

2012

VIETNAM COUNTRY REPORT

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1. Executive Summary

Vietnam is developing country; urbanization occupies 28 percent of population. Hanoi is capital city and Hochiminh city which is largest in Vietnam as regarding the motive force in whole country.

From 2008 to 2012, average GDP growth rate was 5.5 percent. In early 2008, Vietnam was confronted with the overheating economy resulting from massive capital inflow. Attempts to sterilize these inflows were not able to prevent a boom in banking credit, an acceleration of inflation, a ballooning trade deficit and asset price bubbles. A determined reaction by the government from March 2008 onwards succeeded in stabilizing the economy a reducing the trade deficit to manageable levels.

In 2012 Vietnam economy remains challenging year. GDP growth several percentage points below Vietnam's potential: GDP growth rate in the first half of 2012 was 4.28 percent. On the social front, open unemployment may not have been as large as initially feared, but job losses were common among casual and seasonal workers, and cuts in wages and over time affected even those who kept their jobs. As good year in agriculture and the recovery in the construction sector may not be enough to offset the impact.

For the whole year of 2012 the economy is expected to reach approximately 5.5 percent of GDP growth rate and 7.51 percent of CPI growth; in a more optimistic scenario, GDP growth rate is projected to exceed 5 percent but with higher CPI increase.

2. Macroeconomic review & outlook (2 pages)

2.1 Overview of the National Economy

Vietnam's economy remains dominated by state-owned enterprises, which still produce about 40% of GDP, Vietnamese authorities have reaffirmed their commitment to economic liberalization and international integration. They have moved to implement the structural reforms needed to modernize the economy and to produce more competitive export-driven industries. Vietnam joined the World Trade Organization in January 2007 following more than a decade-long negotiation process. Vietnam became an official negotiating partner in the developing Trans-Pacific Partnership trade agreement in 2010. Agriculture's share of economic output has continued to shrink from about 25% in 2000 to about 22% in 2011, while industry's share increased from 36% to 40% in the same period. Deep poverty has declined significantly, and Vietnam is working to create jobs to meet the challenge of a labor force that is growing by more than one million people every year. The global recession has hurt Vietnam's export-oriented economy, with GDP in 2009-11 growing less than the 7% per annum average achieved during the last decade. In 2011, exports increased by more than 33%, year-on-year, and the trade deficit, while reduced from 2010, remained high, prompting the government to maintain administrative trade measures to limit the trade deficit. Vietnam's managed currency, the dong, continues to face downward pressure due to a persistent trade imbalance. Since 2008, the government devalued it in excess of 20% through a series of small devaluations. Foreign donors

pledged nearly \$8 billion in new development assistance for 2011. However, the government's strong growth-oriented economic policies have caused it to struggle to control one of the region's highest inflation rates, which reached as high as 23% in August 2011 and averaged 18% for the year. In February 2011, Vietnam shifted its focus away from economic growth to stabilizing its economy and tightened fiscal and monetary policies. In early 2012 Vietnam unveiled a broad "three pillar" economic reform program, proposing the restructuring of public investment, state-owned enterprises and the banking sector. Vietnam's economy continues to face challenges from low foreign exchange reserves, an undercapitalized banking sector, and high borrowing costs. The near-bankruptcy and subsequent default of the state-owned-enterprise led to a ratings downgrade of Vietnam's sovereign debt, exacerbating Vietnam's borrowing difficulties.

2.2 Main economic indicator (Refer to Table 1)

Table 1: Main economic indicator

ECONOMIC INDICATOR					
Year	2008	2009	2010	2011	1 st half of 2012
	GDP & Components				
GDP at 1994 prices (Billion)	490181	515909	551609	584098	NA
GDP at Current Market Price	91.0941	97.1803	106.4268	123.960	NA
GDP Growth (%)	6.38	5.23	6.7	5.8	4.38
GDP Growth (%) for agriculture, forestry & fishery sector	4.68	1.82	2.78	4.00	3.8
GDP Growth (%) for Manufacturing Sector	9.78	2.76	8.38	8.30	5.6
GDP Growth (%) for Services Sector	9.09	6.42	6.26	6.75	6.51
GDP Growth (%) for Mining Sector	-3.83	7.62	-3.69	-0.14	1.11
GDP Growth (%) for Construction Sector	-0.38	11.36	10.06	-0.97	-0.93
Demographic Indicators					
Population Number (thous. person)	86.256	86.967	89.571	90.547	NA
Population Growth Rate (%)	0.99	0.98	1.1	1.08	NA
Labor Force(number)	47.410	46.510	49.288	50.190	51.137
Labor Force Growth rate (%)	1.68	1.5	1.2	1.1	1.4

Unemployment Rate	4.7	6.5	2.9	2.27	2.29
Inflation Rate	24.4	7	11.8	18.6	9
Financial Indicator					
Interbank interest rate (%)	12.14	10.55	12	14.58	8.67
Short term loan interest rate (3M deposit, period-end) ¹	11.95	10.17	13.72	15.45	9.5
Long term loan interest rate ²	12.14	10.55	12	14.58	8.67
Average Change against USD\$	16.583	17.799	19.130	20.585	20.828

