No.

JAPAN INTERNATIONAL COOPERATION AGENCY
MINISTRY OF TRANSPORT, VIETNAM

THE COMPREHENSIVE STUDY ON THE SUSTAINABLE DEVELOPMENT OF TRANSPORT SYSTEM IN VIETNAM (VITRANSS 2)

Final Report
MAIN TEXT

May 2010

ALMEC CORPORATION
ORIENTAL CONSULTANTS CO. LTD.
NIPPON KOEI CO. LTD.

EID
JR
10-075

JAPAN INTERNATIONAL COOPERATION AGENCY
MINISTRY OF TRANSPORT, VIETNAM

THE COMPREHENSIVE STUDY ON THE SUSTAINABLE DEVELOPMENT OF TRANSPORT SYSTEM IN VIETNAM (VITRANSS 2)

Final Report
MAIN TEXT

May 2010

ALMEC CORPORATION
ORIENTAL CONSULTANTS CO. LTD.
NIPPON KOEI CO. LTD.

Exchange Rate Used in the Report

USD 1 = JPY 110 = VND 17,000

(Average Rate in 2008)

PREFACE

In response to the request from the Government of the Socialist Republic of Vietnam, the Government of Japan decided to conduct the Comprehensive Study on the Sustainable Development of Transport System in Vietnam (VITRANSS2) and entrusted the program to the Japan International cooperation Agency (JICA)

JICA dispatched a team to Vietnam between November 2007 and May 2010, which was headed by Mr. IWATA Shizuo of ALMEC Corporation and consisted of ALMEC Corporation, Oriental Consultants Co., Ltd., and Nippon Koei Co., Ltd.

In the cooperation with the Vietnamese Counterpart Team, the JICA Study Team conducted the study. It also held a series of discussions with the relevant officials of the Government of Vietnam. Upon returning to Japan, the Team duly finalized the study and delivered this report.

I hope that this report will contribute to the sustainable development of transport system and Vietnam and to the enhancement of friendly relations between the two countries.

Finally, I wish to express my sincere appreciation to the officials of the Government of Vietnam for their close cooperation.

May 2010

HIROYO SASAKI,
Vice President
Japan International Cooperation Agency

May 2010

HIROYO SASAKI
Vice President
Japan International Cooperation Agency
Tokyo

Subject: Letter of Transmittal

Dear Sir,

We are pleased to formally submit herewith the final report of the Comprehensive Study on the Sustainable Development of Transport System in Vietnam (VITRANSS2).

This report compiles the results of the study which was undertaken both in Vietnam and Japan from November 2007 to May 2010 by the Team comprising ALMEC Corporation, Oriental Consultants Co., Ltd., and Nippon Koei Co., Ltd.

We owe a lot to many people for the accomplishment of this report. First, we would like to express our sincere appreciation and deep gratitude to all those who extended their extensive assistance and cooperation to the Team, in particular the Ministry of Transport of Vietnam.

We also acknowledge the officials of your agency, the JICA Advisory Committee, and the Embassy of Japan in Vietnam for their support and valuable advice in the course of the Study.

We hope the report would contribute to the sustainable development of transport system and Vietnam.

Very truly yours,

IWATA Shizuo
Team Leader
The Comprehensive Study
on the Sustainable Development
of Transport System in Vietnam
(VITRANSS2)

TABLE OF CONTENTS

MAIN TEXT

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

3PLs	Third-party logistics providers
AAGR	Average annual growth rate
ADB	Asian Development Bank
AFTA	ASEAN Free Trade Area
AIP	Aeronautical Information Publication
ASEAN	Association of Southeast Asian Nations
ATN	Aids to navigation
AWPT	Asia World Port Terminal
BOT	Build-operate-transfer
B2B	Business to business
CAAV	Civil Aviation Administration of Vietnam
CBD	Central Business District
CBTA	Cross-border trade agreement
CBTAs	Cross-border transportation agreements
CBTI	Cross-border trade infrastructure
CFEZ	Central Focal Economic Zone
CH	Central Highlands
CIA	Central Intelligence Agency
CIENCO	Civil Engineering Construction Corporation
CIP	Core Investment Program
CO_2	Carbon dioxide
CPRGS	Comprehensive Poverty Reduction and Growth Strategy
CR	Conventional rail
CTS	Customs Transit and Temporary Admission System
DFR	Draft Final Report
DQIZ	Dung Quat Industrial Zone
DWT	Dead weight ton
EDI	Electronic data interchange
EIRR	Economic internal rates of return
UNESCAP	United Nations Economic and Social Commissions for Asia and the Pacific
ETC	Electronic toll collection
EZs	Economic zones
FDI	Foreign direct investment
FEZ	Focal Economic Zone
FII	Function Improvement Item
FIRR	financial internal rate of return
FR	Final Report
GDP	Gross domestic product
GHG	Greenhouse gases
GIS	Geographical information system
GMS	Great Mekong Subregion
GOV	Government of Vietnam
GRA	General Road Administration
GRDP	Gross regional domestic product
GSO	General Statistic Office
HAIDEP	The Comprehensive Urban Development Programme in Hanoi Capital City
HCM	Ho Chi Minh
HCMC	Ho Chi Minh City
HSR	High-speed railway
IATA	International Air Transport Association
IBRD	International Bank for Reconstruction and Development
ICAO	International Civil Aviation Organization
ICD	Inland container depot

ICR	Inception Report
ICT	Information and communications technology
IFR	Instrument Flight Rules
IICBTA	Initial Implementation of Cross-border Transport Agreement
IMO	International Maritime Organization
IRF	International Road Federation
IRR	Internal rate of return
IT	Information technology
ITR	Interim Report
IWT	Inland waterway transportation
JBIC	Japan Bank for International Cooperation
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
JR	Japan Railway
JSC	Joint stock company
JTC	Japan Transportation Consultants, Inc.
JVC	Joint-venture company
JV	Joint venture
Lao PDR	Lao Peoples' Democratic Republic
LCC	Low-cost carrier
LGU	Local government unit
LPI	Logistic Performance Index
LSP	Logistics solution provider
M/C	Motorcycle
MAC	Middle Airports Corporation
MA	Maritime administration
MCA	Multi-criteria analysis
MFA	Ministry of Foreign Affairs
MICT	Manila International Container Terminal
MLIT	Ministry of Land, Infrastructure and Transport
MOC	Ministry of Constructions
MOD	Ministry of Defense
MOFA	Ministry of Foreign Affairs
MOPS	Ministry of Public Security
MOT	Ministry of Transport
MPA	Myanmar Port Authority
MPI	Ministry of Planning and Investment
MRD	Mekong River Delta
MTOs	Multimodal transportation operators
MTRR	Multimodal Transport Regulatory Review
MTTS	Maritime Technical Training School
NAC	Northern Airport Corporation
NCC	North Central Coast
NCPFP	National Commission on Population and Family Planning
NE	Northeast
NFEZ	Northern Focal Economic Zone
NH	National highway
NNW	North–northwest
NRSC	National Republican Senatorial Committee
N-S	North-south
NSHSR	North-South High-speed Railway
NW	Northwest
O&M	Operation and management
OD	Origin-destination
ODA	Official development assistance
PC	People's committee
PCI	Pacific Consultants International

PCU	Passenger car. units
PDOT	Provincial Department of Transportation
PIP	Public Investment Program
PKT	Terms of passenger-km
PMO	Project Management Office
POP	Population
PPP	Public-private partnership
PRR	Progress Report
PSA	Port of Singapore Authority
PSP	Private sector participation
ROPAX	Roll-on/roll-off passenger
RORO	Roll-on/roll-off
ROT	Rehabilitate-operate-transfer
ROW	Right of way
RRD	Red River Delta
RRMUs	Regional Road Management Units
RSA	Road safety audit
SAC	Southern Airport Corporation
SC	Steering Committee
SCC	South Central Coast
SCM	Supply chain management
SDRs	Special drawing rights
SEDP	Socio-economic development plan
SFEZ	Southern Focal Economic Zone
SKRL	Singapore–Kunming Railway Link
SMI	System modernized item
SMS	Safety management system
SOEs	State-owned enterprises
SRI	System reinforcement item
SSA	Stevedoring Services of America
SSI	Single Stop / Single Window Inspection
SSW	South–southwest
STRADA	System for Traffic Demand Analysis
T2	Terminal building
TDSI	Transport Development and Strategy Institute
TEDI	Transport Engineering Design Institute
TEU	Twenty-foot equivalent unit
TPS	Terminal Petikemas Surabaya
TRICC	Transport Investment and Construction Consulting
TSN	Tan Son Nhat
TTC	Travel time cost
UMRT	Urban mass rail transit
UNCTAD	United Nations Conference on Trade and Development
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
US	Unites States
USA	United State of America
USD	US Dollar
VASCO	Vietnam Aviation Service Company
VC Ratio	Volume-capacity ratio
VEC	Vietnam Expressway Corporation
VFR	Visual flight rules
VICT	Vietnam International Container Terminals
VIMARU	Vietnam Maritime University
VINALINES	Vietnam National Shipping Lines
VINAMARINE	Vietnam National Maritime Bureau
VINASHIN	Vietnam Shipbuilding Industry Corporation
VIPCO	Vietnam Petroleum Joint Stock Company

VITRANSS	The Study on the National Transport Development Strategy in the Socialist Republic of Vietnam
VITRANSS 2	The Comprehensive Study on the Sustainable Development of Transport System in Vietnam
VIWA	Vietnam Inland Waterway Authority
VND	Vietnam dong
VNR	Vietnam Railway
VNRA	Vietnam Railway Administration
VNRC	Vietnam Railway Corporation
VOC	Vehicle operating cost
VoT	Value of time
VPA	Vietnam Port Association
VR	Vietnam Register
VRA	Vietnam Road Administration
VRC	Vietnam Railway Corporation
WB	World Bank
WEF	World Economic Forum
WTO	World Trade Organization

MAIN TEXT

1 INTRODUCTION

1.1 Background

1.1 During the last decade significant achievements were made in the development of Vietnam's transportation infrastructure, particularly roads, which have significantly contributed to the country's economic growth and to regional development. While the trend is expected to continue in the coming years, the gap between increasing demand and available infrastructure capacity has widened. Various issues have also emerged including, among others, worsening traffic safety, traffic congestion in urban areas, low mobility in rural areas, inadequate road maintenance, lack of funding, poor quality of infrastructure, and weak transportation services. In addition to these fundamental issues, Vietnam is also confronted with the need to further strengthen its competitiveness in transportation infrastructure and services as it gets increasingly more integrated with the global economy.

1.2 To respond more appropriately to the country's internal needs and the rapidly changing external environment, the Government of Vietnam intends to accelerate the improvement of the national transportation system to include the development of high-speed transportation links between the north and the south, linking central Vietnam in the process. Toward this end, a need has arisen to update the country's national transportation strategies and formulate a feasible plan to develop a strategic transportation system that includes the north–south high-speed transportation corridors.[1]

1.3 Given these circumstances and upon the request of the Vietnamese government, the Japanese government has provided technical assistance through the Japan International Cooperation Agency (JICA) to carry out "The Comprehensive Study on the Sustainable Development of Transport System in Vietnam" or VITRANSS 2, for short, and update the recommendations made in the first VITRANSS, or the "National Transport Strategy Study for the Socialist Republic of Vietnam," carried out in 1999–2000, or almost a decade ago.

1.2 Objectives of VITRANSS 2

1.4 "The Comprehensive Study on the Sustainable Development of Transport System in Vietnam" (VITRANSS 2) is more than a simple update of the "National Transport Study for the Socialist Republic of Vietnam" (VITRANSS 1), which was carried out in the period 1999–2000. Rather, the current study promotes the concept of a sustainable transportation system in formulating the long-term transportation development strategy for Vietnam. It also considers multimodal transportation planning within an integrated planning environment and situates the issue of urban transportation in a national context.

[1] The request for a study on the north–south high-speed railway and the north–south expressway was expressed in the Joint Vietnam–Japan Communique prepared in October 2006.

1.5 VITRANSS 2 has the following objectives:

(i) To formulate comprehensive, long-term transportation sector development strategies up to the year 2030;

(ii) To formulate a comprehensive medium-term transportation master plan up to the year 2020;

(iii) To formulate a short-term investment program for the 2011–2015 period;

(iv) To formulate a master plan on the north–south expressway network and to conduct a feasibility study review for the two missing links around HCMC;

(v) To conduct preliminary planning for the north–south high-speed railway; and

(vi) To provide transfer of technology to the Vietnamese counterpart team during the course of the study.

1.3 Study Implementation

1.6 In November 2007, VITRANSS 2 commenced. In December 2007, discussions were held on the Inception Report. In March and August of the following year, the Progress Report and Interim Report were submitted, respectively.

1.7 This Final Report summarizes the major findings and results of VITRANSS 2 on comprehensive transportation planning for all modes including road, rail, maritime, inland waterway, and air transportation. Logistics is also included to improve trade competitiveness of Vietnam and demonstrate need for multi-modal connectivity of services.In parallel to comprehensive transportation planning, detailed studies were conducted on the North–South High-speed Railway and the North–South Expressway, the results of which were presented in a special meeting on 2 June 2009 with Vietnam's Vice Prime Minister Hoang Trung Hai. The comments made in that meeting were incorporated as much as possible into this Final Report.

1.8 The entire VITRANSS 2 Report is composed of the following:

(i) Summary;

(ii) Main Text;

(iii) Subsector Reports (7 volumes): covering road and road transportation, railway, ports and shipping, inland waterway, aviation, institutions, and environment; and.

(iv) Technical Reports (10 volumes): covering traffic surveys and database, current transportation system, transportation demand analysis, main commodity analysis, logistics and transportation industries, regional planning development and socio-economic framework, corridor study, traffic safety, transportation cost and pricing in Vietnam, and GIS database.

2 PROFILE OF THE STUDY AREA

2.1 Natural and Physical Conditions

(1) Geography

2.1 Vietnam, an S-shaped land stretching from latitude 23°30' North to 8°30' North and longitude 102° East to 110° East, covers an area of 330,363 square kilometers (km^2). It faces the shallow gulfs of Tonkin in the north and Thailand in the south and the East Sea, with its 3,260-kilometer-long coastline. Vietnam shares 3,370km of land border with China, Laos, and Cambodia. Three-fourths of the land is mountainous, and the rest is composed of plains. The two largest deltas in the plains are the Red River delta and Mekong River delta (see Figure 2.1.1).

2.2 The topographic conditions can be summarized as follows:

(i) Low flat lands are characteristic of the Red River delta, the eastern plain, and the Mekong River delta which may allow dense habitation but are vulnerable to floods;

(ii) Mountainous areas, stretching for kilometers along the border provinces with China and Lao PDR, have always hampered smooth traffic and made transportation development costly; and

(iii) The central highlands is a unique upland area since it is part of the Mekong River watershed. Runoff from this area goes to the Cambodian territory. Route No. 14 runs along the dividing line at the top of the watershed, and thus does not require big bridges across rivers.

(2) Land Use

2.3 Land uses in the country vary enormously (see Figure 2.1.2). Starting in the northwest, there are small landholdings dedicated principally to subsistence farming, market gardens, and wet-rice cultivation. The Red River delta is the country's second-largest area devoted to wet-rice cultivation in combination with industrial and commercial land uses. The North and South Central Coastal regions have a harsher climate, but the land conditions are suitable for agriculture. Some industrial parks and export-processing zones, such as the Nghi Son industrial park (in Thanh Hoa province) and Dung Quat (in Quang Ngai), have been planned so as to take advantage of the vast unused land. The Central Highlands has the largest forested area and produces high-value industrial crops such as coffee, rubber, and pepper. In the south, industrial production is larger in scale and more commercial in nature. The south is mostly planted to rice, sugar cane, maize, citrus, as well as temperate and semitropical fruits, especially the Mekong delta. This region is criss-crossed by dense rivers and canals, which are favorable for inland waterway transportation.

2.4 With the exception of the Central Highlands and the Northeast, forestland in other regions is dramatically shrinking due mostly to logging and conversion to agricultural land. Vietnam, one of the countries with the richest biodiversities in the world, continues to rapidly lose this irreplaceable resource as a result of improper resource management. If not carefully planned, the proposed roads, rail, and port development projects could lead to further reduction in forested areas and biodiversity loss through land-use conversion, encroachment, or fragmentation.

2.5 The major social problems that such projects, especially linear transportation projects, will engender will include split in urban land uses and loss of access to farmlands, which will lead to added costs and restrictions on the movement of goods and livestock. In the urban setting, this will translate into the rearrangement of traffic, then daily economic activities which would in turn affect incomes. Finally, community cohesion will be adversely affected.

Figure 2.1.1 Elevation

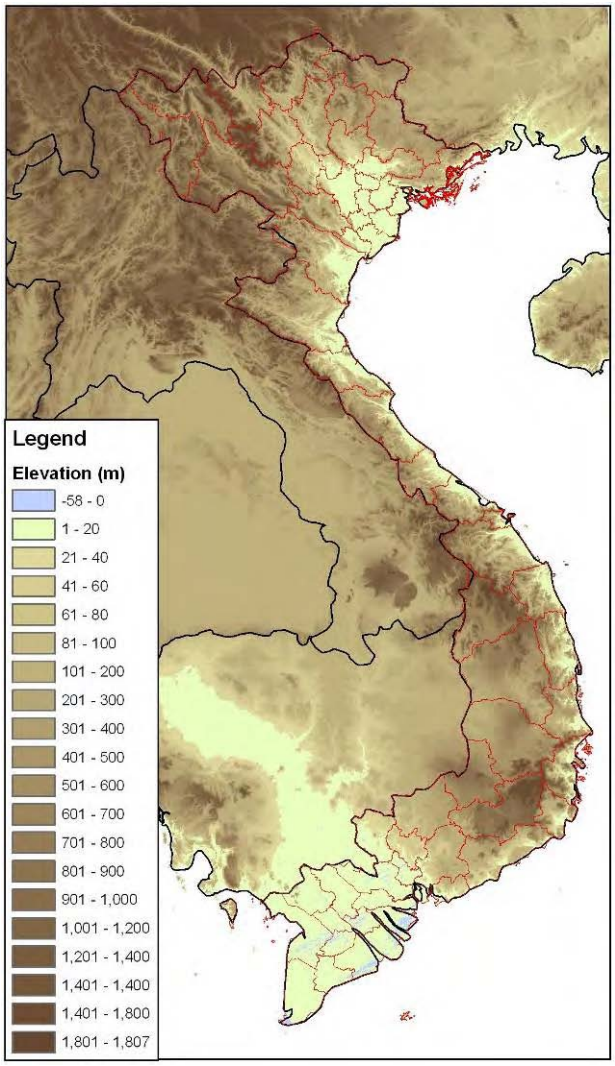
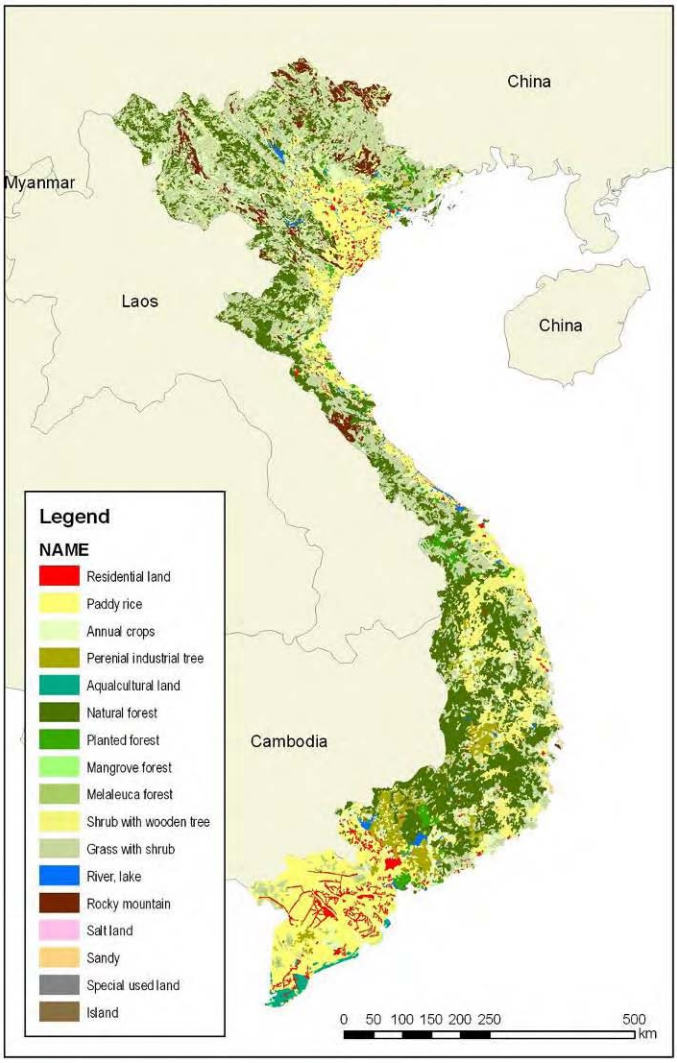


Figure 2.1.2 Present Land Uses in Vietnam



Source VITRANSS 2 Study Team

(3) Climate

2.6 Vietnam is located in the tropical monsoon area; the annual rainfall is about 1,940mm. Three-fourths of the total land area is mountainous; therefore, rainfall is unevenly distributed from one area to another and changes with time. The long-term average annual rainfall varies greatly; in some areas, the annual rainfall can reach 4,000 to 5,000mm, even up to 8,000mm on Bach Ma Mountain (Thua Thien Hue province), but in Binh Thuan province the annual rainfall reaches only 600–800mm (see Figure 2.1.3). The majority of the territory has a long-term average annual rainfall from 1,400 to 2,400mm. The variation of rainfall during the year affects the rainfall regime and is the main cause of droughts in the dry season and floods in the rainy season.

