Knowledge Sharing Program

2013 Knowledge Sharing Program with Vietnam I:

Support for the Implementation of 2011-2020 Ten-year Socio-Economic Development Strategy (SEDS) of Vietnam

MINISTRY OF STRATEGY AND FINANCE

KDI Korea Development Institute

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Preface

In the 21st century, knowledge is one of the key determinants of a country's level of socio-economic development. Based on this recognition, Korea's Knowledge Sharing Program (KSP) was launched in 2004 by the Ministry of Strategy and Finance (MOSF) and the Korea Development Institute (KDI).

KSP aims to share Korea's experience and knowledge with the partner countries to achieve mutual prosperity and cooperative partnership. Former high-ranking government officials are directly involved in the policy consultation to share their intimate knowledge of development challenges, and to complement the analytical work of policy experts and specialists who have extensive experience in their fields. The government officials and practitioners effectively pair up with their counterparts in the development partner countries to work jointly on pressing policy challenges and share development knowledge in the process. The program includes policy research, consultation and capacity-building activities, all in all to provide comprehensive and tailor-made assistance to the development partner countries in building a stable foundation and fostering capabilities to pursue self-sustainable growth.

In 2013, policy consultation and capacity building workshop were carried out with 36 partner countries covering over 140 research agendas. As a new partner country, Costa Rica, Belize, China, Russia, Hungary, Egypt were selected in consideration of the country's policy demand, growth potential, and strategic economic partnership.

The 2013 Knowledge Sharing Program with Vietnam was carried out with the aim of exchanging socio-economic development experience of two countries for improving Vietnam's policy making capacity and achieving her socio-economic development. Under the Cooperation Arrangement, the research and seminars were conducted in order to support the establishment of "Support for the Implementation of 2011-2020 Ten-year Socio-Economic Development Strategy (SEDS) of Vietnam".

I would like to take this opportunity to express my sincere gratitude to Senior Advisor Dr. Nyum Jin, Former Deputy Minister and Minister of Strategy and Finance and Project Manager Dr. Sang-Woo Nam, as well as all the project consultants, including Dr. Yong-Taek Kim, Dr. Tae Yong Jung, Dr. Man Cho, Dr. Yoo-Soon Hwang, and Dr. Jaekyong Chun for their immense efforts in successfully completing the 2013 KSP with Vietnam. I am also grateful to Executive Director Dr. Hongtack Chun, Program Director Mr. Taihee Lee, and Program Officer Ms. Taeyeon Lee, and all members of the Center for International

Development, KDI for their hard work and dedication to this program. Lastly, I extend my warmest thanks to the Vietnamese counterparts, the Development Strategy Institute, Ministry of Planning and Investment, Ministry of Construction and State Agency for Technology Innovation for showing active cooperation and great support.

In your hands is the publication of the results of the 2013 KSP with Vietnam. I believe that KSP will serve as a valuable opportunity to further elevate mutual economic cooperation of Vietnam and Korea to a new level. I sincerely hope the final research results on the selected areas could be fully utilized to support Vietnam in achieving economic development goal in the near future.

Joon-Kyung Kim
President
Korea Development Institute

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The 2013 KSP with Vietnam

Taeyeon Lee (Program Officer, Korea Development Institute)

Vietnam has achieved remarkable socio-economic development by adopting 'Doi Moi' which refers to an economic reform policy initiated in 1986. The country's GDP in 1985 was only 239$, but it became a lower middle income country with a GDP of 1,910$ by 2013. The growth rate of Vietnam jumped to 7~8 percent in the late 1990s and has recently dropped to around 5 percent due to the global financial crisis and other internal and external matters. In this context of rapid economic development, major firms and small and middle enterprises of Korea started entering the Vietnamese market strengthening economic cooperation between two countries. Moreover, the former president of Korea Myungbak-Lee visited Vietnam in November 2009 calling for higher levels of economic and political cooperation between the two countries and spoke of the 'strategic cooperative partnership'.

Vietnam has been a partner of the KSP for the longest time among all DPCs (Development Partner Country) and much was achieved throughout the 9 years of partnership including 3 years of SDPC (Strategic Development Partnership Country) project. The KSP with Vietnam has borne fruitful outcomes; Establishment of Vietnam Development Bank ('06), Contribution to the process of establishing Vietnam's SEDS (Socio-Economic Development Strategy) for 2011~20. Such outcomes and satisfaction by the Vietnamese government regarding the KSP serves as the engine of continued interest and active participation in KSP. Through 3 years SDPC, the KSP with Vietnam has resulted in the production of blue prints for major issues, and has laid ground for further cooperation on current challenges Vietnam faces.

The KSP research team headed by Dr. Sangwoo Nam, Project Manager for the KSP with Vietnam, visited Vietnam from March 11 to 16, 2013 to conduct the Pre-dialogue to discuss the policy priority of the Vietnamese government and finalize decision regarding research topics for the 2013 KSP with Vietnam. The team visited Development Strategy Institute (DSI), Ministry of Planning and Investment (MPI), Ministry of Transportation (MOT), Ministry of Finance (MOF), Ministry of Construction (MOC), Ministry of Science and Technology (MOST), and Ministry of Natural Resources and Environment (MNRE). Considering policy priorities of Vietnam and possible outcomes, both sides reached an agreement on the research topics for the 2013.

With these topics in mind, the Korean delegation headed by Dr. Sangwoo Nam, Project Manager for the KSP with Vietnam conducted the High-level Demand Survey and Pilot Study from June 9th to 14th, 2013. The delegation visited each ministry that was in charge of the included research topic and discussed problems faced, background and challenges regarding the issue. Also the delegation visited the Korean Embassy in Vietnam, KOTRA, and other related ministries/institutes to gather data and information on the respective topics. Each Korean researcher completed interviews with two or three local consultant candidates and finalized their own partner for research.

Meanwhile, to support effective project management and harmonized coordination, KDI and DSI signed a MOU on August 26th 2013. DSI is a government think tank under the MPI, and has conducted local coordination for the KSP with Vietnam effectively since 2004.

As the next step, 9 Vietnamese delegates headed by Dr. Nguyen Van Trung, the Vice Minister of MPI visited Seoul and Gyunggi from September 1st to 6th, 2013, for the Policy Seminar. At the Policy Seminar held on September, 3rd, 2013, at Shilla hotel, Vietnamese local policy officers presented on problems faced and challenges on each topic. Then, Korean experts shared Korea's past experience on the respective topic and both parts expanded understanding on it. After the Policy Seminar, the Vietnamese delegation visited several organizations and interviewed other experts related to topic.

During the additional pilot study, Korean experts visited Hanoi, Hochiminh, and Ca mau in order to carry out in-depth study. In this stage, experts investigated specific local data, legal systems, and derived problems. Korean experts tried to provide policy consultation based on rigorous study on local circumstances.

From 10 November to 15, 2013, Twelve Vietnamese delegates headed by Dr. Bui Tat Thang, the President of DSI, visited Seoul for the Interim Reporting and Policy Practitioners' Workshop. Korean researchers presented their interim research findings

and tentative policy recommendation on each topic. After each presentation, Vietnamese local consultants discussed their own opinion on the Vietnamese situation. Also, Dr. Bui Tat Thang and Dr. Sangwoo Nam added their comments based on insight gained through their wide ranging policy experience. Through active discussion, both sides on each topic could reach optimal results for policy consultation. After the interim reporting workshop, the Vietnamese delegation also visited KREI (Korea Rural Economic Institute), RDA (Rural Development Administration), KEMCO (Korea Energy Management Corporation), KNOC (Korea National Oil Corporation), KOGAS (Korea Gas Corporation), KAERI (Korea Atomic Energy Research Institute), Land and Housing Corporation (LH), KHGC (Korea Housing Guarantee Corporation), HF (Korea Housing-Finance Corporation), MOE (Ministry of Environment), MOLEG (Ministry of Government Legislation).

As the final stage of the 2013 KSP with Vietnam, the Korean research team headed by Dr. Sangwoo Nam visited Hanoi to deliver the final research result and policy recommendations. The Senior Policy Dialogue was conducted during March 2~8, 2013, and the Korean delegation visited the Ministry of Planning and Investment (MPI), Ministry of Construction (MOC), Ministry of Natural Resources and Environment (MNRE) to present the final research findings to each high-level officer Dr. Dang Huy Dong, Vice Minister of Planning and Investment, Dr. Nguyen Tran Nam, Vice Minister of Construction, Dr. Bui Cach Tuyen, Vice Minister of Natural Resources and Environment. The Final Reporting Workshop was held on March 6, 2014, at the Ballroom of the Pullman Hanoi Hotel in Hanoi, with approximately 160 government officials, researchers, businessmen, media and other participants. Korean researchers presented the result of a year of study and designated discussants provided feedback. Also, the research team received active comments from the floor. After receiving local comments, the final reports were revised and completed for this publication.

Executive Summary

Sang-Woo Nam (KDI School of Public Policy and Management)

The Vietnam was a Strategic Development Partner Country (SDPC) of the KSP from 2009 to 2011. This three-year KSP was mainly geared to supporting the formulation and implementation of the Vietnam's Socio-Economic Development Strategy (SEDS) for the period of 2011-20. Even after this period, the KSP with Vietnam has been continued without interruption. It should reflect the great potential for shared growth through mutual cooperation between Korea and Vietnam, which led to the elevation of their diplomatic relations to those of Strategic Cooperation Partnership in 2010.

The focus of the KSP with Vietnam as a SDPC during 2009-11 was on the realization of the vision of Vietnam's 2011-20 SEDS-an Industrialized Mid-income Country by 2020. And the main themes of the KSP included industrial restructuring and growth potential of the Vietnamese economy, enhancing the efficiency of the public sector, industrial technology development, and urban development and infrastructure provision. The five KSP topics for 2012 did not deviate much from this focus either. They included improving the efficiency of public investment, financing mechanism for implementing new urban projects, guidelines for KIST-modeled S&T institute in Vietnam, forecasting labor demand and setting up employment information services, and the double remedy in anti-dumping and countervailing cases for non-market economy.

The main concern of the KSP with Vietnam for 2013 shifted largely to broad 'sustainable development,' which is understandable given that Vietnam should look

beyond 2020 for sustained growth and pay due policy attention to urgent social issues as well. Selection of the KSP topics was mainly based on the proposals which were collected by the local implementation agency (Development Strategy Institute; DSI) from Vietnam's Ministry of Planning and Investment as well as other ministries and agencies. Final selection was made after field visits of Korean experts and interviews with relevant local experts at different ministries and institutes as well as the relevance of the Korean experience. They include (1) Enhancing the Participation of Vietnam's Agriculture in Global Value Chains (2) Long-term Sustainable Energy Policy for Vietnam (3) Social Housing Development in Vietnam (4) Support for the Revision of the Law on Environmental Protection of Vietnam.

(1) Enhancing the Participation of Vietnam's Agriculture in Global Value Chains

From 2005 to 2012, Vietnam's agriculture, forestry and fisheries grew at an annual rate of 3.6 per cent which was largely attributable to favorable weather conditions as well as boom in international agricultural prices. Vietnam's exports of agricultural, forestry and fisheries products expanded at a rapid pace since 2005 to reach USD24.3 in 2012. Vietnam recorded the largest global market share for both rice and pepper, the second largest for coffee and cashews, and the fourth largest for rubber. In spite of these performances and participation in global value chains largely on the basis of favorable growing conditions, Vietnamese agricultural and fisheries products generally have a substantial room for further increasing its value-added. Their major weaknesses include low productivity, lack of quality control and variety improvement, inadequate processing and after-harvest technologies, and complicated distribution channels, among other things. It is imperative for Vietnamese agriculture and fisheries to meet these challenges in order to expand their participation in global value chains.

On the other hand, Korea's agriculture has generally been viewed as lacking international competitiveness due to unfavorable climate and geological conditions. Moreover, the share of Korea's agricultural sector in total GDP declined sharply to a two per cent level in the aftermath of the opening of the agricultural market since the early 1990s. Nevertheless, some of Korea's agricultural products such as paprika, pork and chicken have gained competitiveness in the international markets. In the case of pork, the success factors include vertical integration initiated by farmers' cooperatives with their leaders playing an active role, quality differentiation and brand marketing, and economies of scale through M&As.

Policy recommendations for enhancing the participation of global value chains for major Vietnamese agricultural and fisheries export products such as coffee, rubber and shrimp may be summarized as follows. In the pre-cultivation stage, developing and selecting good and high-yield varieties at the farm level and controlling

diseases are very important tasks. Also critical is ensuring the use of best available technologies through training and consulting as well as access to low-cost credit. In the cultivation stage of global value chains, a high priority should be given to nurturing nationwide farmers associations or cooperatives with a view to enhancing their bargaining power for increased value-added for farmers. Promotion of contract farming between farmers and agribusiness companies or farmers' cooperatives should also be encouraged for the stability of farmers' income. After cultivation, key tasks include upgrading processing facilities and logistic infrastructure, ensuring good quality control, and strong efforts for market development and marketing promotion nurturing own brands wherever possible.

(2) Long-term Sustainable Energy Policy for Vietnam

Vietnam has met its rapidly increasing demand for energy through acceleration of energy development activities together with inducement of foreign direct investment in the fields of oil and gas. However, in the process of sustained growth, energy demand is falling short of its domestic energy supply. Especially, since the turn of the millennium, consumption of oil and coal has increased at around 10 per cent per year, so that Vietnam has become a net importer of oil and will do so shorty for coal as well. Vietnam is now attempting to diversify its energy sources by accelerating the development of domestically available resources and expanding regional cooperation in energy. High priority is put on reducing oil dependency and ensuring adequate energy supply in order to support socio-economic development in a stable manner. Though Vietnam already has a medium and long-term energy master plan prepared on the assumption of sustained economic growth, it seems to be lacking in policy consistency and effective implementation.

With little endowment of energy resources, Korea has put much effort into systematic energy supply and demand management plans, measures to reduce dependency on oil through construction of nuclear power plants, energy conservation policies, and inducement of competition and advancements in the energy industry. Continued development of energy-related technologies as well as introduction of new energy systems such as smart grid is also supporting the progress of the Korean economy. Korea's policy experiences concerned with energy security should serve as valuable references for Vietnam's sustainable energy policies.

Vietnam needs an Energy Master Plan for the period up to 2030, which is to be prepared on the basic premises of diversifying energy supply, increasing the efficiency of energy uses, and ensuring sustainable environment. Since these objectives cannot be realized without reducing the dependency on fossil fuels, it may be necessary to step up the development of nuclear power together with other renewable energy through stronger incentives including the inducement of foreign direct investment

in this field. Nuclear power would help energy security, but safety is a serious concern. Thus, securing the understanding and consensus among the stakeholders is very essential. Another critical task is to raise the competitiveness of the energy sector. To this end, it would be necessary to let electricity and other energy prices be more market-determined and to consider restructuring of the energy related industries towards an increased role for the private sector. In addition, transition to a low-carbon society would require better policies and systems for energy demand management and inducing energy saving and reduction of carbon dioxide emissions. Finally, it is rather critical for Vietnam to strengthen its technical and human capacity in developing and implementing sustainable energy policies.

(3) Social Housing Development in Vietnam

Since the enactment of the Law on Housing of 2005, the Vietnamese government has been making efforts to increase the supply of social housing to low and middle income households, soldiers and others needing state support. Even though Vietnam's urbanization rate is by no means high, housing for low and middle income families are in short supply due to rapid inflow of population into large cities like Hanoi and Ho Chi Minh City. The Vietnamese government, however, faces various constraints in undertaking large-scale housing development projects such as difficulty in land expropriation, limited credit access for both housing suppliers and demanders, and lack of market information.

In Korea, housing policy has always been one of the key socio-economic policies, as housing shortage and soaring housing prices have emerged as a serious issue in the process of rapid economic growth and urban concentration since the 1960s. Still, the long sustained government-initiated housing supply is gradually giving way to private and market initiated supply. From the 1970s to the 1990s, emphasis of Korea's housing policy was on the real sector such as land and housing development. Since the foreign exchange crisis in the late 1990s, however, policy emphasis has shifted to financial support for housing purchase and stabilization of the real estate market. Housing policy for low and middle income households used to be mainly concerned with housing sales, but has shifted towards enhancing housing welfare through various programs of public rental housing since the early 1990s.

In light of the Korean and international experiences, there seem to be several areas where Vietnam's social housing policy needs institutional improvements. Given that lack of housing financing is an urgent matter, a new source of financing may be secured similar to Korea's National Housing Fund and a pre-sale system may be activated. Vietnam may also consider establishing a specialized nationwide institute for the development of social housing like Korea's Land and Housing Corporation. The social housing programs may be divided into those of sales and rent together

with the development of related institutions. Also critical is to keep site costs under control for social housing construction, which requires measures to prevent compensation-related speculation from the moment of project zone designation as well as legal and institutional means for restituting unfair development gains accrued to landowners or property developers. Another challenge is to ensure optimum compensation and minimize related civil complaints. To this end, it is important to pay careful attention to feedback from the key stakeholders and relevant expert groups, refine the standard compensation criteria, consider introduction of a mechanism for compulsory acquisition, and establish a comprehensive real estate information system.

(4) Support for the Revision of the Law on Environmental Protection of Vietnam

The Vietnamese government has submitted a new draft Law on Environmental Protection (LEP) to the National Assembly, which represents a substantial revision and supplement to the current Law of 2005. The current Law is considered to lack internal consistency, has overlaps and discrepancies with other related legal documents, and is unclear about environmental management responsibilities among government agencies. The new draft Law seems to closely integrate the whole environmental legal system and clearly declare environmental ethics as well as the ideal and principles of the law. However, it is weak in its command and control function through such means as permission, authorization, licensing and notification. Its effectiveness is questionable as penalties and punishment for environmental violations are delegated to other laws, where necessary details are usually missing. This feature is also apparent in the provisions of Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA), where specific rules are lacking as to intended targets as well as assessment criteria, methods and procedures.

The purpose of EIA is to make proposed policies, plans, programs, or projects environmentally friendly and to enable sustainable development through an assessment and investigation of their environmental impacts prior to their implementation (Article 1, Korea's EIA Act). On the basis of Korean experience and principles of the relevant U.S. law which played a pioneering role in this effort, a few recommendations may be offered to Vietnam. At the stage of drafting SEA report, it is advised that the concerned administrative authorities prepare and issue such a document as Findings of No Significant Impact (FONSI) rather than simply seeking the opinions of relevant parties in order to enhance the effectiveness of the Assessment. Skipping a review process at the stage of drafting SEA report but requiring it at the consultation stage after finishing the SEA report, as is the case in Korea, should be corrected.

In order to make the LEP more effective, environment penal code should better

be included in the Law. However, it seems unrealistic to expect such a change any time soon given the unique Vietnamese legal culture. In the meantime, though, there are some suggestions for improvement. It is desired for the scope of imprisonment punishment and the severity of punishment to be substantially reduced so that the Law could be more effectively implemented. Since a fine is also a criminal penalty, it should better be changed to a civil penalty. At the same time, the scope of penalty fees needs to be broadened and the fees should be adjusted upward and multi-bracketed with a lower limit, which will make the fees more effective in curbing environmental violations. Finally, disclosure of environmental violators may also be considered as well as compulsory expense of performance which can be imposed repeatedly as long as a violation remains uncorrected.

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Chapter 1

The Study for Promoting Participation of Vietnam's Agriculture in the Global Value Chain

The Study for Promoting Participation of Vietnam's Agriculture in the Global Value Chain

Yong-Taek Kim (Korea Rural Economic Institute)

Summary

Vietnam's economy has achieved tremendous economic growth since the Doi-Moi reform policy. Alike other developing countries, the agricultural sector has been dismissed as an important sector of the Vietnam's economy, but still serves as an important factor due to the contribution of economic growth, higher employment rates, poverty reductions, food securities, and increasing exports. It is interesting to find Vietnam as the leading agricultural exporter, being in the stage of integrating with the global economy; Vietnam's agriculture has the international competitiveness in exporting agricultural commodities. However, low productivity levels, poor quality, raw material exports, inadequate technology processes, and unbranded commodities has led to lower values of agricultural products and decreased incomes for farmers. Vietnam's agriculture can be, therefore, described as a resource-based, underequipped (low-level technology), and poorly valued agriculture, but with a potential of attaining competitiveness in exporting raw agricultural commodities.

The vision of Vietnam's agriculture should be aimed for advanced technology, improved and better quality, and highly valued agriculture, which is also known as the '3H agriculture'. In order to achieve this '3H agriculture', the government involvement and drastic agricultural investment are required. If the government focuses heavily on technological development and highly valued agriculture, the participation of Vietnam's agriculture in the global value chain will result in successful performance.

In order to find a business model to facilitate the participation of Vietnam's agriculture in global value chain (GVC), the representing commodities such as coffee, rubber, and shrimp are selected. The analysis of current challenges appearing on GVC's coffee, rubber, shrimp and Korean experiences will help draw effective strategies and the business model to facilitate the participation of Vietnam's agriculture in GVC.

The agricultural R&D system, the disease control system, and the farm credit system should be developed for producing upward industries. Active farmer associations, contract farming, and effective training programs should be introduced for improvement in the productivity level of Vietnam's agriculture. The PPP model and the integrated quality control system should be developed to meet the demands for domestic and foreign consumers in downward industries. The successful factors drawn from the case study of the Korean pork industry are the vertical integration initiated by farmer cooperatives, an active role of the leading group of farmer cooperatives, active countermeasures to rapid changing global markets, quality differentiation, and the economy of scale through M&A. Upgrading strategies to facilitate the participation of Vietnam's agriculture in the GVC are the formation of producer associations, the extension of contract farming, introduction of effective agricultural R&D system, agricultural extension system, and farm credit system and so forth.

The pilot project for the PPP model should include some important components such as the multiple agro-industry complex zones, systematic supports of Korean and Vietnamese governments, farmer group promotions for international competitiveness, government-corporate contracts, and implementation and phased planning for the pilot project.

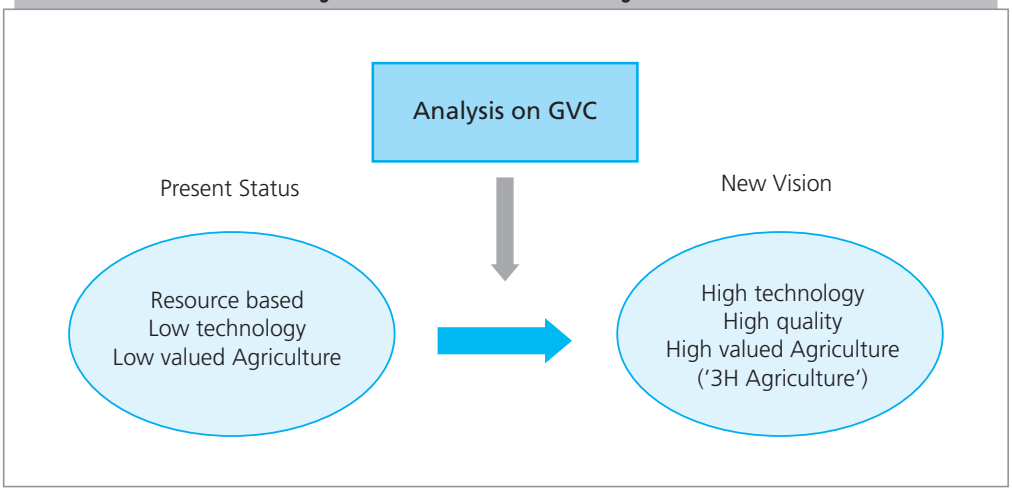
1. Introduction

Although Vietnam's economy has achieved tremendous economic growth since the Doi-Moi reform policy, the country has faced some challenges in stabilizing its macroeconomic situation such as high inflation and increasing deficits in trade balance and public finance. The trade balance and general performance of Vietnam's economy depend heavily on the export. The World Bank (2013) pointed out, however, that Vietnam's competitiveness in exporting goods has stemmed from "low-level technology and resource-based exports". Vietnam cannot increase the value added of exports without switching to higher value products through technology enhancement. The export model with low-level technology and resource-based exports will diminish as wage rates inevitably arise.

Agricultural exports in terms of value has accounted for approximately 20% over a decade without active supports from the Vietnamese government. Agricultural exports are also based on low quality and raw material-based exports. In consideration as a massive agricultural exporter in Vietnam's total export industry, Vietnam's economy will be strongly affected by the agricultural development. Therefore, the vision of Vietnam's agriculture should be achieving high technology, high quality, and high value agriculture, also known as the '3H agriculture'.

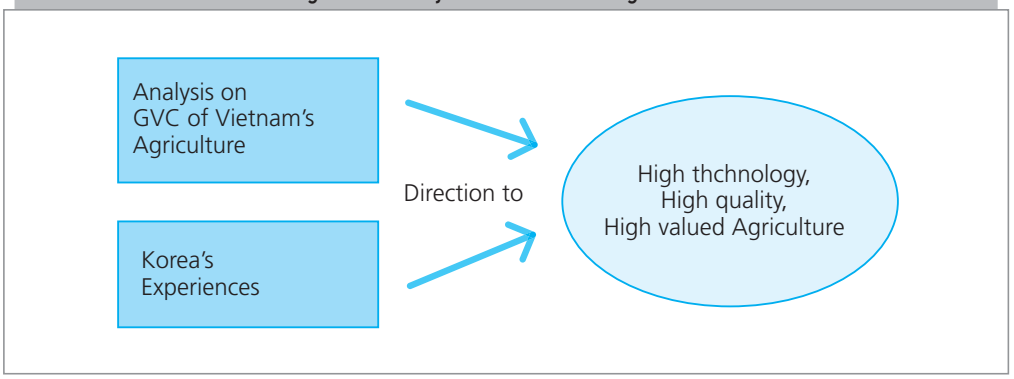
The GVC analysis on the Vietnam's agriculture will suggest effective policy measures to achieve high valued agriculture in Vietnam. In order to achieve the high valued agriculture, government's active involvement and drastic agricultural investments are required.

[Figure 1-1] Vision of Vietnam's Agriculture



It is a known fact that agricultural industries with international competitiveness in Korea are commercialized agricultures (livestock, vegetable, fruits), farm input industries, agricultural processing and marketing industries. During the last three decades, the fast-paced agricultural market liberalization has caused Korean agriculture to become highly technological and of high quality. Thus, an in-depth case study of the Korean agriculture will help decipher meaningful lessons as Vietnam's agriculture participates in the GVC.

[Figure 1-2] Ways to Direct to '3H Agriculture'



The purpose of this study follows:

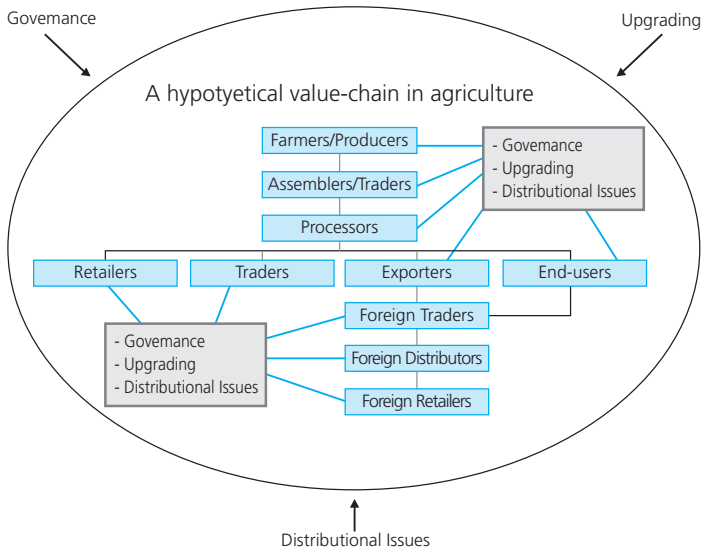
(1) To briefly review theoretical issues on the participation of agriculture in GVC with regards to the concept, engagement patterns, and factors affecting Vietnam's participation in GVC,
(2) To investigate current situations, bottlenecks, upgrading strategies for the participation of Vietnam's agriculture (coffee, rubber, and shrimp) in GVC, and government policies to promote the participation of Vietnam's agriculture in GVC,
(3) To review experiences of Korean agriculture and participation in GVC over the past decades, and various government plans and programs for promoting the participation of Korean agriculture in GVC, and
(4) To draw policy recommendations and policy alternatives for improving Vietnam's position and efficiency in its participation in GVC in the future.

2. The Concept and Applications of GVC

The concept of GVC is the extension of value chain's concept to the global perspective. Value chain (VC) refers to the full range of activities which are the entire range of activities from the initial input supply stage to the final market. Thus, GVC refers to the entire range of activities from the initial input supply stage to the final market in the global market.

The following [Figure 1-3] illustrates the concept of value chain analysis.

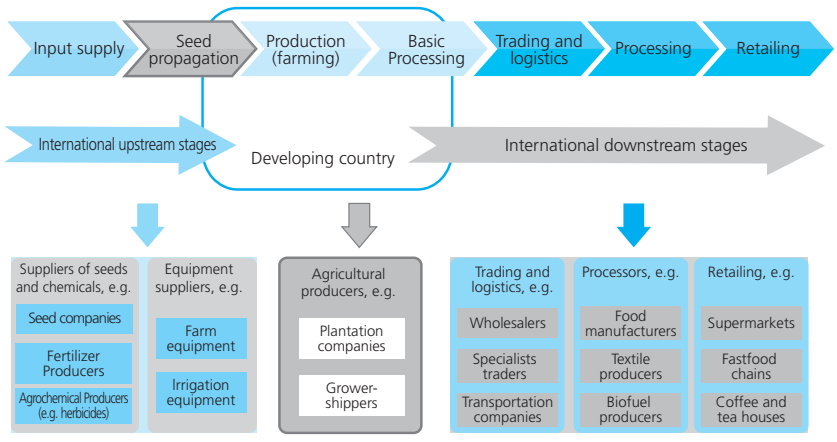
[Figure 1-3] A Schematic of Value Chain Analysis



Source : Rich, 2004

UNCTAD (2009) already addressed the concept of a typical agribusiness global value chain in a developing economy like [Figure 1-4].

[Figure 1-4] A Typical Agribusiness GVC in A Developing Economy



Source: UNCTAD, 2009

In general, value chain analysis (VCA) is used to investigate various factors affecting the long-term profitability and to develop successful strategic plans of firms or industries.

Therefore, the VCA helps answer the following questions:

(1) How the products that the firm produces reach the final consumer,
(2) The economic relationship between the actors in value chain,
(3) How the structure of the economic relationship is likely to change over time,
(4) The key threats of the entire value chain,
(5) The key determinants of the firm's share of the profits created by the value chain

In this study UNIDO's approach (2009) is applied for analyzing the GVC. The steps of the GVC in the UNIDO's approach are as follows:

(1) Selecting and prioritizing a sub-sector and a product in the value chain,
(2) Analyzing the selected value chain,
(3) Mapping, market analysis, technical capacities and performance,
(4) Formulating an upgrading strategy for the specific value chain,
(5) Implementing the upgraded strategy of the GVC
(6) Monitoring and evaluation

3. Current Situations and Export Competitiveness of Vietnam's Agriculture

Vietnam's agriculture has still played an important role in contributing to the economic growth and employment in reducing absolute poverty in rural areas, and increasing export growth (balance payment). Based on the general rules of economic development in the world, the share of economy's agriculture has declined as economy grew. Since Vietnam's economy has achieved tremendous growth of above 7% over the past one decade, the share of agricultural GDP has to decline. The share of agricultural GDP has maintained above 20% since 2000, although the annual growth rate of GDP was above 6% during 2006-11. Alike other developing countries, Vietnam has taken a similar approach in the economic development, which the agricultural sector has been dismissed as an important sector for consideration. It is an interesting fact that the share of agricultural GDP has maintained above 20% of total GDP and has increased agricultural exports without receiving active supports from Vietnam's economic development policies. Moreover, agriculture is very important for the Vietnam's economy because approximately 70% of the population lives in rural areas, and the agricultural sector has employed 48% of the labor force

in 2013. It is fair to declare that agriculture is an imperative industry that influences income and employment levels in Vietnam.

〈Table 1-1〉 Average Annual GDP Growth by Sector

Sector	Average annual percentage growth in real terms			
	1990~95	1996~2000	2001~05	2006~11
GDP growth rate	7.9	6.2	7.4	6.3
Agriculture, forestry and fisheries	4.0	4.3	4.0	3.3
Industry and construction	11.3	9.2	10.0	6.7
Service	8.2	4.8	6.6	7.2

Source: Vietnam General Statistics Office 2011.
Note: GDP=gross domestic product

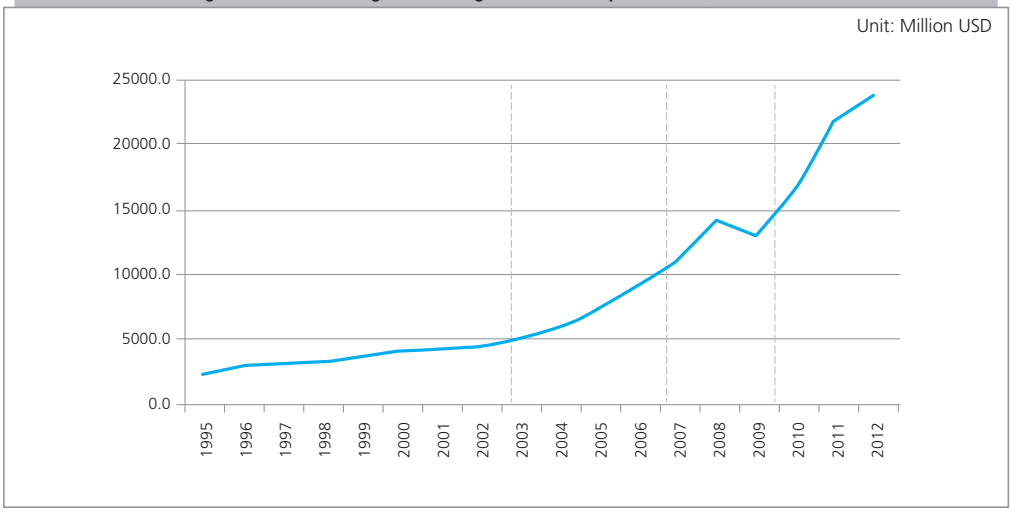
The past performance of agricultural development shows that the agriculture is an effective industry that reduces rural poverty. In 1993, the share of 'below poverty line' was 50%, but the 'below poverty line' dropped to 16% in 2006. Furthermore, the increasing rate of agricultural exports shows why the Vietnam's government should consider the agriculture as a key industry in shaping the overall economy of Vietnam. [Figure 1-5] shows the change in the agricultural export value. Since 2005, the rate of growth in agricultural exports has rapidly increased. The year 2009, specifically, marks a steep rise in the export value. This trend has continued up until now. In terms of the export value, agricultural exports have grown in favor to the international competitiveness.