Throughout 2011, the SBV has made reference to lowering deposit rates and potentially reinstating a ceiling on lending rates in 2012, but the talk has somewhat reduced of late, perhaps because it now sees how sticky core inflation is and that it will take more time to bring it in line with targets. That being said, the SBV targets deposit rates at 10% and lending rates at 14% by the end of 2012. These targets are optimistic as lending rates are currently set by market forces rather than administrative measures and as liquidity issues towards the end of 2011 have forced some banks to again contravene the 14% rate cap in order to mobilize funds.

3. Overview of Construction Industry

3.1 Construction Demand in 2011 (Refer to Table 2)

Table 2: Value of Construction Demand

Value of Construction Demand (estimate)					
Type of Contract/ Expenditure	2008	2009	2010	2011	1 st half of 2012
State Project					
Building works					NA
Residential (units)	21.340	15.320	13.150	12.730	NA
Retail (m2)	135.000	250.000	245.000	320.000	NA
Office (m2)	245.000	325.00	493.000	26.400	NA
Hospitality & others (m2)					NA
Civil Engineering works (Bil. Dongs)	191149.9	222887.8	251725.5	305447.2	NA

Source: Annual, Quarterly report of CBRE and Savills

3.2 Construction Companies

3.2.1 Total number of construction companies by its classification (Refer to table 3)

Table 3.a: Number of contractors & Real estate activities and the breakdown by size of employees

Year	2008	2009	2010	2011	1 st half of 2012
No. of registered contractors	23403	31584	39777	48753	
Breakdown of registered contractors by size classification					
Largest (5000 pers and over)	3	3	2	3	
2nd largest (1000-4999 pers)	126	130	127	141	
3rd largest (500-999 pers)	193	199	197	255	
4th largest (300-499 pers)	280	304	333	423	
5th largest (200-299 pers)	360	395	517	584	
Others (50-199 pers, 10-49 pers, 5-9 pers, Less than 5 persons)	22441	30553	38601	47324	

3.2.2 The growing trend (Refer to table 3)

Table 3.b: Number of contractors & Real estate activities and the breakdown by size of capital

Year	2008	2009	2010	2011	1 st half of 2012
No. of registered contractors	23403	31584	39777	48753	
Breakdown of registered contractors by size classification					
Largest (500 bill. Dongs and over)	103	133	305	514	
2nd largest (from 200-under 500bil dongs)	224	255	681	875	
3rd largest (from 50-under 200bil dongs)	768	878	2576	3392	
4th largest (from 10-under 50bil dongs)	3163	5371	9195	14426	
5th largest (from 5-under 10bil dongs)	3677	5855	9268	10182	
Others (Under 5 bill.dongs)	15468	19092	17752	19346	

Present construction companies of Ministry of Construction still occupies large market share. We must mention corporations and companies under Ministry of Construction as follows:

1. Vietnam national cement corporation (VINACEMENT)
2. Song Da Construction Corporation (SONG DA)
3. Vietnam construction import-export joint stock corporation (VINACONEX)
4. Housing and urban development corporation (HUD)
5. Hanoi construction corporation (HANCORP)
6. Vietnam machinery installation corporation (LILAMA)
7. Construction pottery and glass corporation (VIGLACERA)
8. Construction machinery corporation (COMA)
9. Vietnam construction consultancy corporation (VNCC)
10. Vietnam infrastructure development and construction corporation (LICOGI)
11. Vietnam water supply, sewerage and environment construction investment corporation (VIWASEEN)
12. Song Hong construction corporation (SONG HONG. CORP)
13. Bach Dang Construction Corporation (BACH DANG)
14. Central Construction Corporation (COSEVCO)
15. Construction Corporation No. 1 (CCNo 1)
16. Building Materials Corporation No. 1 (FICO)
17. Vietnam Industrial and Urban Development – Investment Corporation (IDICO)
18. Commerce and construction investment joint stock corporation (CONSTREXIM)
19. Development Investment Construction Joint Stock Corporation (DIC. CORP)

3.3 Construction Manpower

Table 4: Employees of annual construction industry and Real estate activities

Year	Construction				Real Estate			
	2008	2009	2010	2011	2008	2009	2010	2011
Total	2468.4	2594.1	3108	3221.2	51.5	65.2	101.3	119
Index(previous year = 100)%	124.67	105.09	119.81	103.63	107.2	126.8	155.36	117.47
State sector	422	437.8	435.2	435.1	3.2	3.2	3.0	3.3
Index(previous year = 100)%	88.64	103.74	99.4	99.99	100	100	93.75	110
Non-state sector	2046.4	2156.3	2672.8	2786.1	48.3	62	98.3	115.7
Index(previous year = 100)%	89.87	105.37	123.95	104.23	123.6	128.36	158.54	117.7

Source: General Statistical Office 2011

According to table 4 , employees in construction industry and Real estate sector are increase year by year, but employed population of construction industry in state sector decreased almost period study except 2009 growth rate 3.74 percent while employees of non- state sector grows annually except 2011 because of difficult in economic situation. Main cause is that new construction companies were established yearly and market share of state construction enterprises were reduced.