2.7 Based on the statistics of the Research Centre of Meteorology and Climatology, the average temperature in Vietnam is quite high, about 23.9°C in 2007 (0.41°C higher than those in the period 1961–1990). The past 10 years (1998–2007) were the hottest years in Vietnam's history. Average temperature is obviously different between areas nationwide, i.e., Hanoi, 24.7°C; Ho Chi Minh City, 27°C; Sa Pa (Lao Cai) and Da Lat (Lam Dong), 17°C.

2.8 Climate likewise varies greatly in Vietnam's territories. The northern part (northern mountainous areas/midlands and the Red River delta) is directly affected by two monsoon systems, the northeast (October to March) and the southwest monsoon (April to September). Northeasterly winds bring dry and cold weather, while southwesterly winds bring high humidity and temperatures. During the latter period of the year, storms typically occur as these coincide with the rainy season (August to Novenber).

2.9 The climate in the northern central Vietnam (North Central Coast from Thanh Hoa to Thua Thien Hue) is transitional, as this region is located between the northern and southern climatic zones, which are segregated by the Hai Van pass. The rainy season (September to December) coincides with the northeasterly winds and the dry season (November to April) with the southwesterly winds.

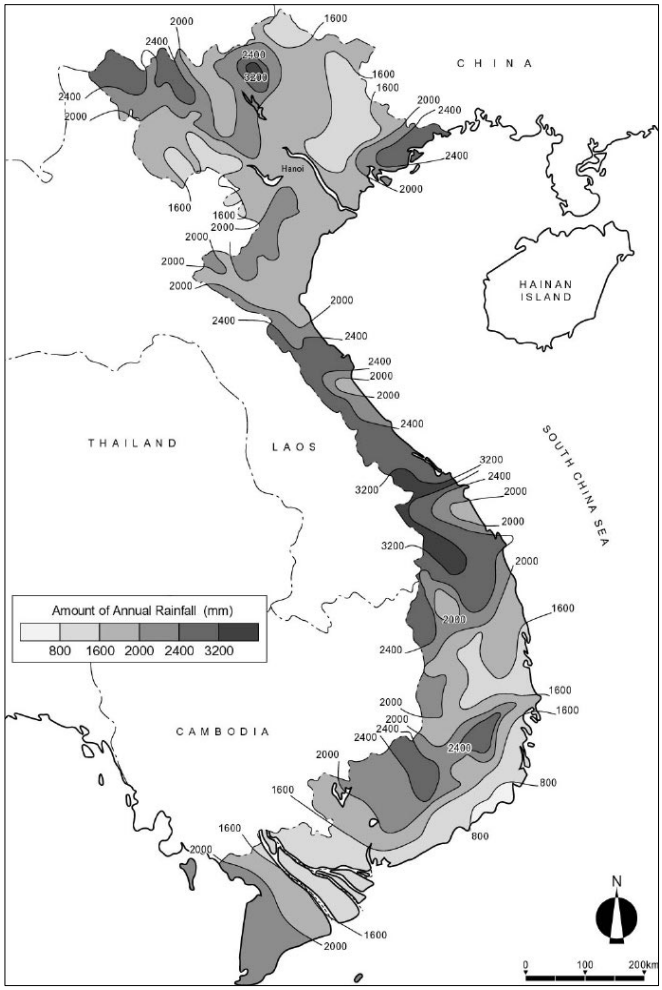
2.10 The southern part of Vietnam (Southeast and Mekong River Delta regions) has two obvious seasons: rainy season (May to October) and dry season (November to April). The climate is cool and temperate.

2.11 In the period 2004–2007, Vietnam was hit by 17 tropical low pressure systems and 30 storms. The highest frequency of typhoons occurs in the North Central Coast and South Central Coast, which mainly take place between July and December. Tropical low pressure systems often occur in the north and northern half of central Vietnam.

2.12 Northern Vietnam and the North Central Coast suffer the largest number of typhoons, accounting for about 67% of all typhoons annually visiting Vietnam (see Figure 2.1.4). The majority of typhoons hit the coast at the onset of the rainy season (August–October). Most of the typhoons that usually hit this region are strong. In addition to the heavy rains and floods they bring, typhoons and low-pressure systems cause landslides in mountainous areas submerging the plains and damaging transportation systems and other infrastructures, agricultural land and livelihoods.

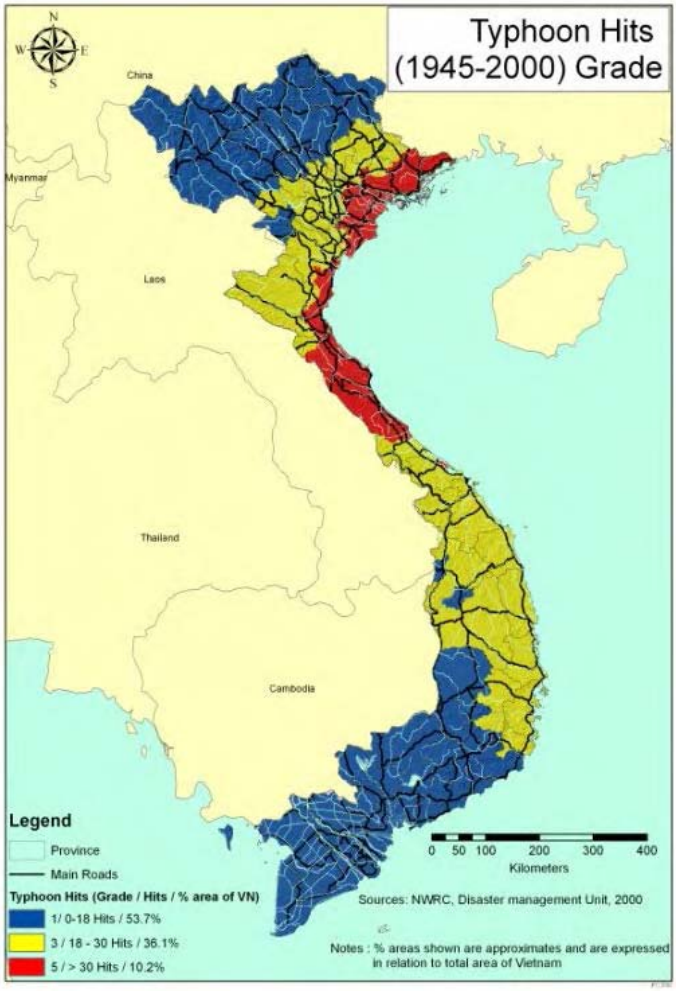
2.13 The South Central Coast is also affected by severe typhoons, an average of 24% a year. The typhoon season in this region as well as in the rest of southern Vietnam is between October and November. In the south, the occurrence of typhoons is not so frequent and averages 9% a year.

Figure 2.1.3 Distribution of Annual Rainfall



Source: Almec/PCI (2000) Technical Report No. 11 Environment, The Study on the National Transport Development Strategy in the Socialist Republic of Vietnam (VITRANSS)

Figure 2.1.4 Frequency of Typhoon Hits



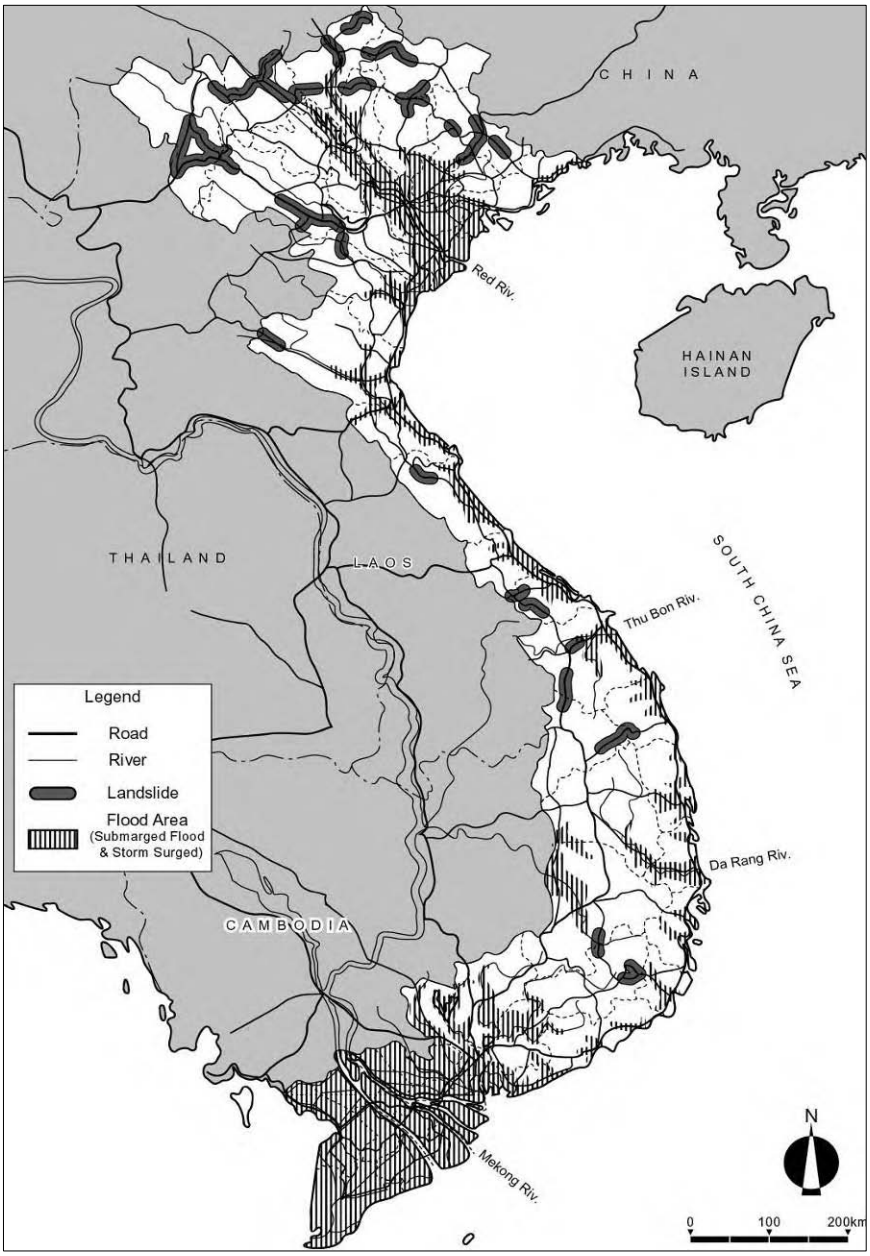
Source: VITRANSS 2 Study Team based on NWRC, Disaster management Unit, 2000

2.14 In northern Vietnam, there are many faults that run from NNW (north–northwest) to SSW (south–southwest). The main rivers (including Red River) here flow down to the Gulf of Bac Bo along these faults. On account of these faults, there are many big landslides in the northern mountainous areas during heavy rains.

2.15 In central and southern Vietnam, almost all the main rivers also flow down to the sea along faults, but the activities of faults are weak and the scale of landslides is small. In the mountainous areas in central Vietnam, however, the land has become unstable, a most conducive situation for landslides.

2.16 With these geological characteristics, transportation accidents, especially landslides, concentrically occur in northern Vietnam, affecting railways and roads. Flash-floods and floods break out in the delta areas as the Red River and Mekong River over-flow (see Figure 2.1.5).

Figure 2.1.5 Flood- and Landslide-prone Areas in Vietnam



Source: Almec/PCI (2000) Technical Report No. 11 Environment, The Study on the National Transport Development Strategy in the Socialist Republic of Vietnam (VITRANSS)

2.2 Socio-economic Profile

1) Population

2.17 In the 1950s, Vietnam's population growth rate was 3.4%. As the government introduced a family planning policy or the so-called "two-children policy" in the early 1960s, the growth fell to 3.1% in 1965, 2.2% in 1980 and 1.2% since 2007. In terms of gender, females were more numerous (50.8%) than males (49.2%) in 2007, though the number of children under 15 showed that males were more numerous.

2.18 The proportion of people living in urban areas seems to have changed quickly (27.4% of the total population in 2007 as compared with 20.8% in 1997 during the time of Vitranss 1). The Southeast, including HCMC, has a high share of urban population, at 54.8%. The growth in urban population was remarkable in the Red and Mekong River Delta, at 4.3% and 3.8%, respectively, while the entire country had 3.2%. The population density in the Red River Delta was extremely high (1,238 persons/ km^2) compared to the national average (257/km^2) and even with Mekong River Delta (432/ km^2). The least populated regions were the Northwest and Central Highlands (71/km^2 and 90/ km^2 respectively).

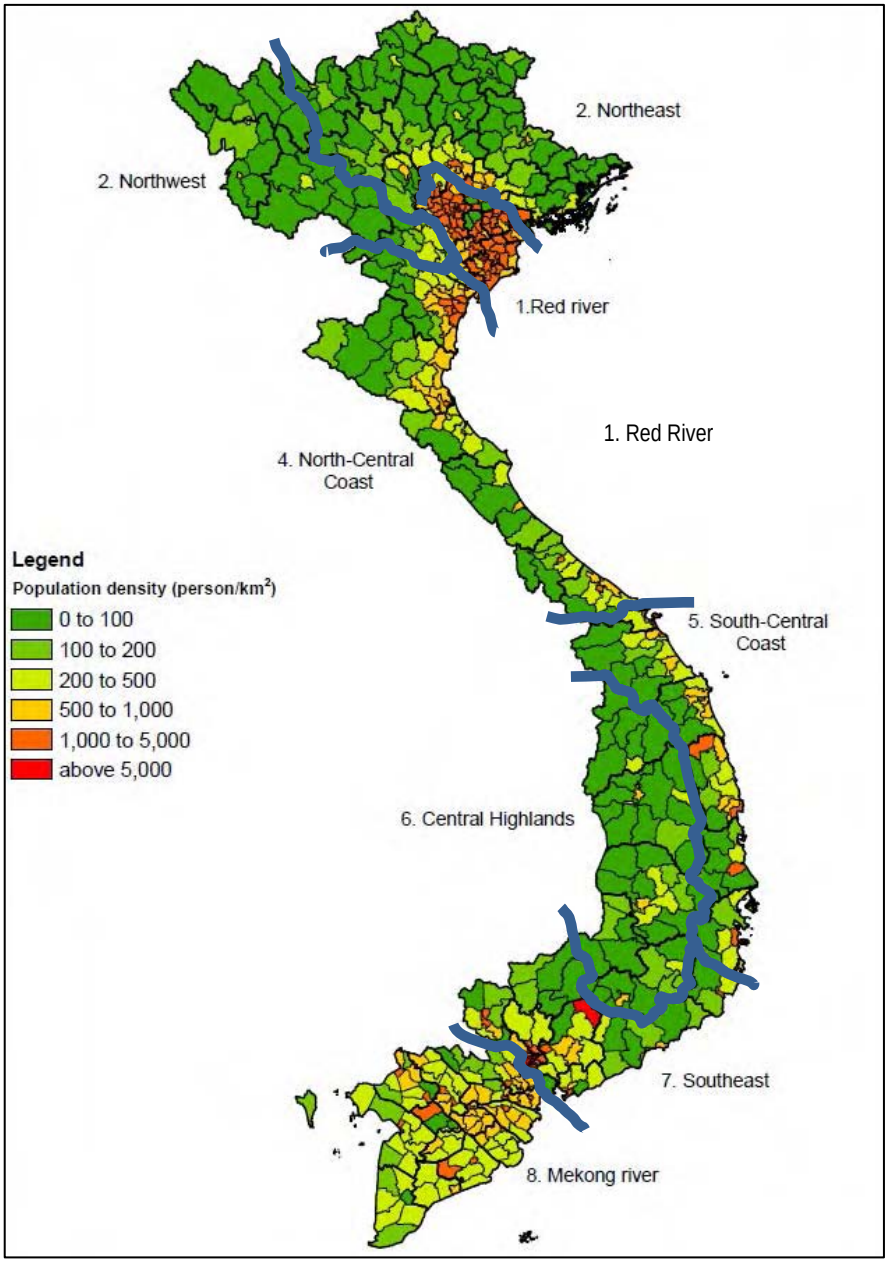
2.19 Population density by district is illustrated in Figure 2.2.1, while urban population rate by region is shown in Table 2.2.2.

Table 2.2.1 Historical Demographic Change

Year	Population (000)	Ave. Growth Rate (%/year)	By Sex		By Area		
			Male	Female	Urban	Rural	% of Urban Population
1976	49,160	2.35	23,597	25,563	10,127	39,033	20.6
1980	53,630	2.23	26,047	27,583	10,295	43,335	19.2
1985	59,872	2.23	29,285	30,587	11,360	48,512	19.0
1990	66,233	2.25	32,327	33,906	13,281	52,952	20.1
1995	71,996	1.65	35,237	36,758	14,938	57,057	20.7
2000	77,635	1.36	38,166	39,469	18,772	58,864	24.2
2005	83,106	1.31	40,846	42,260	22,337	60,770	26.9
2007	85,155	1.21	41,855	43,300	23,370	61,785	27.4
2010[1)]	88,971	1.3	43,731	45,240	27,407	61,564	30.8
2020[1)]	101,439	1,2	49,859	51,580	39,033	62,406	38.5
2030[1)]	113,954	1,2	56,010	57,944	52,454	61,500	46.0

Sources: World Bank, "Vietnam Rising to the challenge", and Statistical Yearbook 2007
Note: 1) Estimated by VITRANSS 2 Study Team based on NCPEP projection.