〈Table 1-2〉 Agricultural Trade Growth and General Trade Balance in Vietnam

(Unit: Billion USD)

Year	Agricultural Export	Agricultural Import	Agricultural Trade Balance	General Trade Balance
2008	16.0	10.3	5.7	-18.0
2009	15.1	9.5	5.5	-12.8
2010	19.0	12.2	6.8	-12.6
2011	23.9	16.1	7.8	-9.8
2012	25.9	16.9	8.9	0.7

[Figure 1-5] A Change in the Agricultural Export Value, 1995 - 2012



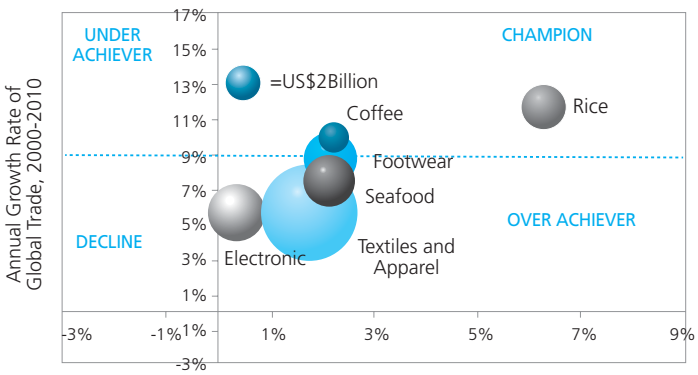
〈Table 1-3〉 Agricultural Export Value by Agricultural Commodity

Agri. Product	2008	2009	2010	2011	2012	Growth Rate	World Rank
Rice	2,894	2,664	3,248	3,657	3,673	6.1	1
Coffee	2,111	1,731	1,851	2,752	3,674	20.7	1, Robusta
Rubber	1,604	1,227	2,388	3,234	2,860	15.6	4
Tea	147	180	200	204	225	11.2	5
Cashews	911	847	1,135	1,473	1,470	12.7	2
Pepper	311	348	421	732	793	26.4	1
Vegegables & Fruits	407	439	451	623	827	19.3	
Forestry Products	2,829	2,597	3,436	3,957	4,665	13.3	
Fishery	4,510	4,251	5,018	6,112	6,089	7.8	
Total	15,724	14,284	18,148	22,744	24,276	11.5	

In order to analyze changes in the market share and to combine export growth with market share, World bank (2013) selected six major commodities - electronics, footwear, textiles and apparel, rice, coffee, and seafood which accounted for 41-43 percent of the total export value from 2006 to 2010. As [Figure 1-6] shows, these manufactured goods and resources of low-technology have comparative advantages. However, agricultural export commodities, pertaining to one of the raw materials, have a stronger advantage than the manufactured goods of low-technology.

Vietnam's rapid export growth during the past two decades has been built on these manufactured products of low-technology, and, especially, focusing on major agricultural export commodities. Therefore, Vietnam's agriculture has played an important role in contributing to the economic growth.

[Figure 1-6] Export Positions of Six selected Leading Export Products, 2000 - 2010



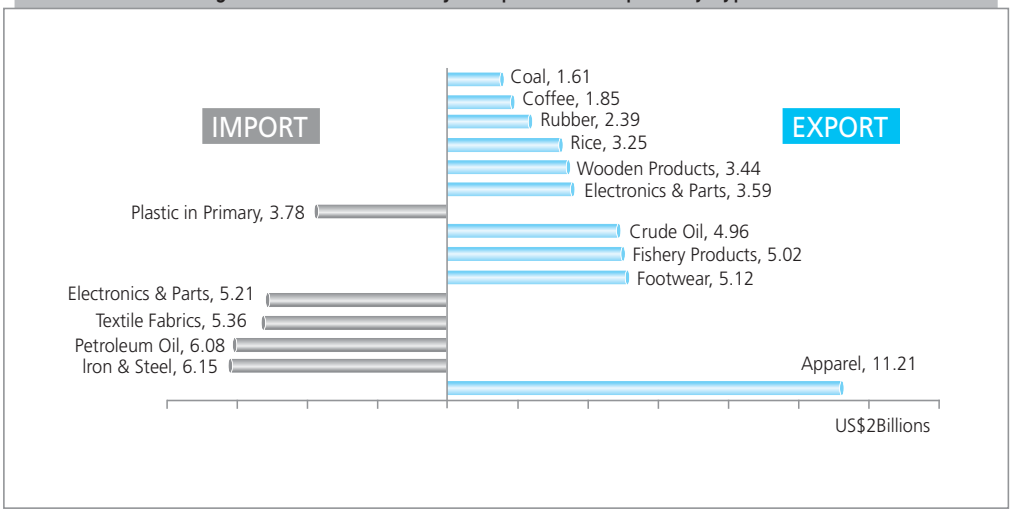
Note: Area of bubbles indicates Vietnam's exports in 2010.
Source: UN Comtrade.

Vietnam's agriculture consists of international competitiveness due to favorable weather conditions, being able to maximize or triple the amount of crop productions per year with abundant resources such as water, land, and young labor forces. However, due to low productivity, insecure quality, raw material exports, low-technology, and, especially, post-harvest and processing technology, Vietnam's agriculture results in lower values of agricultural exports and lower farm incomes. It is said, therefore, that Vietnam's agriculture is the resource based, low technology, low-valued agriculture with the high competitiveness in raw material. Since many agricultural commodities, being raw materials, have exported to global markets, low value-added export structure has become the main characteristics of Vietnam's economy. Active government involvement and drastic agricultural investments are required to shift to highly valued agriculture. It is recommended that a new export model should be established to increase the value added of agricultural export through improving productivity and strengthening technological capacity.

4. GVC Analysis of Vietnam's Agriculture

Coffee, rubber, and shrimp as representative commodities are selected to find strategies to facilitate the participation of Vietnam's agriculture in the GVC. The selection criteria includes world market share and growth rate of export, which shows the competitiveness of agricultural export. As [Figure 1-7], coffee, rubber, and seafood including shrimp have high portion of total export in Vietnam.

[Figure 1-7] Vietnam's Major Exports and Imports by Type (2010)



Source: GSO, 2010.

4.1. The GVC of the Coffee Industry in Vietnam

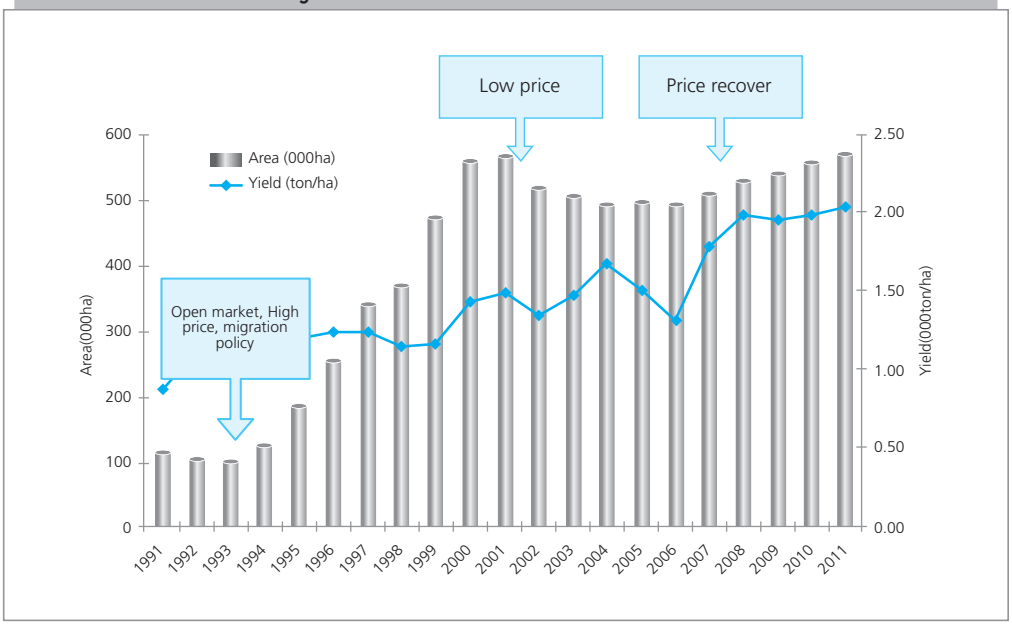
4.1.1. Current Situations

Research institutes provide coffee varieties, and agents selling coffee varieties at locals supply coffee varieties with coffee growers. Until now, there were 11 Robusta coffee varieties, including: 4/55, 1/20, TR4, TR5, TR6, TR7, TR8, TR9, TR11, TR12, TR13 which bring out productivity from 4.5 to 7 tons of green coffee per ha. Two Arabica coffee varieties which are TN1, TN2 have productivity from 4 to 5 tons of green coffee per ha. Those varieties are applied to production and authentication by Ministry of Agriculture and Rural Development. Farmers can buy farm inputs such as fertilizer, pesticides, and machinery at the agent's shops selling agricultural supplies at the local.

The country has over 500,000 coffee growers, including 102,000 farm households, 3 cooperatives and 2 certified cooperative groups involved in coffee production with

a total area of 172,417 ha, and yield reaching approximately above 2 tons per ha. Total amount of certified coffee accounts for over 50% of the total coffee production in the country. Above 80% of the coffee planted area is managed directly by farmers, which are relatively independent. Small area is on average from 0.5 to 1 ha. In the period of 2005-2012, coffee production has been increased from 752.1 thousand tons in 2005 to 1,292.4 thousand tons in 2012. The planted area of coffee was expanded from 497.4 thousand ha in 2005 to 622.1 thousand ha in 2012. Đak Lak, Lam Đong and Đac Nong are three provinces having the biggest coffee production and planted area in the country.

[Figure 1-8] Yield and Area of Coffee in Vietnam



Present times show more than 3,000 coffee collecting agents. Collectors take coffee from cherry coffee and turn them into green coffee for Robusta coffee or into parchment coffee for Arabica coffee. The country has nearly 100 processing plants with different scales and capacities ranging from 5,000 to 60,000 tons of coffee, producing a total amount of 1 million ton per year. Therein, more than 50 coffee processing plants have the industrial scale. The country now processes less than 10% of the annual output of coffee harvest.

Companies that export green coffee (raw material) account for 93% of the coffee production in Vietnam. The country comprises of 140 companies engaging in business and exporting coffee in which there are 12 foreign direct investment (FDI) enterprises. Some instant coffee processor brands are Vinacafe, Trung Nguyên

and Nescafe. Viet Nam has approximately 16 businesses and more than 10,000 smallholders specializing in roasting coffee. The total coffee production is about 10,000 tons each year. Roasted coffee products include brands such as Thu Ha (Gia Lai), Đac Ha (Kon Tum), Vinacafe, Trung Nguyen.

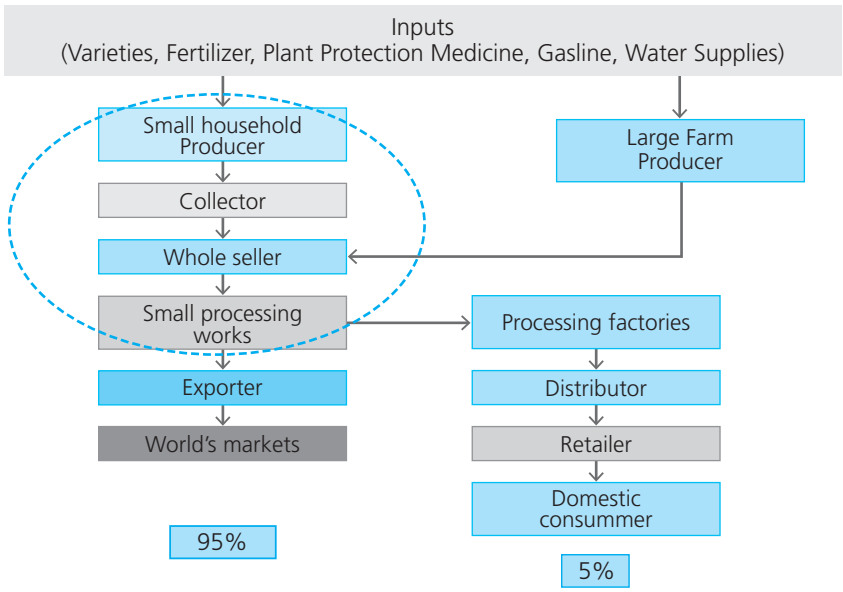
The amount of domestic coffee consumption only occupies 6-7% of the total production. Coffee consumption in Viet Nam went up from 696 thousand bags in 2005 to 1.21 million bags in 2010 and 1.58 millions bags in 2011. Therein, instant coffee takes 30%, famous roasted coffee occupies 60%, and the rest is unknown roasted coffee. During the crop year of 2011-12, Viet Nam exported 711,000 tons of raw coffee in 78 countries with a value of $1.5 billion. German, U.S, Italy are three biggest importers of Vietnam's raw coffee and has a market share of 15.9%, 13.4%, and 6.3%, respectively.

Coffee growers receive various supports from input actors such as agents providing agricultural supplies at local. Input actors provide labor forces for planting and harvesting coffee, management agencies, agricultural extension service providing information, technique, training, and capital. It is the collecting system at local, including collectors at commune, district and other representatives of coffee processors. In addition, collectors are also supported by input actors. Besides, support comes from the consumption actors such as processing businesses, exporting companies, instant coffee processors, and roasters (small businesses, households). Processors do not pay much attention to supports coming from other groups. These "other groups" provide policy information from investment promotion agencies, trade promotion agencies, management agencies, and industry associations. Moreover, the other supporting groups under science are technology service, market information and production organization services. The coffee processing plants are active in seeking commercial banks in order to provide for the capital

A number of policies create favorable conditions for coffee businesses in Vietnam: (1) Export Development Policy, (2) Commercial Law 2005 permits 'buying and selling goods through Department of goods exchange', (3) Incentive policy for product quality enhancement, (4) Integration policy, (5) Science and technology policy.

Based on investigating the current situations of the coffee industry in Vietnam, the GVC of Vietnam's coffee industry is illustrated in [Figure 1-9].

[Figure 1-9] Global Value Chain of the Coffee Industry in Vietnam



〈Table 1-4〉 Value Added Created at Each Stage of the Coffee GVC in Vietnam

Stage of the GVC	Value Added in Each Stage (%)
Farmers	21
Collectors/Processors	10
International Traders	18
Processors in importing Countries	29
Retailers	22

4.1.2. Bottlenecks

The bottlenecks appearing in GVC of the coffee industry are summarized as follows:

(1) Small and fragmented production scale
(2) Weak provision system of coffee varieties
(3) Weak production requirement in both quality and quantity
(4) Low coffee quality because of the picking style 'plucking twigs'
(5) Limited investment in the processing industry
(6) Limited coffee processing activities in both scale and quality

(7) No model of rational production organization
(8) No strong brand in the international market

4.1.3. Upgrading Strategies

First, it is important to restructure the stakeholders' involvement in the coffee value chain by forming a farmer's group that have enough bargaining powers to be able to play a leading role, to perform leading tasks of specialization or to focus on exports and marketing activities, and to focus on research activities for varieties specializing in processing research and distribution businesses. They should have their own brands. The coffee processing and distribution activities having its own brand are capable of competing with other foreign businesses in the world.

Second, it is necessary to invest in the construction of industrial complex zones, focusing on coffee processing in Central Highlands. It will include the research and development (R&D) Centre of coffee and specialized coffee products to create a breakthrough in Vietnam's coffee industry, also with the area of logistics for production and export.

Third, it is desirable to strengthen the linkage between actors in the value chain. It is necessary for other associations and enterprises to strengthen international cooperation to control the supply chains of the coffee industry. By strengthening the linkages between players in the value chain, Vietnam's coffee is deeply involved in the distribution system of the leading multinational companies in both the domestic and global market.

Fourth, following supportive policies should be designed to encourage private enterprises and be involved in the production;

(1) Land policies: favorable conditions should be provided to lease land to build up coffee processing plants. There are effective land policies to encourage farmers to comply with production planning and to form areas of facilitating investments in infrastructure, science, and technology for coffee production.

(2) Capital and financial policies: completes financial policy and encourages the formation of credit funds for citizens to mobilize their flexible capital; loan procedures are reformed so that it becomes more favorable; extended loan time is consistent with the production cycle and the coffee business; and insurance funds of exported coffee is established. Regarding investments in equipment and machinery, it requires incentives on interest rates. When enterprises invest in production, they will become important legal entities in the market-orientation, technology selection, and capital sourcing.

Fifth, creating the 'Coffee Fund' is also helpful for the coffee industry such as in the production and marketing costs for producers. For examples, it is possible to support purchasing coffee with the level of 50% processing capacity.

Sixth, the coordination committees of the coffee industry should be established to propose and plan the strategic policy for coffee sector including policies of reserving, supplying and disseminating market information. Specifically paying attention to trade promotion strategies is through agricultural research projects, marketing and crop forecasting, and through solutions to balance supply and demand for exports and domestic consumption.

Lastly, promoting the public-private partnership model (PPP model) should be investigated to create a playing ground for partners to join together and each partner have their own strengths; they will work together to add value to the coffee value chain.

4.2. GVC of the Rubber Industry in Vietnam

4.2.1. Current Situations

The actors in the rubber value chain include input suppliers, rubber cultivators, collectors, rubber processing companies, and rubber exporting companies. There are more than 1,000 suppliers of rubber varieties while Rubber Research Institute of Vietnam belongs to Vietnam Rubber Group, which is the largest supplier.

Rubber cultivators in Vietnam are SOEs, private businesses, and smallholders. In the period of 2005-2012, total planted area of rubber has continuously increased from 482.7 thousand ha in 2005 to 898 thousand ha in 2012. Total area of latex rubber plantations has risen from 309.8 thousand ha in 2005 to 497.3 thousand ha in 2012. The main areas of rubber plantation are Southeast, Highlands, North Central, and South Central Coast. At the end of 2012, those regions have accounted for 46.5%, 27.7%, 7.6%, and 3.8% of rubber, respectively in the total area planted in the country.

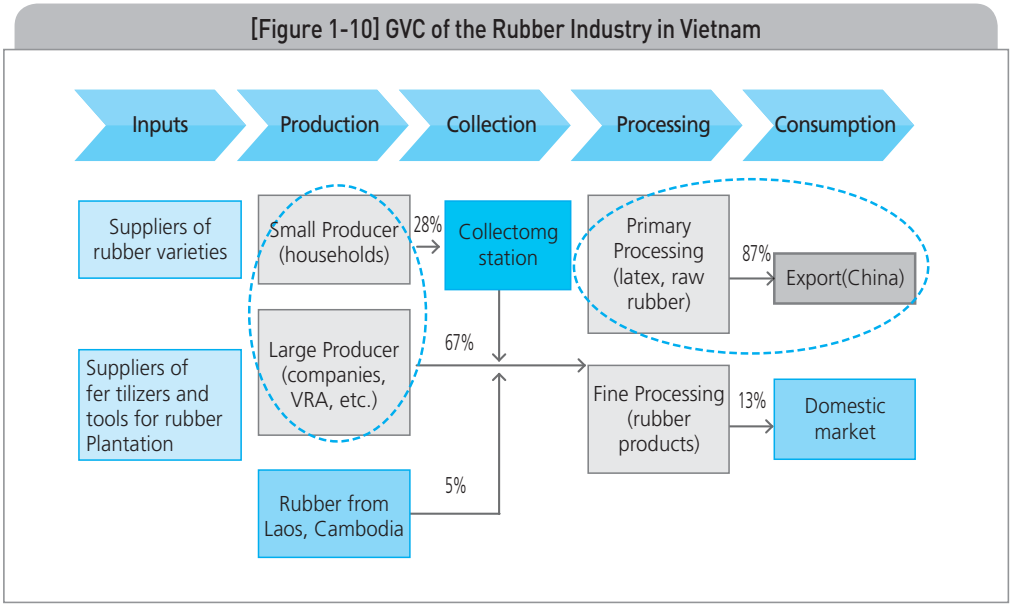
Small collectors collect rubber latex from cultivators (smallholders, farmers) and resell to wholesalers, processing plants, and foreign traders. Currently, there are over 132 rubber processing plants in Vietnam with a total capacity of about 702,200 tons, including 56 state owned plants with a capacity of 421,500 tons and 76 private plants with a capacity of 180,700 tons concentrated in Binh Duong, Binh Phuoc, Tay Ninh province. Rubber businesses only manufacture processed products with low technology. Hence Vietnam's rubber products are sold at a much lower price (about 10%) in comparison to that of other countries such as Malaysia, Thailand.

The rubber processing in Vietnam is often associated with export activities. In 2012, the country had 79 rubber exporters including 23 SOEs (State Own Enterprises) and others are limited liability companies and joint stock companies. Three rubber exporting businesses achieving the biggest export volume in 2012 are Binh Phuoc General Import Export Joint Stock Company; Golden Lotus Trading and Manufacturing Company Limited; and Vietnam Rubber Group Limited with the export volume of $220,161 and $136 million, respectively.

Currently, Vietnam's rubber is exported to 70 markets in which Asian markets comprising of 75%, European markets occupying 19%, and the rest belonging to North America, Africa, and Australia. Above all, the key importing countries are China, Malaysia, Taiwan, India, Germany, Korea and U.S. However, the biggest importer of Vietnam's rubber industry is China composing of 47% of the total rubber export volume in the 1st quarter of 2013.

Based on investigating the current situations of the rubber industry in Vietnam, the GVC of Vietnam's rubber industry is illustrated in [Figure 1-10].

[Figure 1-10] GVC of the Rubber Industry in Vietnam

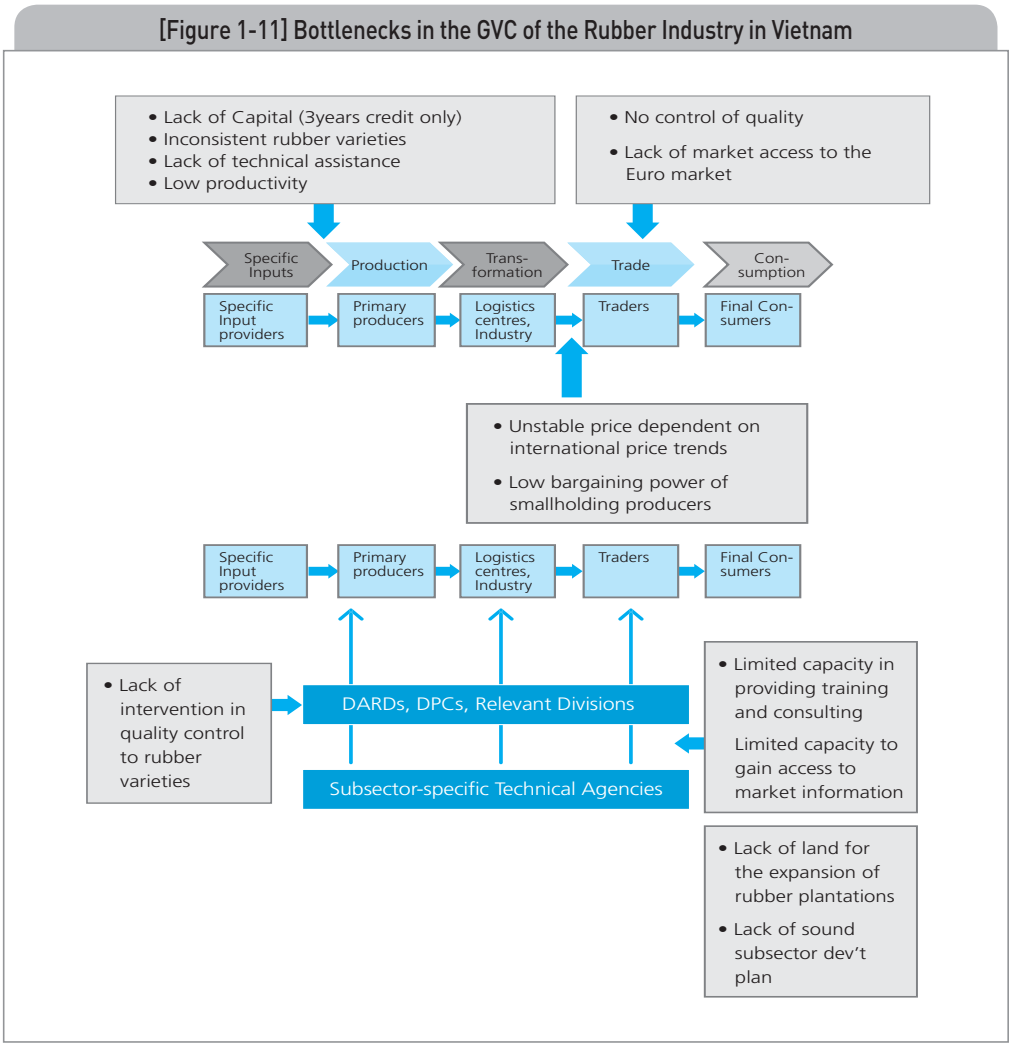


4.2.2. Bottlenecks

The bottlenecks appearing in GVC of the rubber industry are summarized as follows:

(1) Lack of capital
(2) Inconsistent rubber varieties
(3) Lack of technical assistance
(4) Low productivity
(5) No control of quality
(6) Lack of market access to the Europe market
(7) Unstable price dependent on international price trend
(8) Low bargaining power of small holding producers
(9) Lack of intervention in quality control to rubber varieties
(10) Limited capacity in providing training program and consulting
(11) Limited capacity for gaining access of market information
(12) Lack of land for expansion of rubber plantation
(13) Lack of sound subsector development plan

[Figure 1-11] Bottlenecks in the GVC of the Rubber Industry in Vietnam



There exist several difficulties. For example: favorable land areas for rubber cultivation are not much, approximately 50% of the area which lies in climate zone is limited; the export products are not in accordance with market demand; industrial production of industrial rubber products is weak; the State management in an economic sector perspective is still ineffective... The price fluctuations, plus the outdated structure of export products currently increase the risk of losses and dependence on a number of markets.

4.2.3. Upgrading Strategies

The upgrading strategies of GVC of rubber industry in Vietnam are as follows;

(1) Strengthening the links between the processing and the development of raw materials. The joint venture plants producing rubber products have grown rapidly in recent years. That also means that a portion of latex output is used to be an output of plants more in the domestic market. Although the share of raw rubber in the domestic market is still modest compared to the export market, if the companies invest more appropriately, the proportion of exports of raw rubber will decrease because the products of the rubber processing industry are developing and able to export. The private purchasing channel should also take effect in which they collect rubber latex products and export raw rubber.

(2) Promoting the application and research activities from the area of seeds, fertilizers, and exploiting regime to product processing technology. Rubber is a natural resource and strength of Vietnam's natural resources, and natural rubber should be further studied for possible and deep processing, and adding value to the usage. The study of deep processing of natural rubber is indispensable, and in order to enhance economic efficiency, they need to use this resource. The processing also helps the economy to reduce industries' demand for importing rubber products valued hundreds of millions of dollars annually.

(3) Enhancing the role of the Rubber Production and Export Association. In order to further enhance the role of this association and to develop sustainability, the rubber industry in Vietnam needs to expand their member network to the strong businesses so as to prop up development of small and medium enterprises. In the long term, the association encourages linkage models between farmers and businesses to form the joint-stock company in which farmers contribute the land use rights and businesses ensure to provide capital, seeds, other inputs, technical guidance, and so forth.

(4) Increasing the training scale of human resources for cultivation workers and latex tapping workers through extension programs. This program needs to be

deployed and widespread to farmers which then can be used to improve the productivity of the entire rubber industry.

4.3. GVC of the Shrimp Industry in Vietnam

4.3.1. Current Situation

There are 1,529 suppliers of Penaeus monodon species and 185 suppliers of Penaeus vannamei species. Foods for shrimp are provided by 53 suppliers

250 thousand households with small-scale shrimp farming are using extensive farming and semi-extensive farming. 80 thousand shrimp producers are using intensive farming and semi-intensive farming. In the period of 2005-2012, shrimp aquaculture production has continually been upward trend from 327.2 thousand tons in 2005 to 473.9 thousand tons in 2012. Area of water surface for shrimp has gone up from 533 thousand hectares in 2005 to 627 thousand hectares in 2012. Ca Mau, Bac Lieu, Soc Trang are provinces having the largest production and area of water surface for shrimp in Vietnam.

Small collectors only collect approximately 10-20 kg in each farm. Each collecting facility of traders has an area of about 20.4 m^2, sale volume of 15.4 tons per facility. Each agent has an approximate area of 74.8 m^2, while sale volume per agent is 119.2 tons. Every business has an approximate area of 383.3 m^2, while sale volume per business is 387.7 tons.

The shrimp processing companies in Vietnam are often associated with the export activities. In 2011, there were 564 seafood processing/export companies. The shrimp processing plants often have to operate under the 55% of designed capacity due to shortage of raw materials. 95% of shrimp production of finished products produced annually is used for export. The key export markets are U.S, Japan and EU[1)] The three largest shrimp exporting companies are Minh Phu Seafood Corporation; Quoc Viet seafood processing, export and import limited liability company and Soc Trang seafood joint stock company with the market share of 15.86%, 4.89%, 4.82%, respectively.

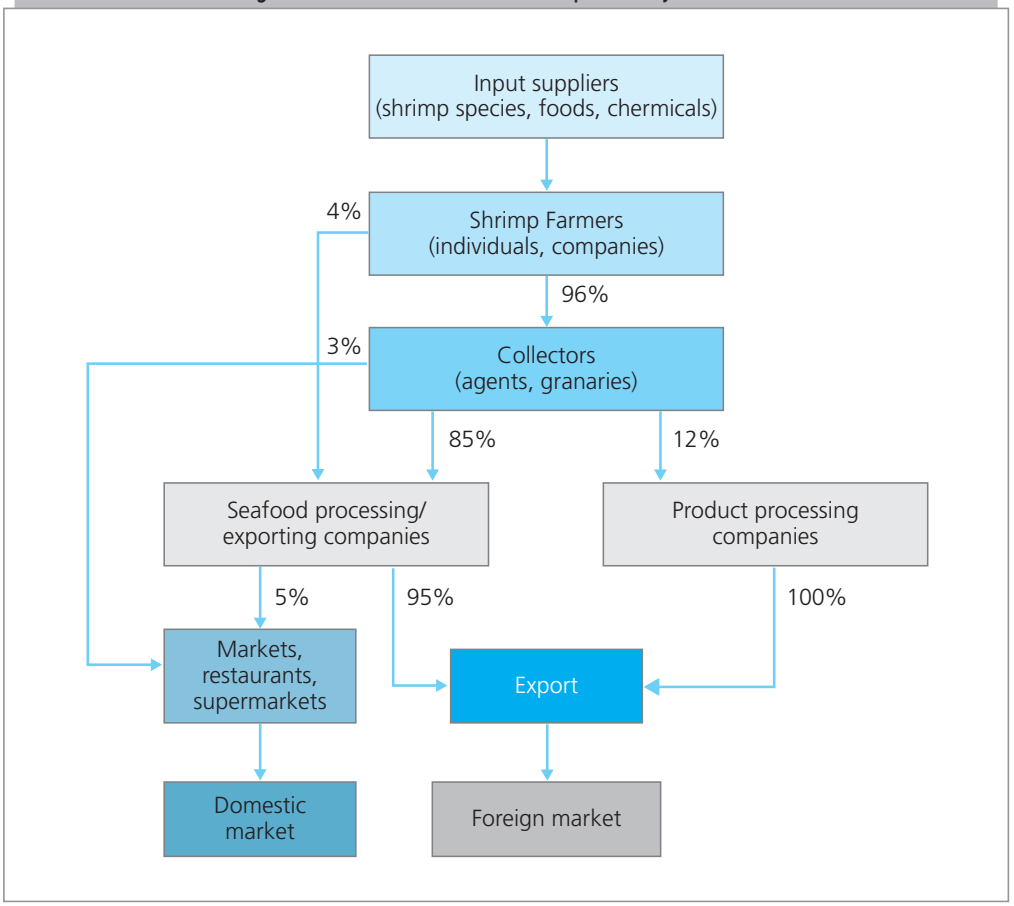
The system of markets, restaurants and supermarkets are places for shrimp distribution to domestic consumers. In 2012, Viet Nam exported shrimp to 92 markets with total export value of $ 2.23 billion. In particular, Penaeus monodon export reached $1.16 billion which accounts for 56.1% of total shrimp export value. Penaeus vannamei export gained $676.6 million which occupies 32.8%.

1) other markets accounted for only 12.2%

Most of them receive information supported from the local authorities and other input providers, while getting technical training support from fishery sector management agency. Getting support and supervision of local authorities and sector management agency with information, market, regulations, guidelines for counterfeiting recognition. The capital support from banks is considerable to agents. Shrimp farmers are the actor getting the most support, especially technical assistance from different sources such as fisheries extension, shrimp species providers. More than 30% of households receive capital from banks with preferential interest rates.