Nowadays, there is lack of skill workers in construction sector such as bricklayer, Carpenter welder... although the government has not put forth encouragement policy to attract people to join these jobs.

3.4 Productivity

3.4.1 Value added per employee

Table 5: Value added per employee in construction industry

	Mill. Dong/ person			
	2008	2009	2010	2011
Average all sectors	32	34.7	40.4	50.3
Construction	38.8	42.5	44.8	50.5
Real estate, renting and business activity	699.8	619.5	469.3	485.4

Source: General Statistical Office 2012

In comparison to average productivity of all sectors, productivity of construction sector is always higher. However, it is so lower than real estate, renting and business activity. Therefore, income of workers in construction industry is lower than some economic sectors.

3.4.2 Physical measurement of construction productivity.

Table 6: Physical measurement of construction productivity

(Vietnam national cement corporation)

Year	2008	2009	2010	2011
Output(1000 tons)	40009	48810	55801	58994
Total workers (person)	30006	39048	49105	56635
Productivity	0.75	0.80	0.88	0.96

Sources: General Statistical Office 2012

Productivity of cement industry is presented in table. In general physical productivity of cement industry rises annually, so contribution's labor of cement sector grows yearly. Like this each person produced average 750 tons per year, but in 2012, one can made average 1.060 tons.

3.5 Construction Cost

3.4.1 Tender Price Index

General goods price as well as the housing and construction materials of prices were very fluctuant from 2008 to 2012. General consumer price index and housing construction materials CPI increased 11.89 percent and 8.46 respectively in 2008 and as for consumer price index continued to increase lesser 11.75 percent up to 2010 and highest figure 2011: 18.13 percent, but Housing, construction materials CPI increased two digits in 2009, 2010 and 2011 namely 12.58 percent, 15.74 and 17.29 percent.

In the Prel of 2012 consumer price index (CPI) decreased 0.26% in June. This is the first time since March / 2009, CPI is negative. With a 0.26% reduction in May, we calculated from the beginning of the year, the country's consumer price index rose 2.52%, its lowest level in many years. Compared to the same period in 2011, the current price level is also increased by only about 6.9%.

The serenity of the real estate market made in houses, building materials fell by 1.21%. Due to raise the prices of construction materials such as steel, cement, sand, wood made some construction companies to face seriously distressed in 2012.

Table 7a: CPI Performance, 2008-2012 % increase compared to previous year

(End-period compared to beginning of the year)

Fluctuations of CPI	2008	2009	2010	2011	Prel. 2012
Average consumer price index	11.89	6.52	11.75	18.13	20.65
Housing, construction materials	8.46	12.58	15.74	17.29	16.01

Source: General Statistical Office 2011

3.5.2 Major construction material average price

Table 7b: Major construction material average price

VND/Kg

Year	2008	2009	2010	2011	Prel. 2012
Rebar	10.350	12.075	15.364	19.600	21.200
Cement	850	930	950	1.980	2.300

3.5.3 Construction industry salaries & wages

Workers' salaries and wages in construction industry uninterruptedly increased duration of 2008 –2012. However, the income of construction labor is always lower than general average income of all sectors in state sector as given in the table . That is why construction

sector has lack of skill employees, even semi-skill employees. But, the government does not have stimulus policy of salaries and wages to attract people to join construction industry.

Table 8: Monthly average income per employee in state sector at current prices

Thous. dong

Year	2008	2009	2010	2011	Prel. 2012
General income	2702.2	3027.2	3259.5	3775.2	4325.4
Construction	2335	2746.2	3122.5	3669	4102.1

Source: General Statistical Office 2011

Table 9: Construction investment

Bill.dong

Year	2008	2009	2010	2011
Total investment at constant 1994 prices	11995	12491	15807	14296
Index (previous year = 100)%	104.43	104.13	126.54	90.44
State investment at constant 1994 prices	6262	7192	7424	6622
Index (previous year = 100)%	87.34	114.85	103.22	89.19
Non-state investment at constant 1994 prices	5733	5299	8383	7674
Index (previous year = 100)%	125.25	92.42	158.19	91.54

Source: General Statistical Office 2011

We can realize the table 9 that the investment in construction sector from 2008 to 2011 almost increased every year except 2011. In particular total investment in 2010 raised peak of figure of 126.54 percent of which state investment growth rate was 3.22 percent and non-state investment growth rate reached 58.19 percent. In 2011, the government has halted some projects, besides, construction industry has faced difficult situation such as increasing material prices therefore the state investment in construction sector decreased, and that was 89.19 percent in comparison with 2010.