Figure 2.2.1 Population Density by District, 2004



Source Socio-Economic Statistical Data of 671 districrs, towns and cities under the authority of provinces in Vietnam, General Statistics office 2006

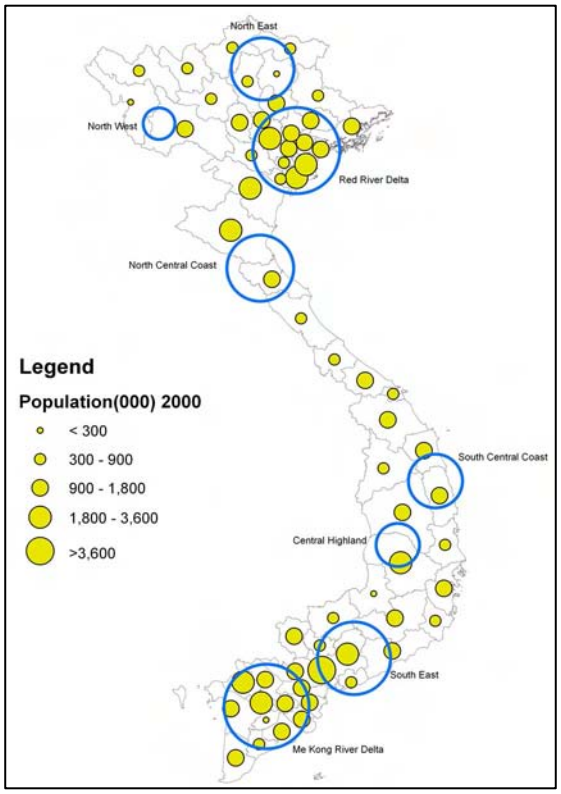
Table 2.2.2 Population by Region, 2007

Region	Population ('000)		00-07 Growth Rate (%)		Density (pers/km²)
	Total	% Urban	Total	Urban	
1.Red River Delta	18,401	25.1	1.1	4.3	1,238
2.Northeast	9,544	19.1	0.9	1.7	149
3.Northwest	2,650	14.1	2.2	4.0	71
4.North Central Coast	10,723	13.9	0.9	1.9	208
5.South Central Coast	7,185	30.6	1.2	2.7	217
6.Central Highlands	4,935	27.8	2.2	2.8	90
7.Southeast	14,193	54.8	2.3	3.1	408
8.Mekong River Delta	17,524	21.2	1.0	3.8	432
Total	85,155	27.4	1.3	3.2	257

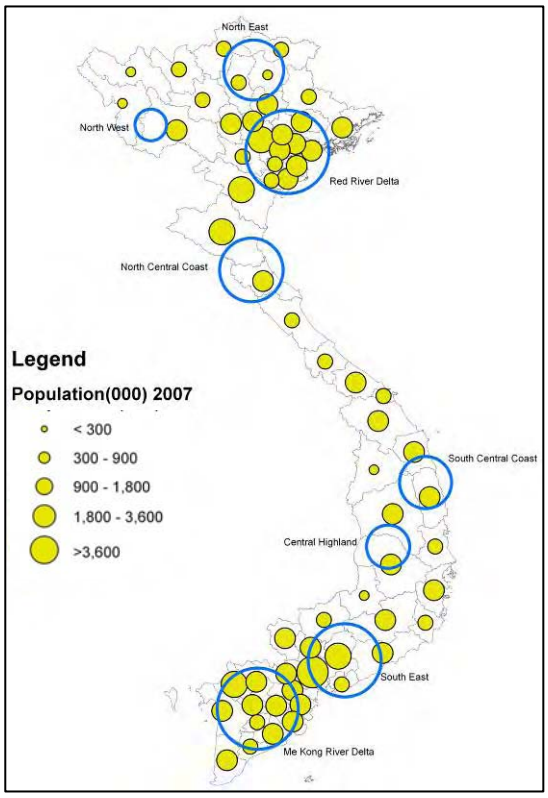
Source: General Statistic Office, Statistical Yearbook 2007

Figure 2.2.2 Population Distribution

2000



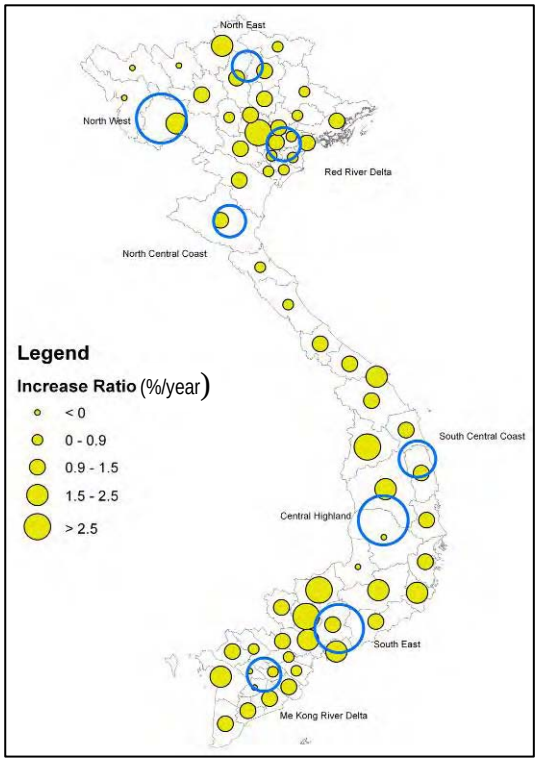
2007



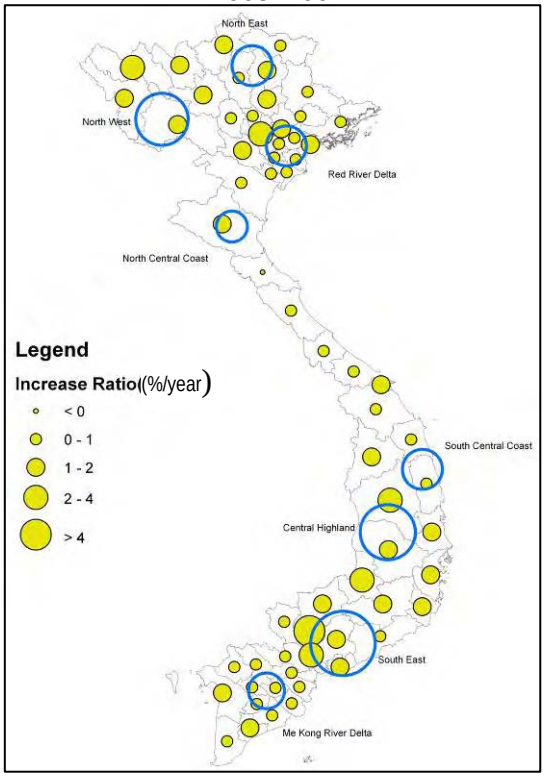
Note: Worked out by VITRANSS 2 Study Team based on GSO data.

Figure 2.2.3 Population Increase Ratio

2000–2005

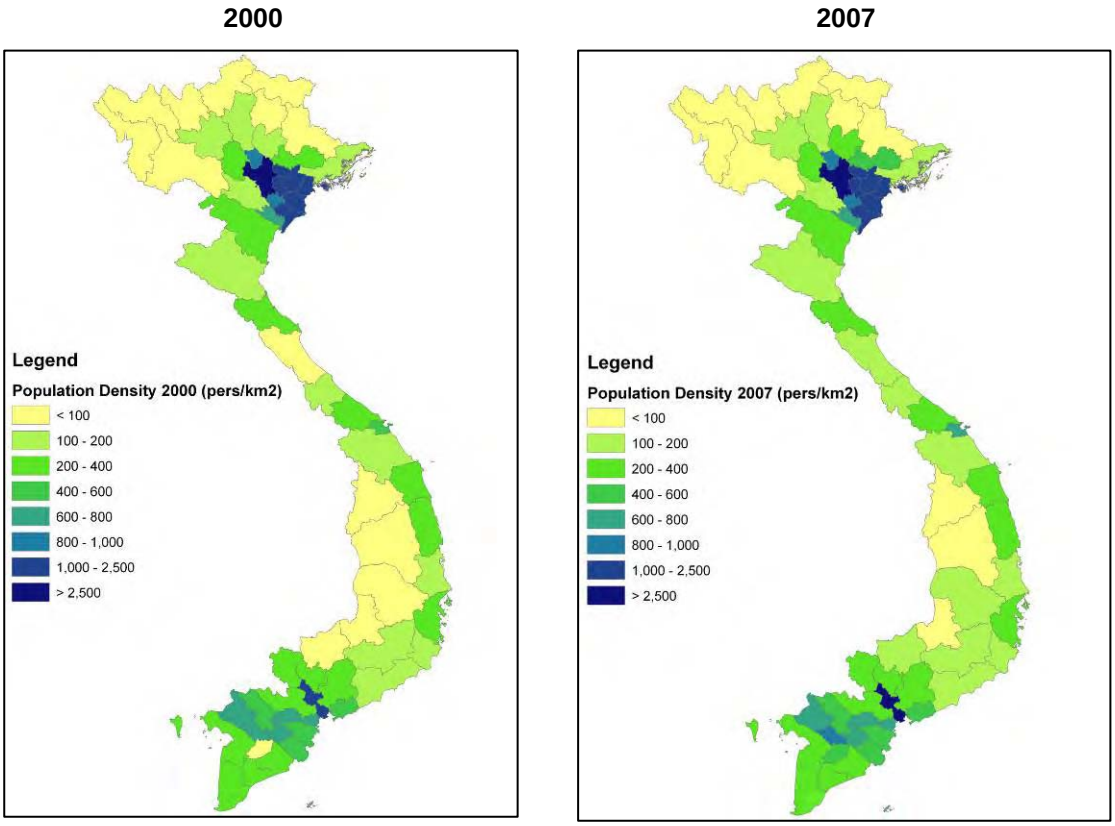


2005–2007



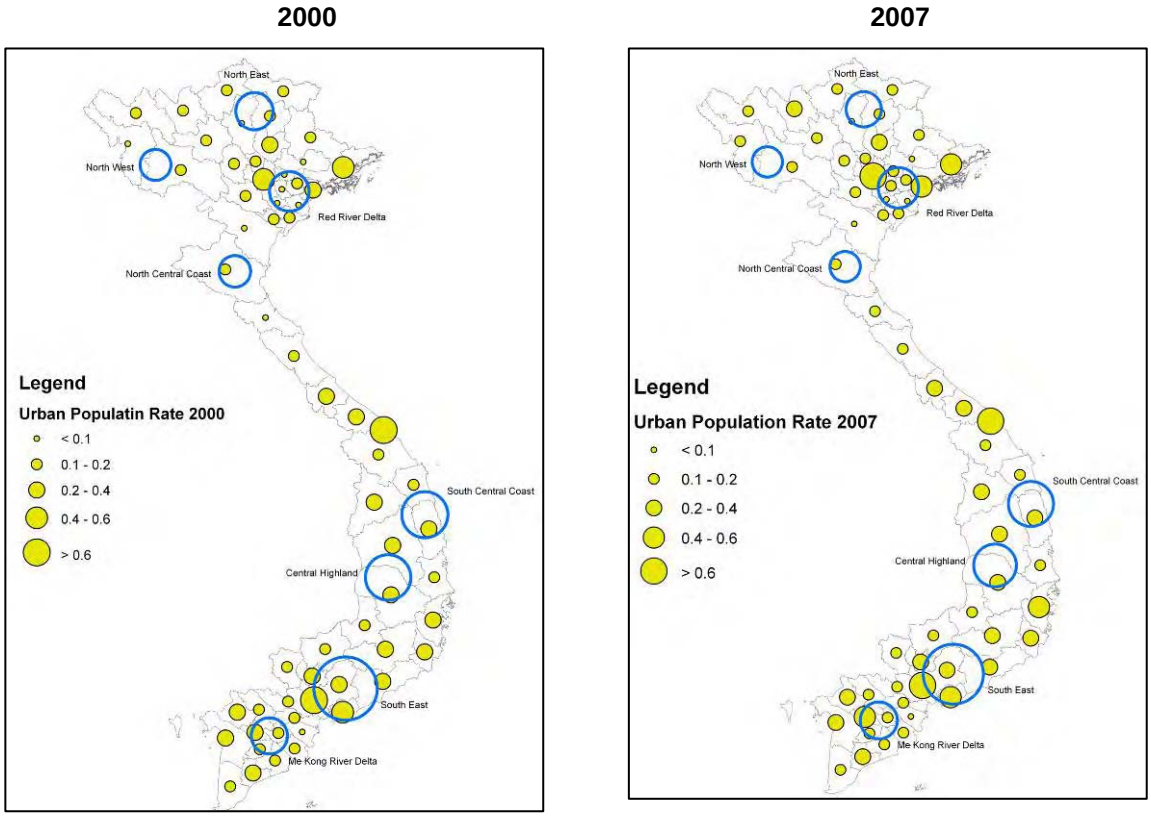
Note: Worked out by VITRANSS 2 Study Team based on GSO data.

Figure 2.2.4 Population Density



Note: Worked out by VITRANSS 2 Study Team based on GSO data.

Figure 2.2.5 Urban Population Ratio



Note: Worked out by VITRANSS 2 Study Team based on GSO data.

2) GDP

2.20 Still one of the poorer countries with a per capita gross domestic product (GDP) of about USD835 in 2007, Vietnam is in a long transition toward a modern and open market economy.

2.21 Aggregate economic indicators have, until 2007, shown continued economic growth, averaging over 7.4% per year over two periods 1995 2000 and 2000 2005; specifically, growth rates were 8.2 8.5% in 2006 and 2007, respectively (see Table 2.2.3). The driving force was the industrial sector, while the agricultural sector firmly supported the rapid economic expansion. However, the service sector rapidly developed with high rates, from 6.4% in the period 1995 2000 to 8.7% in 2007.

2.22 Recently, Vietnam's open market has been directly influenced by the global crisis, but with the government's demand-stimulation method, it is now quite clear that Vietnam's economy can overcome this disadvantageous situation.

2.23 As to GDP by region, more than 60% of the total GDP came from both the Southeast and the Red River Delta, with shares of 39.4% and 21.3%, respectively. This means that it is not only the SFEZ, but also the NFEZ, which play the role of economic pillars, supporting the development of Vietnam's economy.

2.24 The GDP by sector is markedly different by region. In the case of the Mekong River Delta, Central Highlands, and the Northwest, more than 40 50% of the GDP came from agriculture. On the other hand, 94% of the GDP of the Southeast came from the industrial and service sectors. In the Red River Delta, almost 86% of the GDP came from non-agricultural sectors, i.e., 41% from industry and 44% from services.(see Table 2.2.4).

Table 2.2.3 GDP Growth Rate by Sector

Sector	95-2000	00-05	2006	2007
Agri-Forestry-Fishery	4.5	4.0	3.7	3.4
Industry and Construction	11.1	10.2	10.4	10.6
Services	6.4	6.7	8.3	8.7
Whole sector	7.4	7.4	8.2	8.5

Source: General Statistic Office, Statistical Yearbook 2007

Table 2.2.4 GDP and Its Sectoral Composition by Region, 2007

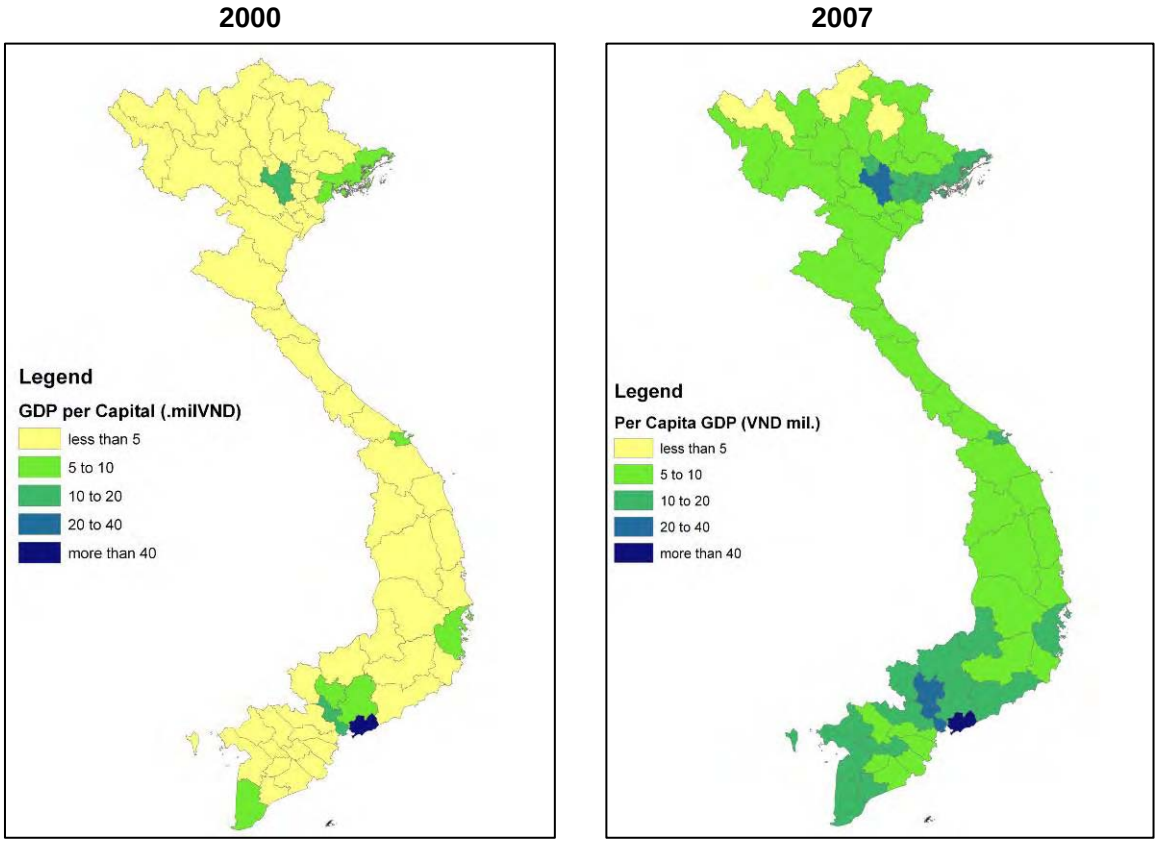
Region	GDP 2007 (VND bil.)	Per capita (VND mil.)	% to Total	Shared by sector (%)		
				Agriculture	Industry	Services
Red River Delta	263,128	14.3	21.3	14.1	41.6	44.3
Northeast	75,609	7.9	6.1	26.3	37.2	36.5
Northwest	14,977	5.7	1.2	40.8	22.6	36.6
North Central	78,844	7.4	6.4	29.0	33.0	38.1
South Central	78,161	10.9	6.3	22.5	38.1	39.4
Central Highlands	42,208	8.6	3.4	54.1	19.4	26.5
Southeast	486,040	34.2	39.4	5.9	60.4	33.7
Me Kong River Delta	193,716	11.1	15.7	42.1	24.5	33.4
Total	1,232,683	13.4	100	19.2	44.3	36.5

Source: General Statistic Office, Statistical Yearbook 2000-2007

2.25 Regarding per capita GDP by region, the Southeast had the highest figures in 2007, at VND 34.2 million. Figure 2.2.6 shows the per capita GDP by province. Provinces with over VND 30 million comprised Hanoi, Ho Chi Minh City, and Ba Ria –VungTau.

