985	30,062	9,969	2,081	0	623	0	32,766	1.44
1986	40,048	9,986	3,521	1,440	706	83	44,275	1.35
1987	50,860	10,812	6,149	2,628	1,072	366	58,081	1.31
1988	66,804	15,944	7,863	1,714	1,133	61	75,800	1.31
1989	92,526	25,722	15,596	7,733	1,322	189	109,444	1.44
1990	128,477	35,951	33,877	18,281	1,603	281	163,957	1.50
1991	150,480	22,003	56,132	22,255	1,725	122	208,337	1.27
1992	160,878	10,398	78,972	22,840	1,978	253	241,828	1.16
1993	177,206	16,328	136,958	57,986	2,180	202	316,344	1.31
1994	188,055	10,849	199,438	62,480	2,534	354	390,027	1.23
1995	194,395	6,340	265,337	65,899	2,563	29	462,295	1.19
1996	201,039	6,644	308,363	43,026	2,563	0	511,965	1.11

\*: M/C with 175cc and over cannot be registered by private, since Sep., 1992

\*\* : up to Sept. 29

Source: HUTMP

### 3.3 Road Traffic Condition

As there is no periodic traffic count survey data in Vietnam, such as “*Road Traffic Census*” in other countries, available traffic counts results in and around Hanoi, which had been carried out in various studies, were collected as much as possible and analyzed from various viewpoints, they are:

- Feasibility Study on the National Highway No. 18 Improvement;
- Hanoi Urban Transport Master Plan Study (HUTMP);
- Traffic count data by Vietnam Road Administration (VRA), etc.

General road traffic condition in and around Hanoi by analyzing some existing data is summarized as follows.

#### 3.3.1 Trends of Traffic Volume at Major Points

There are periodic traffic volume data obtained by VRA’s surveys at 7 survey stations on various national highways leading into Hanoi that can be used to identify the yearly trends, although the detailed contents of the surveys are not clarified. Only the results are tabulated as shown in Table 3.3.1, and it suggests a certain increasing trend of automobile traffic from 1990 to 1996, at most of the survey stations.