3.6 Import & Export of Construction Work and Consultancy Services (please refer to table 10)

Generally, the annual export turnovers of main construction items increased compared to previous year, mainly due to the world market rising prices. Two exported items are pottery and glassware; wood and wood products.

Table 10. Import and Export of Construction Work and Consultancy Services

Mil. USD

Year	2008	2009	2010	2011	1 st half of 2012
Import					
Value of Construction work (Construction and real estate sector- FDI attraction) by foreign contractor^{1a}	2740	6620.85	8577.3	9042	1126
Value of consultancy services by foreign consultant^{1b}	7956	8187	9921	11859	5673
Export					
Value of construction work by local contractor in foreign country^{2a}	NA	NA	NA	193.2	NA
Value of consultancy services by local consultant in foreign country^{2b}	7006	5766	7460	8879	2358

In 2008, the real estate bubble exploded, escalating interest rates due to the economic stabilization policy with the price of cement, steel spike ... made the construction sector GDP decline, almost no increase compared to 2007, while in 2007, the construction sector grew to 12%. This can be considered as the lowest growth of the construction industry since the beginning of the East Asian crisis a decade ago.

In 2009, the construction industry has had a positive change, and return to growth - an increase of 11.36% compared to 2008, contributing to 6.7% of GDP. The reason is that construction materials prices have fallen and interest rates low, so this is a good time for the ongoing construction project including FDI.

In 2010, the construction sector grew 11.06% compared to 2009, contributing 139 162 billion, accounting for 7.03% of the national GDP.

The real estate industry continues to lead in attracting FDI with the total newly registered capital of 6.71 billion, down 9% compared to 2009 capital. No. 4 is the construction sector with 141 projects with a total capital of over \$ 1.7 billion, an increase of 4.4 times compared with 2009.

In 2011, Vietnam attracted nearly \$14.7 billion FDI registered, dropping by 21% over the previous year. FDI disbursed stood at \$11 billion, equivalent to the same figure in 2010. Although the disbursed FDI was not as high as targeted, its structure was positively improved. By sectors, manufacturing and construction made up a large proportion of about 76.4%, much higher than 54.1% in 2010. Proportion of real estate in FDI fell strongly from 34% in 2010 to just 5.8% in 2011.

Table 11: Some main goods for exportation and importation

Mil. USD

Year	2008	2009	2010	2011	1 st half of 2012
Import					
Pottery and glassware (Mill. USD)	344.3	267.2	317.1	358.6	NA
Wood and wooden products (Mill. USD)	2767.2	2597.6	3444.5	3955.3	NA
Export					
Machinery, apparatus and parts for construction	606.8	818.2	868.8	NA	NA
Machinery, apparatus and parts for cement construction	328.2	171.4	211.7	NA	NA
Iron, steel (Thous. tons)	8466	9704	9082	7386.7	NA
<i>Of which: Blank</i>	2411.6	2432	2009	877.7	NA
Aluminum (Mill. USD)	734.6	657	930	NA	NA
Glass (Mill. USD)	47.7	75.4	81.6	NA	NA
Clinkers (Thous. tons)	3694	3540	2259	953.5	NA

5 Major foreign constructors by value:

1. Japan
2. China, PR
3. Korea
4. Taiwan
5. Singapore and Thailand

5 Major foreign markets by value

1. China, PR
2. Korea
3. United States
4. Australia
5. Korea

4. Construction Outlook 2012

4.1 Economic outlook 2012

We believe economic growth will slightly slowdown, albeit post a reasonable growth of 5.5%. However, the right set of policies is in place to improve Vietnam's most

critical macroeconomic imbalance: inflation. On the back drop, exports will continue to grow at a faster pace than the region, thanks to an export mix that is low on elastic goods and increasing competitiveness of its manufacturing sector. Economic growth will also continue to be supported by robust domestic consumption, although at a slightly slower pace than before as salaries will probably not keep pace with inflation. The BOP should also slightly improve thanks to ongoing strength in FDI and remittances, putting the BOP balance in positive territory for a second year in a row, which somewhat will alleviate pressure on the currency. As inflation abates, we should see interest rates gradually come down and help companies reduce interest expenses. All in all, we pencil earnings to grow 18% in 2011 and would see a modest 20% rise of the VNI by year end.

In 2012, banking interest rate is lower rate in comparison with 2010, in addition to stimulus package of government, and prices of steel, iron, cement was down, so construction sector has recovered. Throughout 2011, the SBV has made reference to lowering deposit rates and potentially reinstating a ceiling on lending rates in 2012, but the talk has somewhat reduced of late, perhaps because it now sees how sticky core inflation is and that it will take more time to bring it in line with targets. That being said, the SBV targets deposit rates at 10% and lending rates at 14% by the end of 2012. These targets are optimistic as lending rates are currently set by market forces rather than administrative measures and as liquidity issues towards the end of 2011 have forced some banks to again contravene the 14% rate cap in order to mobilise funds.