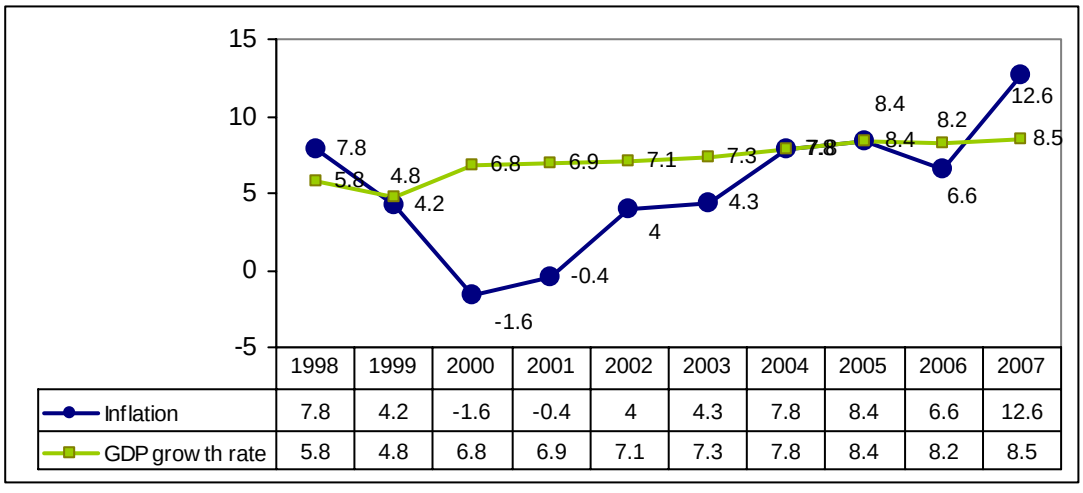
2.26 Inflation was not synchronous with GDP growth (see Figure 2.2.7). Rates were kept stable for a long period from 1996 to 2006 but jumped to two digits in 2007 and 2008, as a result of the global crisis and consequently of long-tempered development.

Figure 2.2.6 GDP per Capita by Province



Note: Worked out by VITRANSS 2 Study Team based on GSO data.

Figure 2.2.7 Trend in GDP and Inflation Rates



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Inflation	7.8	4.2	-1.6	-0.4	4	4.3	7.8	8.4	6.6	12.6
GDP grow th rate	5.8	4.8	6.8	6.9	7.1	7.3	7.8	8.4	8.2	8.5

Source: ADB (2007). "Key Indicators 2007: Inequality in Asia".

3) Employment

2.27 2007 statistics showed that 44.17 million people were of working age or about 51.8% of the country's population. It is estimated that the labor force increased by about 2.6% annually in the period 1996 2000 and 2.3% in 2000 2007.

2.28 Unemployment rate in urban areas decreased annually in the whole country from 6.4% in 2000 to 4.6% average in 2007. In 2007, the Red River Delta had the highest unemployment rate at 5.7% and the Central Highlands the lowest at 2.1% (see Table 2.2.5).

2.29 The employment structure by type of ownership from 1995 to 2007 is characterized as follows: (i) State share seemed to be stable at 9% on average, (ii) non-state share decreased from 90% to 87%, and (iii) FDI share increased from 0.4% to 3.5% (see Table 2.2.6).

2.30 The employment structure by sector from 1995 to 2007 is characterized as follows: agricultural labor force in Vietnam decreased very quickly from 71% to 54% contrary to Industry and services both of which rose significantly, from 11% to 20% and from 17% to 26%, respectively.

2.31 Figure 2.2.8 shows employment growth by sector for three periods 1990 1994, 1994 2000, and 2000 2007: (i) agricultural growth was very modest, even contracting in 2000 2007; (ii) industrial growth was not exceptional during the first two periods but broke the 8% barrier in the period 2000 2007; and (iii) services grew strong in the period 1994 2000 and slightly decreasing to about 5% in 2000 2007.

Table 2.2.5 Unemployment Rate among Working-age Populations in Urban Areas by Region

unit: %

Region	2000	2003	2004	2005	2006	2007
Red River Delta	7.3	6.4	6.0	5.6	6.4	5.7
Northeast	6.5	5.9	5.5	5.1	4.3	4.0
Northwest	6.0	5.2	5.3	4.9	3.9	3.4
North central coast	6.9	5.5	5.4	5.0	5.5	4.9
South central coast	6.3	5.5	5.7	5.5	5.4	5.0
Central highlands	5.2	4.4	4.5	4.2	2.4	2.1
Southeast	6.2	6.1	5.9	5.6	5.5	4.8
Mekong River Delta	6.2	5.3	5.0	4.9	4.5	4.0
Whole country	6.4	5.8	5.6	5.3	4.8	4.6

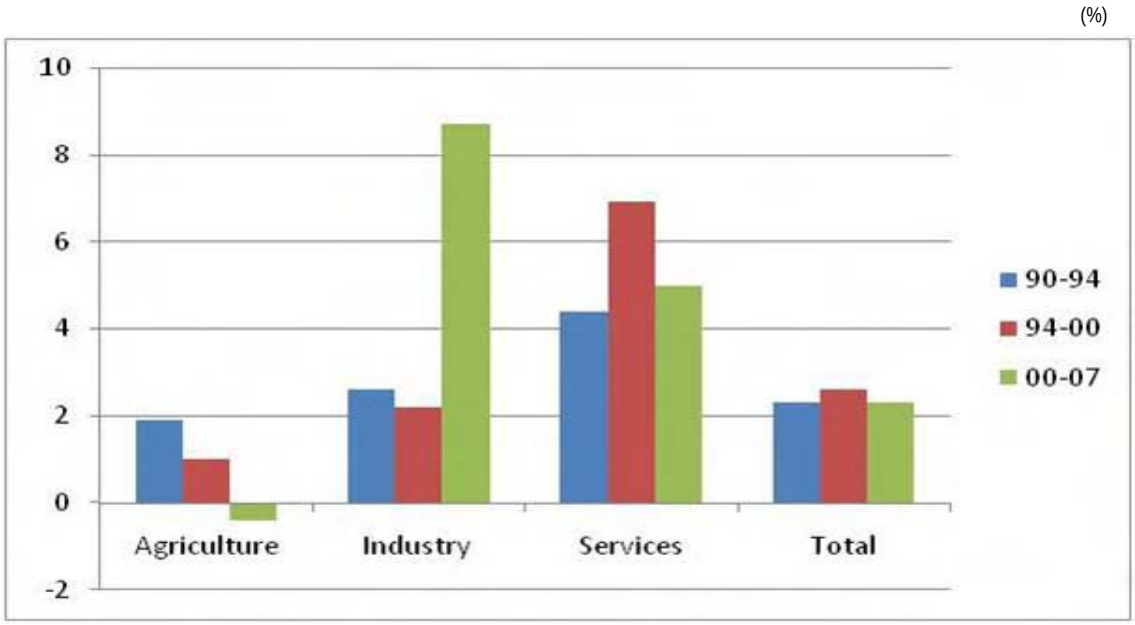
Source: General Statistic Office, Statistical Yearbook 2007

Table 2.2.6 Employment by Type of Ownership and Sector

Year	Type of Ownership (%)			Sector (%)		
	State	Non-state	FDI	Agriculture	Industry	Services
1995	9.3	90.3	0.4	71.3	11.3	17.4
2000	9.3	89.7	1.0	65.1	13.1	21.8
2007	9.0	87.5	3.5	53.9	20.0	26.1

Source: General Statistic Office, Statistical Yearbook 2007

Figure 2.2.8 Employment Growth by Sector



Source: General Statistic Office, Statistical Yearbook 2007

4) Agricultural Sector

2.32 The "rice basket" phenomenon, which means the cultivation of the crop is concentrated in an area, which in Vietnam's case is in the north and south, clearly shows in both the sown area density of food crops and crop product efficiency. The Red River Delta has a sown area density of 0.8, while the Mekong River Delta region has 0.92 (see Table 2.2.7). The sown area density of paddy in the south is higher than in the north, which explains why almost half the output of paddy comes from the Mekong River Delta. Figure 2.2.9 shows the paddy sown area density by province and Figure 2.2.10 shows production and consumption of rice.

2.33 Other crops include other cereals, maize, sweet potatoes, cassava, cotton, jute, rush, sugarcane, peanut, soybean, and tobacco. Of these, sugarcane has a high gross output particularly in the Mekong River Delta.

2.34 Breeding of cattle seems to be prevalent mainly in central Vietnam, while buffalo raising in the north and hog breeding are equally distributed all over the country. Regarding marine products, over half of the total output comes from the Mekong River Delta which is endowed with rich marine and river environments. As to forest industries, the Northeast region recorded the largest outputs in wood products, followed by both South Central Coast and Mekong River Delta (see Table 2.2.8).

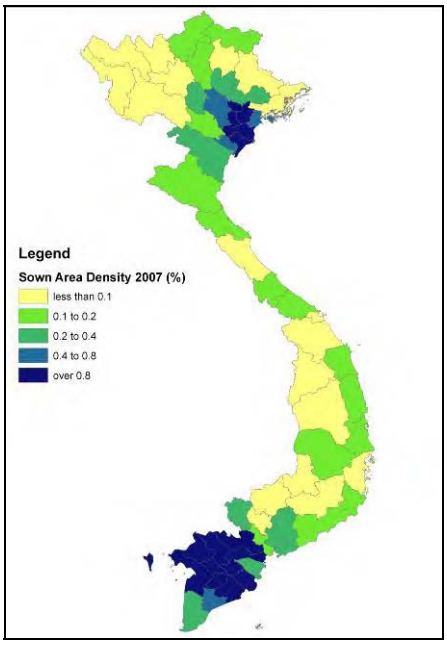
2.35 Figure 2.2.11 shows the production and consumption of sugar (sugar cane and refined sugar), while Figure 2.2.12 shows that of industrial crops. Production of sugar is concentrated in South Central Coast, the coastal side of Mekong River Delta, and Nghe An province in Northeast region. As to industrial crops, its production concentrates on Central Highland, especially.

Table 2.2.7 Sown Area Density and Gross Output of Food by Region, 2007

Region	Area (000 ha)	Sown Area of Food crop (000 ha)	Gross Output of Food Converted to Paddy (000 tons)	Sown Area Density of Food Crop	Food Converted to Paddy Product Efficiency (ton/ha)
1.Red River Delta	1,486	1,196	6,651	0.80	4.62.62
2.Northeast	6,402	789	3,262	0.12	3.00
3.Northwest	3,753	330	1,115	0.09	2.22
4.North Central Coast	5,155	821	3,735	0.16	3.20
5.South Central Coast	3,317	418	2,081	0.13	3.44
6.Central Highlands	5,466	438	1,885	0.08	2.80
7.Southeast	3,481	558	2,408	0.16	3.15
8.Mekong River Delta	4,060	3,720	18,839	0.92	3.97
Total	33,121	8,270	39,976	0.25	3.68

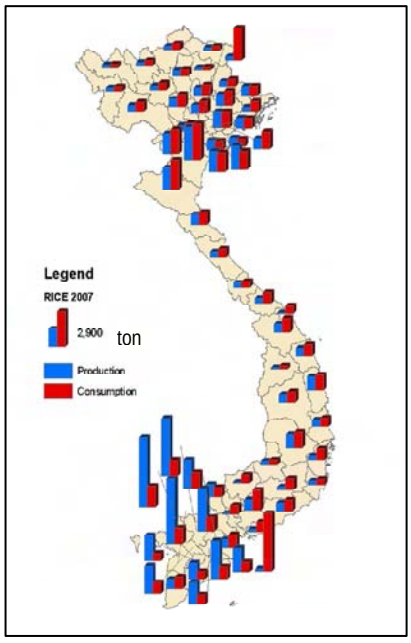
Source: General Statistic Office, Statistical Yearbook 2007

Figure 2.2.9 Paddy Sown Area



Source: General Statistic Office, Statistical Yearbook 2007

Figure 2.2.10 Production & Consumption of Rice, 2007



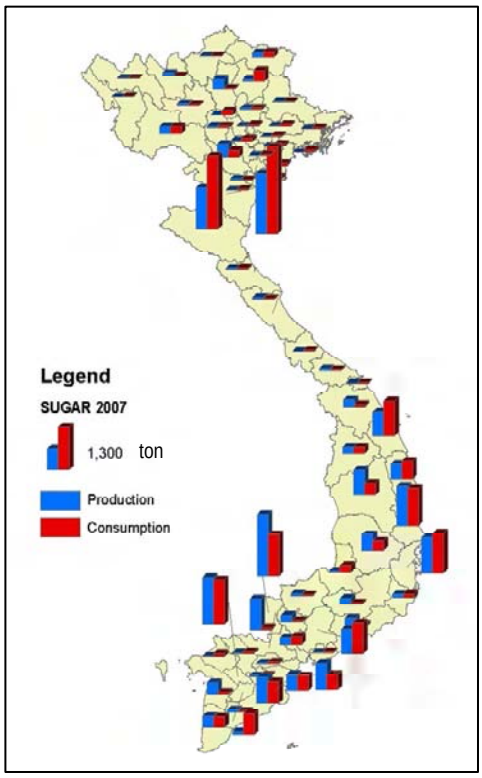
Source: VITRANSS 2 Study Team

Table 2.2.8 Other Products (Livestock, Fishery and Forestry) by Region, 2007

Region	Cattle (000 heads)	Buffalo (000 heads)	Pig (000 heads)	Sea Products (tons)	Exploited Wood (000 m3)
1.Red River Delta	792.7	110.8	6890.5	390,075	94.8
2.Northeast	832.8	1,277.5	4720.3	103,995	943.2
3.Northwest	286.2	485.8	1196.0	9,674	247.7
4.North Central Coast	1280.9	755.6	3803.7	281,200	318
5.South Central Coast	1218.9	163.2	2015.8	435,286	560.5
6.Central Highlands	756.3	84.7	1451.3	14,287	339.8
7.Southeast	867.3	80.7	2698.3	543,521	146.3
8.Mekong River Delta	689.6	38.1	3784.8	2,370,455	608.4
Total	6,724.7	2,996.4	26,560.7	4,149,033	3,258.7

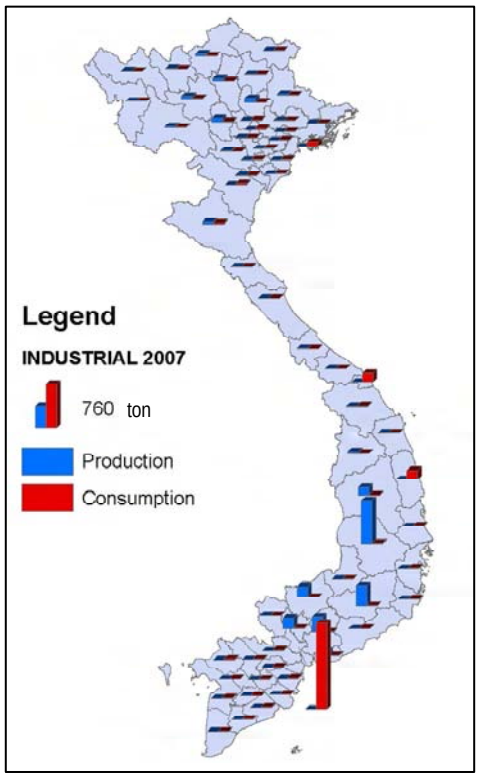
Source: General Statistic Office, Statistical Yearbook 2007

Figure 2.2.11 Production & Consumption of Sugar, 2007



Source: VITRANSS 2 Study Team

Figure 2.2.12 Industrial Crops, 2007[1]



Source: VITRANSS 2 Study Team

5) Industrial Sector

2.36 Recently, there are more than 131,300 establishments engaged in various industrial production activities (see Table 2.2.9). Of this number, 3,706 SOEs and 4,220 foreign-invested enterprises account for small shares in terms of the number of establishments but take up considerable shares of 27.7% and 38.9% (see Table 2.2.10), respectively, of the entire industrial outputs.

2.37 The Southeast region, encompassing HCM City, Dong Nai and Ba Ria-Vung Tau, produces 46.6% of the national industrial output, since a high portion of foreign-invested enterprises are located there. The second-largest industrial region is Red River Delta with a 25% shared of national industrial gross output. Figures 2.2.13 and 2.2.14 show the number of enterprises and their gross outputs and type of ownership by region.

2.38 Figure 2.2.15 shows industrial parks which have been established so far.

[1] Industrial Crops is composed by coffee, tea, rubber, pepper, cashew nuts, sweet potatoes, soybeans, cassava, peanut, and coconut.