Traders are less concerned to external support, yet all of them borrow capital from banks and 75% of traders consider that bank policies are good to them. All traders are given the earliest information by processing plants and 87.5% of traders evaluate this supports which are quite good. They should link horizontally through the support in selling and exchanging market information. Horizontal linkage has a great significance in their activities.

[Figure 1-12] The GVC of the Shrimp Industry in Vietnam



Processing companies are less concerned to the support from other groups. However, due to large scale, they are actively seeking the support from banks. Processing companies are provided policy information by government and associations. Especially they provide pricing information for traders to maintain input supply and technical support in order to buy shrimp from farmers.

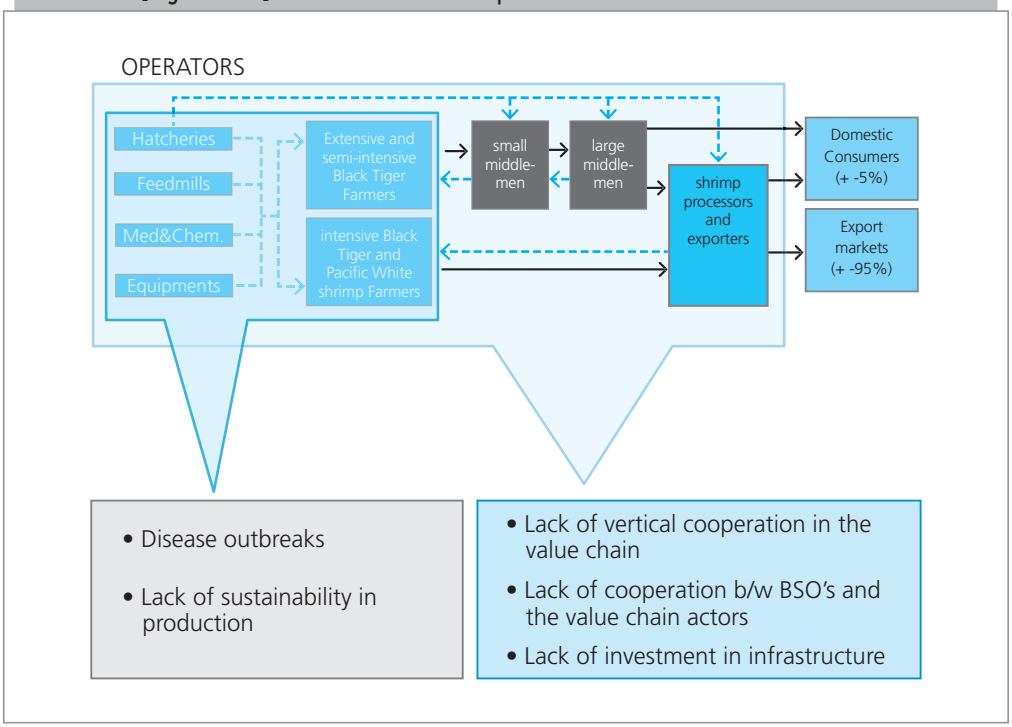
Based on investigating the current situations of the shrimp industry in Vietnam, the GVC of Vietnam's shrimp industry is illustrated in [Figure 1-12].

4.3.2. Bottlenecks in the GVC of the Shrimp Industry in Vietnam

The bottlenecks in facilitating the participation of the shrimp industry are largely divided into following 4 issues:

(1) shrimp disease
(2) lack of vertical cooperation in the supply chain
(3) lack of capital investment in shrimp sector infrastructure
(4) lack of cooperation between value chain actors and BSOs.

[Figure 1-13] The Vietnamese shrimp value chain and its main bottlenecks



4.3.3. Upgrading Strategies

The first upgrading strategy should focus on preventing and solving the diseases of shrimps effectively. The hospital and research institutes should soon find out the main causes of shrimp diseases, because later there have been effective preventive measures to reduce disease risks for farmers. On the other hand, in order to limit disease outbreaks, it should focus on directing the communes and towns to support shrimp farming households, recommending farmers that they should closely monitor and regularize supplement vitamin and digestive enzymes to stabilize intestinal shrimps. For households who suffer from the shrimp disease, supports of chlorine for farmers is necessary, which will carefully study ponds and conduct dredging and renovations in accordance with technical procedures to find the best solution. In particular, it needs to create a water environment and germ free environment in order to minimize outbreaks of diseases for the season. At the same time, it needs to be supported with bank loans, chemical drugs for pond treatments, enabling conditions for farmers to re- invest in production. For areas where shrimp farming are still developing, it needs to strengthen capacity, technical support staffs, and more guidelines for shrimp farming during seasonal transition periods; this is for the purpose of preventing the spread of diseases and minimizing risks for farmers.

The second strategy includes the quality management of varieties and other inputs. Varieties are the leading determinant in aquaculture production. Therefore, the Aquaculture Departments and other related departments should strengthen inspection and quality management of varieties so as to help farmers have safety farming experience. In particular, it needs to strengthen monitoring the conditions of production and business of shrimp varieties; having effective inspection measures of the quality of shrimp varieties which are produced in the key province in order to improve the quality of shrimp varieties and increase the efficiency of farming. At the same time, advising farmers that when purchasing varieties, it should be a thorough selection through quality control and sample; managing a strict pond environment and appropriately stocking density for each kind of shrimps.

The third strategy is developing and planning safe farming areas and disseminating shrimp farming methods to ensure Ethoxyquin chemical residue standards to ensure stable sources of raw materials for shrimp processing and exporting enterprises. Upgrading strategies continue to focus on connecting production to effectively control the problems of antibiotics required by many markets; and promoting activity of traceability. At the same time, it continues to review, plan, and regulate size, scale, and production of shrimp farming in accordance with the market demand.

The fourth strategy states that government should have policies of rescheduling

debt and allowing farmers to take loans with preferential interest rates to revive shrimp farming. Investments in the infrastructure of shrimp farming and the processing of appropriate shrimps for a specific region should be carefully considered. The central authorities should have the interest, investment, and support for locals to construct infrastructure systems, which specializes shrimps for the farming industry. Also, it needs to focus on advertising and branding for Vietnam's shrimp industry. Moreover, state should assist in organizing and connecting with a regional/national scale industry in order to build up and develop the brand, therefore, enhancing the competitiveness of Vietnam's shrimp in international markets. The associations should focus on collaborating with businesses in searching for markets, and trade promotions as well as addressing technical barriers. Hence it can create favorable conditions for the shrimps to continue to help the Vietnam's shrimp industry.

The final strategy is to establish and develop the cooperatives/collaborative teams like My Thanh, Soc Trang Shrimp Farming Association, increasing awareness and adopting the model of safe shrimp farming in accordance with certified standards (Eco Shrimp, Global G.AP, BAP, etc). Furthermore, it is necessary to strengthen the links between farmers and processing plants in which processing plants should play a leading role to limit middlemen and reduce costs and ensure product quality.

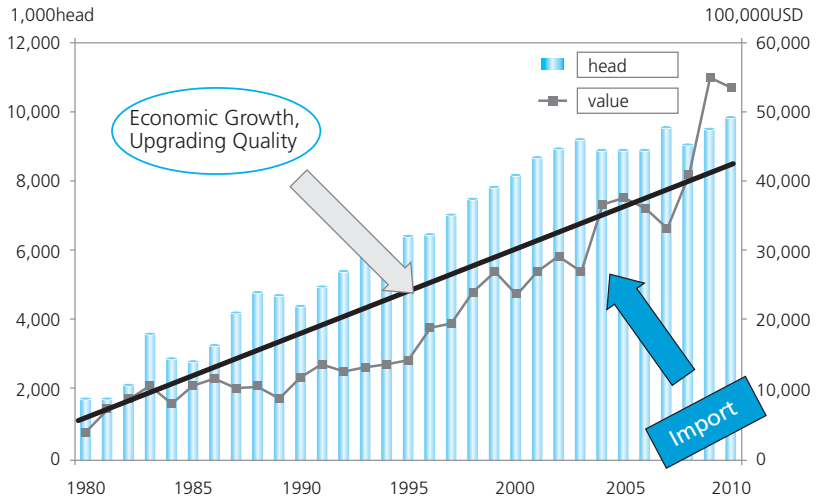
5. The Case of the GVC in Korean Agriculture: the Pork Industry

In order to suggest meaningful lessons to the participation of Vietnam's agriculture in the GVC, this chapter will identify successful factors of the pork industry in Korea during a fast agricultural trade liberalization covering the past two decades.

5.1. Current Situation of the Pork Industry in Korea

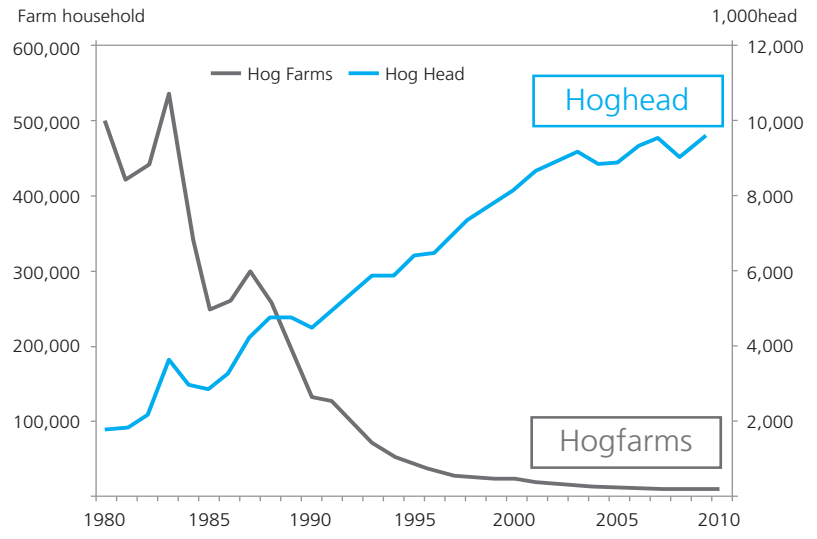
In 2010, Korea produces about 764.7 thousand metric tons of pork while pork consumption is 992.1 thousand metric tons. In Korea, the pork industry is the second largest farming sector of agriculture after the rice sector and is followed by beef, milk and eggs. During the past decade, the annual growth rate of hog production is 5.3%, which is the highest rate except for the broiler production. In 2010, the value of hog production is 4.8 billion dollars, which is 14 times higher than that of 1980. The share of hog production value in total production value of agriculture in Korea is 12.8% in 2010, which places in the largest sector in the livestock industry.

[Figure 1-14] Volume and Value of Hog Production in Korea



Like other types of livestock farms, the pork industry in Korea has undergone major structural changes. As [Figure 1-15] shows, the number of hog farms has declined and the remaining hog farms have increased in size rapidly. The number of hog farms has declined from 46,000 in 1995 to 7,300 in 2010 and the average number of heads per farm has increased from 140 in 1995 to 1,230 in 2010.

[Figure 1-15] Changes in the Hog Farms and Hog Head



In other words, the pork industry in Korea has experienced a fast 'large scale in farm size,' which will lead to a reduced production cost while small-sized or uncompetitive companies will struggle for survival.

The number of specialized hog farms with a herd of 1,000 or more increased from 406 farm households in 1990 to 3,145 farm households in 2009. The number of hogs per farm has increased due to the drop in the number of hog farms. The proportion of specialized hog farms increased from 0.3% in 1990 to 39.5% in 2009, while the portion of hogs at the specialized hog farms has also increased from 23.3% to 86.5%. Thus, another feature of the pork industry in Korea can be declared as the specialization of hog farming.

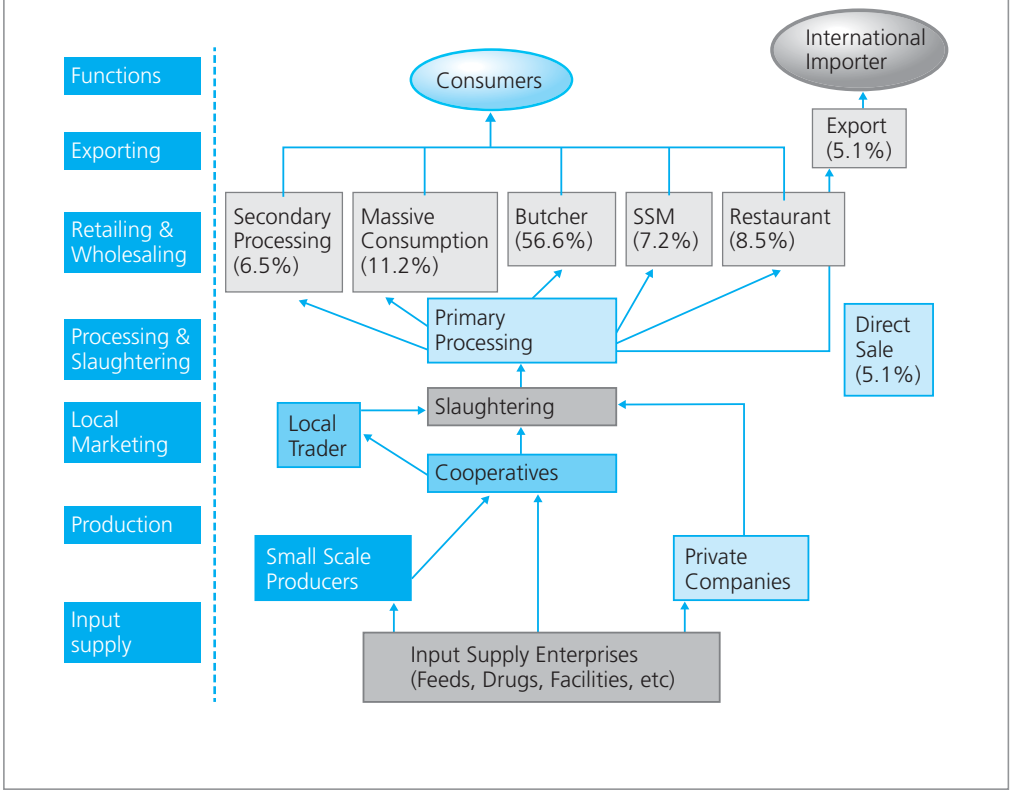
Since the demand for pork has rapidly increased due to the fast economic growth and changes in food consumption pattern, pork consumption has been increasing faster than the domestic production, thus causing the self-sufficiency rate to decline. In 2010, Korea imported 179.5 thousand tons of pork but in 1988, Korea was actually exporting 88 thousand tons of pork mostly to Japan. The outbreak of swine fever in 2002, however, resulted in a suspension of exports to Japan.

[Figure 1-16] shows the GVC of the pork industry in Korea. The GVC starts from the input supply stage providing swine farmers for feeds, medicines, and farm facilities to exporting goods. Furthermore, pigs are produced by small scale producers, cooperatives, and private companies, and hog farm cooperatives play an essential role in the stages of production, local marketing, and processing/ slaughtering. After the primary processing has done, pork moves through the secondary processing, massive consumption, butcher, SSM, restaurant to domestic consumers, and international importer.

<Table 1-5> shows the share of margin at the production stage being lower than the share of margin at the consumption stage. Lower share of margin (1.1%) at the cooperative stage implies that swine farm cooperatives play a significant role in increasing the producers' margin. Since the margin of butcher is still higher, the cooperatives should aggressively participate in the final consumption stage to attain higher margins of producers.

SWOT analysis for the pork industry in Korea is applied to derive some important strategies suitable for gaining the international competitiveness. <Table 1-6> shows the SWOT analysis for the pork industry in Korea.

[Figure 1-16] GVC of the Pork Industry in Korea



〈Table 1-5〉 Margin of Pig Meat in the GVC of the Korean Pork Industry

Marketing Stage	Margin (%)
Producer	30.2
Cooperative	1.1
Consignment(Marketing Center)	3.6
Butcher	45.8
Total	100

Source: Korea Agro-Fisheries & Food Trade Corporation

〈Table 1-6〉 SWOT analysis for the pork industry in Korea

Strength	Opportunity
- Fresh domestic pork - High consumers' confidence on domestic pork - Possible exports on heat pork - Lower logistics' costs and price competitiveness of heat pork	- Consumers' preference on domestic pork - Price competitiveness for unwanted pork parts
Weakness	**Threats**
- Lower productivity than advanced countries of the hog production - High feed costs, high labor costs and rent, and environment regulation - Weak management on the disease controls - Lower capacity in the pork production with equal quality - Strong preference to the specific parts of the pork	- Due to the agricultural trade liberalization, the loss of domestic market - Due to the FMD, pork imports increase and pork exports decrease - High feed costs - Inspection reinforcement on Korean pork in importing countries

5.2. Challenges of the Korean pork industry

5.2.1. Continuous the agricultural liberalization

As the multi-trade negotiation like Doha Round has been pending, the FTA negotiation has been emphasized for maintaining the Korean economic growth. Korea established 10 FTA negotiations (47 countries) and negotiates 15 FTAs. Especially Korea-USA FTA, Korea-EU FTA, Korea-China FTA have great impact on Korea agriculture. Since pork industries of USA and EU are more competitive than Korea in terms of the size of scale, vertical integration, and production costs, it is expected that the amount of farm income losses from the Korea-USA FTA establishment will be 395 million dollars. And the income losses of Korean hog farmers from the Korea - EU FTA establishment will be 121 million dollars.

5.2.2. Occurrence of diseases

Impacts to the Korean economy are unacceptably high when there is a major market failure in the production of hogs, as a consequence of a regional or national disease outbreak. For example, total losses in hog's number and value resulted from FMD which took place from November 2010 to April 2011 were 3.5 million head, 3.9 billion dollars, respectively. There is a need to develop and implement on a national basis, methods to provide protection to producers for disease outbreaks.

Protection must be able to cover both the loss of productive assets as a direct result of the disease, and the losses that may occur if markets are closed as a result of the disease. Production insurance, such as is currently available to crop producers, with appropriate coverage and affordable pricing, must be a priority. Also, predictable coverage in the event of catastrophic losses that occur when the disease impact is severe and includes impacts of border closures needs to be in place. It is recognized there need to be incentives for producers to continue the adoption of world class risk management operational processes and procedures.

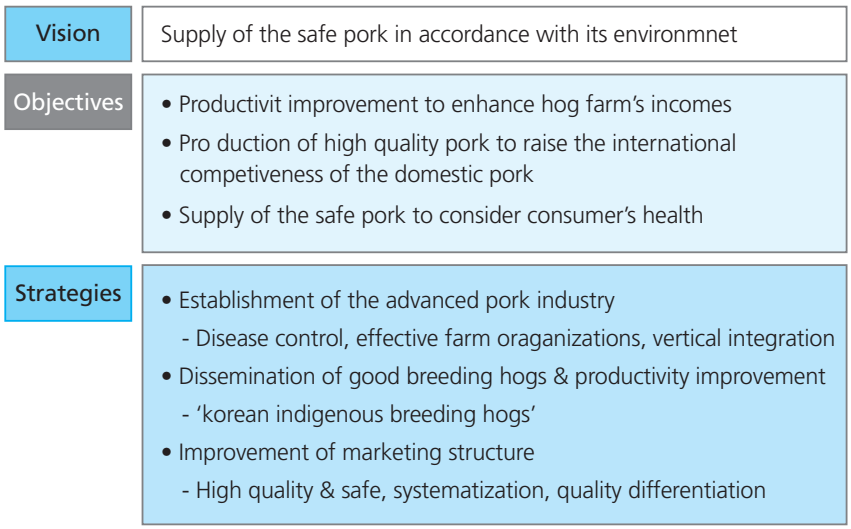
5.2.3. High feed prices

There is an urgent need to lessen the pressure on feed input costs. Feed is the major production input to the pork production process, accounting for almost 50% of production expenses. Feed includes grain sources of energy—such as corn, barley, grain sorghum, and oats—and protein from oilseed sources such as soybeans and canola. Feed grain and supplement costs are increasing as demand pressures on grain inventories rise. The main hog feed ingredients have traditionally been corn and soybean meal, but recent shortages and rising prices for those products have led hog producers to seek alternatives, including by-products from grain-milling, brewing, distilling, and several food processing industries. One of big challenges that Korean livestock has faced since 2006 is high feed prices. High feed prices have resulted from high grain prices in the international market which have simultaneously shown the trend of unstable, high level, and fast fluctuation.

5.3. Agricultural policy framework for the pork industry in Korea

[Figure 1-17] addresses an agricultural policy framework for the pork industry in Korea. The Korean government has established an agricultural policy framework for the Korean pork industry to promote international competitiveness.

[Figure 1-17] Agricultural Policy Framework for the Korean Pork Industry



5.4. An Example of Using Farmers' Associations: Dodram Pig Farmer's Cooperatives (DPFC)

Increasingly, hog farmers have become highly dependent on agribusiness and their requisite power in value chain. The Dodram Pig Farmers' Cooperative (DPFC) is a good model of the intensive hog production fostered by cooperatives rather than agribusiness companies. Whereas, the traditional model was characterized by small, diversified, and family operated, and the intensive production included new

〈Table 1-7〉 Subsidiaries Activities of the Dodram Pig Farmer's Cooperative

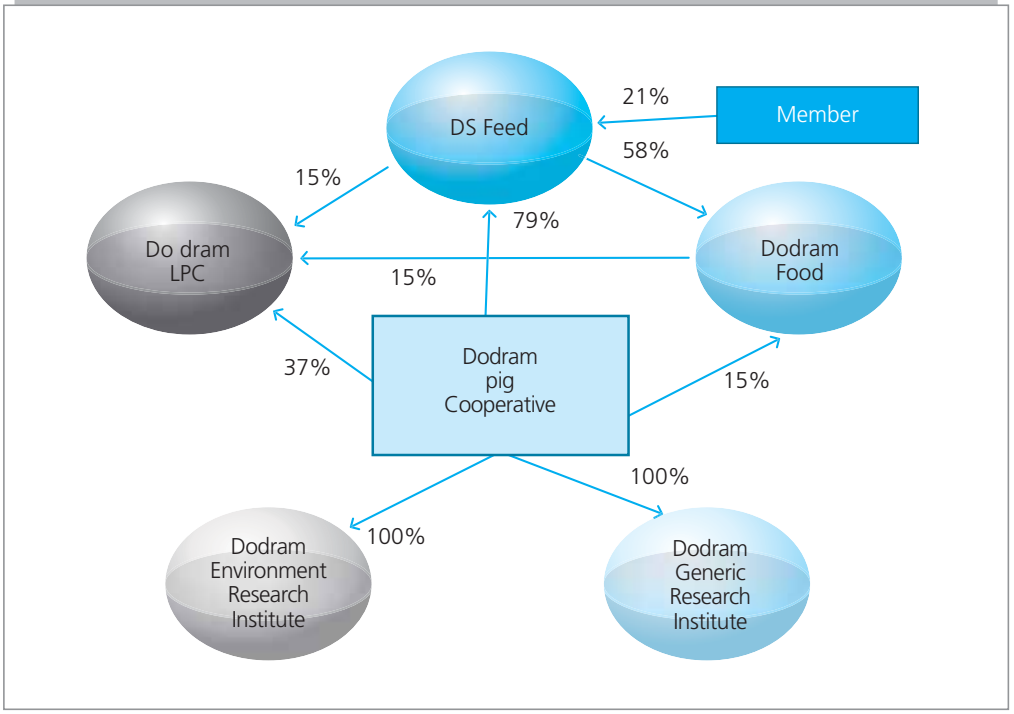
	Name	Business Activities
Corp.	DS Feed	Feed factories, hog sale, technical support
Corp.	Dodram Environment Research Institute	Environmental facilities and drugs
Corp.	Dodram Generic Research Institute	Hog management, production & sales of the pork
Corp.	Dodram Food	Dressed pork, pig carcases, by-products processing & sale
Corp.	Dodram LPC	Slaughter(beef, pork) and processing

relationships between hog farmers and agribusiness or cooperatives. The hog sector began to operate a contractual basis through integration contracts. Feed firms promoted integrated contracts as a way to ensure a market for feed production. In these contracts, the cooperative, not the agribusiness firms which normally come from the feed sector, supplied feed piglets and other inputs to the hog farmer.

DPFC has established a vertical integration system initiated by cooperatives to realize the benefits of membership and active participation. DPFC has operated five divisions and two subsidiaries to build a seamless value chain system, corresponding to the vertical integration system driven by agribusiness companies. As <Table 1-7> shows, the DPFC has 5 subsidiary companies to take part in important functions such as feed, genetic research, processing and by-products in the value chain.

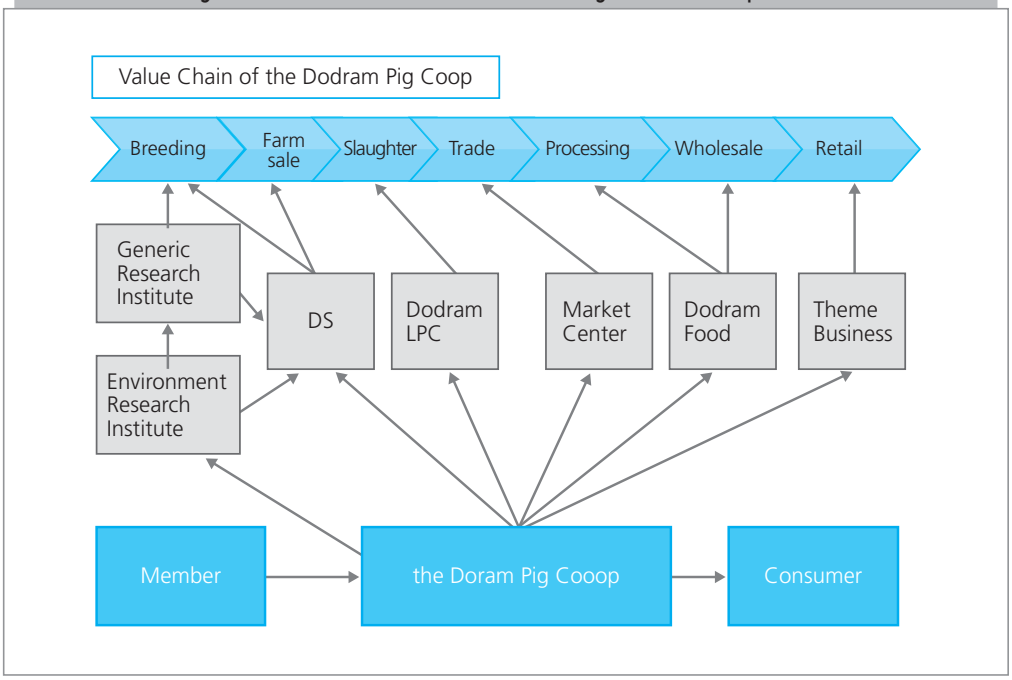
[Figure 1-18] shows the relationship between subsidiaries of the DPFC through the continuous M&A.

[Figure 1-18] Relationship between Subsidiaries of the DPFC



As a result, the value chain of the DPFC can be diagramed as [Figure 1-19].

[Figure 1-19] Value Chain of the Dodram Pig Farmers' Cooperatives



It is evaluated that the model of DPFC is similar to Danish Crown in Denmark. Following factors can be summarized as success factors of the DPFC.

(1) Vertical integration initiated by farmer's cooperatives

In order to attain international competitiveness of domestic pork industry, hog farmers organize farmers' cooperatives, and vertical integration is driven by the farmers' cooperatives. The membership-oriented business system secured by the active M&As has dealt with pig husbandry management, feeding, specification management, shipping, slaughtering, processing, and sales across the value chain of the pork industry. By applying these principles of selecting delegates in proportion to the usage results and supports business subsidies in proportion to earnings made.

(2) Quality differentiation strategy

The DPFC has established consumer-driven quality standards and a brand of "Dodram pork," which has obtained high reputation in the market through the operation of relating research institutes and exclusive feeding system.

(3) Large scale in business size

Through continuous troubles in the M&A cooperatives, the base membership is

expanded and business competitiveness is obtained by increasing the volume and taking cost effective management.

(4) Enforcement of directors' roles

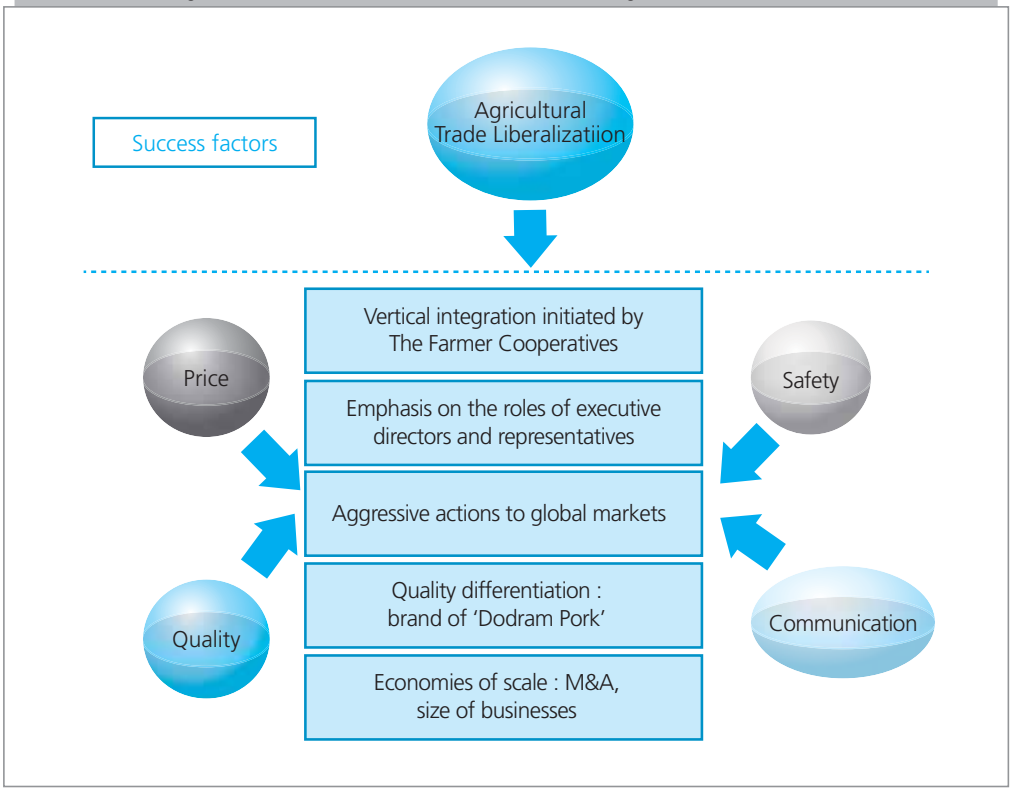
A system for ensuring membership in the homogeneity is established, and the roles of directors are enforced by increasing the volume of business activities. Moreover, the cooperative's business strategies are consistent with the market-oriented principle. Membership eligibility is enforced, and the cooperative is organized in the principle of excluding unqualified members to pursue elitism.

(5) Aggressive actions to changes in global markets

In order for Korea to have competitiveness in price and quality for the pork industry, the reduction in production cost and quality control system is pursued in accordance with rapid changes in global markets.

These success factors are illustrated in [Figure 1-20].

[Figure 1-20] Success Factors of the Dodram Pig Farmers' Association



6. Policy Recommendations

6.1. Summary of upgrading strategies

Many upgraded strategies are suggested from the GVC analysis of coffee, rubber, and shrimp industries. It is essential to summarize all of the upgraded strategies in deriving workable policy recommendations.

In the upward stage of GVC, the following strategies are recommended:

(1) To develop a system of applying goods and high yield varieties at the farm level and of controlling the relating diseases,
(2) To develop a system of getting access to credits with low interests, and
(3) To utilize new and advanced technologies through training and consulting.

In the production stage of GVC, the following strategies are recommended:

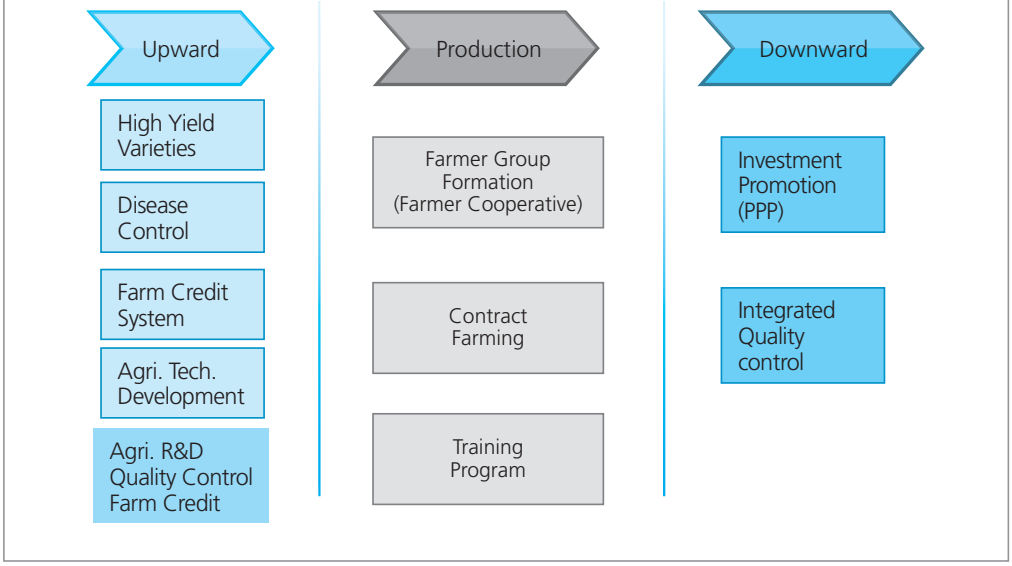
(1) To foster the national farmers' association that can enhance farmers' bargaining power and increase the value added of farmers' products,
(2) To promote the contract farming between agribusiness companies/farmer cooperatives/farmers, and
(3) To develop effective training programs for producers to improve agricultural productivities using developed goods and agricultural technologies.

In the downward stage of GVC, the following strategies are recommended:

(1) To invest processing facilities and quality control system,
(2) To improve the marketing and logistic infrastructure,
(3) To market development and marketing promotion, and
(4) To enhance farmers'/processor's capacity in searching new markets and marketing skills.