4.2 Construction Outlook 2012

Real estate - 2011 was tough, 2012 will be tougher – Given the liquidity crunch and the fact that loans for the real estate sector will continue to be frowned upon, 2012 looks like another tough year for the real estate sector. Many developers suspended new projects and local banks ended up with mounting NPLs on their books. Eventually, as banks put pressure on developers to settle their debts, we could see prices drop further as property companies try to accelerate the sale of their assets. Prices have fallen somewhat this year, but we are still away from a clearing prices which would enable demand to return. With a large portion of its population at family formation age and considering the quality of accommodation throughout the country, we believe demand for real estate is real, but unaffordable for a large part of that population, especially as mortgages are hard to come by. However, until the SBV relaxes limits on lending to non production sectors and excess supply is absorbed, the real estate market is likely to remain depressed.

Hanoi's Master plan in 2020-2050 has improved. **Roads and bridges:** In the West: the high buildings between Mai Dich and Linh Dam. In the North: the high building between Nhat Tan an Noi Bai will be started in November, Nhat Tan Bridge. In The Southeast: Vinh Tuy Bridge 1 complete, Vinh Tuy Bridge 2 is going built. **Urban Rail:** Ha Dong- Cat Linh 30% number of piers are built. Nhon- Ha Noi station: the land is clearance. Proposed 24 parking lots until 2015 in the inner city and along the Third ring road approved. Aviation: The second ground station (75% of ODA) with a capacity of 10 million passengers / year. Completed 4 overpasses bridges in 2012, In the western expansion of Pham Van Dong road, In the eastern extension of Nguyen Van Linh road, Complete Ha Noi - Lao Cai highway at the end of 2012. Amount of number of

construction projects will promote demand of construction materials such as cement, steel and iron...

Some infrastructure milestone of Hochiminh city and other city: Thu thiem Tunnel, The ten year Nhieu Loc-Thi Nghe Canal Road widening. The Bus rapid transport (BRT) route in Hochiminh city opened from Ben Thanh market to Mien Tay Bus Station. **Metro lines:** The expected cost of Metro Line 1 has almost doubled with progress in compensation. Tramway Line No.1 is being restructured into a Bus Rapid Transit (BRT) system at reduced cost. **Road and Bridge:** Construction of the four main roads in the Thu Thiem new urban area will start in July, 2012, completion is expected 2015. Saigon Bridge No.2, with four lanes, has been start in April 2012 and will take 22 months to be completed.

The Da Nang's new airport terminal opens. Prime Minister Officially approved Long Thanh International Airport's Master plan. The Airport has an area of 5.000 hectares with investment capital of US \$6.7 billion for the first phase.

In 2012, Hanoi, Hochiminh city will focus on improving the bus system and services, implementing solutions to improve the backbone of the city's transportation.

By this tendency, the World Bank predicted that GDP growth rate of construction sector of Vietnam will be increase two digits in 2012.

We believe that although Vietnam is going through a deleveraging cycle that exposes serious issues in the banking sector amid a bursting real estate bubble, the back bone of the economy, that is agriculture, manufacturing and services has been and will remain strong in 2012

4.3 Issue and challenges

The construction sector has over the past 50 years proved itself an instrumental industry for national industrialization and modernization with rapid urbanization seen across the country. The construction was one of the booming sectors during Vietnam's remarkable and extended period of growth and poverty reduction. There are financially and technically capable of delivery of large-scale infrastructure and construction projects.

There are two major challenges of the construction industry

Firstly, Construction sector is one factor impact of inflation, growth and high inflation pushed so how to regulating is a difficult problem with the government. Vietnam is depending on credit capital for construction industry and real estate. The bank proportion of real estate, construction always high percentage – In 30th April, 2012: 2.6 trillion, 15% for construction and real estate. To reduce inflation, reduce credit to the sector could be affect the speed of construction industry.

Secondly, as the research of Mc.Kensey, the growth human force of construction industry and real estate is fastest (400% in 2010) but productivity is low (-8.8% in 2012).

In the context of rapid growth and at a time when the institutions of a modern market economy are still emerging in the construction sector, extensive opportunities of rent- seeking exists as competition is limited to a relatively modest number of large SOEs. The risk of

collusion often reflected in the similarity of bids.

In spite of the sizeable investments co-existing with the challenges to maintain integrity in construction, little is known about the specific extent and nature of corruption in the sector. According to the Investment Climate Survey undertaken by the World Bank, around 20% thought that gifts were expected or required when dealing with the Construction Department.

There is lack of skill manpower in construction sector. Some main materials prices are higher than neighbor countries.