Table 2.2.9 Industrial Establishments by Region, 2006

Region	No. of Industrial Establishments	Share by Entity (%)		
		SOEs	Local Non-SOEs	Foreign-invested Enterprises
1.Red River Delta	35,967	na	na	na
2.Northeast	7,895	na	na	na
3.Northwest	1,454	na	na	na
4.North Central Coast	8,466	na	na	na
5.South Central Coast	9,563	na	na	na
6.Central Highlands	4,039	na	na	na
7.Southeast	48,445	na	na	na
8.Mekong River Delta.	15,325	na	na	na
Total	131,318	2.8	94	3.2

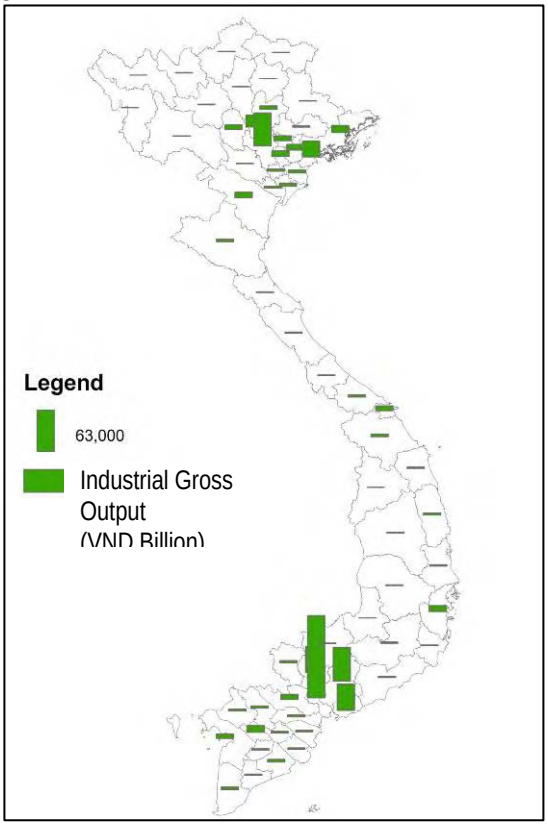
Source: General Statistic Office, Statistical Yearbook 2007

Table 2.2.10 Industrial Gross Outputs by Region, 2007

Region	Industrial Gross Outputs (VND bill)	Share by entity (%)			
		SOEs	Local	Foreign-invested Enterprises	non SOEs
1.Red River Delta	142,473	21.8	4.8	42.2	31.2
2.Northeast	28,977	56.1	3.8	13.4	26.7
3.Northwest	1,430	23.3	8.1	10.9	57.7
4.North Central Coast	19,670	33.9	3.5	22.7	39.9
5.South Central Coast	28,691	31.3	14.8	15.9	38.0
6.Central Highlands	4,717	15.5	7.5	12.1	64.9
7.Southeast	265,853	20.8	4.5	53.0	21.7
8.Mekong River Delta	52,731	24.3	16.8	55.1	3.8
Total	570,771	27.7	6.0	38.9	27.4

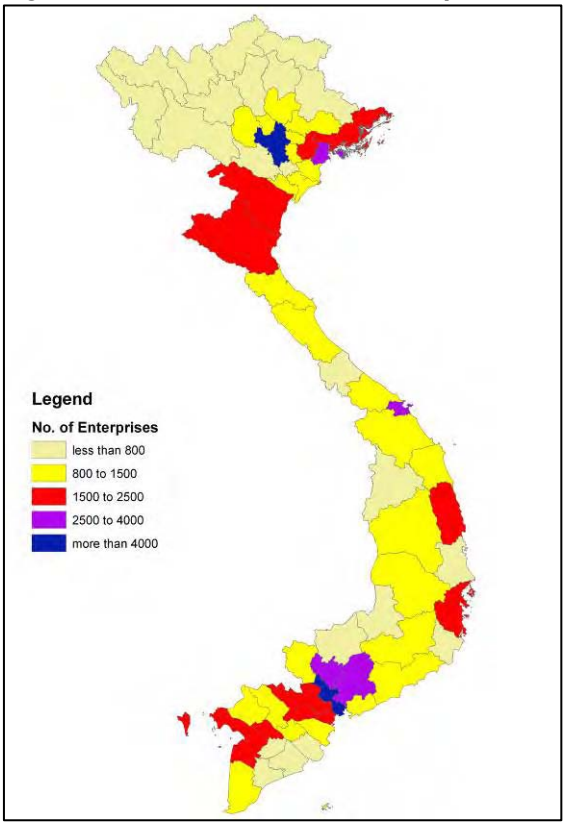
Source: GSO, "Statistical Yearbook", 2007 (1994 constant prices)

Figure 2.2.13 Industrial Establishments, 2007



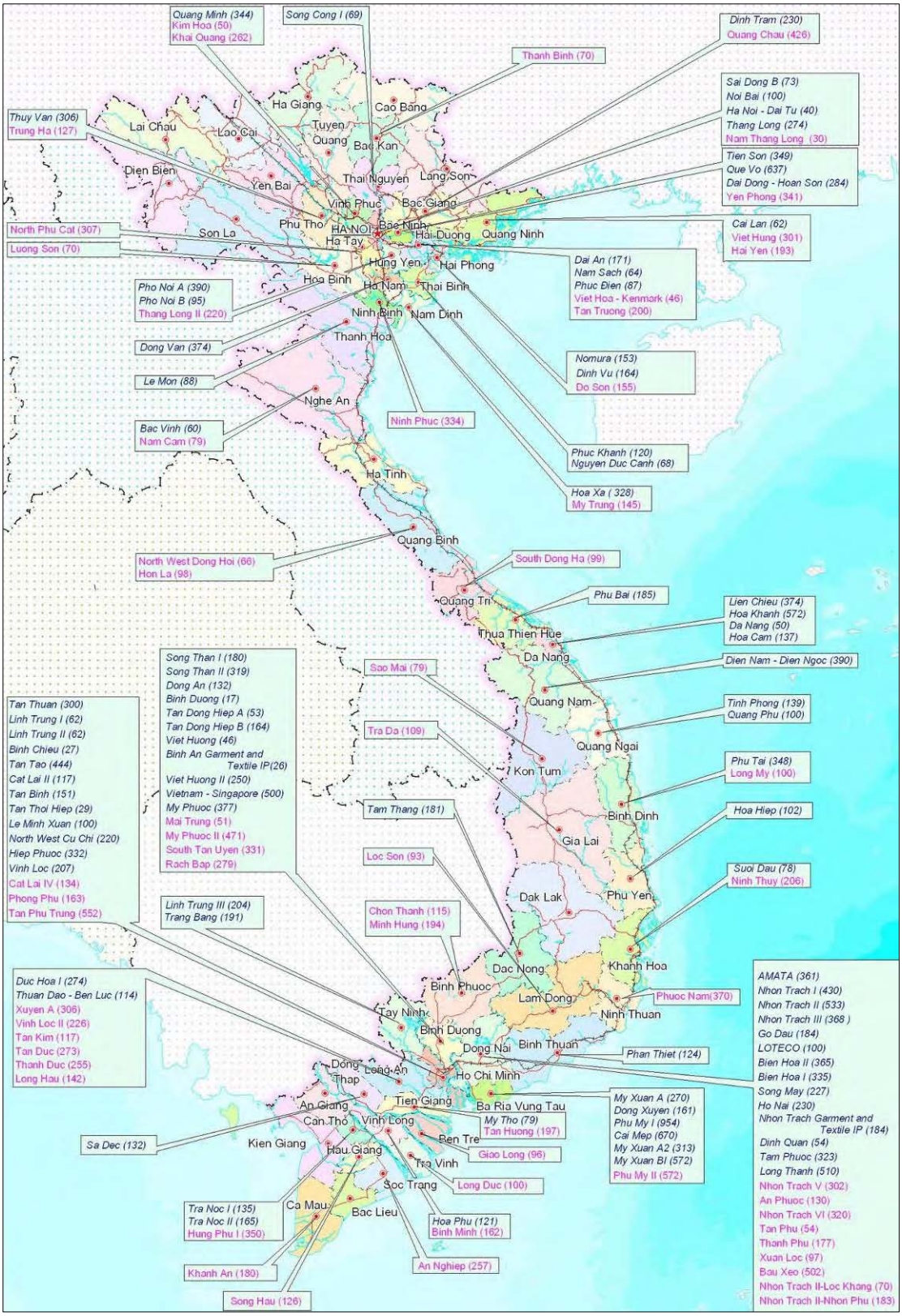
Source: General Statistic Office, Statistical Yearbook 2007

Figure 2.2.14 Industrial Gross Output, 2007



Source: General Statistic Office, Statistical Yearbook 2007

Figure 2.2.15 Established Industrial Parks



Source: Department of Industrial Zone Management, MPI, 2006

6) Trade Balance and Capital Inflow

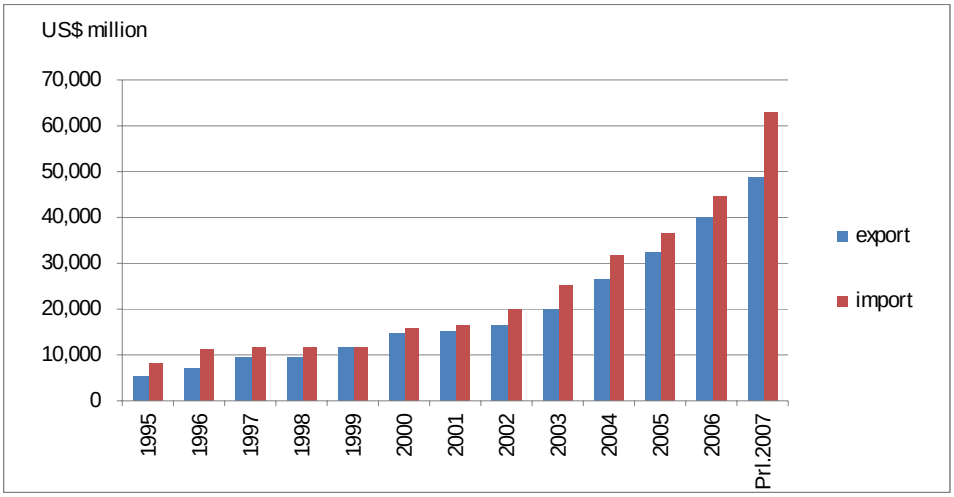
2.39 For long time development, Vietnam has always imported more than it has exported (see Figure 2.2.16). The government has managed to avoid a balance of payments crisis by import contraction and high inflows of foreign direct investment (FDI) and official development assistance (ODA). The deficit in the current account in 2007 was 5% of GDP.

2.40 As to trade structure, Vietnam exports agricultural and mining products, handicrafts and light industrial goods, while it imports refined oil products, fertilizers, steel, machinery and equipment, and transportation fleet (see Table 2.2.11).

2.41 Despite the government's policy to broadly distribute FDI projects, about two-thirds of these projects are still concentrated in the Southeast in 1988-2007 (65% of the total licensed projects) (see Table 2.2.12).

2.42 Vietnam was accepted into the WTO membership on 11 July 2006. At present, Vietnam is included in the world's top 10 countries for FDI (based on classification list of AT Kaerney world consultant). Vietnam is also part of the Greater Mekong Subregion (GMS) Economic Cooperation Program initiated by the Asian Development Bank; achievements are stated in section 2.3 Regional Structure. Vietnam became an ASEAN member on 28 July 1995 and completed its AFTA term up to 2006. Vietnam is listed as having the lowest average tax rate among ASEAN countries after Brunei and Singapore.

Figure 2.2.16 Historical Change in Trade Value (mill.USD)



Source: GSO, Statistical Yearbook, 2007

Table 2.2.11 Major Commodities in Trade

	Item	2000	2007
Export	Crude Oil (000 tons)	15,424	15,062
	Rice (000 tons)	3,477	4,558
	Coal (000 tons)	3,251	31,948
	Rubber (000 tons)	273	715
	Coffee (000 tons)	734	1,229
Import	Refined Oil Products (000 tons)	17,156	12,850
	Fertilizers (000 tons)	3,971	3,792
	Steel (000 tons)	2,845	8,027
	Motor Vehicles (units)	22,848	30,330

Source: GSO, "Statistical Yearbook", 2007

Table 2.2.12 Licensed FDI Projects by Province

Region	2002		2007	
	No. of Projects	Amount (USD mil)	No. of Projects	Amount (USD mil)
1. Red River Delta	135	296.1	480	6,485.2
2. Northeast	37	72.9	51	570.2
3. Northwest	4	6.4	11	38.7
4. North Central Coast	5	4.5	20	612.2
5. South Central Coast	29	135.7	65	3,073.7
6. Central Highlands	5	4.7	15	142.6
7.Southeast	509	874.5	805	8501
8. Mekong River Delta	27	117.6	91	1742.9
Total	751	1512.5	1544	21,347.8

Source: GSO, Statistical Yearbook 2007

7) Poverty

2.43 The estimated total number of population fall under the poverty segment in Vietnam is 13,079,000 in 2007. As the total number of population in the same year is 84.2 million, the poverty ratio (head count index) of Vietnam is calculated at 15.5 in an average. The poverty ratio in geographical distribution is as shown in Table 2.2.13.

Table 2.2.13 Geographical Distribution of Poverty in 2007

(Unit: '000)

Region	Population	Poverty Population	Poverty Ratio (%)
National Total	84,156	13,079	15.5
Red River Delta	18,208	1,818	10.0
Northeast	9,459	2,147	22.7
Northwest	2,607	1,043	40.0
North Central Coast	10,668	2,811	26.3
South Central Coast	7,131	1,196	24.1
Central Highlands	4,869	1,176	24.1
Southeast	13,798	624	4.5
Mekong River Delta	17,416	2,265	13.0

Source: General Statistical Office of Vietnam

2.44 The geographical distribution of poverty as illustrated in Figure 2.2.17, clearly indicates that the poverty segment concentrate in the mountainous area where many of ethnic minority concentrate. The major economic activities in such a mountainous area is slope farming of which agricultural productivity is quite low and the production area locate remotely from the market or major transportation network in the region. The traditional life style of the ethnic minorities has not been matching to a rapidly growing economy in the economic focal-zone. Thus, the income disparity has been expanded in the past and expanding toward the future if no effective measures are taken to narrow the income gap between the people live in low land and the mountainous area.

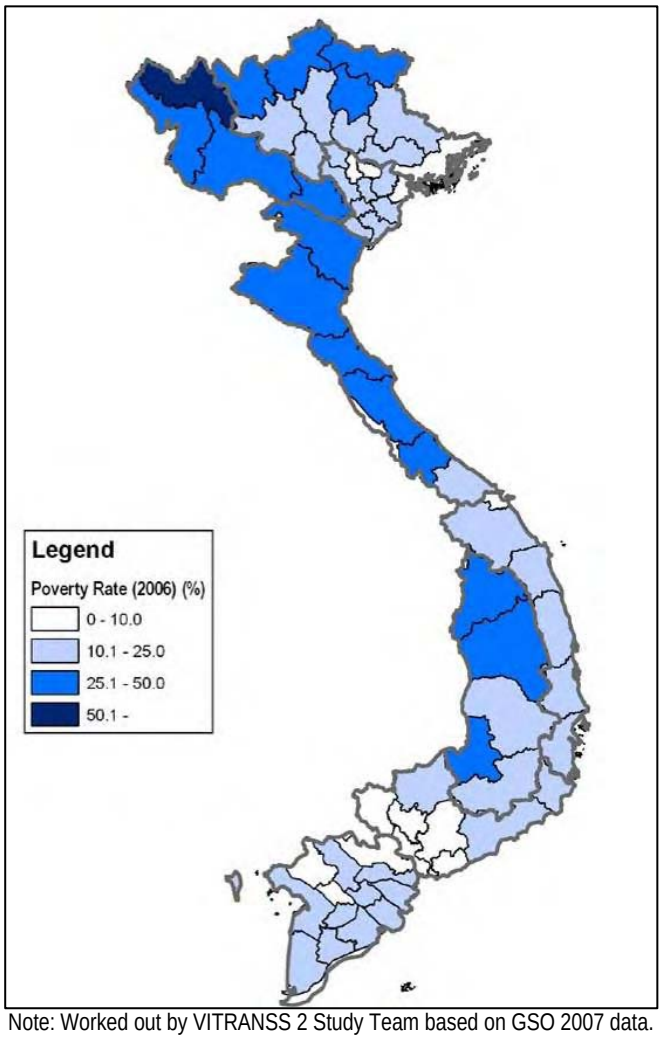
2.45 Since the implementation of the Doi Moi policy in 1986 in general and since 1993 in particular the poverty ratio decreased significantly and constantly. The Comprehensive Poverty Reduction and Growth Strategy (CPRGS, 2001 2005) clearly spelled out that the poverty reduction will progress with economic growth. As targeted in this policy, economic growth effectively reduced poverty incidence in general. The poverty rate decreased in this period by -20%. Table 2.2.14 summarizes the growth rate of industrial output, agricultural output, and FDI that show the relationship of these factors with the reduction of poverty.

2.46 As shown in Table 2.2.11 the impact of FDI on industrial output was significant and clear. The enhancement of both inward FDI and agriculture development has been the key growth strategies of Vietnam. The impact of FDI on production has been of special importance for Vietnam because the industrial production by FDI sector occupies slightly more than one third of total industrial production since 2000.

2.47 During 2000 2005 or the CPRGS period, although there was sizable poverty reduction in all region, the poverty rates lowered quickly in the higher income region in the low land but the same was much slower in the mountainous region. In other words, introduction of CPRGS scheme could not mitigate the income inequality among regions.

2.48 Although the poverty rates were higher in the remote and highland regions, the poor population of larger number lived in the lowland rural regions. The quicker poverty reduction in low land rural regions can be regarded as a mix effect of trickle down and agriculture policy.

Figure 2.2.17 Poverty Rate, 2006



Note: Worked out by VITRANSS 2 Study Team based on GSO 2007 data.

Table 2.2.14 Poverty Incidence, Economic Growth and Employment

(Unit: %)

Region	Decrease of population below poverty line	Growth rate of industrial output	Growth rate of industrial output by FDI	Growth rate of agriculture output	Decrease of urban employment Rate	Increase of proportion of rural working time
Period	2002 04	2000 05	2000 05	2000 05	2000 05	2000 05
National	-20.5	110.0	217.9	22.3	1.1	6.5
Red River Delta	-21.9	133.4	238.4	15.5	1.7	3.2
Northeast	-37.3	99.4	158.3	29.7	1.4	7.3
Northwest	-0.5	139.4	158.3	47.5	1.1	5.0
North Central Coast	-6.9	113.8	324.0	20.0	1.9	4.3
South Central Coast	-24.9	124.6	273.4	14.9	0.8	3.9
Central Highlands	4.8	82.9	266.7	41.0	0.9	4.6
Southeast	-8.9	102.6	204.6	28.0	0.5	6.3
Mekong Delta	-35.2	102.4	211.0	17.6	1.3	6.8

Source: Poverty Reduction in Vietnam 2001 2005, Discussion Paper No.161

2.49 Among the poor regions, poverty reduction was faster in urban area rather than in rural area. This is the impact of the nationwide economic growth. The performance of poverty reduction among regions shows the same pattern of industrial development. FDI centered in HCMC and Hanoi, and did not help the poverty reduction in poor regions much. Therefore, the trickle down effect was much larger than the poverty reduction effect in the poverty reduction in Vietnam.

2.50 As such the efforts to mitigate the poverty in Vietnam has achieved the reduction of poverty incident in general, however, the issue to narrow the inequality between low-land and economic focal-zone and other area such as mountainous, and remote rural area remain unsolved.

2.51 The role of transportation is important to provide further connectivity and accessibility of the mountainous areas with the low land and focal economic zones in each region so as to reduce the poverty incident further and narrow the inequality of income of people those live in the mountainous area of each region.

8) FDI

2.52 The GDP of Vietnam in 2007 was VND 1,144 Trillion. The average annual growth ratio (AAGR) of GDP between 1995 and 2007 is analyzed at 7.6%, which is ranked as second in the world just after China. In 2007, the total amount of FDI was almost USD 8 billion, which is around 3 times bigger than that of 1995. A constant inflow of FDI has continued at AAGR of 12.7%. During this period the export value has increased constantly at AAGR of 24.4% as well. Table 2.2.15 shows the change of GDP, FDI and Export Value for the period 1995 2007.

Table 2.2.15 Change of GDP, FDI and Exports

Unit: USD Million

Year	GDP	FDI Amount	Export of Manufactured Products
1995	20,541	2,556	2,928
1996	19,407	2,714	4,186
1997	19,780	3,115	5,946
1998	17,594	2,367	6,037
1999	18,354	2,335	7,852
2000	19,405	2,414	10,285
2001	19,466	2,451	10,615
2002	19,617	2,591	12,090
2003	20,911	2,650	15,082
2004	22,297	2,853	20,513
2005	23,548	3,309	24,994
2006	25,493	4,100	30,829
2007	28,061	8,030	37,600
AAGR	2.8%	12.7%	24.4%

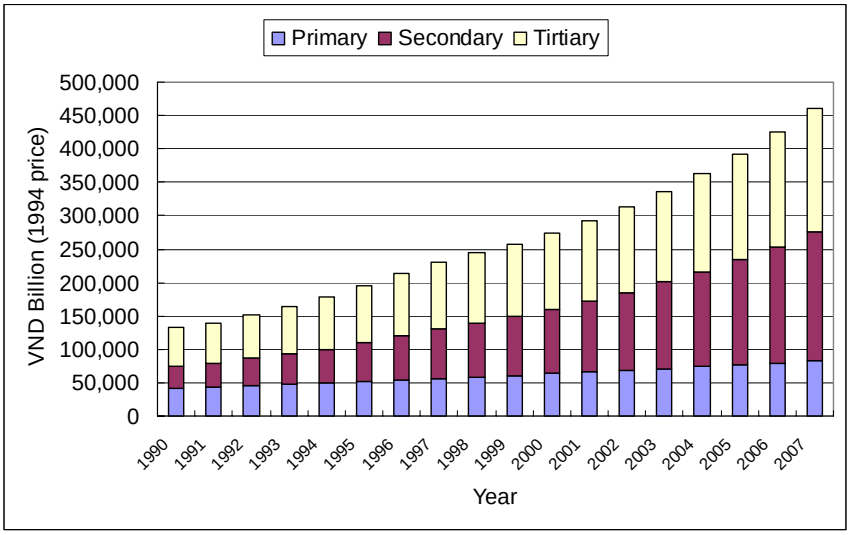
Source: VITRANSS 2 Study Team based of data available from GSO

2.53 Figure 2.2.18 illustrates the change of GDP by economic sector. As shown in this figure, the most rapidly growing sector has been the secondary sector.