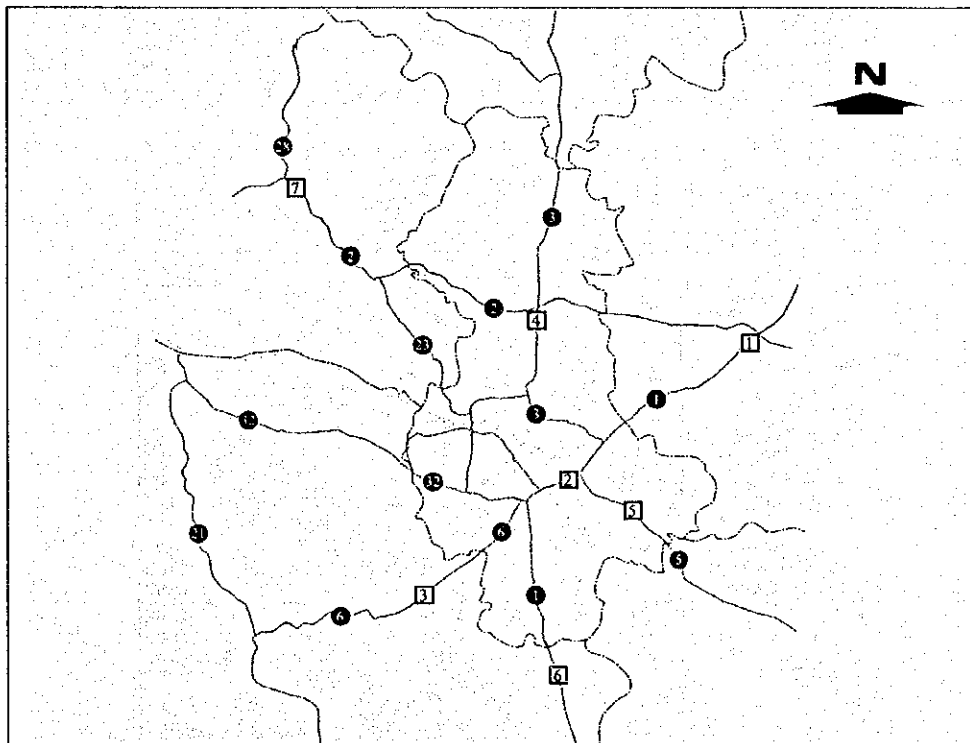


Figure 3.3.1 Traffic Count Stations of VRA

**Table 3.3.1 Trend of Traffic Volume at Major National Highways**

No.	National Highway	Station - Year	1) Passenger Car	2) Bus	Truck <13t	Truck 13t-18t	Truck 18t<	3) Truck Total	4) Trailer	Total 1+2+3+4	Motor-cycle	Total
1	1A	Bac Ninh - 93	779	351	903	180	154	1,237	45	2,412	1,444	3,856
		Bac Ninh - 94	777	447	862	299	183	1,344	11	2,579	-	2,579
		Bac Ninh - 95	784	589	834	408	218	1,460	17	2,850	3,914	6,764
		Bac Ninh - 96	1,712	339	915	398	209	1,522	55	3,628	4,808	8,436
2	1A	Chuong Duong - 90	4,221	1,287	2,524	1,243	299	4,066	92	9,666	25,480	35,146
		Chuong Duong - 91	4,380	979	2,324	379	125	2,828	74	8,261	29,985	38,246
		Chuong Duong - 92	3,821	800	1,692	384	204	2,280	41	6,942	24,252	31,194
		Chuong Duong - 93	4,319	1,262	2,766	451	255	3,472	0	9,053	29,760	38,813
		Chuong Duong - 94	5,350	1,406	2,504	317	95	2,916	107	9,779	49,069	58,848
		Chuong Duong - 95	6,595	1,147	2,746	546	94	3,386	121	11,249	64,591	75,840
		Chuong Duong - 96	7,563	1,196	2,504	236	105	2,845	117	11,721	52,722	64,443
3	6	Mai Linh, NH6-Km18-90	248	196	781	193	117	1,091	49	1,584	664	2,248
		Mai Linh, NH6-Km18-91	448	287	676	297	417	1,390	6	2,131	1,996	4,127
		Mai Linh, NH6-Km18-92	375	372	478	125	1,844	2,447	0	3,194	-	3,194
		Mai Linh, NH6-Km18-93	548	356	553	129	60	742	0	1,646	1,620	3,266
		Mai Linh, NH6-Km18-94	775	528	807	150	122	1,079	59	2,441	2,161	4,602
		Mai Linh, NH6-Km18-95	508	352	381	346	277	1,004	59	1,923	788	2,711
		Mai Linh, NH6-Km18-96	757	349	544	291	260	1,095	73	2,274	2,992	5,266
4	3	Phu Lo - 94	1,446	541	684	512	152	1,348	8	3,343	-	3,343
		Phu Lo - 95	1,349	445	717	416	153	1,286	19	3,099	-	3,099
		Phu Lo - 96	2,069	610	1,309	533	176	2,018	163	4,860	3,892	8,752
5	5	Sai Dong - 92	0	0	5,296	882	986	7,164	0	7,164	-	7,164
		Sai Dong - 93	0	0	3,655	526	1,174	5,355	0	5,355	-	5,355
		Sai Dong - 94	2,251	1,177	2,092	696	349	3,137	152	6,717	7,777	14,494
		Sai Dong - 95	2,113	787	1,171	1,216	354	2,741	158	5,799	11,154	16,953
		Sai Dong - 96	2,440	600	884	1,555	475	2,914	336	6,290	8,417	14,707
6	1A	Tia - 90	737	571	1,455	140	68	1,663	42	3,013	1,696	4,709
		Tia - 91	1,314	871	1,708	230	125	2,063	73	4,321	2,543	6,864
		Tia - 92	741	757	933	192	162	1,287	277	3,062	607	3,669
		Tia - 93	1,141	1,177	1,930	682	781	3,393	257	5,968	1,608	7,576
		Tia - 94	1,669	1,240	1,491	532	232	2,255	60	5,224	3,789	9,013
		Tia - 95	1,594	1,248	1,256	645	211	2,112	118	5,072	3,000	8,072
		Tia - 96	2,369	1,292	1,283	936	256	2,475	75	6,211	4,026	10,237
7	2	Viet Tri - 90	260	239	439	108	75	622	52	1,173	-	1,173
		Viet Tri - 91	328	289	504	105	74	683	34	1,334	-	1,334
		Viet Tri - 92	245	243	443	82	62	587	8	1,083	75	1,158
		Viet Tri - 93	263	242	434	118	92	644	19	1,168	-	1,168
		Viet Tri - 94	638	569	629	495	248	1,372	88	2,667	-	2,667
		Viet Tri - 95	489	297	420	165	82	667	0	1,453	-	1,453
		Viet Tri - 96	704	408	431	48	10	489	10	1,611	1,542	3,153