Summary of upgrading strategies can be diagrammed as [Figure 1-21].

[Figure 1-21] Summary of Upgrading Strategies



6.2. Implications of the case of the pork industry in Korea

There are several approaches to control the global value chain: Cooperative (producers) initiated approach, input company initiated approach, processing or exporting initiated approach, and consumer initiated approach. Cooperative initiated approach has advantages for small producers to gain the value-added products in the process of the global value chain.

According to the experience of the pork industry in Korea, hog farms have attained international competitiveness by allowing hog farmers to initiate the vertical integration and the value chain. The experience of Korean pork industry provides good implications on the participation of Vietnam's Agriculture in the GVC. As a result, the cooperative initiated approach would be a better approach to facilitate the participation of Vietnam's agriculture in the GVC and to let producers get higher margin in the value.

It is desirable to form farmer's cooperatives and to increase the bargaining power of farmers, and to directly participate in the storage, processing, and selling, which produces more value added in the process of the value chain.

In addition, the successful strategies of the pork industry in Korea to have

international competitiveness during the continuous agricultural market liberalization over the past two decades are as follows:

(1) vertical integration led by co-operatives,
(2) membership strengthening and active roles of directors in the cooperatives,
(3) large scale in the business size through continuous M & A,
(4) the quality differentiation strategy and the brand establishment of 'Dodram Pork",
(5) quality and price competitiveness against agricultural market liberalization,
(6) effective disease control system,
(7) comprehensive agricultural policy package for the development of the pork industry

Therefore, strategies to pursue the active participation of Vietnam's agriculture in the GVC are as follows:

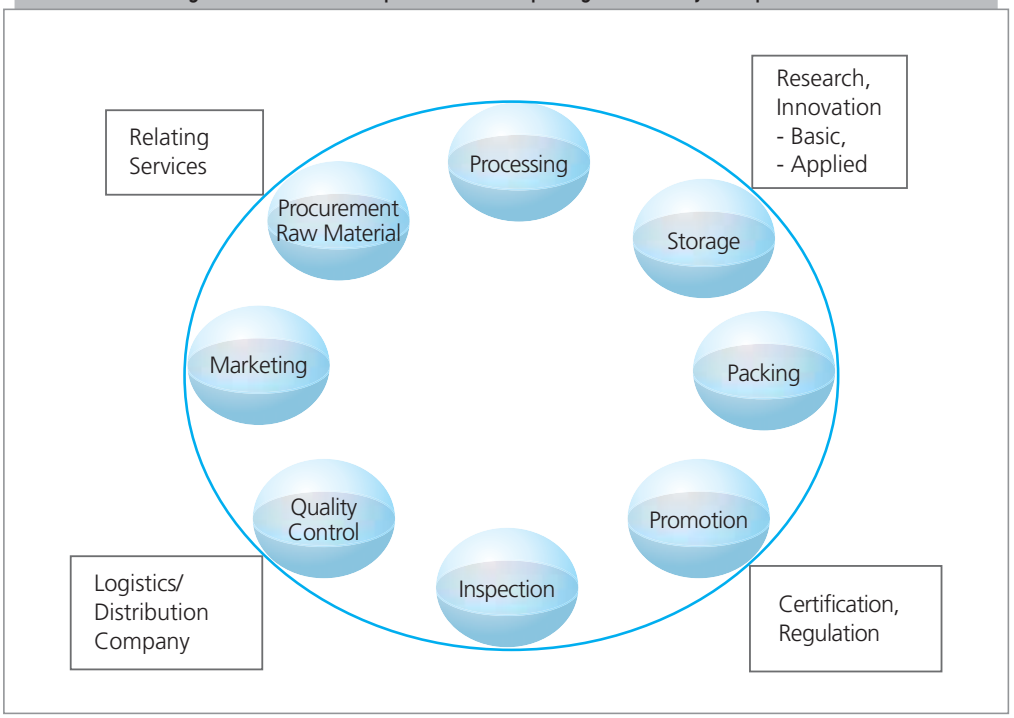
(1) formation of farmer's associations(cooperatives) and the expansion of cooperatives' function,
(2) price competitiveness through vertical integration and large scale in business size,
(3) quality competitiveness through systematic quality control and disease control system,
(4) establishment of marketing strategy and build up of Vietnam's own brand, and
(5) government's active policy formulation and implementation on the infrastructure, agricultural technology development and extension system, and agricultural credit system

Furthermore, it is necessary to introduce the PPP (Public Private Partnership) model and its implementation to solve such problems as limitations of the capital and insufficient policy supports from Vietnamese government.

The introduction of the PPP model should consider the following basic principles for Vietnam's agriculture:

First, multiple agro-industry complex zones should be designated. For example, private companies, which can operate some functions of processing, shipping, and export, can participate in the major producing areas. Commodity-based cooperatives make contracts with private companies maintain good relationships with private companies. [Figure 1-22] illustrates the example of the multiple agro-industry complex zones.

[Figure 1-22] An Example of the Multiple Agro-industry Complex Zone

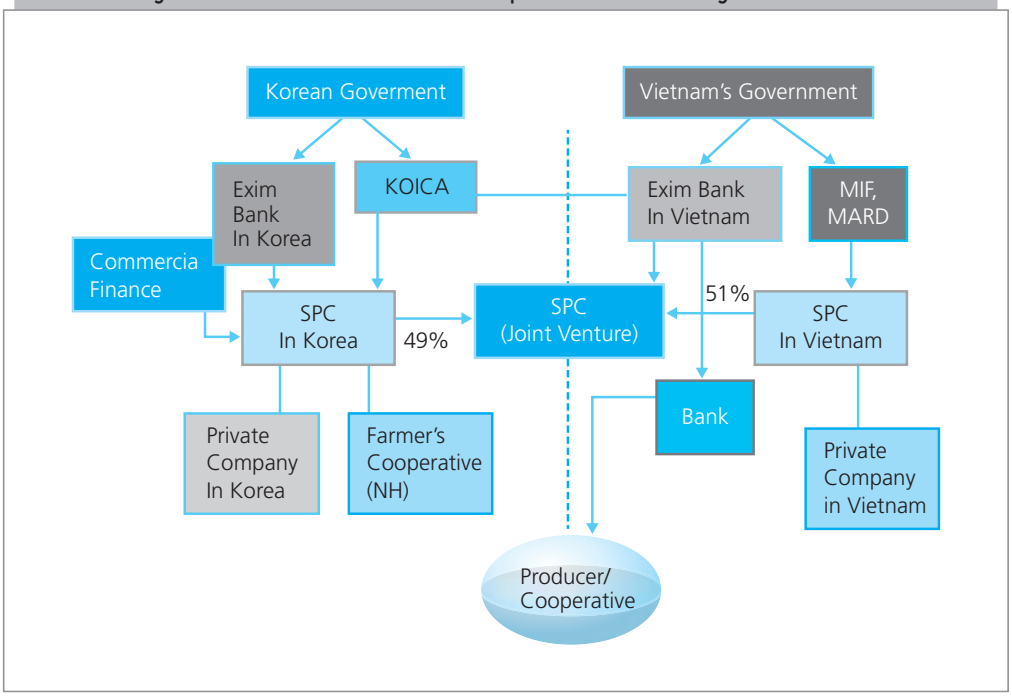


Second, the pilot project should be designed and implemented for the PPP model. The finance and management for the pilot project is covered by both Vietnamese and Korean governments. In Korea, KOICA and EXIM bank provides public funds such as ODA and development loans, and interested private companies can invest in this pilot project by establishing a special purpose company (SPC). National Federation of Agricultural Cooperatives in Korea can also join the SPC to transfer management experiences to the Vietnamese cooperatives.

In Vietnam, Vietnamese government enacts laws and legislations in respect to the administration affairs. Vietnamese EXIM bank and private companies provide funds to the SPC, which Vietnamese farmers, cooperatives, and agribusiness companies participate in providing the funds.

SPC, which is responsible for the overall management of the pilot project, is composed of Vietnam's 51% and Korea 49% shares.

[Figure 1-23] PPP Model for the Participation of Vietnam's Agriculture in GVC



Third, since the important thing in managing this pilot project is to foster farmers and cooperatives with international competitiveness, and systematic education, and training program should be established.

Fourth, the production of farms and cooperatives are realized by contract farming and related issues regarding business management, and it should be confirmed by contracts between government - government, government - farmers/cooperatives, and agribusiness companies - farmers/cooperatives.

Finally, the pilot project should be implemented by the phased project planning. For example, the short-term planning includes feasibility study, comprehensive planning, financial planning, and SPC establishment, etc. <Table 1-8> shows the short-term, mid-term, and long-term planning for the pilot project.

In order to implement the pilot project successfully, the active participation of Vietnamese government is needed. In establishing the legal policy framework and the special economic zone, the roles of Korean and Vietnamese governments are so important.

〈Table 1-8〉 Phased Project Planning for the Pilot Project

Phase	Major Tasks for Implementation
Short-Term	- Feasibility Study - Comprehensive Planning - Financial Planning - SPC Establishment
Mid-Term	- Expansion of Linkages in the GVC - Farm Support System (R&D, Farm Inputs, Farm Credit, etc.) - Post-harvest Technology, Quality Control, Brand Image - Mid-term Monitoring and Evaluation
Long-Term	- Multiple Agro-Food Industrial Complex Zone - New Market Development - Evaluation and Feed Back System

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Chapter 2

Long-term Sustainable Energy Policy for Vietnam

Long-term Sustainable Energy Policy for Vietnam

Tae Yong Jung (KDI School of Public Policy and Management)

Summary

Vietnam has shown strong economic growth and as a result has had a significantly increase in energy demand. The global energy outlook anticipates a significant growth in global demand, as emerging economies become the growth engines of the global economy. The price of energy is anticipated to rise and fuel greater exploration and production of energy resources, especially fossil fuel to support the demand of emerging markets. Global energy security combined with climate change is pushing countries to diversify energy sources and increased investments in low carbon fuels of renewable and nuclear energy.

Vietnam has been able to weather the global economic crisis and has become a rising economy in Southeast Asia. Although the country is currently an energy exporter, by 2015 demand is expected to surpass domestic production and Vietnam will become a net energy importer. Various stakeholders are involved in the energy sector, but the state-owned enterprises that have contributed greatly to Vietnam's rapid growth. In order to maintain consistent economic growth, investments in energy development and policy reforms are needed to ensure a stable energy supply.

Korea's shift towards energy security and sustainable energy polices can provide implications to help facilitate Vietnam's energy development. The national energy master plan of Korea creates a long-term vision and goals for the development of energy policies. Korea's experience can provide Vietnam with practical strategies for

developing robust and sustainable energy policies.

1. Introduction

The global energy outlook is looking more diverse and rapidly changing. The rapid growth of developing economies is increasing demand and placing greater demand on global energy resources. Although increased production is anticipated, the growing demand and rising cost of energy is expected to increase production and make previously more expensive and difficult to reach energy sources more accessible. However, the challenges of climate change have put renewed interest in low-carbon energy sources. It is becoming increasingly critical to develop sustainable energy policies that can ensure a steady long-term supply of energy to fuel the economic and social development. Vietnam is one the leading developing economies in the region and its rapid economic growth have fueled greater demands on energy. In this report we explore the global energy trends and how Vietnam could develop policies for long-term energy security.

In Chapter 2, the international outlook on energy is explored. Energy demand is expected to grow significantly over the next three decades, fueled by economic growth in emerging economies. The demand of all source of energy is expected to grow with fossil fuels, e.g. coal, oil, and gas, as being the main sources for much of the world. Climate change and the move toward low carbon energy sources are expected to impact the choice of fossil fuel use and lead toward greater adoption of more efficient energy use. The relative lower carbon intensity of natural gas has made it a favorable choice as the transitional fuel toward non-carbon emitting sources of nuclear and renewable energy technologies. However, due the recent disaster at the Fukushima nuclear power plant in Japan, a renewed concern about the safety of nuclear facilities has led to many countries to review their nuclear energy policies.

Vietnam's economy has been growing rapidly and as a consequence its energy demand has increased significantly. Although Vietnam is currently an energy exporter, the economy has grown dependent on oil and oil products that are primarily imported. The country is expected to become a net energy importer by 2015; therefore it is critical to develop long-term energy policies and strategies to ensure enough energy resources to prioritize the socio-economic development of the country. Energy security is being sought through diversification of its energy demand by increasing domestic energy generation and regional partnerships.

Chapter 3 examines Vietnam's energy outlook. The rapid economic growth of Vietnam is placing increased pressure on energy resources to maintain economic

develop. Vietnam is endowed with large reserves of natural resources, particularly of coal and oil. The country has been an energy exporting country, facilitating the development of the national economy. However, energy demand is expected to outpace production and by 2015 Vietnam will become a net energy importer. Greater investment and reforms will be necessary to meet domestic energy needs to fuel continued economic development.

The energy policies and institutions of Vietnam are evaluated in Chapter 4. Vietnam lacks a central energy master plan, but has various decrees and laws that constitute its energy policy, including the National Master Plan for Power Development, passed in 2007. The Ministry of Industry and Trade (MOIT) has authority over all of the energy matters, including industries. The energy sector in Vietnam is dominated by state-owned enterprises; Viet Nam National Coal Corporation (Vinacomin), Viet Nam Oil and Gas Group (PVN), and Viet Nam Electric Power Group (EVN).

Energy security ensures the uninterrupted availability of energy resources at an affordable price. Both long- and short-term energy security policies must be coordinated to ensure a reliable and consistent supply of energy resources. Long-term energy security is linked to timely energy investments in accordance with economic development and environmental goals. Short-term energy security focuses on the ability to react promptly to sudden changes in the supply-demand of the energy market. .

Vietnam must overcome a number of energy security challenges. Although Vietnam is an oil producing country, the country still must import significant amounts of petroleum products even with the completion of their first oil refinery in 2009. The country also lacks a strategic oil reserves, making the economy vulnerable to fluctuations in the global energy market. The energy sector is still under reform; power outages are improving and the system lacks appropriate reserves. Current energy investments are not sufficient to meet the rapid growing demand for power generation. The coal sector is facing in improving environmental protection, declining reserves, and must cultivate new reserves and build infrastructure to meet increasing demand. The discovery of new oil and gas fields are expected to be relatively small in size and current producing large oilfields are in decline with an expected depletion over the next 10-15 years (APERC 2013b).

To increase energy security and reduce dependence on imported petroleum products, Vietnam passed the "National Energy Development Strategy for the period up to 2020, with an outlook to 2050" (PMVN 2007). Policies included; the use of legislative reforms and the development of infrastructure to increase domestic energy capacity; utilize preferential financing and international cooperation to

enhance exploration and development of domestic energy reserves; increase production to reduce dependence on foreign imports and global price volatility, increase energy efficiency and conservations; the development of overseas oil and gas resources; increase regional and international cooperation; and develop clean and renewable energy.

The Korean energy policies and industries are reviewed in Chapter 5. A brief overview of Korea's National Energy Master Plan provides a framework for developing strategic energy policies and goals. The energy industry in Korea highlights the diversification of energy development even when there is lack of natural resources. The move to diversify in to different stages of energy production and incorporate advanced technologies of nuclear and renewables have allowed Korea to generate a diverse energy mix.

This report concludes with policy implications from Korea's energy sector development history and policy recommendations. The Vietnam can take away from Korea the focus on diversify the supply side of energy through the development of a variety of energy industries focusing on multiple stages of the energy development process. The importance of institutions in developing a comprehensive plan and strategy is critical for the growth of energy industries and creating an efficient energy market.

2. Global Energy Outlook

2.1. Global Energy Supply

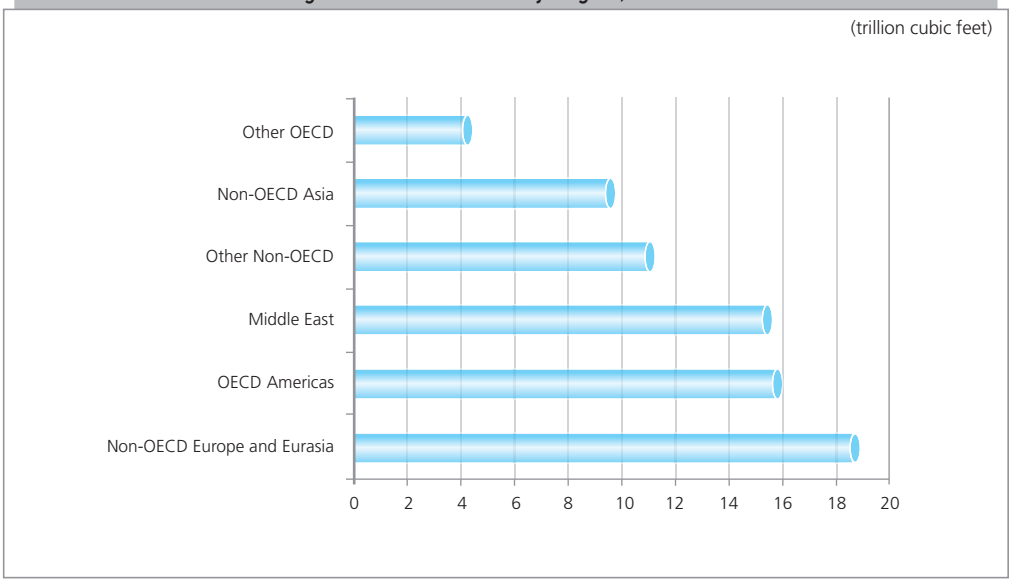
Fossil fuels are expected to supply nearly 80 percent of global energy use through 2040 according to the International Energy Outlook 2013 (IEO2013) by the U.S. Energy Information Administration. Coal use will grow more quickly than petroleum and other liquid fuels until 2030, mainly due to China's demand and lower demand growth in liquids by OECD countries and high oil prices. Growing supplies and discoveries of new tight gas, shale gas, and coal bed methane are supporting worldwide growth of natural gas use. Natural gas is anticipated to be the fasters-growing fossil fuel with a demand increase of 1.7 percent per year.

Global coal production will grow by an additional 3.5 billion tons by 2040 from the nearly 8 billion tons produced in 2010, at an annual average growth of 1.2 percent. Non-OECD countries account for almost 94 percent of the growth in the production of coal primarily. India and China account for the vast majority of production growth accounting for 73 percent. The US is the world's second largest producer and much of their production along with Canada is for export. Over half of

the global coal production in 2010 came from non-OECD Asia countries of China (the largest producer in the world), India (the third-largest producer), and Indonesia (the fifth-largest), accounting for 4.5 billion tons.

Oil production worldwide grows by 28.3 million barrels per day from 2010 levels to total 115 million barrels per day by 2040. The rising price of oil has also led to the rise of more expensive types of oil becoming profitable to develop, including "bitumen, extra-heavy oils, tight oil, and shale oil" (US EIA 2013a). Technological innovation has led to increased productivity and made previously difficult and expensive to reach sources more accessible. These new energy developments especially in non-OPEC countries are anticipated to have serious impacts on global oil supplies. Technology development and increased exploration is expected to increase productivity and discover new oil reserves. The shale oil of the US and oil sands of Canada are expected to increase production in the region.

[Figure 2-1] Natural Gas by Region, 2010-2040



Source: US EIA 2013a

Over 70 percent of the total growth in global natural gas production from 2010 to 2040 will come from non-OECD nations. Recently energy findings from shale oil and gas have received a great deal of attention. Shale oil and gas is trapped within shale rock and sand formations. Due to low permeability, extracting shale natural oil and gas had been difficult. However, innovations in extracting methodologies, e.g. horizontal drilling and hydraulic fracturing, and increased oil prices have drastically transformed the economics of global energy productions. According to a new US EIA

assessment, the global shale oil and gas resources that are technically recoverable are estimated to be 345 billion barrels of shale oil and 7,299 trillion cubic feet of shale gas (US EIA 2013b). This estimate does not include unconfirmed reserves in Russia and the Middle East, which could further expand estimates in the future.

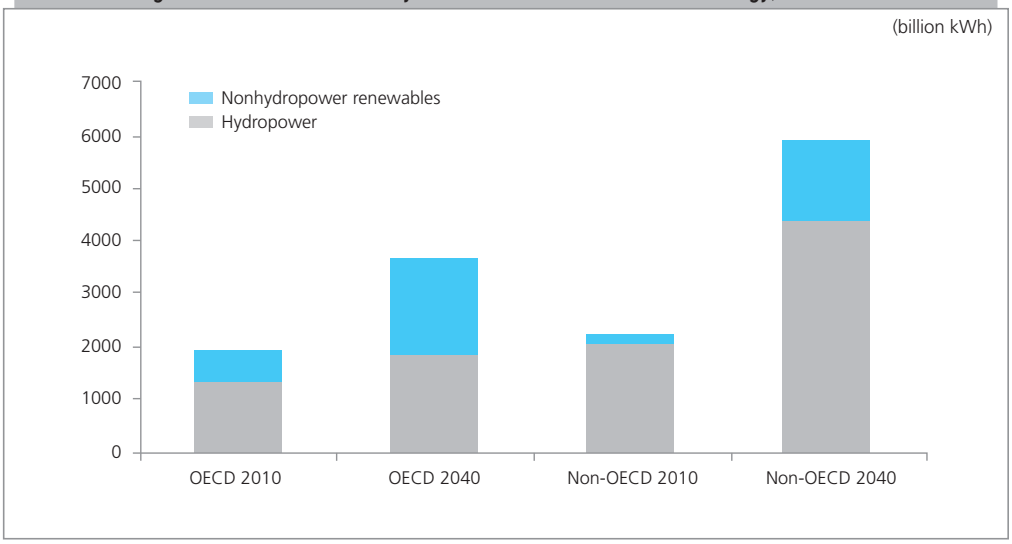
Newly identified reserves of shale gas have risen sharply with a boom in exploration and they are expected to disrupt the geo-economics of global energy production, as some countries that were traditionally energy importers become exporters. The production of US shale gas is expected to increase from 4.9 trillion cubic feet (2010) to 33.1 trillion cubic feet (2040). The shale formations are relative distributed across the world with new discoveries in China, Argentina, and Mexico to name a few, but it is increasingly clear that OPEC (Organization of the Petroleum Exporting Countries) production will have a more limited effects on the global market price of oil in the future. The rapid development of shale extraction technology has greatly reduced the cost of shale oil and gas exploration and development in North America from $73 per 1000 cubic meter in 2007 to $31 by 2010.

〈Table 2-1〉 Shale Oil & Shale Gas Resources

Total World	Crude Oil (billion barrels)	Wet Natural Gas (trillion cubic feet)
Shale / tight oil and shale gas proved reserves	n/a	97
Shale / tight oil and shale gas unproved resources	345	7,201
Other proved reserves	1,642	6,741
Other unproved resources	1,370	8,842
Total	3,357	22,882
Shale as a percent of total	10%	32%

Renewable and nuclear energy are projected to be the fastest growing sectors with 2.5 percent average annual growth. However, there share of global energy still remains relative low. The share of renewable energy is expected to grow from 11 percent (2010) to 15 percent (2040) of total energy use. Anticipated policies regarding climate change and carbon emissions are expected to greatly increase renewable energy development. Hydropower and wind power are expected to fuel 80 percent of the increase in renewable energy over the next 30 years. Non-OECD countries represent 82 percent of the growth in hydroelectricity, while OECD accounts for 52 percent of the growth in wind energy.

[Figure 2-2] World Electricity Generation from Renewable Energy, 2010-2040



Source: US EIA 2013a

Renewable energy is expected to grow by 40 percent from 2013 to 2018 according to the International Energy Agency (IEA 2013). Deployment and investment of renewables in emerging economies are rapidly growing as they address multiple concerns of increased energy demand, diversification of energy, and environmental concerns. The falling cost of renewable technologies is making renewable energy increasingly more competitive and attractive than fossil fuels. By 2018, renewables energy will make up almost a quarter of the global power mix.

Worldwide electricity generation from nuclear power rises from 2,620 billion kilowatt hours in 2010 to 5,492 billion kilowatt-hours in 2040, as energy security and greenhouse gas emissions concerns supports new nuclear capacity. In addition, world average capacity utilization rates have generally risen over time, from about 68 percent in 1980 to about 80 percent in 2011. The estimation of the IEO2013 takes in to account the consequences of the Fukushima nuclear accident in 2011; the planned retirement of nuclear capacity in OECD Europe; and the growth of nuclear generation in non-OECD Asia.

The Japanese Tohoku earthquake and related tsunami in March of 2011 drastically reduced the country's nuclear generation capacity. Immediately after the accident, the Prime Minister was forced to request that some nuclear reactors in the rest of the country be shut down. Not only were the four damaged Fukushima Daiichi reactors shut down, but over the next year fifty other Japanese nuclear reactors were also shut down. In addition, the ongoing construction of reactors has been entirely halted and new rules requiring that the reactors that were shut down

are stress-tested before they are restarted and that they undergo periodic inspections were introduced. Two of the reactors have since returned to service with additional reactors expected to return soon. Japan's loss of nuclear capacity was compensated by increased generation from natural gas, oil, and coal; and additionally through efficiency and conservation measures to reduce demand. Fossil fuels and conservation continue to bridge the energy gap left by the closure of nuclear reactors. In October 2011, the government published a "white paper" confirming that Japan's dependency on nuclear energy will be reduced as much as possible in the medium and long term. Long-term plans may include deploying more renewable energy, as well as stepping-up measures to improve energy efficiency and to encourage cleaner use of fossil fuels.

The Fukushima nuclear power plant disaster could have lasting implications for the future of nuclear power development. China, where significant increases in nuclear capacity have been announced, has halted the process of approving all new reactors until regulators complete its safety review. Germany and Switzerland has decided to phase out nuclear reactors by 2022 and 2034, respectively. Italy will delay a review of future nuclear programs for one year; and numerous countries, including South Korea, have ordered review of their safety and natural disaster plans with regard to nuclear power plants. Uncertainty has surrounded the future of nuclear power projects across the globe as many countries reevaluate the risk associated with nuclear reactors.

In 2010, Germany had 17 reactors operating with a total gross capacity of 20 GW, providing about 23 percent of the country's electricity. Within days of the Fukushima nuclear power plant accident, in an unexpected response, the German government ordered the suspension of operations at seven of its older nuclear plants (operating before 1980) and that another older plant, which was temporarily offline due to technical reasons, should not be restarted. In May 2011, the government followed with a decision to abandon completely the use of nuclear power by 2022. Eight facilities will be closed permanently, while the remaining nine nuclear power plants were to be gradually phased out: one plant each in 2015, 2017, and 2019, respectively; three plants in 2021, and three plants in 2022. The German decision to phase-out nuclear energy by 2022 will be a challenge to its energy mix. It will also affect the energy system in Europe, since it will mean that more intermittent power output will have to be delivered to Germany and more electricity will be traded across borders.

Europe in general has taken a different stance than Germany and Switzerland. The EU has reinforced safety as the primary concern and has conducted safety checks and reviews over its nuclear plans, but has concluded to move forward with current construction and plans to develop additional nuclear capacity. Nuclear power plants

generate about 30 percent of the electricity produced in the EU. There are currently 132 nuclear reactors in operation in 14 EU member countries. Each EU country can decide whether it wants to include nuclear power in its energy mix. The Euratom Treaty ensure the safe and sustainable use of nuclear energy across the EU and help non-EU countries meet high standards of safety, security and non-proliferation.

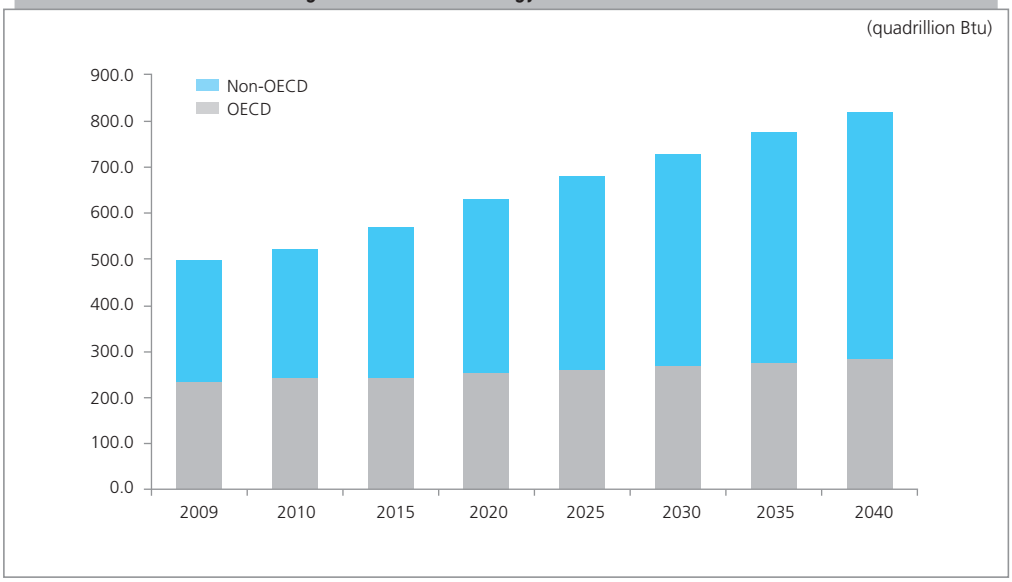
By region, non-OECD Asia is anticipated to have the highest growth in nuclear energy with an average increase of 9.2 percent per a year from 2010 to 2040, with 10.2 percent growth in China and 10.6 percent growth in India. China is leading with 43 percent of world's active reactors projects under construction as of 2011 and will build net generating capacity of 160 GW by 2040. Outside of Europe the next largest increase in nuclear capacity is in OECD Europe with a modest average growth rate of 0.7 percent per year, with worldwide growth to be anticipated at 2.5 percent per year. Korea has already publicly stated that its plans for nuclear expansion will continue. Korea has also inspected existing plants and implemented plans to increase the independence of safety regulators and improve safety drills and practices. Korea currently receives 40 percent of its total energy from 21 nuclear reactors. .

2.2. Global Energy Demand

International energy demand is anticipated to increase by 56 percent over the next three decades. Global demand will grow from 524 quadrillion Btu in 2010 to 630 quadrillion Btu in 2020 and reaching 820 quadrillion Btu by 2030, according the International Energy Outlook 2013 (IEO2013) by the U.S. Energy Information Administration. The 85 percent increase in energy demand is occurring in non-OECD (Organisation for Economic Co-operation and Development) member countries. China and India accounted for only 10 percent of global energy demand in 1990; by 2010 they accounted for almost a quarter at 24 percent and are expected to rise to 34 percent of global demand by 2040. Long-term economic growth in non-OECD countries will lead to increases in energy use by 90 percent, where OECD countries will increase by only 17 percent.

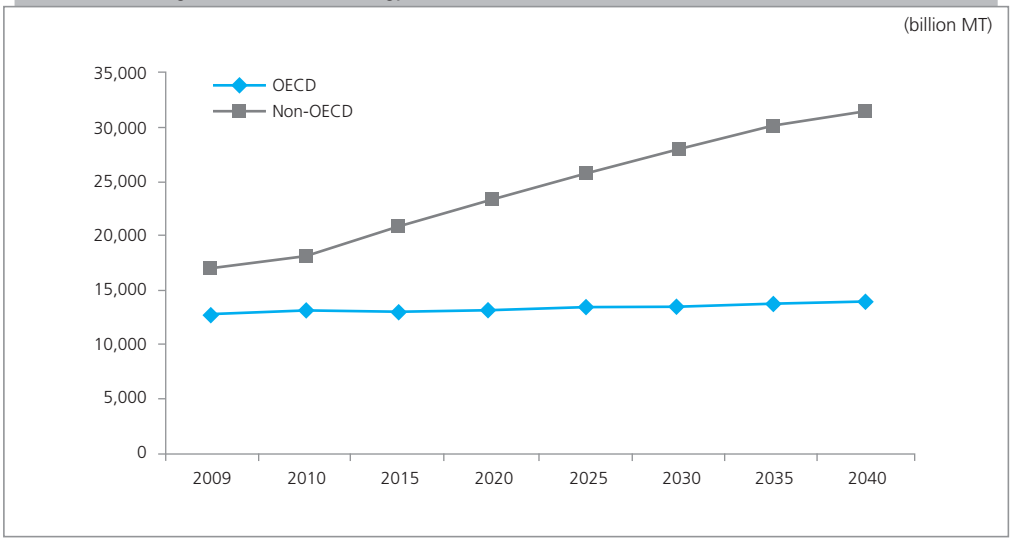
Strong economic growth and continual reliance on fossil fuels are expected for most non-OECD countries under current policies and much of the anticipated increase in carbon dioxide emissions occurs among the developing non-OECD economies. Non-OECD emissions surpassed OECD emissions by 38 percent in 2010; by 2040, they are expected to outpace OECD emissions by about 127 percent. Coal maintains the largest share of carbon dioxide emissions throughout the projection. Worldwide energy-related carbon emissions are forecasted to rise from 36 billion metric tons in 2010 to 46 billion metric tons by 2040.