2.54 The growth of GDP has been continuing at a remarkable ratio and it seems that it will continue to the future. This is clear that the continuous economic growth of Vietnam is attributed by both a rapid increase of FDI investment amount and export value. Figure 2.2.19 clearly indicates the FDI investment and export growth has pushed up the economy of Vietnam. As shown in these graphs the major direction of FDI has been to the manufacturing sector aiming at export of products to the international market. Currently the accumulated amount of FDI since 1995 into the manufacturing sector accounts for around 55% of the total FDI. Therefore, It can be mentioned clearly that the FDI for the manufacturing sector has been a major engine of economic growth of Vietnam to date.

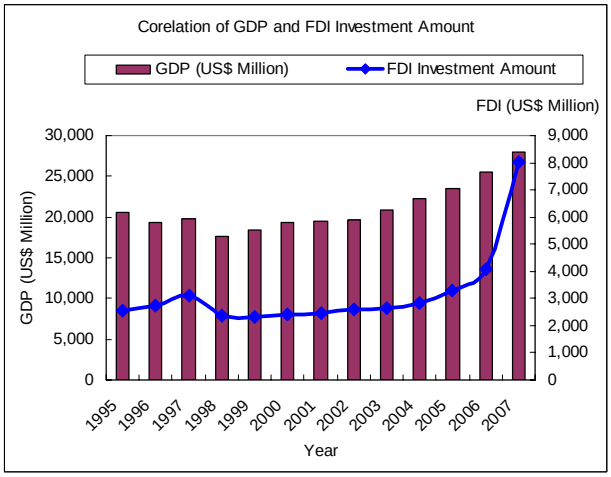
2.55 Current rapid increase of export has attributed largely by the FDI sector especially the FDI in the manufacturing sector as shown in Figure 2.2.20.

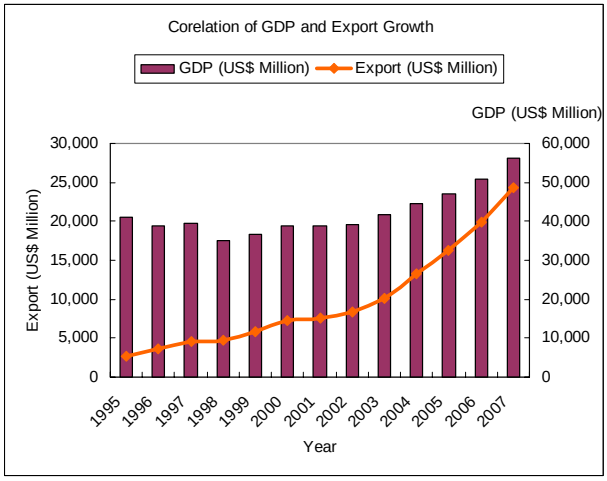
Figure 2.2.18 Changes in GDP



Source: VITRANSS 2 Study Team based on the data available from GSO

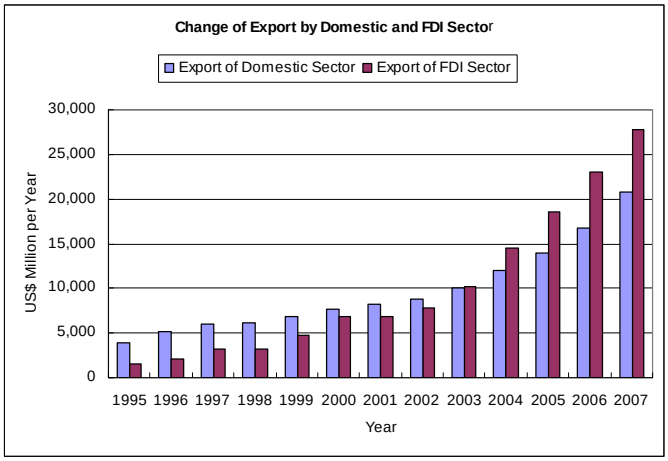
Figure 2.2.19 Correlation of GDP, FDI, and Exports

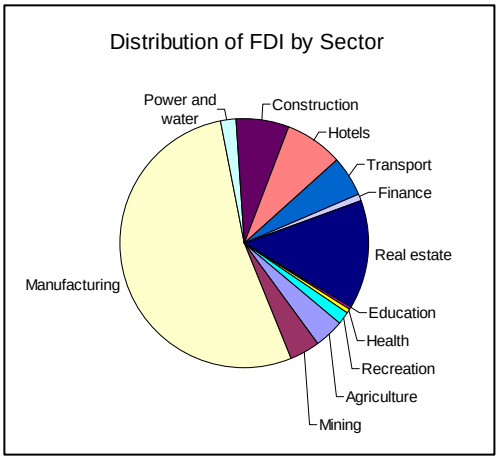




Source: VITRANSS 2 Study Team based on the data available from GSO

Figure 2.2.20 Changes in FDI and Investment Sector





Source: VITRANSS 2 Study Team based on the data available from GSO.

2.3 Regional Structure

1) Vietnam in Asia

2.56 In the next 20 years or so, the world and the Asian region will look different. So will Vietnam. In developing a national transportation strategy for Vietnam, one therefore needs to consider not only what Vietnam would look like in the future, but more importantly how it will relate to the rest of the world. With Vietnam's accession to the WTO in 2007, combined with the FDI-led growth that has characterized its development, the global context becomes a strategic factor.

2.57 A US intelligence study[2] "Mapping the Global Future 2020" paints an authoritative, and generally accepted, picture of a future world economy. By 2020, Asia is seen as the main engine of the global economy with China and India as the economic powerhouses, whose combined GDPs by mid-century could account for 50% of the global output. That study also foresees the world economy to be 80% larger by 2020 than in 2000—equivalent to a coasting speed of 3% per year—and the world average per capita income to be 50% higher. In comparison, Vietnam would be growing faster than the rest of the pack as to expand its economy nearly five times by 2020 and its per capita income by 3.5 times higher than in 2000. By 2030, the per capita GDP of Vietnam will be at par with present-day Thailand at about USD3,700 (see Figure 2.3.1 and Table 2.3.1).

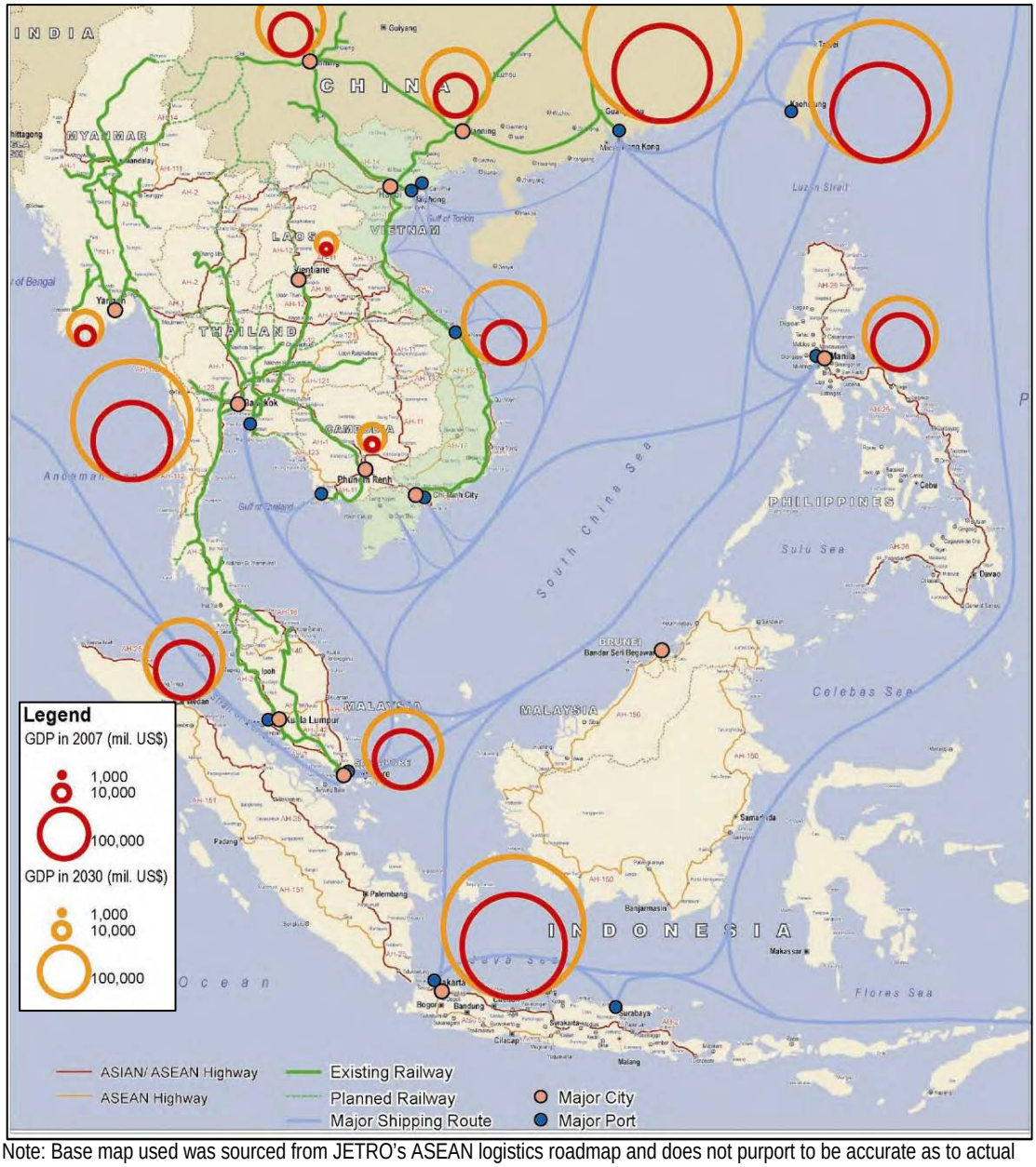
Table 2.3.1 Profile of Main Economies in East Asia

Area	Country	Land Area (km^2)	Population (mi.)	GDP		Trade (USD mil.)	Urbanization (%)
				USD mil.	USD/Capita		
ASEAN	Vietnam	325,360	86,117	70,020	813	100,000	26
	Laos	236,860	5,608	4,128	736	990	21
	Cambodia	181,035	14,475	8,662	598	6,437	19
	Thailand	513,120	65,694	245,702	3,740	248,868	31
	Myanmar	676,577	58,605	12,633	216	5,630	30
	Malaysia	330,252	27,174	186,961	6,880	285,543	60
	Indonesia	1,890,754	224,905	432,728	1,924	161,864	45
	Brunei	5,765	396	12,317	31,104	9,108	74
	Philippines	300,000	88,875	146,895	1,653	99,184	62
	Singapore	704	4,589	161,547	35,203	510,090	100
	Sub-total	4,460,427	576,438	1,281,593	2,223	1,427,714	58
Plus 3	China	9,596,960	1,330,044	3,251,000	2,444	2,118,000	42
	Korea	98,480	49,233	957,100	19,440	728,000	81
	Japan	377,835	127,288	4,384,000	34,442	1,249,000	66

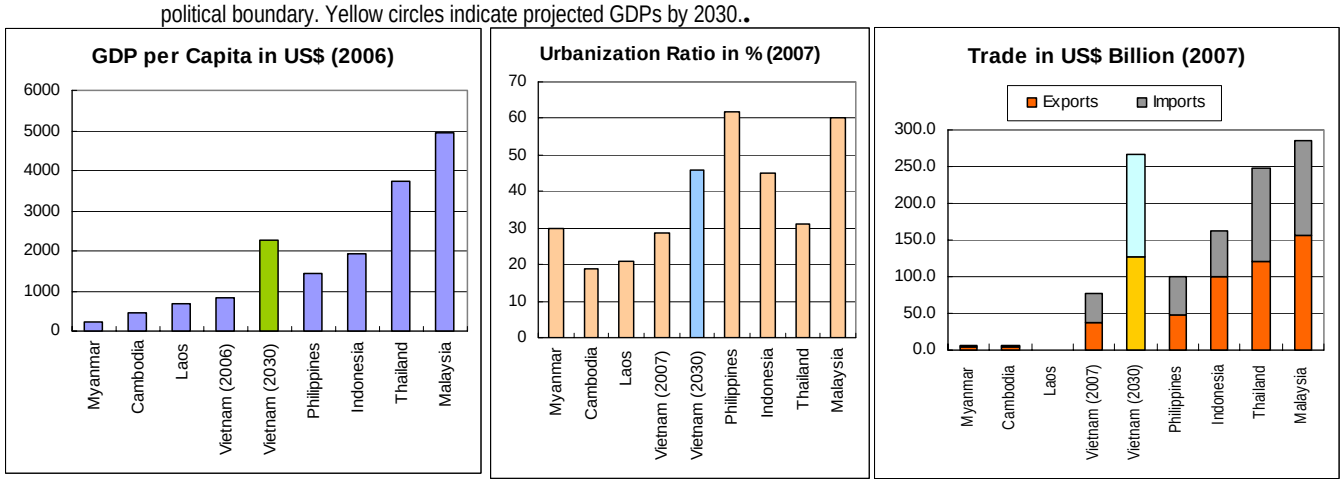
Sources: ASEAN Statistic Yearbook (2006) for ASEAN countries, UNESCAP (2006) for urbanization ratio. CIA - The World Factbook for data of non-ASEAN countries.

[2] http://www.realcities.com/mld/krwashington/10639015.html posted on 13Jan2005 citing a US CIA study.

Figure 2.3.1 Vietnam and Its Neighbors



Note: Base map used was sourced from JETRO's ASEAN logistics roadmap and does not purport to be accurate as to actual political boundary. Yellow circles indicate projected GDPs by 2030.



Source: Worked out by VITRANSS 2 Study Team based on ASEAN Secretariat data and CIA World Factbook and Ministry of Foreign Affairs of Japan (http://www.mofa.go.jp/mofaj/)

2.58 The main driver of world trends will be "globalization, the ever-expanding international flows of goods, services, capital, people and information." This will also be the main factor for Vietnam. With its accession to the WTO and the phenomenal growth it has achieved since Doi Moi, economic integration with the rest of the world is in Vietnam's future. It has embraced this course in its latest socio-economic blueprint to year 2010. Its two-way trade in 2005 reached USD 61.2 billion, a level nearly 1.2 times its GDP. Its major trading partners are USA, Japan, Korea, and China. In recent years, China has been one of the most important trade partners of Vietnam. In 2005, China is Vietnam's top import partner with USD 5.8 billion, i.e. 16% of Vietnam's total import. On the export side, China is Vietnam's third important trade partner, with USD 3.0 billion (or 9% of Vietnam's total export). The government expected trade volume to reach USD 10 billion in 2007, and for bilateral trade to expand in scale as it shifts from simple trade to forming joint ventures to manufacturing and selling products between the two countries, and also exporting to third countries.

2.59 Trade with India is still a blip, but the indication is that it will also grow, if the recent entry of Tata Steel is any indication.

2.60 It is convenient to extrapolate the present trading pattern into the future, but that would ignore the impact of globalization and the changing Asian landscape. By 2030, the center and engine of the global economy will be Asia. Vietnam's trade will change as it gets integrated more and more with the global economy. It is to be expected, therefore, for Asian countries to become prominent in Vietnam's future trade. Due to geography, it is but logical for Vietnam's future transportation system to integrate more closely with Asia's. With the emergence of new large economic hubs and liberalizing trade in the region, it is expected that future trade pattern would become different from today. The northern region can ride with China's growth. It is a promising track, since the combined GDPs of the two southern provinces (Yunnan and Guangxi) of China is about the same as Vietnam's today. Meanwhile, the southern region can link its fortune to ASEAN. The north to look north is supported by a research finding that 'distance of trade' declines over time for the average country in the world[3] due to the increasing trend for shorter times to market and as a result of trading blocs. With rising fuel costs, the globe-spanning supply chains have also started to shrink.[4] The ASEAN-China Free Trade Agreement, once it gets into force, would reinforce this trend.

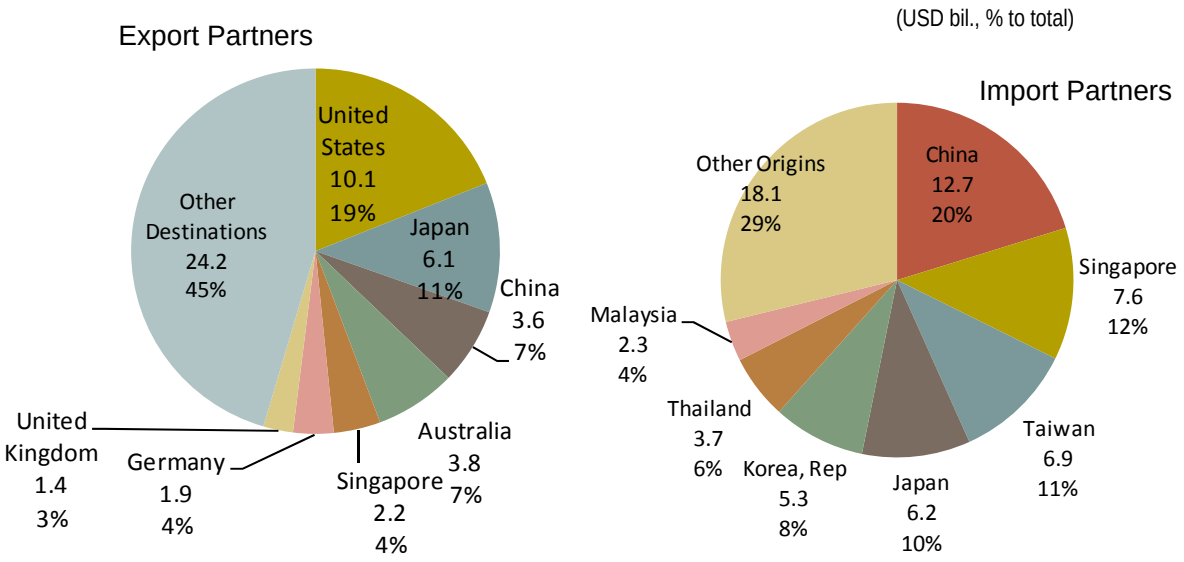
2.61 Compared to China, Vietnam is more exposed to the international economy[5] in terms of both exports and foreign direct investment as a percentage of GDP. Hence, foreign trade and tourism become strategic to its transportation system.

[3] Carrere and Shiff, "On the Geography of Trade: Distance is Alive and Well," World Bank Policy Research Working Paper No. 3206 (Feb 2004).