Source: VRA

**Composition by Vehicle Type**

No.	National Highway	Station - Year	1) Passenger Car	2) Bus	Truck <13t	Truck 13t-18t	Truck 18t<	3) Truck Total	4) Trailer	Total 1+2+3+4
1	1A	Bac Ninh - 93	32.3%	14.6%	37.4%	7.5%	6.4%	51.3%	1.9%	100.0%
		Bac Ninh - 94	30.1%	17.3%	33.4%	11.6%	7.1%	52.1%	0.4%	100.0%
		Bac Ninh - 95	27.5%	20.7%	29.3%	14.3%	7.6%	51.2%	0.6%	100.0%
		Bac Ninh - 96	47.2%	9.3%	25.2%	11.0%	5.8%	42.0%	1.5%	100.0%
2	1A	Chuong Duong - 90	43.7%	13.3%	26.1%	12.9%	3.1%	42.1%	1.0%	100.0%
		Chuong Duong - 91	53.0%	11.9%	28.1%	4.6%	1.5%	34.2%	0.9%	100.0%
		Chuong Duong - 92	55.0%	11.5%	24.4%	5.5%	2.9%	32.8%	0.6%	100.0%
		Chuong Duong - 93	47.7%	12.9%	28.3%	4.6%	2.6%	35.5%	0.0%	100.0%
		Chuong Duong - 94	54.7%	14.4%	25.6%	3.2%	1.0%	29.8%	1.1%	129.8%
		Chuong Duong - 95	58.6%	10.2%	24.4%	4.9%	0.8%	30.1%	1.1%	100.0%
		Chuong Duong - 96	64.5%	10.2%	21.4%	2.0%	0.9%	24.3%	1.0%	100.0%
3	6	Mai Linh, NH6-Km18-90	15.7%	12.4%	49.3%	12.2%	7.4%	68.9%	3.1%	100.0%
		Mai Linh, NH6-Km18-91	21.0%	13.5%	31.7%	13.9%	19.6%	65.2%	0.3%	100.0%
		Mai Linh, NH6-Km18-92	11.7%	11.6%	15.0%	3.9%	57.7%	76.6%	0.0%	100.0%
		Mai Linh, NH6-Km18-93	33.3%	21.6%	33.6%	7.8%	3.6%	45.1%	0.0%	100.0%
		Mai Linh, NH6-Km18-94	31.7%	21.6%	33.1%	6.1%	5.0%	44.2%	2.4%	100.0%
		Mai Linh, NH6-Km18-95	26.4%	18.3%	19.8%	18.0%	14.4%	52.2%	3.1%	100.0%
		Mai Linh, NH6-Km18-96	33.3%	15.3%	23.9%	12.8%	11.4%	48.2%	3.2%	100.0%
4	3	Phu Lo - 94	43.3%	16.2%	20.5%	15.3%	4.5%	40.3%	0.2%	100.0%
		Phu Lo - 95	43.5%	14.4%	23.1%	13.4%	4.9%	41.5%	0.6%	100.0%
		Phu Lo - 96	42.6%	12.6%	26.9%	11.0%	3.6%	41.5%	3.4%	100.0%
5	5	Sai Dong - 92	0.0%	0.0%	73.9%	12.3%	13.8%	100.0%	0.0%	100.0%
		Sai Dong - 93	0.0%	0.0%	68.3%	9.8%	21.9%	100.0%	0.0%	100.0%
		Sai Dong - 94	33.5%	17.5%	31.1%	10.4%	5.2%	46.7%	2.3%	100.0%
		Sai Dong - 95	36.4%	13.6%	20.2%	21.0%	6.1%	47.3%	2.7%	100.0%
		Sai Dong - 96	38.8%	9.5%	14.1%	24.7%	7.6%	46.3%	5.3%	100.0%