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REGULATIONS OF ENVIRONMENTAL MANAGEMENT OF THE CONSTRUCTION PROJECTS

Dr. Pham Van Bo

Vice president

Academy of Managers for Construction and Cities

Ministry of Construction - Vietnam

List of abbreviations

QH: National Assembly

ND-CP: Decree – Government

BXD: Ministry of Construction

TCVN: Vietnamese Standards

TCXDVN: Vietnamese Construction Standards

1. Introduction

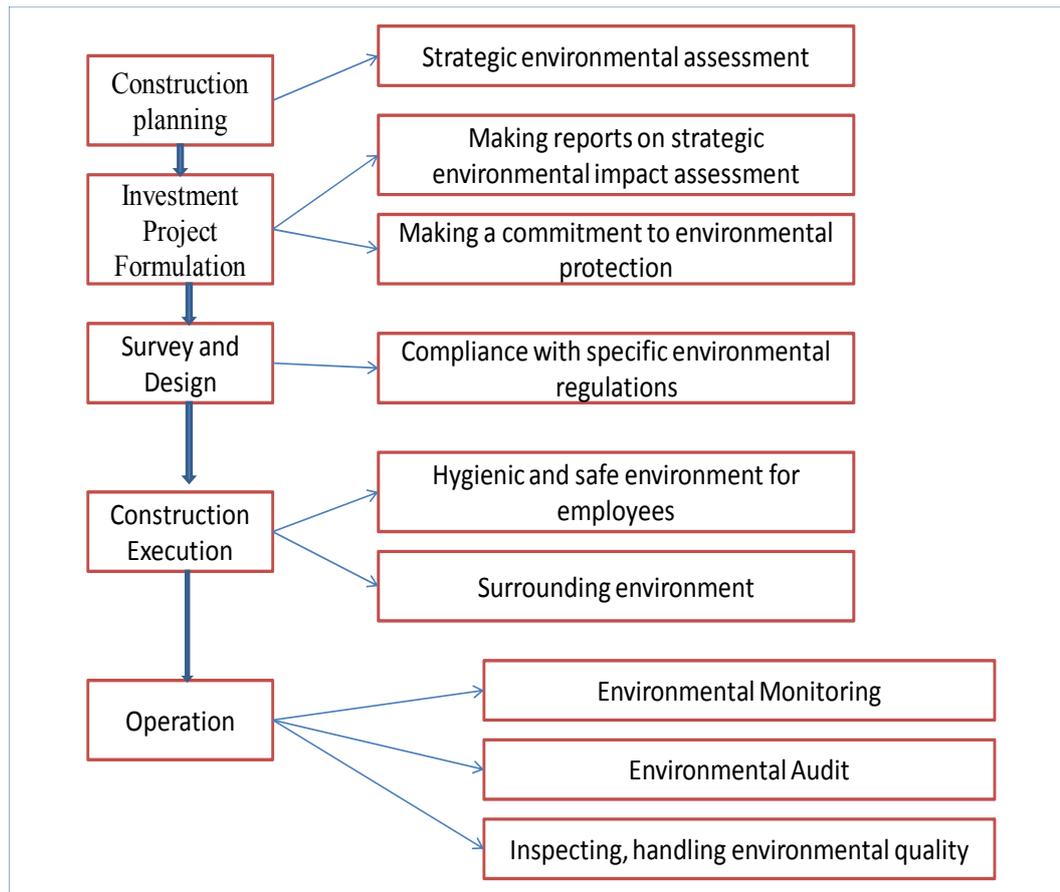
Vietnam is processing industrialization and urbanization. Construction industry is one of the key economic sectors, have a particularly important role for the socio-economic development, especially in the period of industrialization and modernization of the country. Construction projects have been implementing over country. Currently there are 267 Industrial Park, with an area of 72,000 ha; the Prime Minister has decided to set up 558 industrial parks in 2020, with an area of 200 thousand hectares, an increase 128 thousand hectare compared to 2010 (including 95 industrial zones located in 20 coastal economic zones and 30 border-gate economic zones) – (According to the Report of the Government 2011). Urbanization rate is about 31%, the country has 755 cities, including two especial cities: Hanoi and Ho Chi Minh City, more than 10 grade -1 and the rest are urban types 2,3,4,5. On the whole country there are over 2500 housing projects, new urban areas and other real estate projects, with an area of over 104,000 hectares of land have been developed on. Hanoi has 800 projects, Ho Chi Minh City has 1400 projects and Haiphong has 260 projects, in which there are about 300 low-income housing projects. The country has 90 cement manufacturing companies, with 60 blast furnace cement plants and 60 rotary kiln cement plants. The cement plants bring serious pollution in particular, blast furnace cement plant.

Construction is one of the economic sector which exploit and use a lot of natural resources, including non-renewable resources such as: land, minerals, sand, stone and gravel; renewable resources such as: plants

(logging of forests), water resources, enormous consumption of power and energy. According to the law of conservation of matter and conservation of energy, the industry that uses multiple materials, energy consumption, and discharge lots of wastes that pollute the environment and thus the responsibility of this industry plays greater role in national environmental protection.