[4] Rohter, Larry. "Shipping Costs Start to Crimp Globalization," New York Times, 3 August 2008.

[5] Source: Accountability and Inequality in Single-Party Regimes: A Comparative Analysis of Vietnam and China, Regina Abrami, Edmund Malesky, Yu Zheng, Harvard Business School, June 4, 2008.

Figure 2.3.2 Vietnam's International Trade, 2007



Source: General Statistics Office, Vietnam.

2) Connectivity in the GMS

2.62 Vietnam and its neighboring countries are characterized by mountain ranges and rivers running in the north-south direction. Their territories also follow the same orientation. Up to now, rivers and the coastline serve as trunk transportation corridors for agricultural products and daily commodities, but there is no east-west connection across mountains. However, the GMS Program, as well as ASEAN's initiatives such as the ASEAN Highway Network Project and the Singapore-Kunming Rail Link Project, highlights many east-west linkages across mountain ranges, rivers and borders. Different from the conventional north-south transportation corridors, the east-west transportation corridors intend to facilitate cross-border traffic and support sub-regional economic integration.

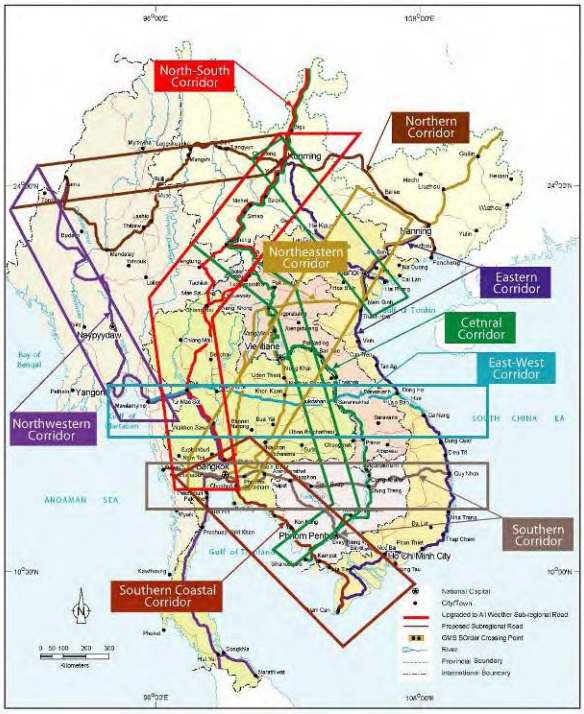
2.63 Under the GMS development framework, major regional economic corridors were identified to connect infrastructure development with investment activities and then to effectively promote regional economic development. Two north-south corridors, one east-west corridor, and two southern corridors were identified in the initial framework. In 2007, a total of nine corridors were identified in the ADB's GMS Transport Sector Strategy, including the north-eastern corridor (Bangkok-Hanoi) and the northern corridor (Bangkok-Myanmar) as presented in Figure 2.3.3.

2.64 Development projects of cross-border transportation infrastructure forming these corridors were identified, prioritized, and implemented in order to promote regional development along them. While the institutional framework to facilitate cross-border transportation was formulated as cross-border transportation agreements (CBTAs), their initial implementation was carried out along these major regional economic corridors.

2.65 At the same time, the transportation sector must play a critical role in facilitating the integration of the country's regional growth centers to create synergy and to provide an effective and competitive means of producing and delivering goods and services to both the domestic and the international markets. It must address the key changes in the external settings that influence Vietnam's development, namely: (i) increasing competition due to its accession to the World Trade Organization (WTO), (ii) increasing impacts from

adjoining countries, especially China, due to increasing facilitation of cross-border transportation, and (iii) growing concerns on the global environment. As of 2006, Vietnam set up trade relations with 165 countries and signed bilateral trade agreements with 72, the more recent of which was with the United States. Vietnam is also a member of the Association of Southeast Asian Nations (ASEAN) Free Trade Area (AFTA). Further opening of the Vietnamese economy to international competition will definitely put pressure on the national economy to meet, or rise above, the competition.

Figure 2.3.3 GMS Regional Economic Corridors (as of 2007)



Source: ADB, GMS Transport Sector Strategy, 2007

2.66 Thus, transportation services must play a key roles aiming to create an advantage associating of the central of regional development cores; that makes the regional unify and provision the competition effectively tools in freight forwarding services for internal and external market.

3) Urban Centers

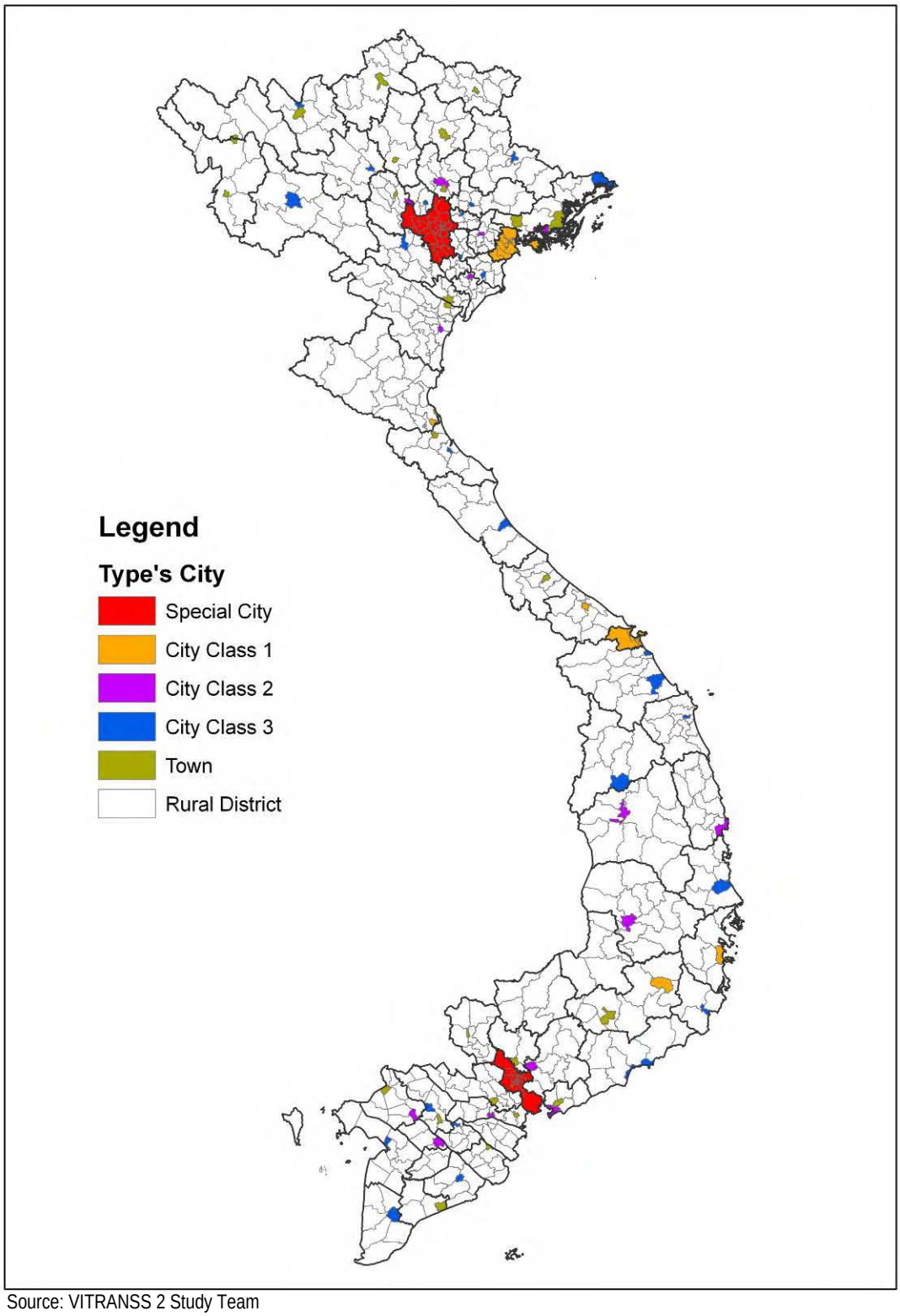
2.67 Existing urban centers, 93 in total except district centers, are composed of 5 cities (Hanoi, Hai Phong, Da Nang, HCM and Can Tho City) belonging to central government (including two special cities Hanoi and HCM City), 45 cities and 43 towns belonging to provinces. Classification of cities is shown in Table 2.3.2 and Figure 2.3.4.

Table 2.3.2 Classification of City Centers

Classification	Population size (mill. pers)	Agricultural Employment (%)	Average density (pers./km^2)	Number of city
Special City	≥ 1.5	≤ 10	≥ 15,000	2
City of class 1	≥ 0.5	≥ 85	≥ 12,000	6
City of class 2	≥ 0.25	≥ 80	≥ 10,000	14
City of class 3	0.10-0.35	≥ 80	≥ 10,000	28
City in total				50

Sources: Wikidepia and Statistical Yearbook 2007

Figure 2.3.4 Present Classification of Urban Centers



Source: VITRANSS 2 Study Team

2.68 Decree No 72/2001/ND-CP describes urban classification as follows:

(1) Special City

2.69 play role of political, economical, cultural, scientific-technical, training, tourist, services center and being transportation hub of domestic and international traffic. It's also locomotive of socio-economical development of the whole country.

(i) Agriculture employment is ≤ 10%

(ii) Population size ≥ 1.5 million or population density ≥ 15,000 pers./km^2

2.70 Vietnam has 2 special cities: Hanoi capital and HCM City.

(2) City Class 1

2.71 Play role as national or regional and inter provincial center

(i) As political, economical, cultural, scientific-technical, training, tourist, services center and being transportation hub of domestic and international traffic. It's also locomotive of socio-economical development of the region or inter-provinces.

(ii) Non-agriculture employment is ≥ 85%

(iii) Infrastructure in all sectors is comprehensive and fully-done

(iv) Population size ≥ 500,000

(v) Population density ≥ 12,000 pers./km^2

(vi) Vietnam has 6 cities of class 1: Danang, Haiphong, Hue, Vinh, Dalat, NhaTrang

(3) City Class 2

(i) As political, economical, cultural, scientific-technical, training, tourist, services center and being transportation hub of provincial and inter-provincial traffic. It's also locomotive of socio-economical development of the province or inter-provinces.

(ii) Non-agriculture employment is ≥ 80%

(iii) Infrastructure in all sectors is fairly comprehensive and fully-done

(iv) Population size ≥ 250,000

(v) Population density ≥ 10,000 pers./km^2

(4) City Class 3

(i) As political, economical, cultural, scientific-technical, training, tourist, services center and being transportation hub of provincial and inter-provincial traffic. It's also locomotive of socio-economical development of a province or a inter-provinces.

(ii) Non-agriculture employment is ≥ 80%

(iii) Infrastructure in some sector is comprehensive and fully-done

(iv) Population size = 10,000-350,000

(v) Population density ≥ 10,000 pers./ km^2

(5) Central-run City

2.72 Including of special cities, big cities of class 1 and 2. These are developed economy and being important on military, politic, culture, economic, socio and being locomotive of all country or regions.

2.73 At present Vietnam has 5 central-run cities: Hanoi capital, Haiphong City, Danang City, HCM City, Cantho City.

(6) Province-run City

2.74 Being an administrative unit equal to district and towns directly manage by PC of that province. Some provincial- run cities also play role of regional or inter-province center. Some specific provinces have not city yet instead by town or even district keeping role of township. Thus, there is individual province having over 1 depended city.

2.4 National Transportation Network

1) Overall

2.75 The spatial organization of Vietnam is focused around three FEZs situated at either end and in the middle of the country. In the north, economic functions are divided between the ports city of Hai Phong Quang Ninh and the country's capital, Hanoi, located at the heart of the NFEZ. Hanoi serves as hub of the transportation network, consisting of roads, inland waterways, railways and airway in northern Vietnam. In the south, HCM City, located at the heart of SFEZ and between the eastern plains and the Mekong delta. In the middle of the country, Da Nang City serves as the core economical development of CFEZ. These are significant economical centers and major ports city. Connecting these three major nodes by road, rail and sea and air is the principal transportation corridor, National Highway No.1 (NH1), extending from China border to Ca Mau and North-South railway trunk running through the central region along the coast. NH1 and railway trunk play an important role in polarizing population growth in the main cities in the central region.

2.76 The density of the regional transportation network varies. The northern region has the dense road network combined with a good inland waterway network with road density of 1.13km/km^2, while in the southern region the major transportation system is a criss-crossing inland waterway network and road density a little lower than north. The road density in the central region is quite low compared to that of other regions with road density, 0.59km/km^2 (see Table 2.4.1).

2) Road

2.77 Currently, Vietnam's road network comprises over 256,000km, of which 17,385km are national highways, 22,783km are provincial roads, and the rest are other local roads (district roads, commune roads, urban roads and exclusive roads). The network grew by 1.6% p.a. from 1999 to 2006.

2.78 The paved ratio also significantly improved. The percentage of national highways that remain unpaved was 6% by 2008. While paved ratio is high, the surface conditions of national roads are not satisfactory. Unpaved provincial roads was 21% in 2008. Still, the overall pavement conditions of roads has a long way to go to be considered good, especially since the overall network is only about 30% paved due to the significant share of district and commune roads that have remained unpaved.

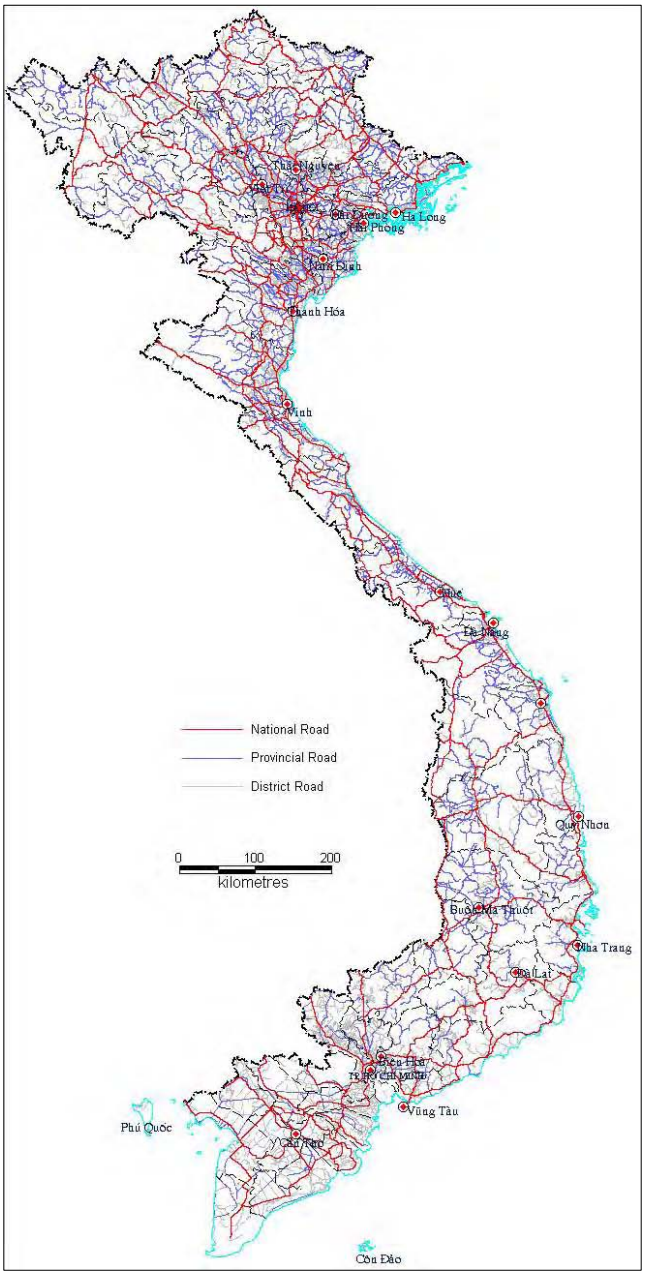
2.79 The road network can be considered as properly distributed considering demand and terrain, although it is narrow and has a limited capacity, 60% have less than two lanes. The connectivity of the network also leaves much to be desired and it is not well articulated in a hierarchical.

Table 2.4.1 Road length and Density by Region 2005

Region	Road			Others	Total	Area (km^2)	Road density
	National	Provincial	District				Km/km^2
The north	6,882	8,950	15,350	99,964	131,147	116410	1.13
The central	6,634	7,017	16,300	52,575	82,526	139390	0.59
The south	3,244	6,918	14,349	53,831	78,342	75410	1.04
Total	16,761	22,885	45,999	206,370	292,014	331210	0.88

Sources: TDSI

Figure 2.4.1 Road Network in Vietnam



Source: Vietnam Road Administration

Figure 2.4.2 Pavement Conditions of National Roads

Source: The Study for Roadside Stations Master Plan in the Socialist Republic of Vietnam.

3) Railway

2.80 Railway operation started in 1901 with the Saigon–Nha Trang Line, and by 1936 much of the present-day network, which is approximately 2,600km, was already in place (see Figure 2.4.3). However, the national railway network was put in disrepair as a result of the war and neglect during that time. Since then much of the focus has been in the re-habilitation of the network. However, track infrastructure remains unsatisfactory with prob-lems of weak bridges and bottlenecks (i.e. restricted speed sections), as well as numer-ous at-grade crossings. Furthermore, the network in the north converge inside Hanoi, wherein due to numerous at-grade crossings, train operation is not permitted during day-time, and this seriously affects the connectivity of the network in the north.

2.81 The system utilizes single track and narrow gauge (except in some sections) with maximum passing capability of 25 up and down trains per day. Signal and communication systems are outdated. Typical operating train speeds are as follows:

(i) Hanoi–Saigon Line: 90% at 70–80km/h;
(ii) Hanoi–Hai Phong Line: 94% at 70km/h;
(iii) Hanoi–Lao Cai: 63% at 45–55km/h, 14% at 70km/h; and
(iv) Hanoi–Lang Son Line: 47% at 40km/h and 34% at 70km/h.

Figure 2.4.3 Vietnam Railways Network

Source Vitranss 2 Study Team

4) Port and Shipping

2.82 There are 49 seaports and 166 berths in Vietnam (Decision No.16/2008/QD-TTg dated January 28, 2008, Prime Minister). Apparently, Vietnamese ports have limited capacities to handle larger-sized vessels. Thus vessels used in ocean container operation are typically small; for instance, one operator utilizes 400–800teu vessels, while another uses 1,000teu vessels operating either feeder service or intraregional service.