Source: VRA

### 3.3.2 Trip Generation/Attraction in Hanoi

The study by JICA, entitled as "The Master Plan of Urban Transport for Hanoi City in Vietnam" (HUTMP) was conducted from September 1995 to January 1997 in order to formulate an urban transport master plan for the year 2015 and to conduct a feasibility study of urban development for 2005.

The result of HUTMP is the only reliable source of information on the overall trip flow generated/attraction about Hanoi City. Though those analyses were mostly conducted in terms of "person trip", general features of traffic flow can be observed from the results summarized hereinafter.

#### (1) Trip Generation/Attraction

There were, in total, approximately 3.48 million person trips per day (excluding walk trip) generated/attraction from/to Hanoi in 1995, of which 64% was traveled by bicycle, 26% by motorcycle, 12% by passenger car, 7% by bus and the rest by truck.

Number of trips by area (6 integrated blocks) is summarized by means of transport as shown in Table 3.3.2. Though approximate 60% of trips were traveled by bicycle in any block, rather high share by passenger car was observed in Soc Son and higher shares by bus and truck were in central Hanoi.

**Table 3.3.2 Person Trips by Mode, 1995 (by 6 integrated block)**

(thousand)

1995 PT	C. Ha Noi	Soc Son	Tu Liem	Ha Dong	Thanh Tri	Gia Lam	Total
Bicycle	1,106.4	493.0	296.1	222.0	196.3	292.2	2,606.0
	62.4%	58.4%	61.8%	62.4%	61.0%	60.8%	61.3%
M/C	559.3	234.8	166.7	112.8	106.9	164.7	1,345.2
	31.6%	27.8%	34.8%	31.7%	33.2%	34.3%	31.6%
Pass.Car	78.0	106.8	9.2	16.1	11.4	17.9	239.4
	4.4%	12.6%	1.9%	4.5%	3.5%	3.7%	5.6%
Bus	14.5	5.4	3.0	2.1	2.0	3.1	30.1
	0.8%	0.6%	0.6%	0.6%	0.6%	0.6%	0.7%
Truck	14.1	4.6	4.1	3.0	5.3	2.3	33.4
	0.8%	0.5%	0.9%	0.8%	1.6%	0.5%	0.8%
Total	1,773.3	845.6	480.1	357.0	322.9	481.2	4,255.1

Source: HUTMP

(2) Trip Flow Structure

A simplified Origin-Destination (O-D) table illustrates the general person trip flow within Hanoi City. Trips within one block occupy 78% of the total; this means short-distant trips are certainly dominant in Hanoi. Rather heavy flows are observed between the central Hanoi and Soc Son (Northern part beyond Red River), Tu Liem (Western), Ha Dong (South-western) and Gia Lam (Eastern of Red River).

**Table 3.3.3 6-Block Triangle PT O-D Table, 1995**

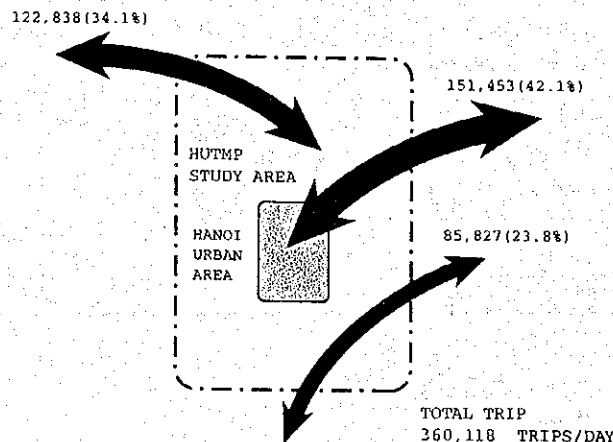
1995 O/D	C/Ha Noi	S/S	T/L	H/D	T/T	G/L	Total
Central Ha Noi	1,187	182	105	130	71	98	1,773
Soc Son		555	30	25	21	31	844
Tu Liem			300	14	12	17	478
Ha Dong				164	10	14	357
Thanh Tri					197	12	323
Gia Lam						308	480
Total							4,255