Along with industrialization, urbanization, combined with the above-

2. Regulations of environment management in each implementation of the construction process



STEP 1: PLANNING – STRATEGIC ENVIRONMENTAL IMPACT ASSESSMENT

- In urban planning law: No 30/2009/QH12 dated 17 June 2009 – Item 6: Strategic environmental impact assessment “Predict changes in the environment during implementation of the project according to the approved urban planning. Set out the overall solution to prevent, mitigate and overcome influence and make planning of environmental supervision.”
- Law on Environmental Protection: 52/2005/QH11 November 29, 2005 in **Chapter III**: Strategic environmental assessment, environmental impact assessment and environmental protection commitment
- Decree 08/2005/ND-CP dated 24/01/2005 on construction planning. Regulations on environmental impact assessment in each type of construction planning.

- Decision 03/2008/BXD March 31, 2008: promulgate content regulations expressed drawings, notes for tasks and construction projects
Content regulations of diagram of strategic environmental impact assessment

STEP 2: SETTING UP PROJECT - ENVIRONMENTAL IMPACT ASSESSMENT; COMMITMENT TO ENVIRONMENTAL PROTECTION

- In the step 2, we can apply Law on Environmental Protection in Chapter III - Section 2: Environmental Impact Assessment and Section 3 of Chapter III -: Commitment to environmental protection
- Some specific *regulations of the solid waste management* are stipulated in Vietnamese standards and Vietnamese construction standards, decree of government, circulars of Ministry of Construction as below given:
 - + TCVN 6706-2000: Hazardous waste and hazardous waste classification.
 - + TCVN 6696-2000: burial landfill of solid waste sanitary. General requirements for environmental protection.
 - + 261-2001 TCXDVN: Solid Waste Landfill. Design standards.
 - + 320-2004 TCXDVN: Hazardous Waste Landfill. Design standards.
- Decree No. 59/2007/ND-CP dated 9/4/2007 of the Government on management of solid waste.
- Circular No 13/2007/TT-BXD 31/12/2007 by the Ministry of Construction guiding a some of articles of Decree some 59/2007/ND-CP dated 9/4/2007 of the Government on management of quality solid waste.
- In reference to *toxic level of enterprises and warehouses*, it is prescribed TCVN 4449-1987: Classification of factories, warehouses by toxic level and sanitary isolation distance.
- ***Regulations on water quality:***
 - + Decision No 09/2005/QĐ-BYT 11 January 3, 2005 of the Minister of Health regulations on focused water supply quality for the life of the urban and rural population.
 - + Decision No. 1329/2002/BYT/QĐ dated 18/4/2002 of the Ministry of Health - regulations on drinking water quality to allow drinking directly.

- ***Waste water quality regulations:***

- + Live life wastewater being discharged into coastal waters to comply with TCVN 5943-1995.
- + Live life wastewater - pollution limits to allow complied with TCVN 6772-2000.
- + Live life wastewater being discharged into the water irrigation subjected to TCVN 6773-2000.
- + Live life wastewater being discharged into fresh water to protect aquatic life in accordance with TCVN: 6774-2000
- + Wastewater treatment plant wastewater concentration TCVN 7222-2002.
- + Live life wastewater being discharged into surface waters complied with TCVN 5942-1995.
- + TCVN 7382-2004: Water quality. Hospital wastewater. Emissions standards.
- + TCVN 5945-2005 "Industrial wastewater. Emissions standards"

- ***Air quality regulations:***

- + Air quality around the discharge point: TCVN 5937-2005.
- + The maximum allowable concentration of toxic substances in the air around the discharge point: TCVN 5938-2005.
- + TCVN 5939-2005: Air quality - Standard of industrial emissions for dust and inorganic substances.
- + TCVN 5940-2005: Air Quality. Industrial emission standards for organic substances.
- + TCVN 6560-1999: Emissions of medical solid waste incinerator.

- ***Regulations on the maximum noise permission:***

- + TCVN 5949-1998: maximum noise level allowed in residential areas.
- + TCVN 5948-1995: maximum noise level of road transport.
- + TCVN 6436-1998: maximum noise level of road transport when stopping.
- + TCVN 5948-1999: maximum noise level of road vehicles emitted when accelerating.
- + TCVN 6962-2001: Maximum shock and vibration allows the

construction activity and industrial production for residential and public environments.

STEP 3: SURVEY - DESIGN

- Construction Law: No.16/2003/QH11

Article 51. The rights and obligations of construction survey contractors in which section 2.d stipulated: Environmental Protection in the survey area;

Article 53. Content of design and construction in which section 8 stipulated: Solution of environmental protection and environmental impact assessment in accordance with environmental laws.

STEP 4: CONSTRUCTION EXECUTION

- We must follow Construction Law in construction execution

+ **Article 72.** Conditions to start the construction works in which Section 6 provided: There are measures to ensure safety and environmental hygiene during the construction process.