[Figure 2-3] World Energy Demand 2009-2040



Source: US EIA 2013a

[Figure 2-4] World Energy-related Carbon Dioxide Emissions, 2009-2040

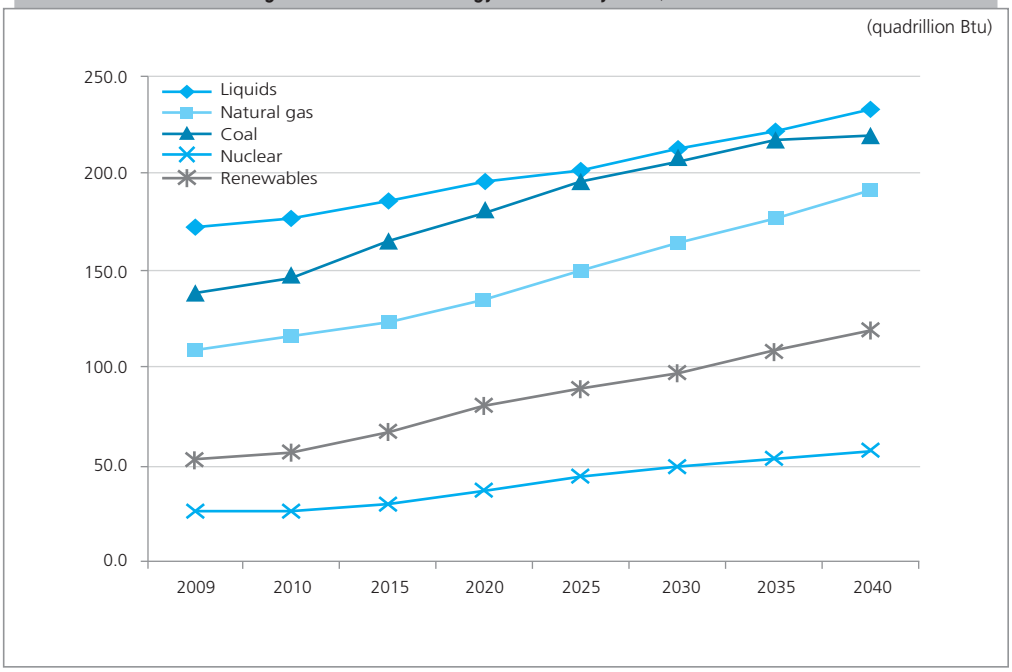


Source: US EIA 2013a

Global coal demand is expected to climb to 180 quadrillion Btu in 2020 and to 220 quadrillion Btu in 2040 from 147 quadrillion Btu in 2010, an annual average growth of 1.3percent. Non-OECD countries, including China and India, primarily drive this growth according to IEO2013. In the long-term, the growth of coal demand is expected to diminish with the rise of cleaner energy sources. In 2010, 70 percent

of global coal demand came from three countries, China (with 47 percent), the United States (US) (with 14 percent), and India (with 9 percent), and by 2040 they are expected to increase their global share to 75 percent. Between 2001 and 2009, China's rapid development contributed to 88 percent of the growth in global coal demand (US EIA 2013a). The continued growth of non-OECD is expected to expand coal use with India surpassing the US after 2030, as the 2nd largest coal consuming country.

[Figure 2-5] World Energy Demand by Fuel, 2009-2040



Source: US EIA 2013a

IEO2013 also anticipates global oil use to grow from the 2010 levels of 87 million barrels per day to 97 million barrels per day by 2020 and surge to 115 million barrels per day by 2040. The non-OECD Asia account for nearly 70 percent of the growth in oil demand led strong economic growth. The growth in demand from China and India will surpass the growth demand of the rest of the world combined. Strong growth in population will push Middle East demand for liquid fuels over the next 30 years. The rising price of oil has made other fuel sources more cost-competitive, leading to changes in fuel source when possible in all sectors. By 2040, the transport and industrial sectors are expected to account for 92 percent of oil demand.

Natural gas is the environmentally favored choice in comparison to other hydrocarbon fuels. The lower carbon intensity of natural gas compared with coal

and oil has made it the preferable energy fuel for the industrial and electric power sectors in many regions of the world where many governments are implementing greenhouse gas reduction policies. The relatively lower capital costs and the favorable heat rates for natural gas generation has made it a favorable alternative fuel for new power plants.

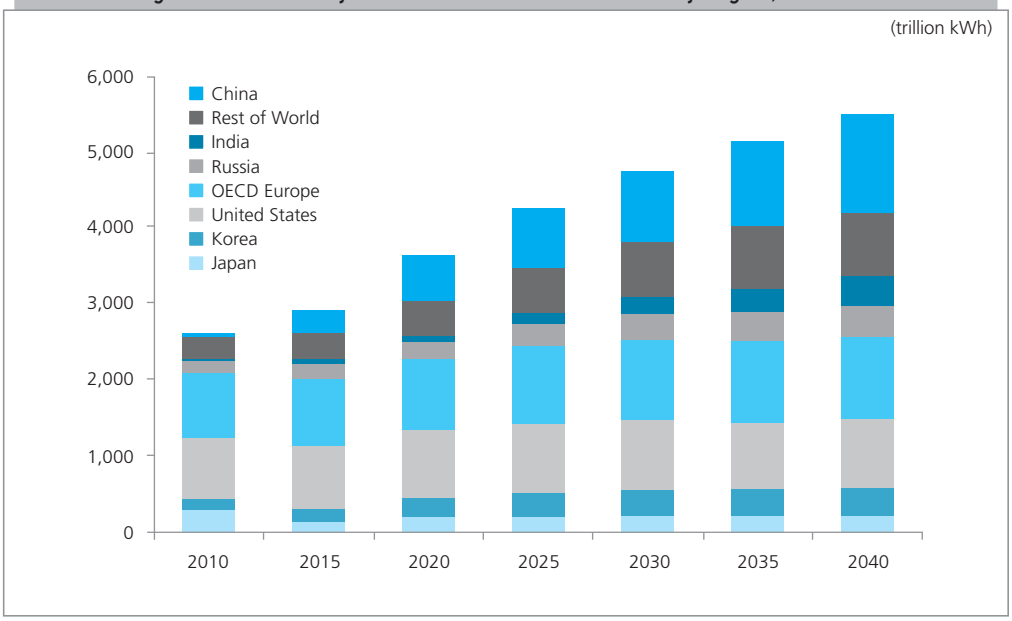
Natural gas is expected to be the fastest-growing fossil fuel in the world, with demand growing from 113.0 trillion cubic feet in 2010 to 185.0 trillion cubic feet in 2040 (US EIA 2013a). Growth in demand occurs in every region and particularly in non-OECD countries, where demand grows more than twice as quickly as in OECD countries. The total global demand of natural gas for industrial use is anticipated to grow by an annual average of 1.5 percent till 2040, while the annual demand in electric power is expected to increase by 2 percent. The industrial and electric power sector is projected to account for about 77 percent of the expected increase in natural gas demand. Non-OECD countries are forecasted to show particularly strong natural gas demand as they are anticipated to have greater economic growth. Non-OECD countries demand is expected to grow twice as fast as OECD countries with an average of 2.2 percent per a year through 2040, as compared to 1 percent for OECD countries. IEO2013 anticipates non-OECD countries will account for 72 percent of the global increase in natural gas demand and their share of natural gas use will rise from 51 percent in 2010 to 59 percent in 2040.

2.3. Shift from Fossil Fuels

Energy security and environmental concerns has led countries toward energy policies that reduce carbon emissions and diversify energy sources. Projected higher energy prices and increasing volatility of carbon-intensive energy has pushed for increased demand for renewable and nuclear energy. Although many countries of have developed policies and goals for renewable and nuclear energy targets, demand has been primarily driven by governments pushing and requiring industries to diversify their energy mix.

Prior to the Fukushima incident, the US was a big proponent of nuclear power as an important component to the long-term energy strategy toward reducing carbon emissions. In 2010, President Obama announced that the Department of Energy has offered conditional loan guarantees for the development of two new nuclear reactors in Georgia (White House 2010). The new facilities would mark the first nuclear power plant to be built in the US in nearly 30 years. However, after the nuclear disaster in Japan the support for nuclear power has diminished. Not only has public support diminished, but also the economics of the energy market has made it difficult to support.

[Figure 2-6] Electricity Generation from Nuclear Power by Region, 2010-2040



Source: US EIA 2013a

Although the new facilities are being constructed, many more are either shutting down or preparing to shut their reactors down. Japan has reminded the public of the dangers of nuclear power and public support has dropped significantly. As a result, the country has publicly stressed the concerns for safety and has revised safety plans and protocols to ensure against similar incidents from occurring in the US. Although the Obama administration has supported the building of new nuclear power facilities, the private utilities have been less optimistic return on investment and have begun shutting down facilities due to cost constraints. The failure of implementing a carbon market combined with the new discoveries of shale gas has made the economics of nuclear power too expensive. Natural gas emits only half the amount of carbons as coal, and the cost of developing new gas power facilities are far less than nuclear power plants that can cost billions and take decades to complete.

However, the actual rate of growth of nuclear power worldwide is expected to be slower than previously forecasted. High capital and maintenance costs may keep some countries from expanding their nuclear power programs, while a lack of trained personnel, concerns about safety, and limited global nuclear supply chain capacity could keep national nuclear programs from meeting previously planned schedules. A variety of factors impacts the projected growth of nuclear development in the short-term, including current policy activities of national governments and the nuclear industry, and in the long-term geopolitics; technology advancement, environmental policies, and viable alternative technologies play a critical role.

3. Energy Outlook in Vietnam

Vietnam has a population of 92.47 million residents that is spread over 63 provinces and cities, covering 331,210 km^2. Vietnam has been able to maintain stable growth despite the challenges of the 2008 global recession. In 2012 the GDP growth rate reached 5.2 percent and GDP per capita (PPP) reached $3,800 USD (CIA). Economic growth has increasingly pushed energy demand and ensuring a stable energy supply for the economy has become very critical. Vietnam's energy system is rather diverse, consisting of exploitation, production and supply of primary energy sources such as coal, crude oil, gas, and hydropower sources.

3.1. Energy Supply

3.1.1. Production

Coal

Coal production in Vietnam can be found primarily in the north in two large coalfields located in the Quang Ninh province and the Red River Delta. Anthracite coal is found in the Quang Ninh province with a reserve of about 5.9 billion tons and the Red River Delta has sub-bituminous (brown) coal with several hundred billion tons of reserves (APERC 2013b). Coal production has been primarily for domestic demand as the main fuel for electrical generation and other industrial activities.

〈Table 2-2〉 Vietnam Coal Production (1990~2011)

(Unit: million tons)

Year	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011 est.
Production	4.6	8.4	11.6	34.1	38.9	43.2	39.8	44.1	44.8	45.8

Source: SYB 2011, Vinacomine

Coal production has been rapidly growing in Vietnam since 1990. Coal production was 4.6 million tons in 1990 and increased to 8.4 million tons in 1995. The average growth rate was 9.6 percent during the period from 1991 to 2000 and 5.6 percent for the period 2005-2010. In 2010, Coal accounted for 23 percent of the total primary energy supply in Vietnam.

Coal exports have helped Vietnam bring in foreign currency reserves, but rapid economic growth is requiring greater amounts of energy for domestic use. Vietnam exported a record amount of coal in 2009 with over 20 million tons and the volume of coal production is expected to grow to 75 million tons by 2030, where production

will plateau (APERC 2013a). Vietnam is expected to outpace energy production by 2015, becoming a net energy importer. As a result, the coal export tax has been raised from 10 percent to 13 percent, in 2013, to limit exports and satisfy the rapidly growing domestic demand for energy.

Oil

Vietnam has made significant developments in the oil and gas sector to attract foreign investment, promote market reforms, and increase exploration making it an important producer in Southeast Asia. These policies have led to increased oil and gas production leading to rapid economic growth, industrialization, and export market development and increasing domestic demand for energy.

Crude oil production was 2.7 million tons in 1990 and increased to 7.6 million tonnes in 1995, a high growth rate of 23 percent per year for the period 1990-1995. Crude oil exploitation has been increased significantly in 2000 with 16.3 million tonnes. For the period 2005-2010, crude oil exploitation has decreasing from 18.5 million tons in 2005 to 15.0 million tons in 2010. In 2010, Oil accounted for 10.3 percent of total primary energy supply of Vietnam. The data of crude oil exploitation has been indicated in the period 1990-2010 the table below.

〈Table 2-3〉 Vietnam Crude Oil Production (1990~2011)

(Unit: million tons)

Year	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011 est.
Production	2.7	7.67	16.3	18.5	16.8	15.9	14.9	16.4	15.0	15.2

Source: SYB 2011, Petrovietnam

As of 2005, Vietnam had proven reserves of 615Mt of oil and is expected to grow with increased exploration. Over the twenty year period from 1990 to 2010 crude oil production has boomed from 2,749ktoe to 16,053ktoe, while exports has diminished on average 0.3 percent from 2000-2010. Vietnam has 14 oil-producing fields, most of the oil exploration and production occurs along the southeast coast in the Cuu Long and Nam Con Son basins.

Oil is a critical source of energy for Vietnam; in 2010 it was 44 percent of the country's primary energy supply. Continued exploration has led to a significant increase in the proven oil reserves from 0.6 billion barrels in 2011 to 4.4 billion barrels as of January 2013 (US EIA 2012). Much of Vietnam's coast still remains unexplored and continued exploration may lead to significant new oil discoveries in the future. Vietnam trails only China and India in the amount crude oil reserves in Asia.

Although Vietnam is a net exporter of crude oil, it is an importer of petroleum products. Over the last decade oil demand has doubled, requiring an increase in the importation of petroleum products. Prior to 2009 all crude oil was exported and all petroleum products were imported. To increase energy security and meet domestic demand an oil refinery in Quang Nam province became operational in February of 2009. The refinery has a capacity of 150,000 barrels per day and annually produces about 6.5 million tons of petroleum products for domestic demand (APERC 2013a).

Natural Gas

Vietnam gas resources are more favorable than its oil resources. Although gas resources can be found across the country, the largest gas reserves can be found in the offshore basin regions of Vietnam. Increased exploration has resulted from greater foreign investment from 2007 and has considerably grown natural gas reserves from 6.8 trillion cubic feet in 2011 to 24.7 trillion cubic feet in 2013 (US EIA 2013c). Along with the Cuu Long and Nam Con Son basins, natural gas and oil reserves has also been discovered in the southwest region of the Malay-Tho Chu basin and the north' Song Hong basin. The country is currently self-sufficient in natural gas, having produced and domestically consumed 272 billion cubic feet in 2011. However by 2025, demand is anticipated to surpass supply by 1.3 billion cubic feet gap of natural gas per a day. To help meet this growing demand, the government is considering the importation of liquefied natural gas (LNG). In 2010, natural gas accounted for 13 percent of Vietnam's total primary energy supply.

〈Table 2-4〉 Vietnam Natural Gas Production (1995~2011)

(Unit: million, m^3)

Year	1995	2000	2005	2006	2007	2008	2009	2010	2011 est.
Production	183	1580	6890	7520	6860	7499	8010	9402	8480
Gas for electricity	182	1224	4460	4950	5050	5410			

Source: Petrovietnam, SYB 2011, EVN

Vietnam has used gas for electricity generation since 1995, after the completion of the Bach Ho gas pipeline that connected the Bach Ho field to Ba Ria power plant. By 1999, gas was being supplied to Phu My power plant. In 2000, the Dinh Co. Gas facility was producing 1.58 billion m^3 of LPG and would grow by almost 5 times by 2008 to 7.5 billion m^3. The average growth rate for gas production was 6.4 percent from 2005 to 2010.

Electricity Generation

Coal, oil and gas are main fuels for electricity generation (EG). In 1990, 40 percent of coal production was used for electricity generation while gas represented 34.9 percent. Over the last 20 years the ratio has drastically changed, by 2009only 29.1 percent of coal production, while 88.6 percent of gas production was used forelectricity generation.

〈Table 2-5〉 Fossil Fuel for Power Generation (1990~2009)

(Unit: KTOE)

Year	1990	1995	2000	2005	2006	2007	2008	2009
Coal								
Total	2,212.2	3,313.5	4,372.5	8,341.5	9,030.4	9,681.2	11,888	12645
For EG	888	710	1,150	2,990.7	3,468.0	3,591.7	3,727.9	3679.6
Ratio %	40.1	21.4	26.3	35.9	38.4	37.1	31.0	29.1
Oil Products								
Total	2,859.6	4,616.6	7,916.9	12,336.3	12,022.2	14,148.9	14,057.8	14635.2
For EG	381	369	1,310	699.7	483.1	821.0	612.3	646.2
Ratio %	13.3	8.0	16.5	5.7	4.0	5.8	4.4	4.4
Gas								
Total	7.74	185.85	1,441.35	4,907.7	5,360.4	5,652.9	6,533	7290
For EG	2.7	165	1,102	4,154.3	4,636.4	4,916.3	5,693.0	6462
Ratio %	34.9	88.6	76.4	84.6	86.5	87.0	87.1	88.6

Source: EVN; Petro Vietnam

Hydro power plants have played a very important role in Vietnam. Electricity generation from hydro power plants has generally been a very high share in total generation of Vietnam's system. During the period 1990-2002, the share of electricity generation from hydro power plants peaked at 75 percent in 1994 and lowered to 51 percent in 1998. The share was reduced to 32.8 percent in 2008. Although total generation has steadily increased, the overall ratio of hydropower generation has been declining with the increased use of fossil fuels.

〈Table 2-6〉 Electricity Generation from Hydro (2007~2011)

(GWh)

Year	2007	2008	2009	2010	2011
Generation	23,035	25,986	29,981	27,550	40,924

Source: Insititute of Energy

In 2011 the total electricity generation was 105TWh, which has been heavily dependent on thermal power plants fueled by coal (27 percent), oil (5 percent), and gas (40 percent). Hydropower generation accounts for the remaining 28 percent of electricity generation. Between 2000 and 2010, generation grew at an average of 13.7 percent annually. Vietnam has moved toward energy policies aimed at reducing carbon emissions and improves long-term energy security through increases in nuclear power and renewable energy generation as part of their energy mix (Enerdata 2012).

The demand of electricity in Vietnam has nearly quadrupled from 2000 (22 billion kWh) to 2010 (86 billion kWh) and demand is expected to more than triple by 2020 to 330 billion kWh (US EIA 2013c).

The installed capacity and electricity generation has grown rapidly in Vietnam with the addition of gas-tubine and coal themal plants to the system. Power generation from gas-turbine and diesel plants grew on average of 14.1 percent per a year from 2001 to 2010. Coal thermal power generation increased at a similar rate of 13.2 percent per a year.

〈Table 2-7〉 Installed Capacity and Generation of Vietnam's Electricity System

Year	2010	2011	2012
Total Installed capacity (MW)	21,297	21,297	27,475
Total electricity generation (bill. kWh)	100.071	108.725	120.257

Source: Institute of Energy, Vietnam

There has been a growing interest in renewable energy in Vietnam, which has been reinforced with favorable policies and development. Vietnam has a wealth of renewable energy resources that are suitable for electricity generation, which include wind, solar, biomass, small hydro, and geothermal. Wind has a potential capacity of 2,000MW; biomass has 800MW; small hydro of capacity less than 30MW per a site around 4,000MW; and geothermal has a potential capacity of 300-400MW (US EIA 2013b).

There are a number of different organizations and institutions that are critical to the development of renewable energy in Vietnam. The Ministry of Industry and Trade monitors and implements energy policies, like Renewable Energy Action Plan (2001) and National Electricity Development Master Plan (2011). The Ministry of Science and Technology, Vietnam Electric Power Group (EVN), Petro Vietnam (PVN) and the Institute of Energy all play roll in the monitoring and developing of

Vietnam's energy policies. The government has been working with the international organizations and the private sector to induce foreign investment to aggressively pursue its renewable energy policies and development.

Renewable energy is a critical component to Vietnam's rural development. Around 70 percent of the country's 86 million people are living in rural areas and by 2012; about 4 percent of households are not expected to have electricity access. A number of policies have been legislated to promote rural electrification and renewable energy development in Vietnam.

3.1.2. Import and Export

Vietnam has relied on the importation of energy to meet the growing demand of its emerging economy. Imports of petroleum products have increased from 5,000 thousand tons in 1995 to 9,900 thousand tons in 2010. Electricity has been imported from 2005, increasing from 383 GWh in 2005 to 4,102 GWh in 2009. In the recent years, the export of the crude oil and the import of petroleum products has been reduced due to the opening of the first domestic oil refinery, the Dung Quat Refinery in 2009 with annual capacity of 6.5Mt of oil, enough to supply 33 percent of the country's total demand for petroleum products. As a result Vietnam is more energy secure and less dependent on foreign petroleum products, which can be seen in the energyimport and export during the 1990-2010 period presented in the <Table 2-8>.

〈Table 2-8〉 Energy Imports and Exports (1990~2011)

Year	Import of Petroleum products, refined (Unit: 103 tons)	Export of Crude Oil (Unit: 103 tons)	Export of Coal (Unit: 103 tons)	Import of Coal (Unit: 103 tons)	Import of Electricity (GWh)	Export of Electricity (GWh)
1990	2,888	2,617	789			
1995	5,004	7,652	2,821			
2000	8,748	15,423	3,251			
2005	11,500	18,000	18,000		383	
2006	11,894	16,442	29,308		966	
2007	13,651	15,062	31,948	785	2,630	
2008	13,000	13,800	19,400	806	3,220	
2009	13,000	13,400	25,000	908	4,102	-373
2010	9,900	8,100	19,700	1171	5,599	-964
2011 est.	10,700	8,200	17,200	1118	4,959	-1,087

Source: SYB 2011, Department of Customer, EVN, Insititute of Energy, Vietnam

3.2. Energy Demand

Energy has supported Vietnam's economic development by fueling its industrial growth and generating foreign revenue through exports. Vietnam's energy supply is geographically divided by coal production in the northern region and oil exploration off the coast in the southern half of Vietnam. Rapid economic growth has fueled greater energy demand. During the first decade of the 21st century, Vietnamese demand of coal and oil grew annually by 10 percent and has begun importing oil in 2011 (Korea Energy Economics Institute 2013). Although Vietnam has been a net energy exporter since 1990, it is projected that they will become a net energy importing economy by 2015.

〈Table 2-9〉 Total Primary Energy Demand (1990~2009)

(Unit: KTOE)

Year	1990	1995	2000	2005	2006	2007	2008	2009
Coal	2,212	3,314	4,372	8,341	9,030	9,681	11,888	12,645
Oil	2,860	4,617	7,917	12,336	12,022	14,149	14,058	14,635
Gas	7.7	186	1,441	4,908	5,360	5,653	6,533	7,290
Hydro	2,063	3,237	4,314	3,835	4,619	5,213	5,881	6,785
Non-Commercial	12,421	12,872	14,191	14,794	14,767	14,748	14,725	14,722
Imported Electricity	-	-	-	33	83	226	277	321
Total	19,564	24,225	32,236	44,247	45,881	49,670	53,362	58,370

Source: Institute of Energy, Vietnam

Total primary energy demand in Vietnam has grown significantly from 19,564 KTOE in 1990 to 44,247 KTOE in 2005 and 53,364 KTOE in 2008. An average growth rate of 5.9 percent from 1990 to 2005. Total primary energy demand has been growing much more quickly in the last few years with an increase of 8.3 percent in 2007, 7.4 percent in 2008, and 9.4 percent in 2009.

Total final energy consumption has been increased sharply from 16.76 MTOE in 1990 to 46.8 MTOE in 2009. An average growth rate of 5.6 percent for the period of 1990 to 2009. Total final energy demand has grown significantly nearly tripling from 1990 to 2009 demostrating the rapid industrialization of the Vietnamese economy.

〈Table 2-10〉 Total Final Energy Demand (1990~2009)

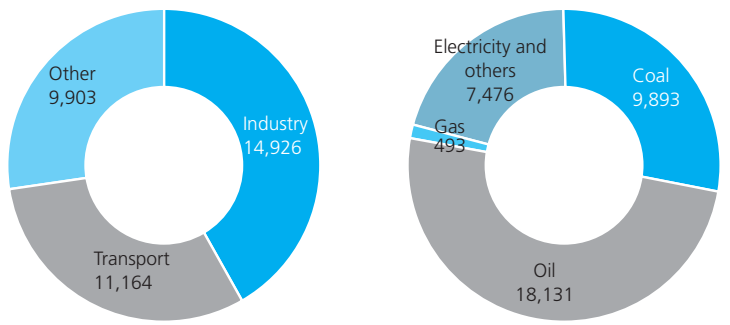
(Unit: KTOE)

Year	1990	1995	2000	2005	2006	2007	2008	2009
Coal	1,324	2,603	3,223	5,351	5,562	6,089	8,271	8,966
Oil Products	2,479	4,247	6,920	12,122	12,023	13,713	13,797	15,851
Gas	5	21.2	19.4	537	485	542	666	639
Electricity	532	963	1,927	4,051	4,630	5,275	5,834	6,615
Non-Commercial	12,421	12,872	14,191	14,780	14,748	14,726	14,710	14,704
Total	16,760	20,707	26,280	36841	37,449	40,345	43,277	46,774

Source: Institute of Energy, Vietnam

[Figure 2-7] Vietnam Final Energy Demand by Sector & Fuel, 2010

(KTOE)



Source: EDMC, APERC (2012b)

Energy demand continues to fuel rapid economic growth. Electricity demand showed rapid growth between 2000 and 2010 with a 13 percent annual growth rate. Industry is one of the leading energy consumers and made up for 41 percent of the final energy demand in 2010 with 12 percent annual average growth for the decade prior. The biggest energy users include the steel, paper and pulp, and construction materials industry. The transport sector accounted for almost a third of final energy demand in 2010 (APERC 2013b).

Coal

Coal demand has been steadily rising, fueling Vietnam's economic growth. Coals portion of total primary energy demand has grown form 11.3 percent (2,212KTOE) in 1990 to almost doubling to 21.7 percent of total primary energy demand and nearly

a six-time increase in quantity to 12,646KTOE. The annual growth of coal from 2005 to 2009 was 8.7 percent. Coal demand as part of final total energy consumed shows a similar picture. The share grew from 7.9 percent in 1990 to accounting for almost a fifth of total final energy demand by 2009. Coal use has been in steadily rising causing the govrenment to curb coal exports by raising the export tax of coal from 10 percent to 13 percent.

Oil

Oil demand in Vietnam has been rising significantly. In 2010, it represented almost half of Vietnam's total final energy demand. The share of oil as primary energy demand has steadily increased from 14.6 percent in 1990 to 25.1 percent in 2009. From 1990 to 2009 the average annual growth was 9.0 percent. Oil products portion of final energy demand has more than doubled from 14.8 percent in 1990 to 33.9 percent in 2009. As the country industrializes it becoming clear that an increased demand in oil products is evident. Vietnam petroleum imports have been increasing at average of 3.6 percent per a year from 2000 (8,882ktoe) to 2010 (12,703ktoe). The rising demand of oil products led to the development of Vietnam's first oil refinery in 2009.

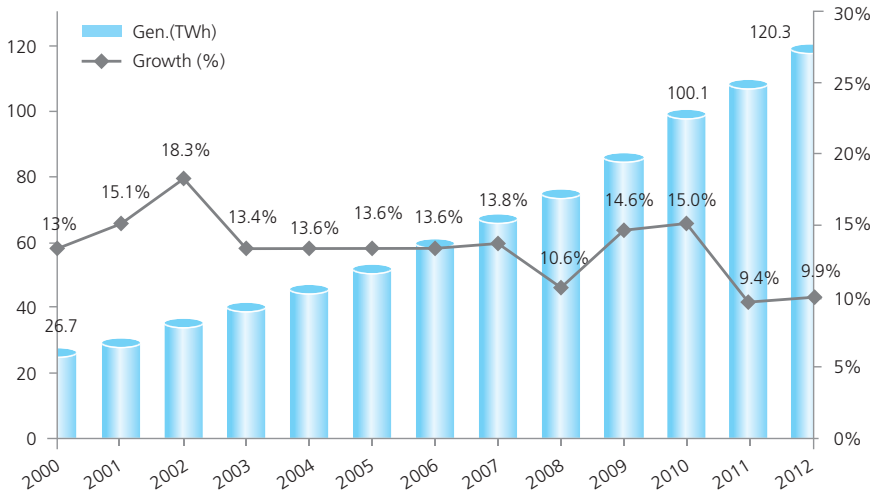
Gas

Gas demand has soared in Vietnam over the last 20 years. Gas share of primary energy demand has been relatively small, but has grown significantly over recent years. In 1990 the the primary energy demand of gas was 8KTOE and a nominal portion, but by 2009 the share jumped to 12.49 percent of the total share and was 7,290KTOE was consumed. The average annual growth from 1990 to 2009 was 43.4 percent for primary energy. Gas portion of final total energy demand is still quite modest but has rose from 16,760KTOE in 1990 to 46,774KTOE by 2009. The annual average growth from 1990 to 2009 was 29.1 percent for final energy demand.

Electricity

Hydropower as a primary energy source has increase significantly tripling from 2,063KTOE in 1990 to 6,785KTOE in 2009, it's relative portion has only increase by 1 percent to 11.6 percent. Although hydro portion of overall portion of primary energy has not changed significantly, investments continue to increase productivity of hydropower. The average annual growth of of 12.1 percent over the period of 2005 to 2009 for primary energy demand. Non-commercial energy was quite a large share of total primary energy demand at 63.1 percent but has decreased to only 25.2 percent by 2009.

[Figure 2-8] Power Generation Trends, 2000-2012



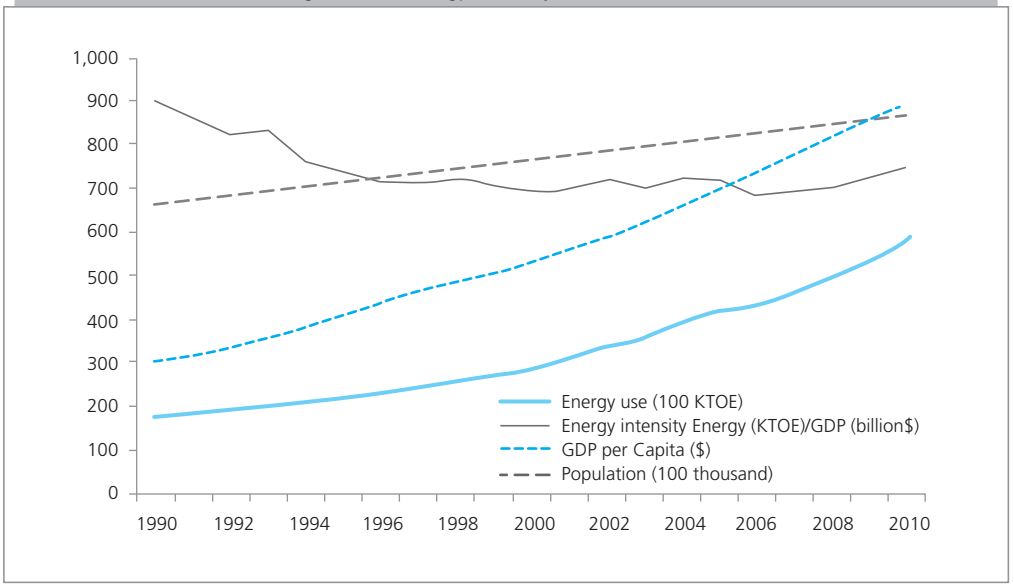
Source: Institute of Energy

Electricity demand has shown remarkable growth. The share of electricity of total final energy demand leaped from 3.2 percent in 1990 to 14.1 percent in 2009. Rapid growth has fueled the need for power generation and electricity. Imported electricity as part of primary energy consumed has also multiplied from 33KTOE in 2005 to 321KTOE in 2009. The share of final renewable energy demand of final total energy demand has decreased significantly from 74.1 percent in 1990 to 31.4 percent in 2009.

3.3. Energy Decomposition

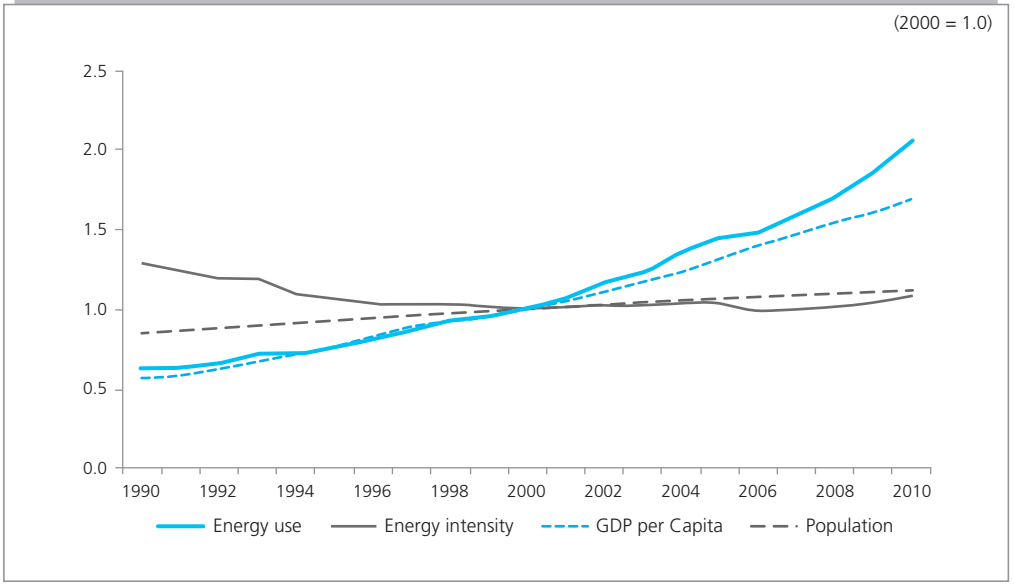
The Vietnam economy has shown strong growth over the last two decades. Energy use has shown increased significantly more than tripling from 17,866KTOE in 1990 to 58,911KTOE in 2010. Over that same period the energy intensity has decreased significantly as the amount of energy needed to produce one unit of GDP has declined, showing greater energy efficiency. The rapid growth of the economy can be seen in the per capita GDP (constant 2005 US$) from $301 in 1990 to nearly a three-time increase of $900 in 2010. The population has also grown to 86.9 million residents, a population increase of over 20 million from 1990 to 2010.