Source: HUTMP

According to the above O-D table, the person trip volume crossing Red River accounts for 400 thousand per day in 1995, excluding the cordon-line traffic.

(3) Cordon Line Traffic

The results of cordon line survey at the border of Hanoi City (surveys were actually carried out in October 1995) clarify a person trip flow between Hanoi and its outside area and a flow through Hanoi. There were 360 thousand person trips in total crossing the cordon line, of which 86 thousand or 24% of the total was "through traffic" of Hanoi; that is, trips passing through Hanoi area with both trip origin and destination outside of Hanoi City (Figure 3.3.2).



**Figure 3.3.2 Person Trip Flow at Cordon Line, 1995**



Traffic count surveys at cordon line stations also quantified the number of vehicle traffic crossing the city border by type, the average occupancy of all vehicle types revealed 1.65 persons per vehicle (Table 3.3.4).

**Table 3.3.4 Cordon Line Vehicle Traffic Volume, 1995**

Direction	Bicycle	M/C	TWV	Pass.Car	Bus	Pass.V	Truck	Auto.	Total
1 (NH1-s)	7,535	8,794	16,329	1,852	2,811	4,663	3,331	7,994	24,323
2 (NH6)	18,014	112,583	130,597	1,417	1,939	3,356	2,420	5,776	136,373
3 (NH32)	18,872	13,368	32,241	743	1,767	2,510	1,394	3,904	36,144
4 (NH2)	5,598	6,888	12,486	762	399	1,161	1,529	2,689	15,176
5 (NH3)	3,140	2,898	6,038	433	535	968	1,036	2,004	8,042
6 (NH1-n)	6,695	15,951	22,645	886	975	1,860	2,598	4,458	27,103
7 (NH5)	6,245	10,469	16,714	1,355	1,176	2,531	3,291	5,822	22,536
Total	66,099	170,951	237,050	7,447	9,602	17,049	15,598	32,647	269,697

Source: HUTMP

### 3.3.3 Regional Traffic Flow

On the contrary with the above-mentioned urban transport study, an inter-regional vehicle movement is analyzed in the study of JICA, entitled as "the Feasibility Study on the Highway No.18 Improvement in Vietnam" in 1996. It covers most of the Red River delta region and a part of north mountain and midland regions related to NH No. 18. The regional vehicle flow related to the Study Area is also examined in the Study. The vehicle traffic volume between Hanoi and its outside is summarized by major national highway direction in Table 3.3.5.

**Table 3.3.5 Vehicle Traffic Volume across Border of Hanoi, 1995**

May, 1995

Direction	Bicycle	M/C	TWV	Pass.Car	Bus	Pass.V	Truck	Total	Auto.
1 (NH1-s)	5,444	8,902	14,346	1,404	1,130	2,534	2,684	5,218	
2 (NH6)	38,190	40,618	78,808	1,918	1,320	3,238	1,488	4,726	
3 (NH32)	12,164	10,194	22,358	401	382	783	698	1,481	
4 (NH2)	4,086	5,320	9,406	1,136	604	1,740	1,702	3,442	
5 (NH3)	4,354	4,666	9,020	378	338	716	1,188	1,904	
6 (NH1-n)	8,834	14,208	23,042	466	1,128	1,594	1,640	3,234	
7 (NH5)	4,654	9,736	14,390	1,256	1,136	2,392	2,382	4,774	
Total	77,726	93,644	171,370	6,959	6,038	12,997	11,782	24,779	

Source: F/S on NH No. 18 Improvement

The comparison between the two, Table 3.3.4 and 3.3.5, resulted in a big difference of two-wheel vehicle traffic volume, especially motorcycles.