+ **Article 75.** The rights and obligations of construction investors: Investors have the right to stop construction work and require adjustment of contractor's violated consequence to regulations on construction quality, safety and environmental hygiene; The investor is obliged: Testing the environmental safety and hygiene measures in construction works.

+ **Article 76.** The rights and obligations of the construction contractor Contractor is obliged to: construction according to the design, construction standards, assurance of quality, safety, progress and sanitation.

+ **Article 79.** Environmental hygiene in the construction works During construction works, construction works contractor shall:

1. Measures to ensure environmental hygiene in the construction process including environmental air, water, solid waste, noise and other requirements on environmental sanitation;
2. Compensation for damages caused by the breach of sanitation caused by them in the course of construction and transportation of construction materials;
3. Comply with other provisions of the law on environmental protection.

Besides, we must follow Law on Environmental Protection: 52/2005/QH11 November 29, 2005 in construction execution.

Article 40. Environmental protection in construction activities

1. Construction planning must comply with environmental protection standards and requirements.
2. Construction of works must satisfy the following environmental protection requirements:
 - a/ For works built in residential areas, measures must be taken to ensure that no dust is dispersed and noise, vibration and light will not exceed allowable limits;
 - b/ Construction materials must be transported by means which meet technical specifications, causing no leakage, spillage and environmental pollution;
 - c/ Waste water, solid wastes and other kinds of wastes must be collected and treated up to environmental standards.
3. People's Committees at all levels and public order management units may apply measures to handle owners of works and means of transport that violate environmental protection regulations.

STEP 5: OPERATION

After the acceptance and put into operational use, the finishing project must be performed environmental monitoring, environmental auditing, inspected, handled environmental quality. To perform this task that reviews the project in accordance with the commitment in the first proposal and approval, and also to detect whether there is a change about the environment after the project which is completed and operated. In addition to the competent authorities of the host state in commune (environmental resource cadre), to the district level (environmental resource division), provincial level (Department of Natural Resources and Environment), Government (Ministry of natural resources and environment) is responsible for the inspection and detection, besides the participation of communities, mass communication participate inspection and detection of environment. Professional bodies such as monitoring, auditing, inspection have to test environment to give the exact figures of impacts on the environment.

We can consult as follows

- Law on Environmental Protection: 52/2005/QH11 November 29, 2005
- Decree 80/2006/ND-CP Guide implementation of the Law on Environment.

- Decree 21/2008/ND-CP Guide to modify some of the ND80
- Decree 117/2009/ND-CP provisions on sanctioning of administrative violations in the field of environmental protection.

3. Some actions of environmental management of the construction sector

3.1 Environmental management for the production of building materials and components

Many facts have demonstrated emissions of handmade brick, vertical brick kilns, hop-man type damage to crops and the health of surrounding communities. **Therefore** the Ministry of Construction has a policy and plan to remove the manual brick kilns, as well as old-style vertical kiln in 2012.

To overcome the severe environmental pollution of blast furnace cement plants, the Ministry of Construction put forward policy immediately that the vertical kiln must be renovated, improved production technology, increased investment in environmental pollution treatment to overcome the serious pollution now and plan to 2020 the entire blast furnace cement plant will cease operations and move production of cement rotary kiln technology with greater capacity. This is a very right policy that should be resolutely implemented radically. In addition, it should be stressed that the building materials industry is one of the major sectors caused the degradation and destruction of natural landscapes.

3.2 Management of environmental protection for the design of urban and rural planning, economic planning zones and industrial parks

Planning of urban construction has to meet the target for social and economic development, the requirements of environmental protection to ensure sustainable development, especially in the planning system of urban infrastructure: water supply systems, collection systems, and wastewater and solid waste treatment; urban transport system; funeral houses and urban graveyards and urban green system.

To use environmental ecological approach, integration of environmental issues into the process of urban construction planning, strategic environmental assessment (SEA) for urban planning, consultation of community involved in the planning process ...

3.3 Proper consideration of environmental impacts and the application of solutions to protect the environment, save efficient energy use in construction

Investment to build any construction (civil engineering, public works, public service or manufacturing process) are emerging negative impacts on the environment. In the design phase, the designer must consider the full factors that impact negatively on the environment and the application of effective measures to reduce environmental pollution, in specially, waste water, solid waste, air pollution and noise. In today's climate change conditions, the risk of scarcity and depletion of freshwater resources are more and more serious, thus need to adopt measures to reuse waste, use water circulation and utilize rainwater in construction is significant.

To execute four green building criteria these are: (1) saving, rational use of energy, (2) Save and reuse of building materials, (3) Save and re-use of water resources, (4) Conservation of ecology and soil environment.

3.4 To promote the implementation of the solution of urban solid, industrial waste management

Under the provisions of the Environmental Protection Law and other legal documents under the law, the Ministry of Construction is assigned in charge of the management of municipal solid industrial and rural waste.

To build plants of the handling of hazardous industrial waste with proper technique such as Nam Son – Hanoi, Song Cong – Thai Nguyen, Phu Ly – Hanam...

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