[Figure 2-9] Energy Decomposition, 1990-2010



Source: World Bank 2013

[Figure 2-10] Relative Energy Decomposition, 1990-2010



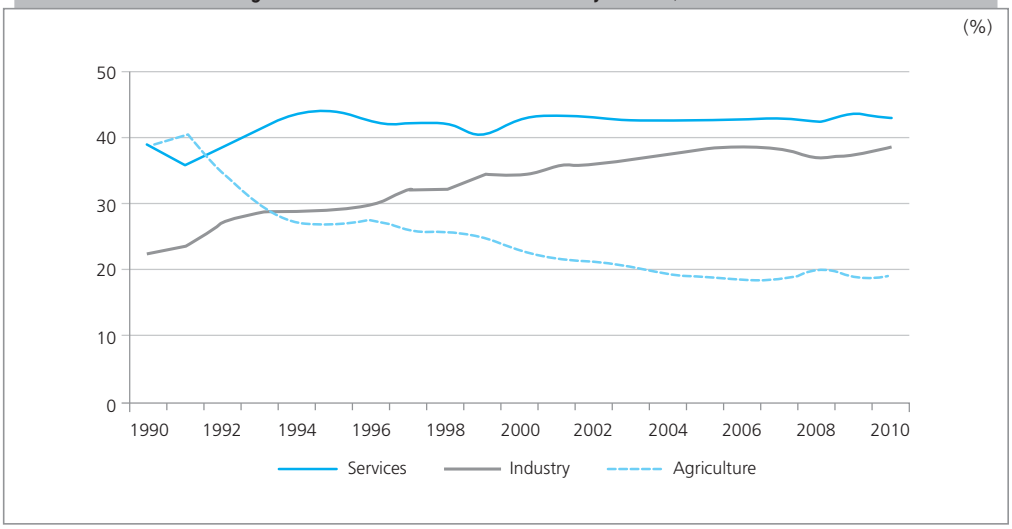
Source: World Bank 2013

The relative energy decomposition tells a more poignant story of Vietnam's economic development. Assuming the year 2000 as a base year, a clear picture of energy use and GDP growth emerges. Population growth is quite steady over the

20-year period. Energy use and GDP per capita show significant growth during that period, energy use growing more quickly relative to per capita GDP. The energy intensity shows a rather significant decline the decade prior to 2000 and then begins to level off in the decade after. The flattening of energy intensity signals a relative decline in efficiency as the amount of energy needed to create GDP does not change, where in the previous decade the amount of energy needed was declining to produce the same amount of GDP.

The energy intensity is relatively flat with a modest upward trend toward the tail end of decade after 2000. The cause of this period of relative limited decline in energy intensity and trending towards increasing amounts of energy needed to produce the equivalent amount of GDP is result of the changing industrial structure of the country. The figure below shows the share of GDP by industrial structure for the same period. The service and agricultural sector accounted for almost 80 percent of GDP in 1990 and the agriculture sector saw a steep decline of over 40 percent from 1990 to 2000. The decline in agriculture is reciprocated by the growth of the industrial sector. As industry's share grows and expands, the relative increase in energy intensity could be a result of a shift toward more energy intensive industries.

[Figure 2-11] Vietnam Share of GDP by Sector, 1990-2010



Source: World Bank 2013

3.4. Energy Projections

High economic growth projections in the long-term are leading to rapid growth in the energy demand and production. Power generation capacity is expected to

triple by 2020 and jump by 8 folds of current levels by 2030. The Vietnam has set a 2030 vision for a diverse energy mix with goals of reaching 51.6 percent capacity from coal-fired plants, 11.8 percent from gas-fired, 15.7 percent from hydro, 6.6 percent from nuclear, 9.4 percent from renewable energy, and 4.8 percent from imports.

〈Table 2-11〉 Final Energy Demand by Fuel Type (2015~2030)

(Unit: MTOE)

Year	2015	2020	2025	2030
Scenario	Base/High	Base/High	Base/High	Base/High
Coal	13.6/13.9	18/18.9	23.6/25.8	29.9/34.2
Electricity	14.6/15.8	24.9/27.4	37.1/42.5	52.9/63.5
Oil Products	23.5/23.9	34.4/35.9	48.2/51.9	66.9/74.8
Gas	1.0/1.03	1.4/1.5	1.9/2.2	2.6/3.0
Non-Commercial	14.5/14.7	14.0/14.3	13.3/13.6	12.4/12.8
Total	67.2/69.4	92.8/97.8	124.1/136.0	164.9/188.2

Source: Institute of Energy, Vietnam

The energy projection has production rising by all types of fuel except non-commercial. The demand for coal, electricity, and oil products are growing enormously. The fastest growing fuel is electricity rising from 14.6/15.8 MTOE in 2015 to 52.9/63.5 MTOE, over the 15-year project an increase of 260 percent for the base scenario and jumps 302 percent in the high scenario. The average annual growth for the total projected period reaches 9 percent for the high scenario for electricity. Growth from is highest from 2015 to 2020 as both scenarios increase by more than 70 percent over the five year period with an average annual growth of over 11 percent. Oil products increase about triples from 23.5/23.9 MTOE to 66.9/74.8 MTOE. Coal also grows significantly from 13.6/13.9 MTOE and more than doubles to 29.2/34.2 MOE by 2030.

The only fuel to decease in the projection is non-commercial, which decreases from 14.5/14.7 MTOE to 12.4/12.8 MTOE by 2030. This seems in part due to the changing nature of the economy and social structure. As <figure 2-10> shows the trend of the changing industrial structure as Vietnam moves away from agricultural productivity and toward industrial activities. This leads to greater energy use as depicted by the projection, but also greater mobility as people move away from rural agrarian life towards the industrial centers where the jobs are located. It is in the rural areas that utilize non-commercial fuels of wood and bio-mass and is a possible cause of the decrease in non-commercial fuel use.

Coal

Vietnam National Coal and Mineral Industries Group (Vinacomine) has estimated based on the business-as-usual scenario that country will begin importing coal from 2015 to meet domestic energy demand. Global coal reserves and production data shows Indonesia, Australia, and Russia as some of the potential countries that Vietnam can import from to meet domestic demand. Vietnam's importation of coal is currently quite low. It will become increasingly challenging to import coal to not only meet domestic demand, but to also secure coal to fuel its thermal power plants in the future.

〈Table 2-12〉 Projected Coal Supply and Demand (2015~2020)

(Unit: million tons)

Year	2015	2016	2017	2018	2019	2020
Commercial coal supply	55,260	56,300	57,010	58,006	59,031	60,538
Total demand	61,303	74,386	86,938	96,620	107,047	116,340
- Domestic demand	57,260	70,199	82,123	92,003	102,441	111,738
- Export coal	4,043	4,187	4,815	4,617	4,606	4,602
Imported Coal (planned)	6,043	18,086	29,928	38,614	48,016	55,802

Source: Vinacomine Group

Oil

Vietnam oil production comes from two sources: local production and foreign/overseas production. Although local production is still the main source of oil production, overseas activities represent a growing amount based on the projections given by PVN. Currently petroleum products are imported to meet domestic demand. Although refinery capacity is growing, reducing the dependence on foreign oil imports will be a key concern in the future.

〈Table 2-13〉 Projected Crude Oil Production (2010~2020)

(Unit: million tons)

Year	2010	2015	2020
Base Scenario	15.0	20.0	20.7
Local production	15.0	17.0	12.4

Source: Petro Vietnam (PVN)

Natural Gas

Based on the business-as-usual scenario of demand-supply of gas, it is estimated that Vietnam will begin importing several billion m^3 of gas per year from 2016 to 2018 and up to 9 billion m^3 per year from 2025 to 2030. There are two options being considered for the importation of gas; PNG (Piped Natural Gas) from Indonesia and LNG (liquefied Natural Gas) from the global spot market or by long term contract from Australia and Russia. However for LNG importation, the necessary infrastructure of storage and ports must be developed.

Electricity

Electricity demand and capacity has been forecasted in Vietnam's "National Master Plan for Power Development for the period 2011-2020, outlook up to 2030" (Master Plan VII). The base scenario estimates demand to reach 194.3 billion kilowatt-hours in 2015 and grow to 329.4 billion kWh by 2020. The high scenario projects 2015 demand to rise to 210.8 billion kWh and 2020 demand to increase to 361.9 billion kWh.

〈Table 2-14〉 Projected Electricity Demand (2015~2020)

(Unit: billion kWh)

Year	2015	2020
Electricity generation		
(Base-High Scenario)	194.3-210.8	329.4-361.9

Source: Master Plan VII

Total additional capacity planned in Master Plan VII shows 26,911MW for the period of 2011 to 2015 and 28,611MW for the period from 2016 to 2020. Based on the demand forecasted in 2015, it will be a challenge to not only meet the demand but also develop the 27,000MW of planned additional capacity by the planned period of 2011 to 2015.

〈Table 2-15〉 Projected Electricity Demand (2015~2020)

(Unit: MW)

Period	2011~2015	2016~2020
Total additional capacity	26,911	28,611
(Base-High Scenario)	194.3-210.8	329.4-361.9

Source: Master Plan VII

The National Energy Development Strategy (PMVN 2007) provides government support for the renewable energy and rural electrification. This policy gives priority to the development of new and renewable energy sources for rural areas, like solar, wind, and hydropower. It also sets objective goals for increasing renewable energy proportion to 5 percent of total energy demand by 2025 and 11 percent of energy demand by 2050; with the goal of electrifying 100 percent of rural households by 2020.

The National Energy Development Strategy issued in 2007, the development of electricity industry has been oriented as follows: (i) Ensuring sufficient supply of electricity for social-economic development of the country. Give priority to develop hydro power plants at reasonable rate, while developing coal-fired and natural gas-fired power plants. Encourage power generation using new and renewable energy sources. (ii) Development of the electricity industry towards ownership diversity. EVN is the main entity responsible for developing power sources and the national transmission line system. Publicize the list of investment projects to encourage economic investment from inside and outside of Vietnam. (iii) Diversify investments in developing power sources and distribution grids. (iv) Set the process for the development of the electricity market in Vietnam. (v) Research for the development of nuclear power plant in Vietnam. (vi) Ensuring sustainable development, eliminating negative impacts to environment.

The future of renewable energy development in Vietnam is quite favorable. Targets have been set to increase the share of renewable energy production to 6 percent of total electricity generation by 2030. The Vietnamese government has been promoting renewable energy policies since 2008. Policy measures have included subsidies for wind power development, Fit-In Tariff, and land use incentives

In order to meet future electricity demand and to maintain economic development, the Decision of Prime Minister of Vietnam No 1208/QĐ-TTg dated 21 July 2011 approved the "National Electric System Expansion Planning for the period 2011-2020, Outlook up to 2030." The objectives are listed as follows: (i) Supplying sufficient electricity to meet domestic demand, electricity produced and imported will range from 194-210 bill kWh in 2015 and 330-362 bill kWh in 2020; (ii) Giving priority to develop renewable energy sources for electrical generation, increasing the ratio of the total electricity generated from these sources from 3.5 percent in 2010 to 4.5 percent in 2020; (iii) Reducing elasticity coefficient electricity/GDP average from the current 2.0 to 1.5 in 2015 and 1.0 in 2020; (iv) Accelerating the electrification program in rural and mountainous areas to ensure most rural households are provided electricity by 2020.

〈Table 2-16〉 Electrical Grid Development (2011~2020)

Year	2011~2015	2016~2020	2011~2020
Grid 500 kV			
Distance (km)	3,833	4,539	8,372
Capacity of transformer (MVA)	17,100	26,750	43,850
Grid 220 kV			
Distance (km)	10,637	5,305	15,924
Capacity of transformer (MVA)	35,863	39,063	74,926

Source: PMVN 2011

The total needed investment for the electrical industry, from 2011 to 2020, is approximately 50 billion USD. This is an average of 5 billion USD per a year, of which investment for power plants is about 67 percent, and grid development is about 23 percent. The Master plan outlined the objectives of power source development as listed: (i) giving the priority to develop renewable energy sources for electrical generation: increasing wind power capacity up to 1,000 MW in 2020; (ii) giving the priority to develop hydro power plants, especially for facilities with multiple objectives including flood prevention, water supply, and electricity generation. Increase the capacity from 9,200 MW in 2011 to 17,400 MW in 2020; (iii) studying the introduction of pump storage plants to increase the operating efficiency of the

〈Table 2-17〉 Base Scenario Power Plant Structure

Plants	Year 2020			
	Capacity (MW)	Ratio (%)	Generation (TWh)	Ratio (%)
Install. Capacity, generation	75,000	100.0	330	100.0
Hydro	17,400	23.1	65	19.6
Pump Storage	1,800	2.4	-	-
Coal	36,000	48.0	156	46.8
Gas(*)	12,400	16.5	79	24.0
Small hydro and Renewable	4,200	5.6	15	4.5
Nuclear	1,000	1.3	5	2.1
Imported	2,200	3.1	10	3.0

(*) Included 10,400 MW using natural gas, produce 66 TWh (20% of total generation) and 2,000 MW using imported LPG, produce about 13 TWh (4% of total generation)

Source: PMVN 2011

system. It is planned to develop pump storage plants with capacity of 1,800 MW in 2020; (iv) develop thermal power plants by: Increasing the capacity of plants using natural gas to 10,400 MW in 2020, generating of 66 billion kWh; raising the capacity of plants using liquid natural gas to about 2,000 MW in 2020. Increase the capacity of plants using coal to 36,000 MW in 2020, generating about 156 billion kWh, and consuming about 67.3 million tons of coal. Construct nuclear power plants with the first unit operating in 2020 (1,000 MW). Import 2,200 MW of electricity in 2020 from neighbors: China, Lao, and Cambodia.

The Prime Minister of Vietnam approved the "National Integrated Development Plan for Application of Nuclear Energy for Peaceful Purposes by 2020" in June 2010. This would officially begin the planning and development of nuclear technology capacity for the socio-economic development of Vietnam (PMVN 2010). The Ministry of Industry and Trade performed a pre-feasibility study in 2005, on the construction of 2,000MW nuclear power plant for two different locations in the Ninh Thuan province, Ninh Phuoc or Ninh Hai. In 2009 the National Assembly approved a revised version, called an investment report. The "Orientation on Nuclear Power Development Planning by 2030" was approved by the Prime Minister in June of 2010, proposing a 1,000MW facility would be operating by 2020 (APERC 2013b). The expected start of construction for both nuclear facilities is in 2014-2015, with additional capacity to reach 8,000-10,000MW by 2030 (IOE 2011).

Nuclear energy has been planned to diversify Vietnam's energy mix, Electricity of Vietnam (EVN) is still preparing for the first nuclear reactor to begin construction in 2014 and it seems like this schedule may be delayed even further. The two current nuclear power facilities are being built in partnership with Russia and Japan with Korea being considered for the third. Both countries have won with bids pledging to offer low interest loans between $8 billion and $9 billion for construction. The current goals are to have 10 reactors by 2030.

4. Energy Policies and Industries in Vietnam

4.1. National Energy Development Strategy

Although the energy system has existed and operated for a long time in Vietnam, the "National Energy Development Strategy of Vietnam up to 2020 and Outlook to 2050" issued in 2007 was the first strategy to focus on developing the operations within the energy system. Although a strategy exists, Vietnam currently has no general energy master plan. The energy laws and plans focus on certain energy sectors and industries, such as the "Master Plan on Power Development" (Master Plan VII), approved in 2011, and "National Integrated Development Plan for Application

of Nuclear Energy," approved in 2010, but no comprehensive master energy plan that incorporates all the different energy sectors has been developed. The Electricity Law of 2004 provided regulations on the electricity sector development and investment (USAID 2007). The 2005 law on Environmental Protection included the development of clean and renewable energy as means of protecting the environment. Therefore, institutional problems still hamper energy development.

An energy master plan is a necessary step for developing a framework that incorporates the participation of experts and concerning organizations as an officially approved plan for developing energy industries (e.g. electricity, coal, oil and gas) and efficient management of the energy system. The plan must be oriented toward sustainable energy development or provide national energy security by demonstrating the national benefits and the gains of the participants in energy development. The plan can provide a legal structure for the implementation of policies by all stakeholders.

The Ministry of Trade and the Ministry of Industry were merged in 2007 by a Prime Minister decree forming the Ministry of Industry and Trade (MOIT) and became responsible for all activities related to energy and industry. The ministry is in charge of formulating and supervising laws, policies, and plans within those sectors, including all the energy industries (e.g. electricity, new renewable energy, coal, and the oil and gas industries). The findings of MOIT oversight on the direction and development of the energy sector are reported to the Prime Minister. The "National Energy Development Strategy for the period up to 2020, with an outlook to 2050" was approved by the Prime Ministries of Vietnam in 2007.

Some of the main objectives are ensuring sufficient supply of primary energy to meet the rapidly growing demand for social-economic development of the country in the future. In which, primary energy is 47.5-49.5 million TOE by 2010 and 100-110 million TOE by 2020. Improve the accuracy in estimating reserves of primary energy sources (coal, oil and gas, hydro and uranium). Developing oil refineries to sufficiently supply for domestic demand of oil products and increase refinery capacity to 25-30 million tons of crude oil in 2020. Ensure a strategic reserve level of national petroleum of 45 days of average demand level in 2010, and 60 days in 2020. Give a high priority to new and renewable energy development with the target of making new and renewable energy portion of total primary commercial energy to 3 percent in 2010 and 5 percent in 2020. Shift energy industries (electricity, coal, oil and gas) towards competitive market structure with the regulation of the State. Establish competitive electricity market for retail sale after 2022; establishing the markets for coal, oil, and gas by 2015. Control and reduce pollution in energy activities; by 2015 all energy projects should meet the standards on environmental protection. Actively prepare the necessary conditions to put the first nuclear power facility in to

operation by 2020 (PMVN 2007).

4.1.1. Energy Security Policies

Vietnam faces a variety of challenges to its short-term energy security. In the oil and gas sector, Dung Quat refinery can only meet 30 percent of domestic demand and reserve levels are limited. The domestic price of petroleum products has depended significantly on imported price of these products, making it vulnerable to market volatility. Vietnam has also begun to invest in overseas oil and gas activities (e.g. Algeria, Venezuela) to increase oil and gas supplies. In the electricity sector, water for hydro power plants is growing scarce with lower than required levels need for electricity generation leading to load shutting at some locations. The country is exploring the importation of coal from other countries, like Australia and Indonesia, to meet its energy needs. However, these overseas investment activities requires an extended amount of time to bring in additional energy supply to Vietnam, while the rate of domestic demand is growing more rapidly. Therefore in the short-run, activities provide insufficient influence for increasing domestic energy supply in Vietnam.

Ensuring long-term energy security to meet economic development and environmental goals can be challenging due to significant financial investments. The estimated investments in the oil and gas industry for refinery facilities are in the several ten billions USD up to 2020. Vietnam's first refinery, Dung Quat refinery in Quang Ngai province has an operating capacity of 6.5 million tons per year. The second oil refinery in Vietnam is planned at a cost of 9 billion USD, the Nghi Son refinery in Thanh Hoa province will have 10 million tons per year capacity and targeted to be operational by 2017. The Vung Ro project in Phu Yen province has been approved for construction at a cost of 3.18 billion USD, with capacity of 8 million tons per year. The Nhon Hoi project in Binh Dinh province will have capacity of 30 million crude oil tons per year, at a total investment of 27.5 billion USD. The mobilization of financial capital for these projects may be an issue in next coming years and the environmental concerns may arise at these locations.

Similarly in the long-term, the planned power plant projects and grid projects as indicated in the annex of Master Plan of Electricity industry up to 2030 (Master Plan No. VII), approved in 2011, requires investments of about 5 billion USD per year during the period from 2011 to 2020. Recent history has shown that investments have not been sufficiently mobilized for the development of planned energy projects, leading to the delay of power plant and grid projects from the planned schedule. Ensuring that the proper financial resources are appropriately mobilized and efficiently channeled will be critical to ensure that Vietnam will be able to meet it future energy needs.

4.1.2. Renewable Energy Policies

Renewable and alternative energy policies have always been important to Vietnam's development. The Renewable Energy Action Plan developed in 2001 had five components: (i) renewable energy systems for individual households and institutions; (ii) off-grid hydro systems for villages; (iii) grid-oriented renewable energy systems; (iv) institutional and policy capacity development: and (v) technology development. The plan was broken up in to two 5-year phases. The first phase would build up capacity building period creating the institutions and policies for renewable energy. The second phase would be an implementation period scaling up the implementation of projects (MOI 2001). The plan focused on further developing Vietnam's hydropower infrastructure.

The Energy Development Strategy has targets to increase the share of renewable of total primary energy supply to 5 percent by 2020 and 11 percent by 2050. In order to reach these targets the government has been developing policies to power generation from renewable energy source, including the "Regulation on avoided cost electricity tariff schedule and standard power purchase agreement" by MOIT in 2008 and the "Mechanism for supporting wind power development" from the Prime Minister in 2011. About 70 percent of the country's 86 million people are living in rural areas and about 4 percent of households are not expected to have electricity access in 2012. The development of renewable energy is targeted for rural electrification.

The barriers for the development of new and renewable energy sources are the lack of administrative structure, inadequate pricing of energy production, and undeveloped feed-in-tariff (FIT) mechanism. Vietnam has a complex administrative process, as they lack the regulatory framework on wind power. Energy subsidies by EVN have distorted electricity pricing, making full cost recovery difficult. Although Prime Ministerial Decision 21 in 2009 and the 7th National Power Development Plan were suppose to move toward market-based pricing to have electricity prices meet the long-run marginal cost by 2020, estimated to be 8-9 cents US/kWh. Electricity is currently priced at 6 cents US/kWh, while the tariff on wind power projects has been set at 7.8 cents US/kWh, significantly lower than other neighboring countries (Thailand has 18 cents US/kWh, Phillipines has 19.5 cents US/kWh). .The low tariff and subsidized price of fossil fuels make the share of renewable energy still quite low. MOIT is constructing mechanisms and policies to support the development of projects using renewable energy sources, including a proposal to develop the FIT structure for the Bac Lieu Wind Power Plant. Energy efficiency and conservation policies

The National Energy Efficiency Program (VNEEP) was launched by MOIT in 2006 for the period of 2006-2015. Targets for the program were set to reduce the

total energy consumed by 3 to 5 percent per year from 2006 to 2010 and further reductions from 2011 to 2015 of 5 to 8 percent per year compared to BAU. The program includes a number of critical areas: "the legal framework; education and information dissemination; high-efficiency equipment and appliances; energy efficiency and conservation in industry; and the building code" (APERC 2013a). The Energy Efficiency and Conservation Office is responsible for working with other government organizations and jointly works with a State Steering Committee, that is chaired by MOIT, to supervise, implement, and monitor the program.

The National Assembly of Vietnam has issued the Law on Energy Efficiency and Conservation in 2010. This law was taken in to effects on January 01, 2011 and established a national program on energy efficiency and conservation. MOIT has been assigned to implement this program through projects that aim to consume energy efficiently and conserve energy. EVN has implemented programs on electricity efficiency, energy conservation, and demand side management to reduce peak load of the energy system. However, more work is needed in constructing criteria energy intensive applications and the phasing out of inefficient older technologies that may lead to inefficient use of energy resources and poor environmental quality.

As a result of 2010 law, new standards have been implemented. The Centre for Vietnamese Standard has created new energy efficiency standards for a variety of electrical devices. Testing procedures and standards were developed for energy efficient household appliances, including air conditioners, electric cookers, and refrigerators. New policies and laws were also passed in support of implementation, including "Decree on Detailed Regulations and Measures for Implementation of the Law; Regulation of Administrative Punishment on the Use of Energy Saving and Efficiency; the Road Map for Labeling Energy Equipment; and the Decree on Public Lighting Management" (APERC 2013b).

4.1.3. Energy Price Policies

In principle the Government of Vietnam has controlled the price of electricity, coal, and petroleum products. Particularly, the Circulation No 17/2012/TT-BCT issued by Ministry of Industry has determined the tariffs and Trade (MOIT) dated June 29 2012. The Ministry of Finance (MOF), under Document No 15442/BTC-QLG dated Nov. 11 2013, has regulated the price of petroleum products. But recently the price of coal, which was controlled by Vietnam National Coal (Vinacomin), has moved toward market mechanisms for pricing by its move to the Price Management Department of MOF. However, the increased price of coal for electricity generation has impacted coal-fired thermal power plants with high production cost. As a result, the government in practice is still regulating the price on energy, not market mechanisms.

The entrenchment of state owned enterprises has led to increased inefficiency and large investment gap in energy infrastructure. EVN is required to sell much of its electricity at cost or below. The state owned enterprise is said to have racked up "losses between 2009 and 2011 exceeded $940m" (Economist 2013). It is estimated that Vietnam needs to invest $5 billion annually to keep up with rising demand. Policies have been difficult to enforce as the price of energy has always been below market rates, but unless reforms take place the needed capital for re-investments will have to come from other sources.

4.1.4. Environmental Policies

In order to maintain sustainable development of the energy system, environment protection is critical to the construction and operation of energy projects in Vietnam. The National Assembly of Vietnam has issued the Law on Environment Protection in 2005 to require owners of energy projects to utilize technology and equipment measures to eliminate pollution to the natural environment and improve the health of the people. The approval of power plant projects should be based on the criteria of gas emissions, solid waste, and liquid waste. Presently, Ministry of Natural Resource and Environment (MONRE) has issued regulations on the fee for coal exploration and water use to protect the environment from pollution caused by these activities. However, there is still no environment tax on electricity generation.

Vietnam is signatory of the United Nations Framework Convention on Climate Change and in 2002 ratified the Kyoto Protocol to reduce greenhouse gas emissions. The country considers climate change to real and imminent threat, in which Vietnam is highly vulnerable and is committed to utilize clean development mechanism (CDMs). In 2004, the "Strategic Orientation for Sustainable Development in Viet Nam" (Vietnam Agenda 21) was adopted. Vietnam's commitment to CDMs demonstrates Vietnam's pledge to contribute international environmental protection and openness toward international investment and technology transfer.

In 2012 the Prime Minister of Vietnam announced the "Approval of the National Green Growth Strategy." The strategy defines green growth as way to achieve low carbon sustainable economic development while reducing and absorbing greenhouse gas emissions. The specific objectives include the restructuring of the economy towards the efficient use of resources, the application of technology for the effective use of resources and reduction of greenhouse gases, and the social improvements through green jobs and infrastructure (PMVN 2012).

4.2. Energy Industries in Vietnam

4.2.1. Structure of Energy Institutions

There four main actors who participate in the energy development: (i) State; (ii) Enterprises; (iii) People; and (iv) Social and political organizations. The State is responsible for polices and laws related to energy development. In Vietnam, MOIT (Ministry of Industry and Trade) has the authority of the state to manage all of the energy industries, including electricity, new renewable energy, coal, and the oil and gas industries. It is responsible for the formulation of development strategies, laws, policies, annual plans, and master plans for those sectors, and submits them to the Prime Minister for issue or approval. Maintaining consistency across the plans and laws of the various energy sectors can be challenging.

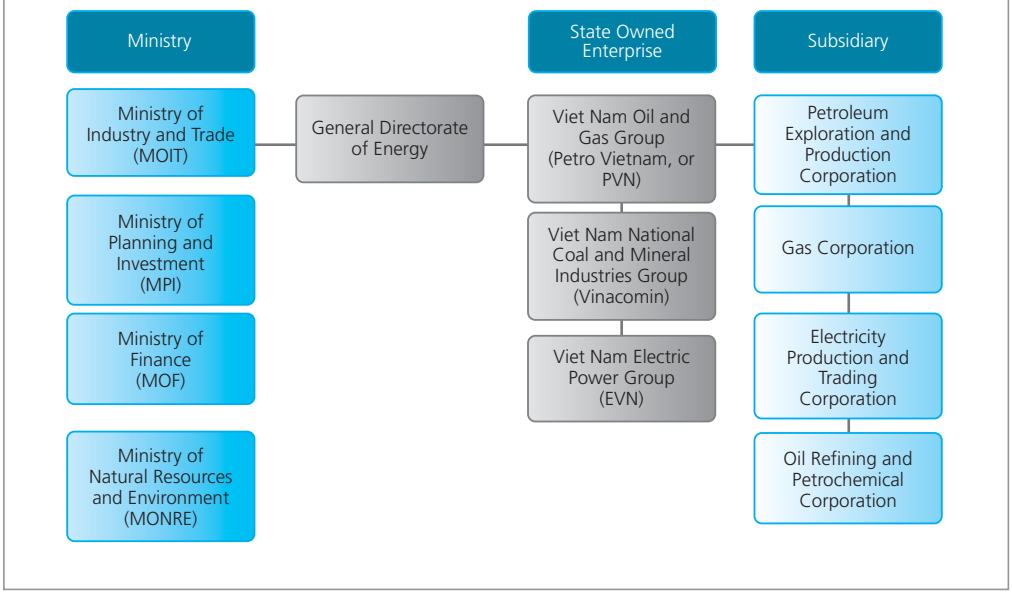
A number of different state agencies play supporting role in the energy development of Vietnam. The Ministry of Planning and Investment is responsible for the Socio-economic Development Strategy and Plan, manages the distribution of economy-wide capital investment among projects submitted by ministries and agencies, and dispenses foreign direct investment. The Ministry of Finance has authority over tariffs and taxation regarding energy activities. The Ministry of National Resources and Environment supports in research and development in energy and environmental protection, including environmental evaluations of all sorts of projects at the national level.

Enterprises play a very important role in energy development. In Vietnam, most of enterprises doing businesses in energy sector are State-owned. Within MOIT, the General Directorate of Energy oversees the three main state-owned enterprises: the Viet Nam Electric Power Group (EVN), the Viet Nam National Coal and Mineral Industries Group (Vinacomin) and the Viet Nam Oil and Gas Group (PetroVietnam, or PVN). This allows for the State to more comfortably intervene in the energy market and manage national energy security. However, these groups can sometimes distort the energy market. This reduces the effectiveness and efficiency of the energy sector.

The role of the people and social and political organizations in energy development is not rather clear. The role of these institutional sectors in supervising energy activities is weak. This leaves the development of energy sector primarily with the State and Enterprises, which are mainly state-owned enterprises. For a more effective and robust energy sector in Vietnam, institutional reforms should be implemented. The reforms must be oriented to: (i) make clear roles for each institutional sector related to energy development; (ii) reform state owned enterprises to provide more and effective energy activity.; (iii) provide the participation of none-state actors in the energy field to reduce the state financial

burden as well as increasing the effectiveness of the energy system; (iv) provide a role and avenue for the people and social & political organizations to participate.

[Figure 2-12] Structure of Energy Institutions



Source: APERC (2012b)

4.2.2. Coal Industry

The Viet Nam National Coal Corporation (Vinacoal), a state owned enterprise was transformed in to a holding company called the Viet Nam National Coal and Mineral Industries Group (Vinacomin), under Prime Minister's Decision No. 199/2005/QD-TTg in 2005. The restructuring turned Vinacomin in to diversified state-owned enterprise with modern management and advanced technology with business interest in coal, mining, automobiles, shipbuilding, and mineral processing. In July 2008, the Prime Minister approved the Viet Nam Coal Development Strategy to 2015, with an outlook to 2025 (PMVN 2008a). One of its main aims is to accelerate the corporatization of coal production companies and the creation of a coal market with diversified ownership and business activities.

As a state-owned enterprise, Vinacomin has supplied coal at below cost to the market to maintain economic stability. Although it has positively impacted industries fuelled by coal, it has reduced Vinacomin profits and its ability to reinvest profits. The government has gradually begun to deregulate coal prices and have been allowed to set prices for non-power generation local customers. As a result, the pricing of

coal for electricity generation has risen and will be adjusted to not fall below cost to ensure reinvestment in coal production to meet demand.

In the "National Energy Development Strategy of Vietnam up to 2020 and Outlook to 2050" issued in 2007, the development of Coal industry has been oriented toward: (i) Increasing exploration activity and assess coal reserves at the depth of 300m or more underground and conduct surveys at depths between 400m to 1,000m at Quang Ninh Coalfields; (ii) Encouraging localities with existing coalfields to invest in exploitation to meet local demand for demand; (iii) Developing coal industry in a stable and sustainable fashion to meet coal demand for the economy; ensuring a stable market for local coal demand and setting a reasonable portion for export; (iv) Encourage economic sector participation and investment in exploration, process and distribution of coal. Establish the road map for privatization of coal production companies, and moving towards establishing a coal market.

4.2.3. Oil and Gas Industry

In 2006, Viet Nam Oil and Gas Group (PVN) were reorganized by the order of the Prime Minister. The restructured PVN comprises four businesses: the Petroleum Exploration and Production Corporation, the Gas Corporation, the Electricity Production and Trading Corporation (established when Viet Nam National Oil and Gas Group power plant investments came into operation), and the Oil Refining and Petrochemical Corporation (established when the group's refining and petrochemical plants came into operation). PVN has multiple owners, but the government holds the dominant share. PVN also includes joint stock companies, joint venture enterprises, scientific and technological enterprises, and training organizations.

The "National Energy Development Strategy of Vietnam up to 2020 and Outlook to 2050" issued in 2007 includes objectives for the development of oil and gas industry: (i) Distinguishing and separating state management functions and business management functions of management and business organizations in the oil and gas industry and concentrating state management functions on Oil and Gas in to one entity; (ii) Establishing a legal framework for activities of Oil and Gas industry, especially focusing on upstream and downstream activities; (iii) Encouraging and accelerating oil and gas surveying and exploration activities; (iv) Giving a priority to develop, explore and use natural gas. Diversifying investment forms, establishing join ventures to develop gas-fired power plant for sale of electricity for national grid system.

4.2.4. Electricity Industry

The state owned Electricity of Viet Nam (EVN) was founded in 1995 and was renamed Viet Nam Electric Power Group. They are in charge of Vietnam's electricity generation, transmission, and distribution. It is the responsibility of EVN to ensure that electricity supply can meet the demand needs of residents and facilitate economic development. This is done through direct investments and augmented by the Build–Operate–Transfer and independent power producer schemes run in partnership with private investors. Over 53 percent (53,131 GWh) of the power supply system in Vietnam was owned by companies other than EVN in 2010. Renewable energy, including hydropower, and nuclear power, in the future, are under the authority of the EVN.

Vietnam has gone through a significant shift in energy policy and energy development. The MOIT has taken greater leadership in developing a more comprehensive energy policy, but a clear comprehensive master plan is lacking. The Master Plan VII has provided a clear and strategic framework for electricity development across the entire country. Under the leadership of MOIT, the energy industry is going through the necessary reforms and privatization to ensure a more robust and efficient energy market.