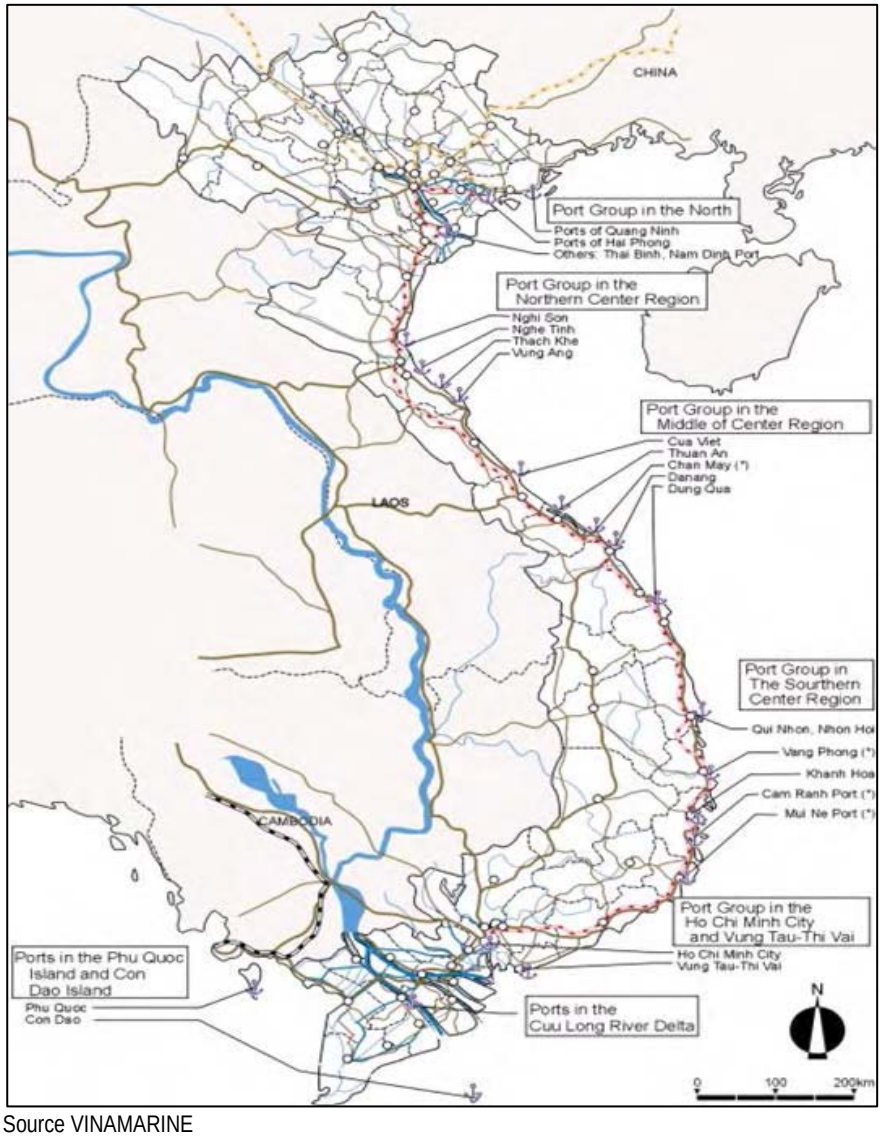
2.83 Seaports in Vietnam are classified into three categories, i.e. Class I, Class II and Class III, based on their importance and characteristics in accordance with the provisions of Maritime Code. Each class is defined as following:

(i) Class I Seaports (17 ports): Especially important seaports with sizable scope to serve the socio-economic development of the whole country or of the inter-region

(ii) Class II Seaports (23 ports): Important seaports with medium scope to serve the socio-economic development of the region or localities

(iii) Class III Seaport (9 ports): Dedicated seaports close to oil derrick at sea to export crude oil.

Figure 2.4.4 Location of Ports by Seaport Groups



Source VINAMARINE

At present, regarding to Vietnam seaport development master plan, Prime Minister decision 202/1999/QD-TTg is still applied while new updated MP is now ongoing.

2.84 The names of seaports under each class are announced by Decision No.16/2008/QD-TTg dated January 28, 2008 of Prime Minister on publicizing the list for classification of Vietnamese seaport. According to this Decision, seaport system of Vietnam includes 17 seaports of Class I, 23 seaports of Class II and 9 seaports of Class III. Seaports of class I and class II include 166 terminals and waterfronts.

2.85 Existing terminals are mainly at somehow upstream of the rivers, distant from the sea and are of small scales with poor, limited facilities. Since 1995, the seaport system of Vietnam has been paid greater attention to in terms of investment made into the system and thus some major ports could be renovate, upgrade and expand their infrastructure and acquire better facilities and equipment to improve their performance than at the time when VITRANSS 1 study was carried out. But, the terminals that can accommodate large vessels are still limited.

5) Inland Waterway

2.86 The number of rivers and canals in the country was counted at 2,360 with total length of 220,000km. Of this, only about 19% (~41,900km) is considered navigable and 7% (or 15,436km) placed under management and operation. The latter is split – about 43% (or 6,612km) falls under the responsibility of the central government, with the balance under the local government units (see Table 2.4.2).

2.87 There are two main river groups in Vietnam, which are utilized for inland waterway transportation (IWT). The northern region river system focuses mainly on the Red River Delta with minimum channel widths of 30–36 meters and minimum depths of 1.5–3.6m. The northern region has 55 channels with a length of 2,753km. Most of the major waterways are under operation 24/24 due to a secured navigational depth. The biggest concern is that the connected waterways are not under the same grade and have sharp curves. Some even have limited vertical navigational clearance under the bridges and other river-crossing structure.

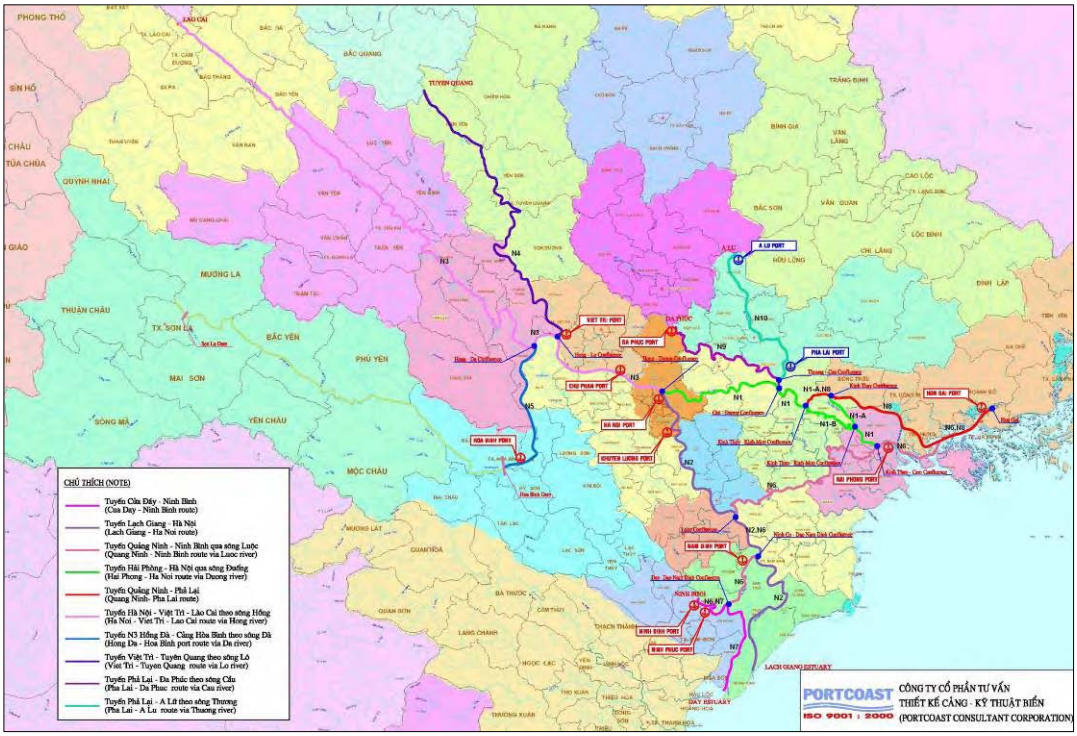
2.88 The technical specifications of the channels in the south are more favorable, with minimum widths of 30–100m and minimum depths of 2.5–4m. In some sections, the depth can reach up to six meters. The channels are, however, constrained by low bridges and narrow clearances. The south has 80 channels with a combined length of 3,017km. Major waterways from HCMC to Mekong delta are operated 24/24; others are operated during daytime only.

Table 2.4.2 Scale of Inland Waterways

	Length (km)	
Total Length	220,000	
Navigational Length	41,900	(19.0%)
Under Management	15,436	(36.8%)
By Central Government	6,612	(42.8%)
By Local Government	8,824	(57.2%)

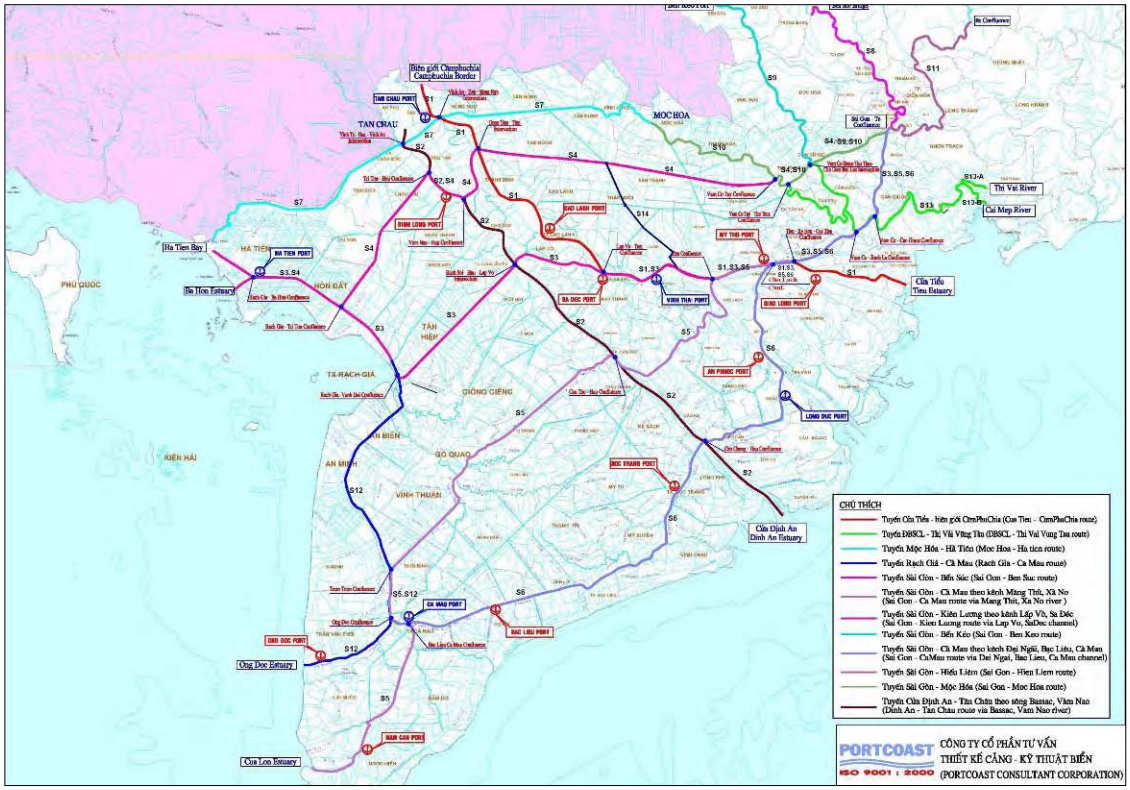
Source: Prepared based on Revised IWT Master Plan

Figure 2.4.5 Location of Major Inland Waterway Routes in the Northern Region



Source: VITRANSS 2 Study Team.

Figure 2.4.6 Location of Major Inland Waterway Routes in the Southern Region

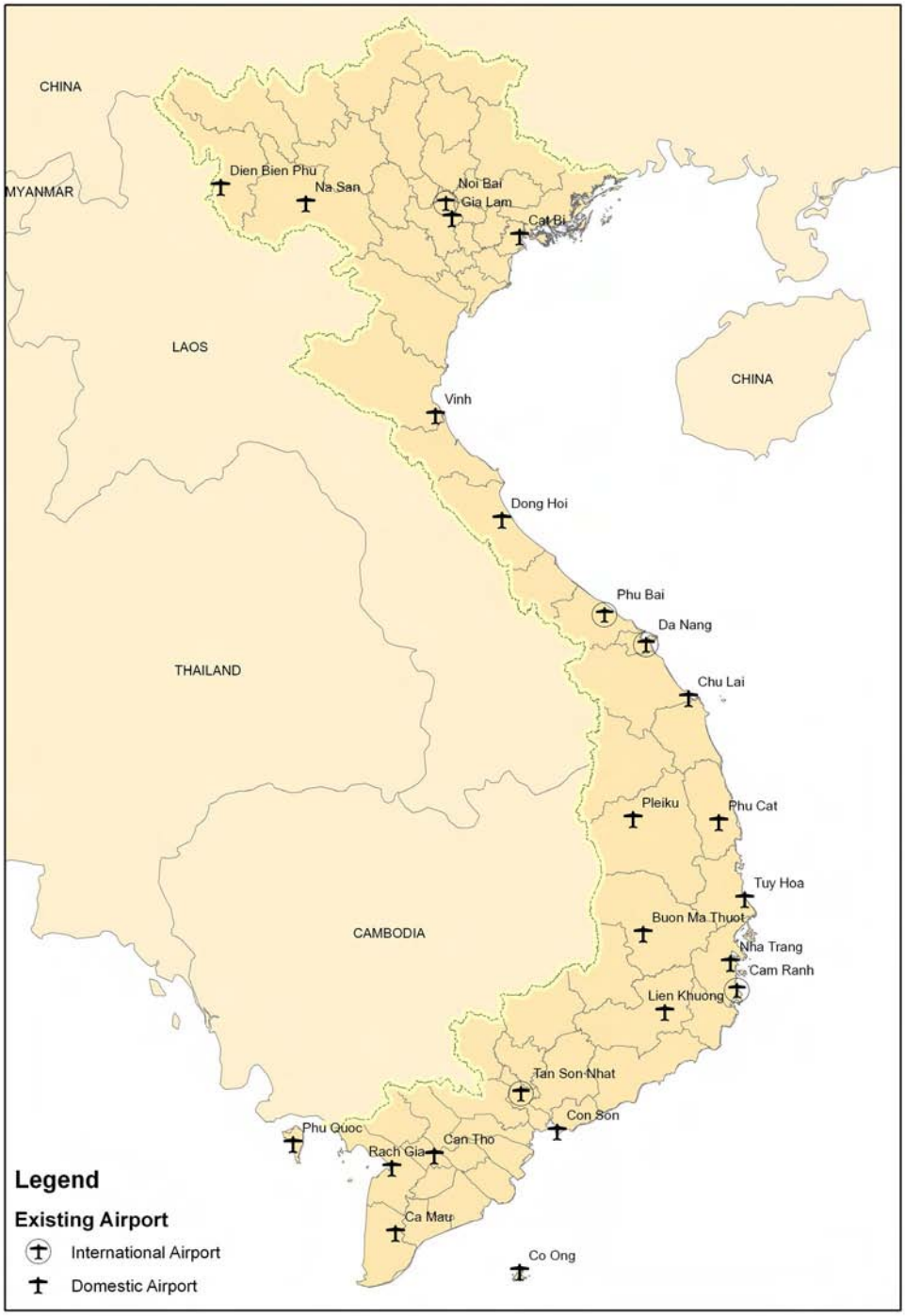


Source: VITRANSS 2 Study Team.

6) Aviation

2.89 There are 22 airports listed in AD section of AIP of Vietnam, as of May 2008. The Table 2.4.3 shows the airports from north to south. Among the 22 airports, 20 have scheduled domestic service[6]; while the big 3 (Tan Son Nhat, Noi Bai, and Danang) have scheduled international and domestic flights. Phu Bai and Cam Ranh Airport were recently classified as international.

Figure 2.4.7 Present Location of Airports in Vietnam



Source: Vitranss2 Study Team

[6] As of 21 January, 2008

Table 2.4.3 Existing Airports in Vietnam

No	Airport Name	City, Province	ICAO code	IATA code	Int'l traffic	Scheduled traffic
1	Dien Bien	Dien Bien	VVDB	DIN		Y
2	Na San	Son La	VVNS	SQH		
3	Noi Bai	Ha Noi	VVNB	HAN	Y	Y
4	Cat Bi	Hai Phong	VVCI	HPH		Y
5	Vinh	Nghe An	VVVH	VII		Y
6	Dong Hoi	Quang Binh	N/A	VDH		Y
7	Phu Bai	Thua Thien Hue	VVPB	HUI	Y	Y
8	Chu Lai	Quang Ngai	VVCA	VCL		Y
9	Da Nang	Da Nang	VVDN	DAD	Y	Y
10	Phu Cat	Binh Dinh	VVPC	UIH		Y
11	Tuy Hoa	Phu Yen	VVTH	TBB		Y
12	Nha Trang	Khanh Hoa	VVNT	NHA		
13	Cam Ranh	Khanh Hoa	N/A	CXR	Y	Y
14	Plei Ku	Gia Lai	VVPK	PXU		Y
15	Buon Ma Thuot	Dac Lak	VVBM	BMV		Y
16	Lien Khuong	Lam Dong	VVDL	DLI		Y
17	Tan Son Nhat	Tp. Ho Chi Minh	VVTS	SGN	Y	Y
18	Con Son	Ba Ria- Vung Tau	VVVT	N/A		Y
19	Can Tho	Can Tho	N/A	N/A		Y
20	Phu Quoc	Kien Giang	VVPQ	PQC		Y
21	Rach Gia	Kien Giang	VVRG	VKG		Y
22	Ca Mau	Ca Mau	VVCM	CAH		Y

Sources: Vitranss2 Study Team (based on Airport Master Plan (August 2007) and others)

2.90 Dong Hoi Airport in Quang Binh Province was opened in 19 May 2008, followed shortly thereaft by Can Tho Airport in Can Tho Province. By 2009, there number of rose to 22 airports (excluding Gia Lam airport). All these airports listed in AIP are permitted to use IFR/VFR flights and scheduled, non-scheduled, and private use.

2.91 Table 2.4.4 shows the passenger terminal building area, estimated annual capacity, main runway dimensions, and maximum operating aircraft, for each of the airports.

Table 2.4.4 Airports Dimensions and Capacity

Airport	Passenger Terminal Building Area (sq.m)	Capacity (Passenger / Year) *1	Main Runway Length (m)	Main Runway Width (m)	Maximum Operating Aircraft
Dien Bien Phu	2,530	100,000	1,830	30	ATR72
Noi Bai	90,000	4,300,000	3,800	45	B747-400
Na San	549	*2	2,400	44	*3
Gia Lam	*2	*2	2,000	45	*3
Cat Bi	2,392	100,000	2,400	50	B737/A320
Vinh	1,950	100,000	2,400	45	B737/A320
Phu Bai	5,650	582,000	2,700	40	B737/A320
Da Nang	5,700	1,000,000	3,048	45	A320
Chu Lai	*2	291,000	3,658	45	ATR72
Pleiku	2,061	100,000	1,829	37	ATR72
Phu Cat	3,153	291,000	3,048	46	ATR72
Tuy Hoa	372	20,000	2,743	46	ATR72
Buon Ma Thuot	1,536	50,000	3,000	45	A320
Cam Ranh	1,800	243,000	3,048	45	B737/A320
Lien Khuong	736	20,000	3,230	45	ATR72/F70
Tan Son Nhat	100,000	10,000,000	3,800	45.72	B747-400
Con Son	*2	*2	1,800	30	*3
Phu Quoc	2,491	194,000	2,100	30	ATR72
Rach Gia	756	20,000	1,500	30	ATR72
Ca Mau	2,368	75,000	1,500	30	ATR72
Co Ong	*2	*2	1,843	30	ATR72
Dong Hoi	4,000	300,000	2,400	45	*3
Can Tho	*2	*2	2,400	45	*3

*1 Aviation Transport Development Master Plan (up to 2015 and orientation to 2020).
*2 Data not available, *3: No scheduled traffic as of May 2008.