5. Energy Policy in Korea

Korea has transformed itself from one of the poorest countries in the 1960s into one of the most technologically advanced and largest trading countries. Such rapid economic development was based on rational energy policies, which have changed over time in Korea. This chapter explores a brief history of Korean energy policy, national strategies, and key industrial policies have supported the rapid growth of Korea. Through a review of Korean energy policies, we will extract key implications for the energy development of Vietnam.

5.1. Overview

The main energy policy concern in Korea after the Korean War was to provide a stable supply of energy as the energy demand was growing due to rapid economic growth in the 1960s. In the 1970s, energy vulnerability to external shocks was a major issue and the Ministry of Energy and Resources implemented an oil-free policy after the oil-crisis, since the implementation of the policy the share of oil in total energy demand has steadily decreased. Meanwhile, Korea started to develop nuclear power plants during this period. When Korea achieved remarkable growth in the 1980s, stabilization of the energy supply and demand became one of the most

important issues. Korea established a comprehensive energy supply and demand management policy and made various efforts, such as improving efficiency of each energy distribution step and the management of energy prices. In the 1990s, the energy industry was liberalized to improve the health of the energy market, resulting in many structural changes. In the 2000s, enhanced energy efficiency and the promotion of renewable energy led toward a low carbon growth paradigm. In recent years, global climate change concerns have merged with energy policies, making sustainable energy development a top priority of the national agenda.

Korea imports a majority of its energy resources from abroad, including oil, coal, nuclear fuel, and natural gas. The import dependence ratio of the energy supply has steadily increased and reached 96.4 percent in 2011. Korea is currently ranking 10th, in the world as the largest energy-consuming country in the world. Total primary energy demand has rapidly increased along with rapid economic and industrial growths, accounting for 275.7 million TOE in 2011. The dramatic increase in energy demand for the past few decades was primarily due to the expansion of energy intensive industries during the industrialization period, such as cement, steelmaking, and petrochemicals.

Sustainable energy development is one of the key goals of the energy policy goals, establishing an environment-friendly energy system to address the United Nations Framework Convention on Climate Change. To achieve rational energy utilizations, improvements in energy efficiency are highly required. Therefore, the establishment of an energy efficient information system, precise energy demand management, and increasing public awareness are emphasized. Since domestic energy resources are scarce and foreign dependency of energy imports is extremely high, Korea has been trying to import a stable supply of energy and diversifying sources of the energy supply. Diversifying energy sources reduces the risks resulting from the volatility in volume and price of crude oil imports. Recently, the promotion of a stable supply of the importation of natural gas and expanding resources for overseas development are being pushed. In addition, including the participation of local governments to meet national energy policy goals is a critical concern.

To enhance energy efficiency, restructuring and privatization of the energy industry was inevitable. According to the Basic Plan for the Privatization of Power Generation Corporations in Korea, gradual privatization of divided power generation companies has been in progress. These efforts are not only limited to the power generation sector, but also extending to coal, gas, and other energy industries. Reforming the energy price system, particularly electricity rates, has become an enormous social issue, requiring national and political consensus. On the other hand, technology-driven policies emphasize reinforcing the support system for technological innovation in the energy sector. New and renewable energy

technologies are expected to have significant opportunities; therefore, research and development, education, and performance evaluation mechanisms are required.

Korea Electric Power Corporation (KEPCO) was placed on the Korea Stock Exchange in 1989 and was listed in the New York Stock Exchange in 1994. After the 1997 financial crisis reforms were required for the privatization of the state-owned enterprises, including KEPCO. The reforms included dividing KEPCO in to six power generation subsidiaries (Korea Hydro & Nuclear Power, Korea South-East Power, Korea Midland Power, Korea Western Power, Korea Southern Power, Korea East-West Power) and the development of the Korea Power Exchange to facilitate the competition of wholesale power generation (MOTIE 2013). The privatization of the subsidiaries was announced in 2002, however due to poor market conditions and protest from labor unions the privatization process was halted in 2005. Although KEPCO is a publicly listed corporation, the Korean government maintains over 51 percent of the ownership.

In 1962 the Korean government through the Korea Oil Corporation partnered with Gulf Oil, an US Company, to establish Korea's first oil refinery in Ulsan (MOTIE 2013). As domestic demand for petrochemical products was increasing, by 1970 the government ceded management rights to Gulf Oil to finance expansions in to petrochemical business. However after the 1st and 2nd oil shock, Gulf Oil folded it's business in Korea selling its remaining shares of the company to the Korean government. The policies of the 1980's pushed for the privatization of SOEs, leading to sale of Korea Oil Corporation to what would become the SK Group.

Strengthening international energy and resources cooperation is also critical, both in bilateral and multilateral cooperation. Korea has a close partnership with the IEA to maximize the effectiveness of energy policies and is promoting systematic cooperation with the APEC. The importance of bilateral energy cooperation is increasingly being highlighted and Korea is operating bilateral energy cooperation within the framework of the Resource Cooperation Commission with resource-rich countries such as China, Indonesia and Australia.

5.2. National Policies

The National Energy Master Plan is a comprehensive 20-year energy plan that is updated every five years, providing the basic principles and directions of the energy policy in Korea. The National Energy Master Plan represents the energy policies at the highest level and shapes the mid to long-term energy strategies, with the consideration of almost all industrial sectors. It is a comprehensive plan that targets almost every areas of the energy sector and is interconnected with all other energy-related plans. The plan outlines and provides principles and guidelines for all energy-

related plans. The key objectives of the plan are to promote a stable energy supply and demand, to improve energy efficiency, and to forecast and prepare the future energy mix. This supports sustainable national economic development and the efficient use of and conservation of energy resources. It also accomplishes the goals of national energy policy, minimizing energy-related environmental concerns, and promoting the development of energy-related technologies. The Plan gives basic directions for policy initiatives, as well as the basic guidelines for all other energy plans by sectors, sources, and regions.

The First National Energy Master Plan was established in 2008. The first plan divided Korea's energy policies in to two concurrent directions. Firstly, it aims for low-carbon green (economic) growth to create jobs and new growth engines by developing green technologies and clean energy technologies. Secondly, it targeted sustainable economic growth through the promotion of energy security, energy efficiency, and environment-friendly energy sources. Compared to past energy policies which focused on economic growth by industrial activities through the supply of cheap and stable energy sources, the energy policy paradigm has shifted significantly towards consideration of sustainable development and clean technology. It also emphasized energy security as Korea has been trying to increase energy self-sufficiency through the development of overseas energy resources.

The Second National Energy Master Plan is expected to highlight future energy policy directions through the promotion of energy savings and increasing energy efficiency; strengthening demand-side management; establishment of dispersion power generation system; enhancing energy security; promoting environmentally friendly energy supply, such as renewable energy; as well as strengthening research and development, human development, international development, and energy welfare. Since the plan covers almost every area, it is critical to ensure consistency as it is connected to other energy-related plans. As a result, Korea has increasingly tried to involve various stakeholders and private sector participation, as it is an important process in the development of the National Energy Master Plan.

Energy security has been placed as a priority policy, resulting in various policies to improve energy independence that includes increasing oil stocks; expansion of infrastructure for energy supply; diversifying energy mix such as promoting renewable energy; and overseas resources development. In addition, recent Korean energy policy has focused on demand management in order to achieve low energy-consuming society. The Korean case suggests that the establishment, implementation, and monitoring of policies at the national level are essential to accomplishing the energy policies goals successfully.

5.3. Key Policies

5.3.1. Oil

The oil industry in Korea began in 1964. Currently, Korea ranks as the world's fourth largest oil importer and sixth biggest consumer. Oil products are also currently one of five core export items along with ships, semiconductors, automobiles, and flat panel display and sensors. Korea has a daily production capacity of 3.01 million barrels of capacity from five refineries in 2011, which is the sixth largest capacity in the world.

Deregulation policies have started in the high growth period of the 1980s. According to high pressure for industrial liberalization in the 1990s, the domestic oil industry has undergone tremendous changes. Though liberalization of the industry played a critical role in the sector growth, substantial government support was the driving force behind the rapid expansion of domestic demand.

Korean oil industry has focused on increasing the margin of crude oil distillation and oil product exports. Establishing advanced facilities requires substantial investments but it was necessary to stable supply of oil products. As majority of the oil demand relies on foreign resources, Korean oil industrial policies have concentrated on decreasing foreign oil dependency and strengthening national competitiveness of domestic industry.

As many of domestic oil companies are subsidiaries of larger conglomerates, business diversification is limited in this industry. Interestingly, the governance structure of the domestic oil companies reflects the extent of their diversification. Although companies are legally diversified into various sectors and industries, the main holding and legal entity is the dominant shareholder. Recently, growth of the

〈Box.1〉 Korea National Oil Corporation

The Korea National Oil Corporation (KNOC) is national oil and gas company and one of the most important industrial companies in the country. The KNOC was established in 1979 to develop oil resources, to reserve oil stocks, to implement oil products distribution. Since establishment, the company has been leading Korean oil industry and energy development.

Half of energy consumption comes from petroleum, which is a vital component driving the national economy. Currently, Korea is the world's fourth-largest oil importer and the sixth-largest oil consumer. So, a stable supply of petroleum is fundamental to well-being of the Korean economy, for its future development and its status in the world market place. The founding principle is to secure oil supplies for the nation, by exploration for and development of oilfields, by holding petroleum reserves and by building a national distribution network.

Source: http://www.knoc.co.kr/

petrochemical and bioengineering sectors have realized much higher profits, making investments in gas, power, and renewable energy projects less of a priority.

5.3.2. Gas

The Korean Gas industry was established in June of 1907 as a major industrial expansion of the Japanese company, Ilhanwa, Inc. As a catalyst of industrial growth, numerous Korean entities relied on its reliable supply of energy. However, the oil crises of 1973 and 1974 brought drastic changes to the structure of global energy supply, demand, and delivery. In response to these situations, the Korean government adopted a new set of initiatives to address the demands of the changing environment of the energy market.

The first initiative was to diversify the sourcing of energy demand through the promotion of liquid petroleum gas (LPG) and liquefied natural gas (LNG). In 1983 the Korea Gas Corporation (KOGAS), a state monopoly, was formed "as the LNG importer to manage the import, storage, transmission and wholesale distribution of LNG in Korea" (MOTIE 2013). The government became the primary energy provider mainly to increase efficiency in the energy sector because during the early stages of development the private sector in Korea lacked the required technology and financing. By October of 1986, Korea began importing Indonesian-sourced LNG to the domestic market. After 2000, it would take an active role in overseas resource acquisitions, expanding foreign operations, and the construction of LNG terminals and upstream pipeline networks.

The second policy initiative aimed for reliable energy production and storage to achieve greater self-sufficiency in energy. The Korea Gas Corporation would not only invest in supply diversification, but also in the expansion of production facilities, securing storage tanks, construction of major pipelines, and the chemical decomposition of LNG with lead. Substantial investments in strategic overseas resources have expanded Korea's supply chain of natural gas and oil. Korea Gas Corporation has the world's largest LNG storage capacity (8,860,000kl) and continues to provide 75 percent of the Korean domestic energy needs.

Reducing the dependency on foreign energy resources through diversified energy sourcing is part of Korea's long-term energy strategy. Increasing the efficiency and effectiveness of the energy market is critical. Policy reforms include providing management autonomy and limiting government intervention; increase industry competition by breaking up monopolies; and through the privatization of state-owned enterprises.

〈Box.2〉 Korea Gas Corporation

Korea Gas Corporation (KOGAS) is the public natural gas company, established in 1983. KOGAS has now grown to become the largest LNG import company in the world. As the nation's sole LNG provider, the Corporation is fully committed to providing clean, safe and convenient energy to the people of Korea. In keeping with this mission, KOGAS currently operates three LNG terminals and a nationwide pipeline network spanning over 3,562km in order to ensure stable supply for the nation.

KOGAS imports LNG from around the world and supplies it to power generation plants, gas-utility companies and city gas companies throughout the country. It produces and supplies natural gas, purifies and sells gas-related by-products, builds and operates production facilities and distribution network, and explores imports and exports natural gas for domestic and overseas markets.

Source: http://www.kogas.or.kr/

5.3.3. Energy Efficiency

Energy conservation and efficiency improvement policies, initiated in 1970s, were systematically implemented. Right after the first and second oil shocks, the government introduced a series of energy conservation policies which, however, were less efficient and effective in terms of scale and quality. Considerable outcomes followed the promulgation of the Act on Rational Energy Utilization followed by the establishment of the Korea Energy Management Corporation (KEMCO) pursuant to the law. Between the 1980s and the early 1990s, there were a variety of policy tools and programs developed and implemented under the auspices of the Ministry of Energy and Resources (now the Ministry of Trade, Industry, and Energy, MOTIE).

The Korea Energy Management Corporation (KEMCO) has played a key role in achieving Korea's policy goals for energy efficiency, energy conservation, clean energy and new and renewable energy technologies. It also manages research and development planning and financial support and management. Within KEMCO, the New & Renewable Energy Centre (NREC) works on R&D in the renewables field. The Korea Atomic Energy Research Institute (KAERI) conducts studies related to nuclear power.

Since Korea has very limited domestic energy resources, the only option for Korea is to make the most of the energy sources available through conservation and improved efficiency in energy use. As fully illustrated in the section of energy conservation and energy efficiency, the Korean government has developed and implemented a variety of policy tools to reduce energy demand. Those policies have evolved in response to changes in the energy market, resulting in strong infrastructure including the government, state-owned organizations, and financial

sources within a clear legal framework. Above all, the Korea Energy Management Corporation (KEMCO) as an implementing public organization has played a central role.

Since 1993, Korea has developed five-year Rational Energy Utilization Basic Plans. The fourth was announced in 2008, which set the target to improve energy intensity 11.3% by 2012. The plan introduced several energy saving measures to encourage the public to conserve energy voluntarily. Among series of energy conservation campaigns, Voluntary Energy Conservation Campaigns were introduced to reduce heating fuel consumption, which accounts for about 13% of the nation's total consumption. In particular, the campaign encouraged to keep indoor temperature between 18°C and 20°C during winter time. The government estimated that if households, businesses, and organizations lower 3°C during winter, the total energy consumption would fall by 20%.

The government also designated the Energy Week, which promotes increasing public awareness for energy conservation and introduces various energy saving tips. The government also urged to enhance energy efficiency to energy-intensive industries. In addition, various policy measures have been applied, such as energy audits, efficiency audits, labeling and standards, and promoting public transit.

〈Box.3〉 Korea Energy Management Corporation

Established in 1980, Korea Energy Management Corporation (KEMCO) acts as a national institution in implementing various projects on end-use energy efficiency, developing and supplying renewable energy technologies, etc. The KEMCO was designated by UN as a CDM operational entity in several areas such as transportation, forestation, and mineral production. The designation has allowed the corporation to provide verification and certification services to businesses in and out of the country and intending to implement CDM projects across all 15 areas of CDM projects. The company has participated in many overseas project certifications such as a Chinese cement factory's waste heat recovery projects.

KEMCO seeks to implement projects efficiently for the rationalization of energy use, thereby reducing carbon dioxide emission and contributing to the sound development of the national economy. The company implements various projects aimed at rationalizing energy use such as creating an energy use culture that is responsive to climate change, enhancing energy use efficiency, and developing and supplying technologies for new renewable energies as future energy sources.

Source: http://www.kemco.or.kr/

6. Conclusion

This report explored the world energy outlook, current status and policies in energy industries in Vietnam, and Korea experience in developing sustainable energy policies and plans. Vietnam has already established long-term energy strategies to meet the increasing demand that is expected by rapid economic growth and to prepare more stable energy mix in the future.

6.1. Policy Implications from Korea

The Korean experience in developing energy security and reforms provides useful policy implications for the development of Vietnam's energy policy. Korea and Vietnam continue to enhance strategic cooperation at various levels such as socio-economic, cultural, and human resource areas. It is highly expected that the partnership will facilitate increased business opportunities and win-win models; policy supports to foster a business-friendly market are required on both sides.

For developing countries that still to building out their energy supply and demand infrastructure, the early Korean experience could provide a useful model. It is recommended that developing countries establish a policy infrastructure by setting a feasible long-term plan and targets and developing strategies to reach them. For these policies to be effectively and efficiently implemented, relevant governance as well as an implementing state-owned agency should be created and supported by legislation. The National Energy Master Plan is a good example to follow for developing a policy framework that is supported with legislative enforcement.

Based on this policy framework, a variety of policy measures could be introduced along with tools to conserve energy and improve energy efficiency based on their specific conditions in terms of availability of energy resources, level of technology, and other socio-economic and cultural factors. First, education and training programs need to be introduced to build the necessary technical and policy expertise. Then, as KEMCO has done, the designated state-owned organization works on specific policy measures and programs to mobilize this expertise and build the capacity to cope with challenges for energy conservation as well as reduce GHG emissions.

The oil and gas industry provides a unique case in developing a diverse energy portfolio. Korea lacks natural resources, especially in the oil and natural gas. Korean industries have been able to secure fossil fuels through diverse investments all stages of oil and gas industry. They were able to move upstream in overseas exploration, midstream investments in the transport of energy resources, and downstream in building refinery capacity. This has given Korea access to a variety of different fossil fuels.

Korea was also making strategic investments in non-fossil fuel energy sources that would increase energy independence. The two cornerstones of this energy policy were the development of nuclear power and renewable and green energies. The country was able to secure a significant portion of their total energy generation from nuclear power. Korea has become a global leader in green growth development, setting strategic energy goals for renewable energy and the development of those industries as engines of growth for economic development.

Above all, energy security is an inevitable factor to maintain national economic growth, industrial activities, and human welfare. As one of the most vulnerable countries for primary energy sources, Korea's energy policies have set stable energy supply at the highest priority. Specific policy tools to enhance energy security capability include diversifying energy sources, expanding infrastructure for generation capacity, encouraging overseas development and international cooperation, and increasing volume of oil stocks to minimizing effects of external crises.

Lastly, Vietnam and Korea have a common background in energy policies and challenges, such as high fossil fuel dependency and an unstable energy portfolio. Korea has already begun diversifying fossil fuel energy supply sources from all various regions across the globe and through aggressive investments in nuclear and renewable energy. A partnership between Korea and Vietnam has already been made to contribute to the nuclear energy development program based on the Korean experience and knowledge sharing. The promotion of green technologies in Korea has fostered the growth of SMEs in renewable energy industries..

Therefore, nuclear and renewable energy are key elements for energy security and has the potential for increased collaboration between Vietnam and Korea. The similar background have allowed for a mutual understanding in developing a strategic partnership in pursuing energy security. Particularly, Korea has recently accelerated the development of renewable and nuclear power technologies, which has potential lessons for Vietnam to minimize their own risks. According to the joint statement on energy cooperation between Korea and Vietnam in 2013, a series of energy and infrastructure projects and investments, especially in nuclear power development, are expected in the near future.

6.2. Policy Recommendation

Improving competitiveness of the energy sector is necessary. In order to achieve the goal, policies should lead to a timely privatization and market pricing of energy. It is critical to evaluate the role of the state owned enterprises, in energy development and promote the reform of state owned enterprises to increase the economical effectives of these enterprises. In addition, it would be recommendable

to develop and implement institutional frameworks that favor private sector participation in energy development to reduce the state financial burden and create a competitive energy market. Appropriate energy price system with tariffs for fossil fuels such as coal, oil, gas should be established in order to allocate primary energy sources efficiently, which will lead to improve the energy intensity of Vietnam.

Long-term energy policy in Vietnam should aim to develop stable supply system at national, regional and village levels. Stable energy supply would create new economic activities and lead to shared growth of the nation. Developing a stable energy portfolio is required to decrease dependence on fossil fuels, which is critical for sustainable development. Vietnam has relatively favorable conditions for renewable energy development. Therefore, more active strategies are required to facilitate research and development, to provide favorable conditions for foreign investments in the area of renewable energy sources. To diversify the primary energy sources for electricity generation, nuclear development in Vietnam would be carefully cultivated to minimize risks and to secure national consensus.

But many are concerned about Vietnam's ability to manage and operate the nuclear power infrastructure in a relatively short development period. The country is rapidly increasing domestic capacity in developing nuclear technologies to ensure that the necessary personnel and expertise will be available when the facilities become operational (Onishi 2012). The complexity of nuclear technology requires a vast number of trained experts to not only operate and maintain, but qualified professionals to analyze and regulate the industry.

Finally, in order to overcome major barriers and difficulties in developing sustainable energy policies in Vietnam, the enhancement of technical and human capacity in developing and implementing energy policies is quite necessary. It is also critical to communicate with various stakeholders, including private sectors, local government and local communities in the process of developing and implementing national and local energy policies.

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2013 Knowledge Sharing Program with Vietnam I:
Support for the Implementation of 2011-2020 Ten-year
Socio-Economic Development Strategy (SEDS) of Vietnam

Chapter 3

Social Housing Development Policy in Vietnam: Lessons from the Korean Experience and Policy Recommendations

Social Housing Development Policy in Vietnam: Lessons from the Korean Experience and Policy Recommendations

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Summary

As a part of the 2013 KSP (Knowledge Sharing Program) policy consultation, this report aims to make a set of policy recommendations to Vietnamese government in resolving housing shortage and raising housing affordability in major cities by pursuing the social housing policy. To that end, we survey the Korean experience of providing affordable housing to low- and moderate-income households in the process of the rapid and sustained economic growth and the urbanization, with the following being the key attributes elaborated:

- Housing institutions established early on (for financing & for land and housing development)
- Continuous spatial expansion of the capital region (Seoul and its vicinity) and the large scale housing and urban development projects
- Efficient land expropriation and allocation of affordable housing units
- Development of a market-oriented housing finance system
- Instituting the real estate market stabilization policies
- Rental housing development

On the social housing (SH) policy in Vietnam, after surveying the current state of macroeconomic and housing market conditions as well as that of the policy in question, we organize our recommendations around the following seven topics:

- Setting the SH policy in a broader context of fostering the housing sector
- Designing specific terms and conditions of the SH policy
- Building an institution for nation-wide land expropriation and SH development
- Building an institution for consumer and producer financing
- Implementing real estate market stabilization policies
- Developing a land compensation system
- Initiating a pilot housing and urban development project (by forming an international collaboration team to experiment the specific recommendations made)

This report consists of the seven sections: motivation and objective (Section I), an overview of the Korean experience (Section II), the macroeconomic and housing market conditions in Vietnam (Section III), the SH policy being initiated in Vietnam (Section IV), the relevant Korean experiences (Section V), the land compensation system in Korea (Section VI), and policy recommendations (Section VII).

1. Background & Objectives

"No country has industrialized without urbanization," as one recent World Report put it.[2)] Vietnam and Korea were no exception to this statement as both countries faced a sustained period of rapid output growth and the resulting in-migration of job and people into major urban areas. In the Korean case, housing became one of the top-priority policy issues to the national government in the very early stage of the economic growth. That was partly because of the acute shortage of housing caused by a large-scale destruction of the stock during the Korean War along with the prolonged population growth and urbanization after the war, and because of the rampant housing price hikes in Seoul and other large cities when the growth took off from 1960s and the worsening housing affordability therein. In response, the Korean government frequently intervened the housing markets with various real estate stabilization policies along with several discrete and massive housing supply initiatives.

In the Vietnamese case, the vibrant economic growth path has been sustaining since the Doi Moi policy reform in the mid-1980s, although the output growth rates moderately decelerated after the Global Financial Crisis in 2007~09. Along with the growth, came the continuously rising share of urban population, especially in Hanoi and Ho Chi Min City (HCMC), causing a pressing need for housing and other urban development projects in those and other major urban areas. In response, the Vietnamese government enacted the Law on Housing in 2005, after which a series

2) Commission on Growth and Development (2008).

of degrees and executive decisions are issued to help shape the social housing (SH) policy in the country.

As a part of the 2013 KSP (Knowledge Sharing Program) policy consultation, this report aims to make a set of policy recommendations to Vietnamese government in resolving housing shortage and raising housing affordability in major cities by pursuing the SH policy, based on the lessons learned from the Korean experience.[3)]

In a nutshell, the Korean experience in fostering the housing sector over the last five decades exhibits several distinct transitions in the policy focus. First, there was a shift from the government-led housing supply and institution building to a more private-sector driven housing delivery system. While such milestone initiatives as the Gangnam (South of Han River in Seoul) development in the 1970s and the two million housing units construction drive in the late 1980s contributed to resolving housing shortage and stabilizing housing prices in the major urban areas, the role of private sector has been rising as the construction industry became more matured and as the market-oriented financing extended service to more consumer cohorts (especially after the Asian Financial Crisis, AFC). Second, while the physical aspect of home building got more policy attention because resolving spatial mismatch between demand and supply was a pressing need to the government, use of financial sector in stabilizing the housing markets as well as in enhancing housing affordability for low- and middle-income households has gotten to be a more and more important policy instrument. The deregulation of the residential mortgage lending after AFC along with the interest rate liberalization were a catalyst in expanding the housing finance system in Korea; And the lending restrictions (in terms of the maximum loan-to-value and debt-to-income ratios set by the government) have been utilized as important policy tools. Third, there was also a policy shift since the early 1990s from owner-occupied housing to renter-occupied one, which was a logical evolution in housing policy given the fact that, on the viewpoint of government, the rental housing sector in general should be the segment in resolving need of shelter for low-income and other target consumer groups.

Using the Korean experience as a benchmark, policy recommendations are made around seven topics as listed below, and a set of specific recommendations under each one is discussed in the last section:

- Setting the SH housing policy in a broader context of fostering the housing sector
- Designing specific terms and conditions of the SH policy

3) Hong (2013) is a prior study that examines the urban development policy in Vietnam as a part of the 2012 KSP project. While that study largely focuses on various financing issues related to urban projects in Vietnam, this one deals with the social (or affordable) housing and relevant policy issues.

- Building an institution for nation-wide land expropriation and SH development
- Building an institution for consumer and producer financing
- Implementing real estate market stabilization policies
- Developing a land compensation system
- Initiating a pilot housing and urban development project (by forming an international collaboration team to experiment the specific recommendations made)

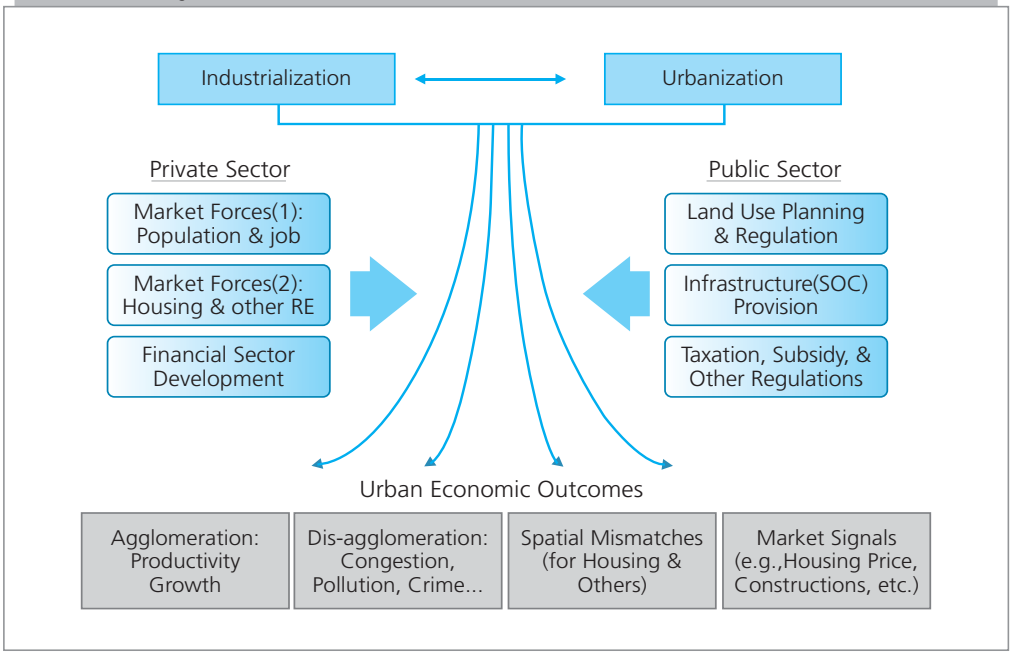
The rest of this report consists of the following six sections: an overview of the Korean experience (Section II), the macroeconomic and housing market conditions in Vietnam (Section III), the SH policy being initiated in Vietnam (Section IV), the relevant Korean experiences (Section V), the land compensation system in Korea (Section VI), and policy recommendations (Section VII).

2. Overview of the Korean Experience

2.1. Urbanization and Economic Growth

A large-scale and prolonged rural-to-urban migration is an inevitable outcome when a country experiences a sustained output growth, and cities, especially primate ones, serve as an engine of growth and innovation in the process.

[Figure 3-1] Determinants and Outcomes of Growth-Driven Urbanization



As depicted in [Figure 3-1], a growth-driven sustained urbanization results in several economic outcomes, both favorable ones and not-so-favorable ones. On the positive side, the concentration of job and population into cities brings about so-called agglomeration economies, that is, rise of labor productivity and other positive externalities caused by the clustered economic activities. On the other hand, urbanization also produces negative consequences of certain type, often referred to as disagglomeration economies, such as slums, traffic congestion, air pollution, crime, and so on. Overall policy goal for government in dealing with the rising urbanization should be maximizing the agglomeration economies, such that cities can serve as an engine of continued growth, while minimizing the disagglomeration economies by properly containing the negative externalities as listed in the above.

Another outcome of the urbanization that both public and private sector entities should properly manage is the spatial mismatch of housing and other real estate. That is, the sustained in-migration of population to cities causes a shortage of living and working space in urban areas, a critical and challenging policy task for government to adequately plan and execute. To ensure sufficient residential and non-residential real estate in major urban areas government should utilize several conventional policy instruments, including regulations on various land uses (within a particular city as well as in whole country), planning and goal-setting for housing and urban development, providing infrastructure, and utilizing taxes and subsidies to achieve intended policy targets. Instituting the social housing policy, whose goal is in general to provide housing safety net for low-income and other target groups and to enhance housing affordability for low- and moderate-income households, should be done in this broader context of managing the urbanization process. Policy decisions should also consider various indicators that show market signals as to extent and trend of spatial mismatches in housing and other development needs.

One crucial element that determines the outcomes of urbanization is 'financial deepening': that is, the depth of financial service by banks and non-bank financial institutions in extending credit to corporate and household borrowers, which is an important ingredient in pursuing pending development needs and outcomes of the public and private sector actions to ensure an effective and orderly urbanization process. If and when such financial service function is not yet fully developed, then government usually resorts to a 'special circuit' financing to channel necessary amount of credit to planned development projects.

2.2. The Korean Experience in a Nutshell

Right after the Korean War in 1950~53, Korea was one of the poorest country in the world. However, gearing up the output growth from the first five-year economic development in the early 1963s, the country has completely transformed itself from

a rural agrarian society to a fully-industrialized urban economy, with the per capita GDP jumping from a less than $100 to over $20,000 right now. The two pictures in [Figure 3-2], showing Cheong-Gye-Chun – the stream flowing across the central area of Seoul – in 1965 vs. 2007, symbolically contrasts the state of urban outlook before and after the transformation, and nicely demonstrates the outcome of an effective urban development policy.

[Figure 3-2] Impact of Sound Urban Development Policies

Cheonggyecheon Before the Urbanization of Seoul in1965

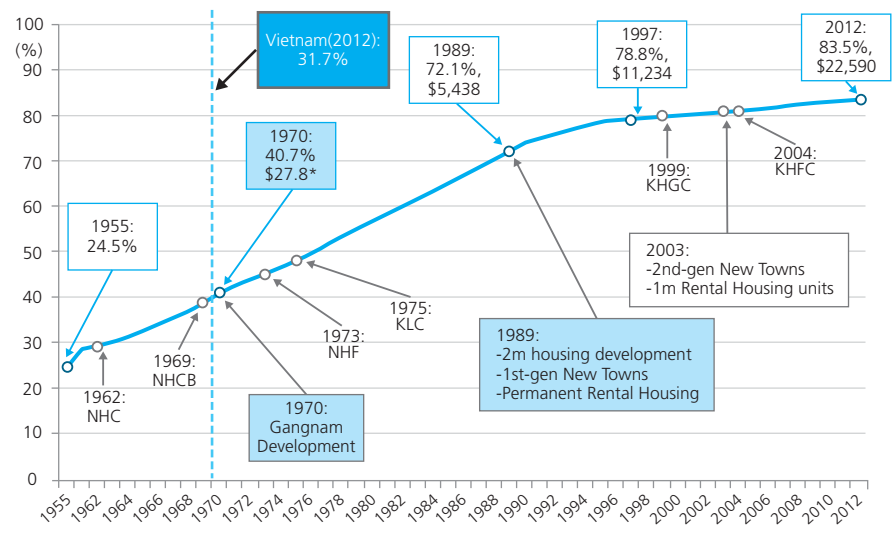
Cheonggyecheon in 2007

Source: Renaud (2011)

In terms of housing, its shortage was evident even before the start of economic growth. In the supply side, about 18 percent of housing stock (or 3.3 million units) were destroyed during the Korean war, whereas the rapid population growth in the post-war era – from 20 million in 1949 to 25 million in 1960 – worked as a demand shifter in 1950s and 1960s. Hence, housing took the main stage in public policy early on: that is, in September 1953, the government announced the presidential proclamation of building one million housing units within five years, which was not realized due to an unrealistic financing plan. (See Attachment 1 for a survey of housing market conditions and policy interventions in Korea in each of the last six decades.)

As the urbanization progresses, the Korean government instituted a series of housing policies from the early 1960s. Some of the key characteristics of the Korean housing policies are summarized in [Figure 3-3], which shows the major policy measures adopted along with the urbanization and per capita income growth paths. Several notable characteristics of the Korean experience are summarized below.

[Figure 3-3] Urbanization and Housing Policies in Korea



*GDP per capita (current US$)
NHC(National Housing Corporation), NHCB(National Housing and Commercial Bank), NHF(National Housing Fund), KLC(Korea Land Corporation), KHGC(Korea Housing Guarantee Corporation), KHFC(Korea Housing Finance Corporation)

2.2.1. Institutions Established Early On

Starting from the very early stage of economic growth, the government established housing institutions whose goals were to implement affordable housing policies for the whole country: the National Housing Corporation (NHC) in 1962 as the main development agency of affordable owner and rental housing units; the National Housing Bank (NHB) in 1969 as the financing arm for home builders and consumers, which was privatized in 1997 and had the new name as the National Housing and Commerce Bank (NHCB); the National Housing Fund (NHF) in 1973 as the funding vehicle for housing development and purchase, whose actual operation was delegated to NHCB and other banks; the National Land Corporation (NLC) as the agency specialized at land expropriation for large scale housing and urban development projects; the Korea Housing Guarantee Corporation (KHGC) in 1999 as a guarantor for home buyers on adequate delivery of housing units under the pre-sale contracts; the Korea Housing Finance Corporation (KHFC) in 2004 as a mortgage securitization conduit, whose mission was to expand the long-term fixed-rate mortgage loans. These institutions played critical roles in building and allocating affordable housing units to low- and moderate-income households and, as such, in forming sizable middle class citizens in the Korean society. Nonetheless, social missions of some of these institutions weakened over time as the private sector was further developed for constructing the properties and for providing financial services. That required a re-alignment of the roles thereof and a policy reform to shift their functions and operations. As a related institution building effort, the Korean government established the Comprehensive National Territorial Plan in 1971, which has been periodically updated since its inception; And the government also maintains the 10-year term housing policy goals from the early 1990s, which has also been updated and announced over time.

2.2.2. Continuous Spatial Expansion of the Capital Region

Seoul and its vicinity constantly expanded as the economic growth continued, which made it necessary to develop new and large-scale urban clusters surrounding the initial urban core. The first such development was done in the Gangnam (South of Han River) area from the early 1970s. The share of urban population at that time was 40.7%, which was higher than the current urbanization rate of 31.7% in Vietnam but lower than that of Chinese (50%). The second such spatial expansion occurred in the late 1980s when the Korean government initiated the two million housing units construction drive (already over a 70% urbanization rate at that time), the milestone housing development project that delivered the planned units along with the five satellite cities in the outskirts of Seoul. The project is generally viewed as effective as it largely solves housing shortage problem and also stabilizes housing prices in the capital area during the 1990s. (See the quote below from Cho (2013)

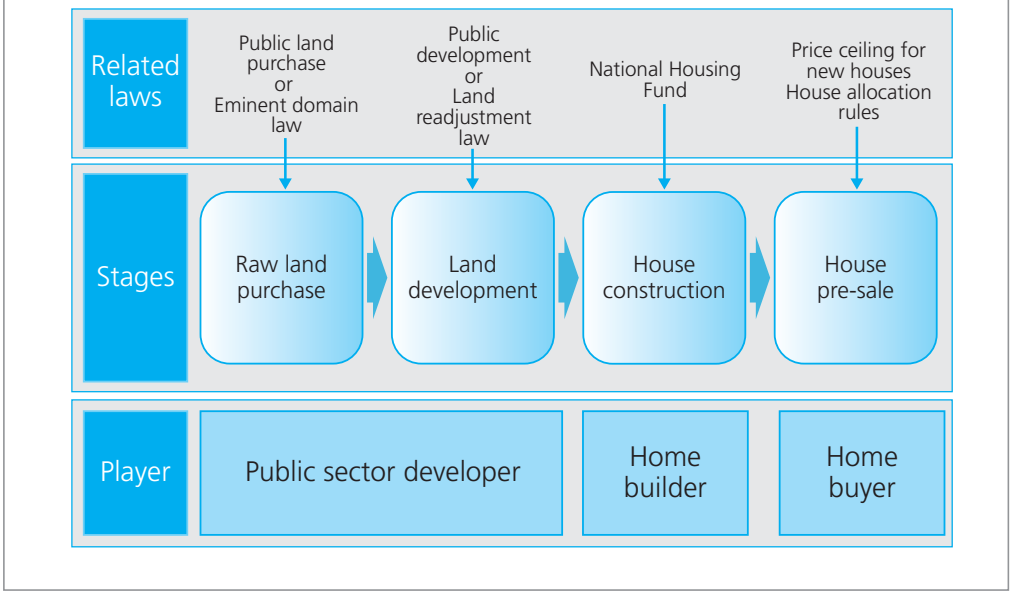
on how the project came about.) Thanks to the booming economy after the Asian Financial Crisis (AFC) and the global low interest rate environment in the early to mid-2000s, there was another round of large-scale housing development, which built the second-generation new towns located about 30~50km from downtown Seoul. Unlike the first wave in 1990s, this project was not successful in that, due in part to the poor road infrastructure and road network, housing demands in those locations were weak, and a large stock of unsold finished housing units was generated. The project is one of the reasons behind the prolonged recession in the capital region housing markets and the construction activities.

"The rampant housing price hike and the worsening affordability became a hot socio-political issue in the 1987 Presidential election; And the then ruling party candidate Mr. Noh, who later on won the election, announced a plan to build four million housing units during his six year term. The plan was modified to a more realistic scale when the government announced in 1988 to construct two million units during the five-year period 1988~92.Even though some of the powerful cabinet members expressed a concern on the feasibility of the plan, Minister of Construction (MOC) and the Blue House (BH, the presidential quarter similar to White House in the U.S.) staff members held on to the position to pursue the project as an election pledge, to which the President gave his support." (Cho, 2013a)

2.2.3. Efficient Land Expropriation and Allocation of Affordable Housing Units

In the early 1980s, the Korean government changed the land expropriation method, from the time-consuming and less efficient land re-adjustment method (which left the ownership to land owners) to the public development method (which assigned the taking power of ownership to KLC and other development agencies and compensated land owners). The new method enabled the public sector development entities to proceed with the large scale housing and urban development projects. However, the issue of fairness in land taking and compensation was often raised, the other side of the efficient land mobilization scheme. [Figure 3-4] describes the land and housing development process in Korea, from purchasing raw land all the way to selling developed units to consumers, in each step of which different regulations apply. The Korean system is essentially passing through low-cost land development and the subsidized construction financing (by NHF) to home buyers via pre-sales with the price ceilings of new housing units.

[Figure 3-4] Land & Housing Development Process in Korea

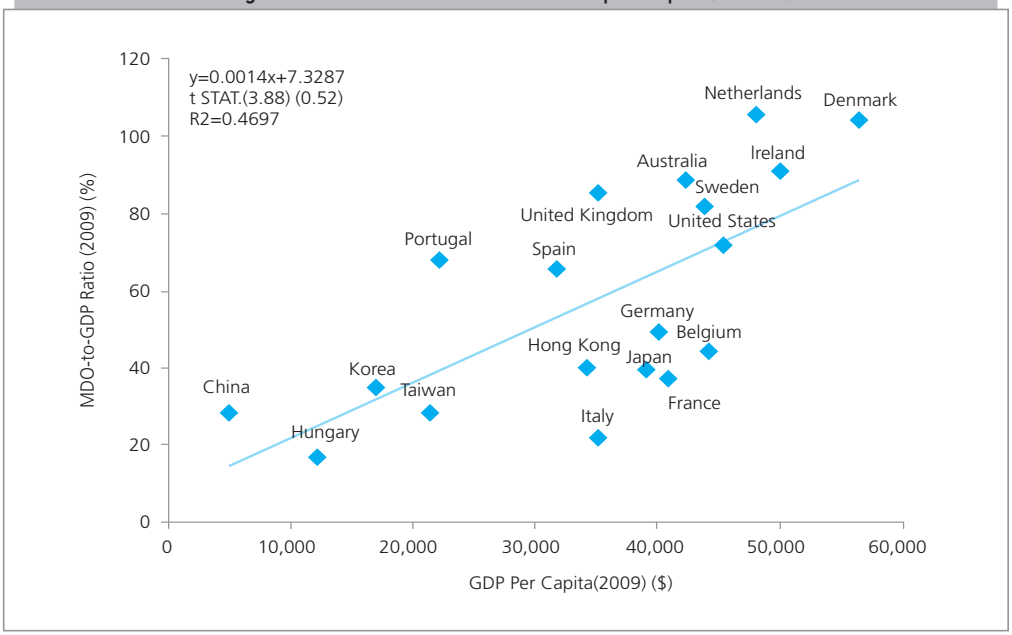


Source: Son and Lee (2014)

2.2.4. Development of a Market-Oriented Housing Finance System

After the Asian Financial Crisis (AFC) in 1997~99, the residential mortgage lending system in Korea shifted from a small government-subsidized one to a much larger market-oriented one. In consequence, home purchase became more affordable for low-income and other underserved households. For example, the typical loan-to-value (LTV) ratio was in the 20-30% range in 1990s, which increased to the 50% range with the maximum LTV set at 70% for loans securitized by KHFC and at 60% for the commercial banks and other private financial institutions. The lending volume increased dramatically after AFC with the MDO-to-GDP ratio of 34%. As shown in [Figure 3-5], the ratio exhibits a fairly strong positive correlation with per capita GDP, showing an increase of $1,000 USD in the personal income causing 1.4% increase in the ratio. The ratio in Korea fares with the trend line, implying that the size of its residential mortgage lending is neither excessive nor lagging behind when considering the relationship between two variables.

[Figure 3-5] MDO to GDP Ratio vs. GDP per Capita (in 2009)



Source: Cho, Kim, and Renaud (2013)

2.2.5. Instituting the Market Stabilization Policies

"Stabilizing housing prices" has been a motto for housing policy in Korea for a long time. To that end, the Korean government frequently intervened housing markets (over 60 times during the last 40 years) both in upturns and in downturns, often referred to as the "the hot-bath-cold-bath policies." The conventional policy instruments adopted were real estate taxes (for acquiring, holding, and re-selling housing and other real estate assets) and various restrictions on land and housing transactions (for example, the speculative zones designated in which mortgage lending and housing transactions were regulated). As the residential mortgage lending sector became more active and sizable, the new policy instruments were added, the lending restrictions (often called as macro-prudential regulations) such as LTV (Loan-to-Value) and DTI (Debt-to-Income) ratios limits. On the effectiveness of those alternative policy instruments, one recent study by IMF demonstrates that the macro-prudential regulations such as LTV·DTI caps tend to work better than others in that they stabilize housing market activities with the minimum effect on the volatility of GDP gaps (i.e., with a smaller side effect on the whole economy).

2.2.6. Rental Housing Development

The rental housing sector in Korea has been relatively under-developed, partly because of the unique housing rental system in Korea called as Chonsei. (Under

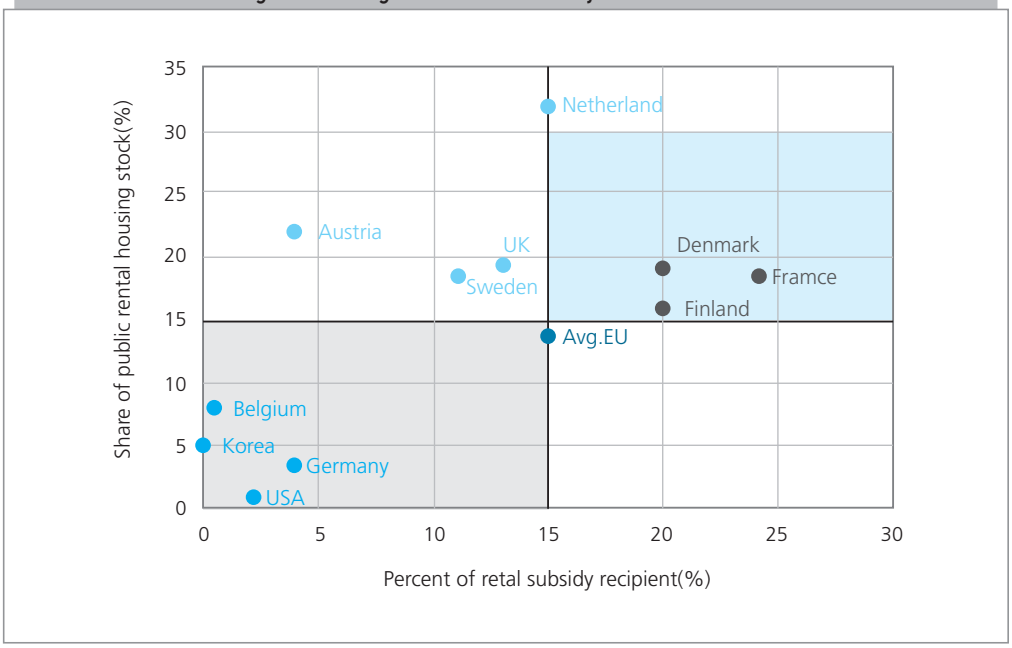
Chonsei, tenants make a large sum of deposit, usually 40~60% of purchase price, in the beginning of the 2-year contract, pay no monthly rent during the tenure, and get the entire deposit back at the end of the contract.) However, realizing the need for expanding rental housing stock for low-income and other target households, the Korean government started various rental housing programs from the early 1990s, with the Permanent Rental Housing Program as the one that specifically targeted low and very low-income families. Recently (or at the end of 2013), the Housing Allowance Act has been passed in the Congress, based on which the housing voucher program is scheduled to be launched in the second half of 2014.

2.3. "Social Housing" vs. "Public Housing" vs. "Affordable Housing"

In Korea and other OECD countries, the terms 'social housing' and 'public housing' are used inter-changeably. In general, public housing refers to rental housing units owned by public sector entities (either by national or local government or by housing agency such as LH Corporation in Korea) and leased with low (often subsidized) rents to low-income and other target consumer cohorts. In the U.S., for example, the public housing is the subsidized rental units built after World War II, owned and operated by the national or local government entities (PHAs, Public Housing Agencies, as an example).

Social housing, on the other hand, is the terminology that is more frequently used in Europe, and refers to the rental housing units owned and operated by government and other public sector entities, as well as by NGOs (Non-Governmental Organizations). In Europe, social housing is usually combined with tenant-based rental housing subsidies (e.g., housing allowance or voucher). There is also the term 'quasi-social housing,' the privately-owned rental units that are subsidized by government for long-term lease to low-income and other target groups (for example, those private rental housing units in the U.S. that are developed with LIHTC – Low-Income Housing Tax Credit, the tax incentive system for the private rental housing developers). In summary, in most OECD countries, both social housing and public housing essentially refer to rental housing for low- and moderate-income households; And the social or public housing programs managed by public and private entities are often combined with the housing allowance program such as housing voucher. How extensive those rental housing programs should be dependent upon views and philosophies of political leadership in a given country (as shown in [Figure 3-6]). One thing to note is that a well-functioning rental housing sector also works as a stabilizer of housing market and macroeconomy because that represents a viable housing option to consumers as an alternative to owning and, as such, can mitigate an overheated housing market for owning.

[Figure 3-6] Regimes of Rental Policy in OECD Countries



Source: Jin (2013)

In the Vietnamese context, 'social housing' seemingly means the affordable housing units for both owning and renting, which are developed with taxes and land use fee incentives and are allocated to the several target household groups. The developed SH units are government-owned and sold for leasing, owning, or rent-purchasing to low-income households, workers at the industrial parks, university students, and government officials. The program appears to be still in an early stage, and to represent an alternative housing market segment to the commercial housing that is suited for more well-off citizens.

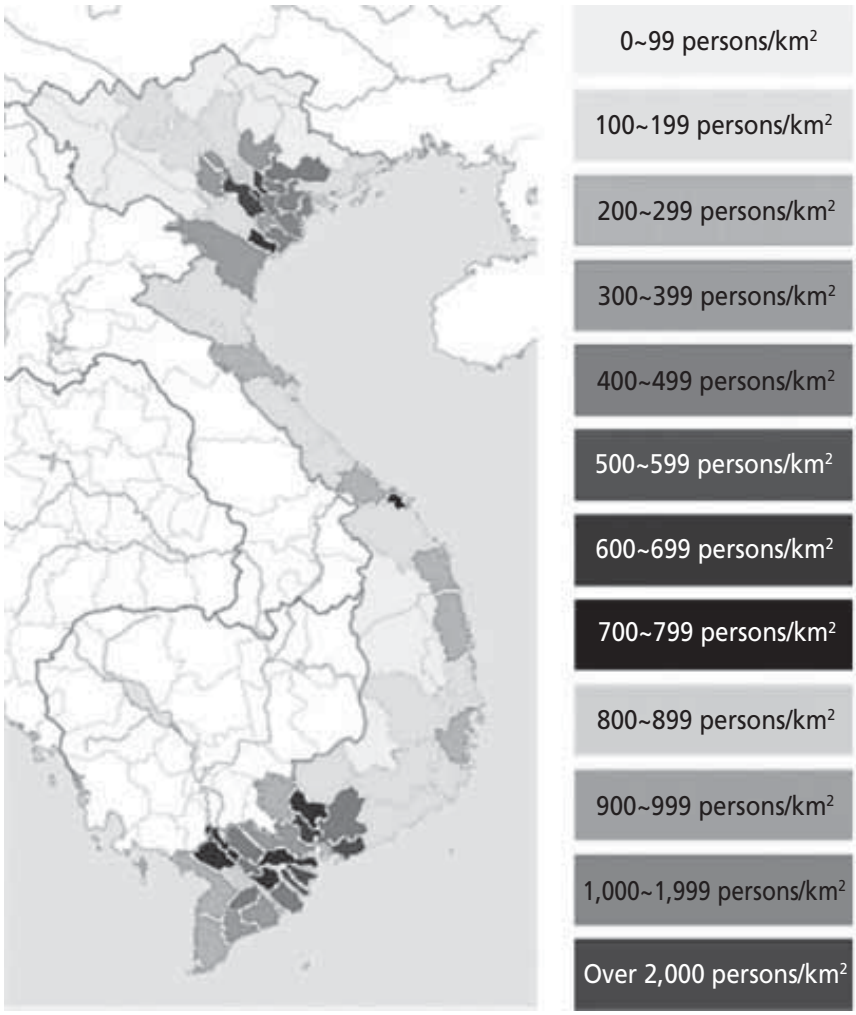
3. Socio-Economic Trends in Vietnam

3.1. Demographic Trends

Vietnam consists of five regions (Red River Delta, Northern Midland and Mountain Area, North Central and Central Coastal Area, Central Highland, and Mekong River Delta) and 63 provinces; The current population is 87.8 million as of 2011 (6.7m in Hanoi, and 7.5m in HCMC). As of 2012, 31.6% of the total population reside in urban areas, which has risen from 24.4% in 2000. Although the urbanization is progressing, population densities in the major cities are still fairly low compared to the large cities in Korea: 2,013 people in Hanoi (per km^2, as of 2011), 3,389 in HCMC, and, for

comparison, 16,567 in Seoul, and 4,509 in Busan.

[Figure 3-7] Population Density in Vietnam by Province (as of 2011)

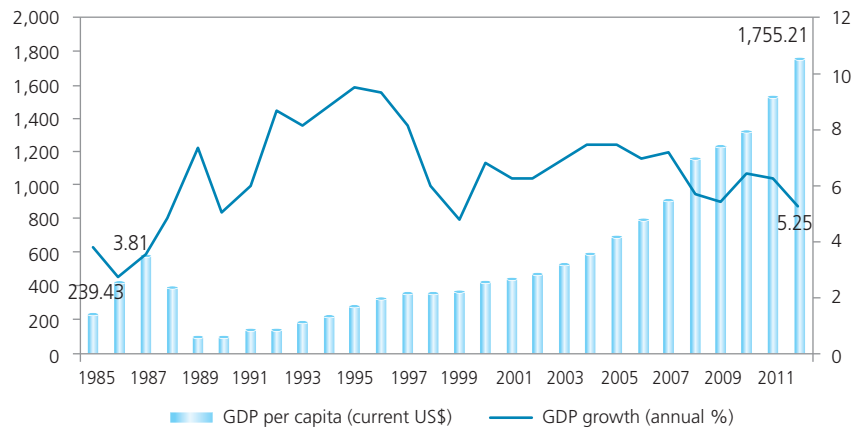


Source: The authors

3.2. Macroeconomic Trends

The real annual GDP growth rates started accelerating since the DoiMoi policy shift in 1986, but decelerated to a 6~8% range in 2002~07 and further to a 5% range after 2009. Per capita GDP is$1,755 in 2012 (in current U.S. dollar), which is lower than China as of 2012 ($6,019) but similar to that of China in in 2005 ($1,731).

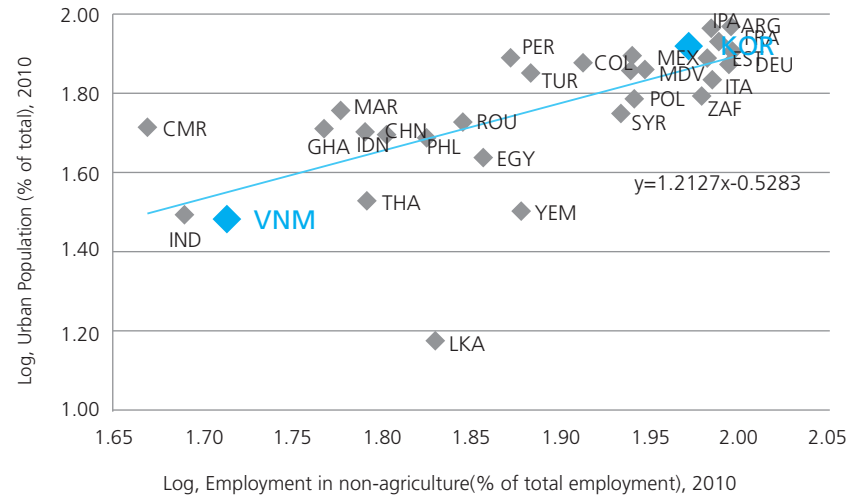
[Figure 3-8] GDP Per Capita and GDP Growth Rate



Data source: World Bank

The relatively low share of urban population (31.7%) in Vietnam reflects the still low level of industrialization, measured in terms of percent of non-agricultural employment in the total employment base. As shown in [Figure 3-9], the share of industrial sector employment in Vietnam is fairly low; And, as shown in the figure, a 10% increase in the non-agricultural employment in a country raises the share of urban population by 12%.

[Figure 3-9] Urbanization vs. Industrial Employment: An International Comparison

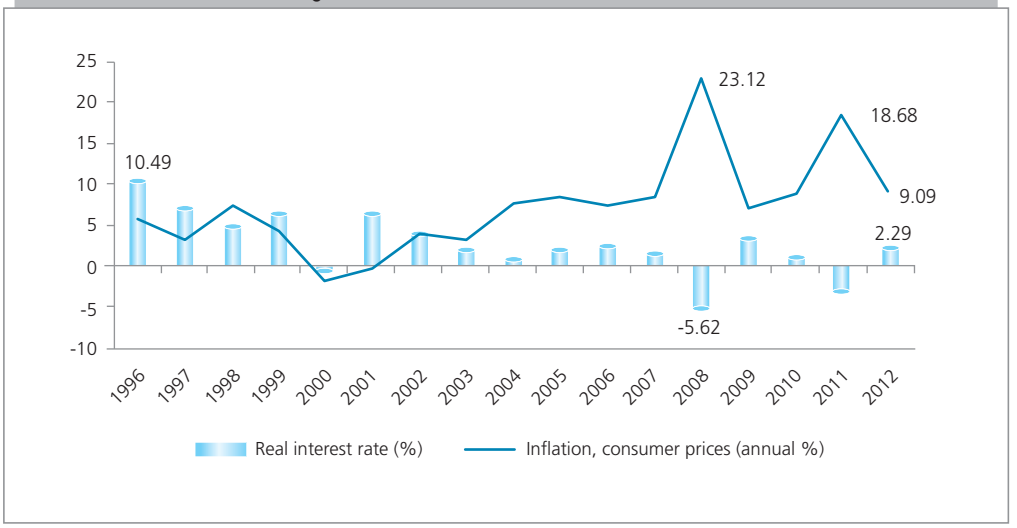


Data source: The World Bank

Inflation is still high, with a two-digit annual CPI growth rates since 2009, and, as a result, the market interest rates are also relatively high [Figure 3-10]. They constitute unfavorable conditions for developing an active financial market for home builders and households. As one indication, the domestic credit provided by the banking sector as percent to GDP is still fairly low in Vietnam [Figure 3-11]. As per capita income increases by 10%, the banking credit as percent to GDP rises by 4.8%.

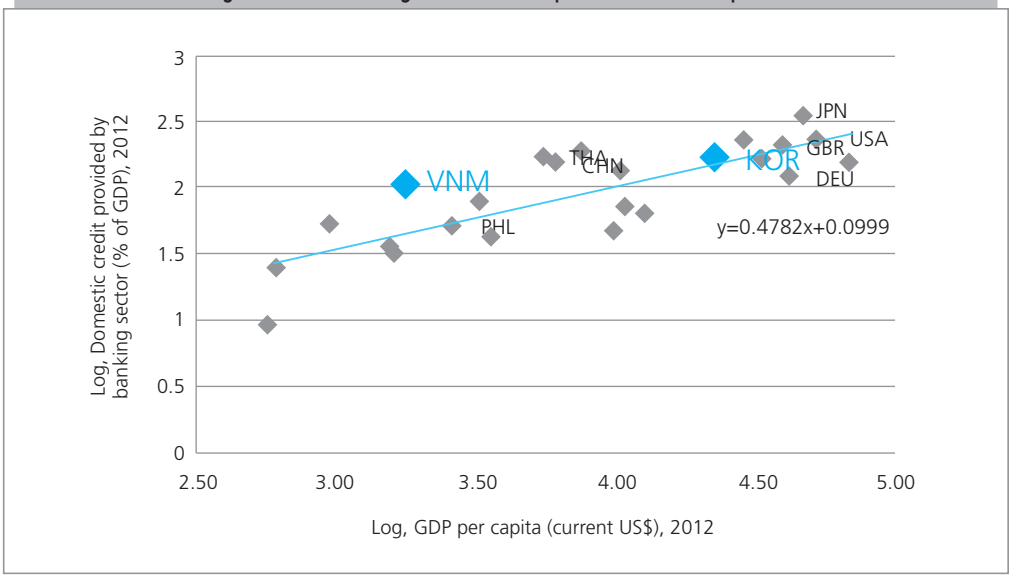
According to one World Bank report, informal financing (i.e., borrowing from friends and relatives) for home purchase, rather than from formal financial institutions, is prevalent in Vietnam <Table 3-1>. Typical lending features for residential mortgage loans by financial institutions are generally 5-year maturity, 70 maximum loan-to-value (LTV) ratio, and mostly non-amortizing principals. (Pham, 2010) One thing to note is that statistics on total Mortgage Debt Outstanding (MDO), new mortgage issuance, and other mortgage market activities are not yet available in Vietnam.

[Figure 3-10] Inflation and Real Interest Rate



Data source: General Statistics Office of Vietnam

[Figure 3-11] Banking Sector Development and Per Capita GDP



Data source: The World Bank

〈Table 3-1〉 Financing Methods for Home Purchase

City/Land Market		Payment To		Payment Format		Money Borrowed	Lender			
		Owner/ Seller	Broker	One time	Installment		Bank	Family/ Friends	Other lenders	Combination
Hannoi	High	100	0	0	100	15	33	33	0	33
	Medium	100	0	100	0	3	0	0	100	0
	Low	83	17	86	14	43	12	47	18	24
	Industrial zons	100	0	100	0	0				
	Total	93	7	79	21	16	17	42	17	25
HCMC	High	91	9	64	36	30	33	67	0	0
	Medium	93	7	47	53	45	22	22	11	44
	Low	92	8	58	42	30	33	33	0	33
	Total	92	8	55	45	35	29	38	5	29

Source: Vietnam Urbanization Review, World Bank (2011)

3.3. Housing Market Conditions

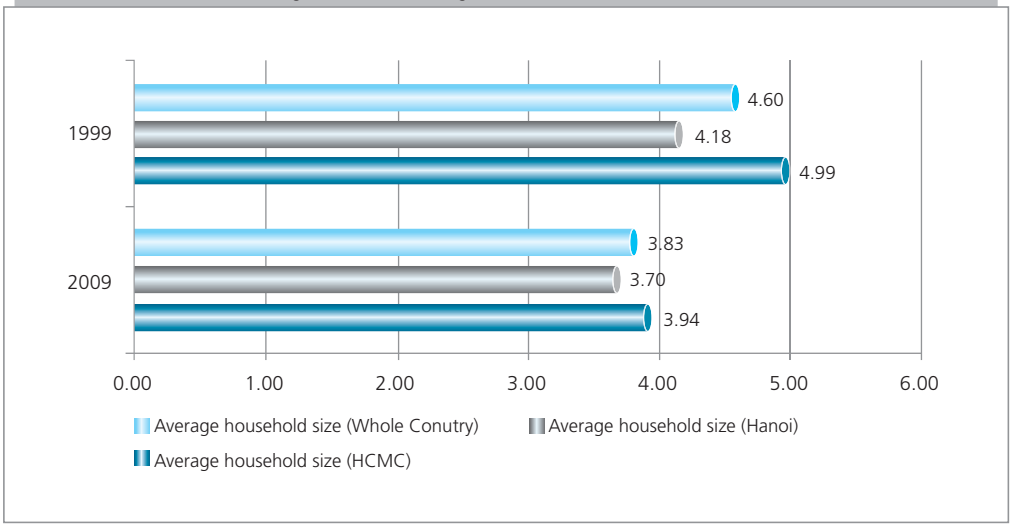
Between 1999 and 2009, housing market conditions in Vietnam have improved, as shown by the indicators in <Table 3-2>. In the supply side, housing units per 1,000 people increased from 217 to 242 units (for comparison, 302 units in Korea, 450 in Japan). However, the housing supply ratio (= housing units/households), which is reasonably high, declines from 99% in 1999 to 92% in 2009, possibly reflecting the lowering average household size [Figure 3-12]. Housing quality has also improved in the same period: housing units with waterborne toilets rising from 16% to 54%, and per capita housing space from 9.6m^2 to 16.7m^2 (in Korea, 25m^2 in 2010 and 17m^2 in 1995).

〈Table 3-2〉 Selected Housing Indicators for Vietnam (1999 vs. 2009)

	UOM	1999	2009	△
Housing stock	units	16,659,593	22,200,183	33%
Housing space per capita	sq. meters	9.68	16.7	73%
Housing space per household	sq. meters	42.56	63.75	50%
Housing units w / safe sater	%	54.81	86.7	58%
Housing units w / water-borne toilet	%	16.41	54.0	229%
Housing supply ratio	%	99.99	92.97	-7%
Housing units / 1,000 people	units	217.50	242.56	12%

Source: General Statistics Office of Vietnam

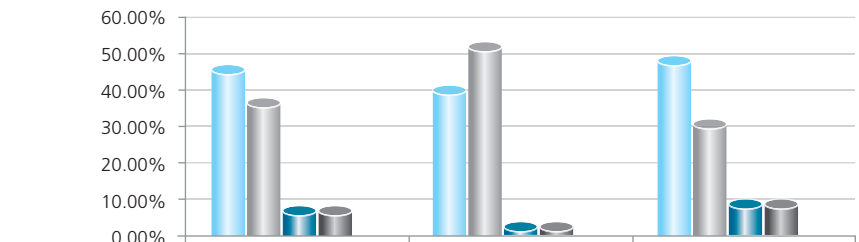
[Figure 3-12] Average Household Size in Vietnam



Data source: General Statistics Office of Vietnam

One attribute to note as to the housing stock in Vietnam is the high share of "non-permanent structures" [Figure 3-13]: only 47% of the total housing units being "permanent structure," which goes down in the urban area (40.9%). This indicates that quality improvement of existing structures is needed along with development of additional units. The housing construction has been on the rise since 2005, with the private housing, rather than apartment, being the predominant structural form [Figure 3-14].

[Figure 3-13] Distribution across Housing Structure Types

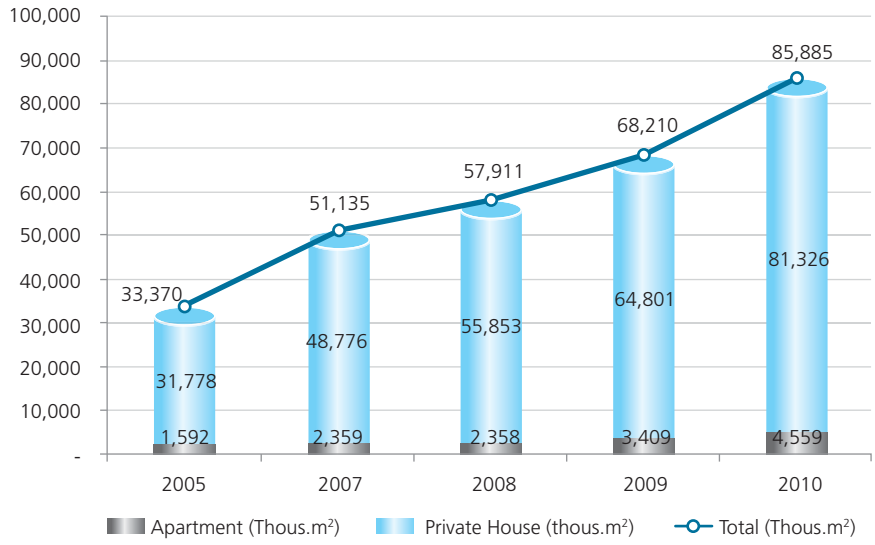


	Total	Urban	Rural
Permanent	46.77%	40.92%	49.33%
Semi-permanent	38.17%	53.12%	31.62%
Less-permanent	7.62%	3.29%	9.51%
Simple	7.42%	2.61%	9.52%
Not stated	0.03%	0.05%	0.02%

Data source: General Statistics Office of Vietnam

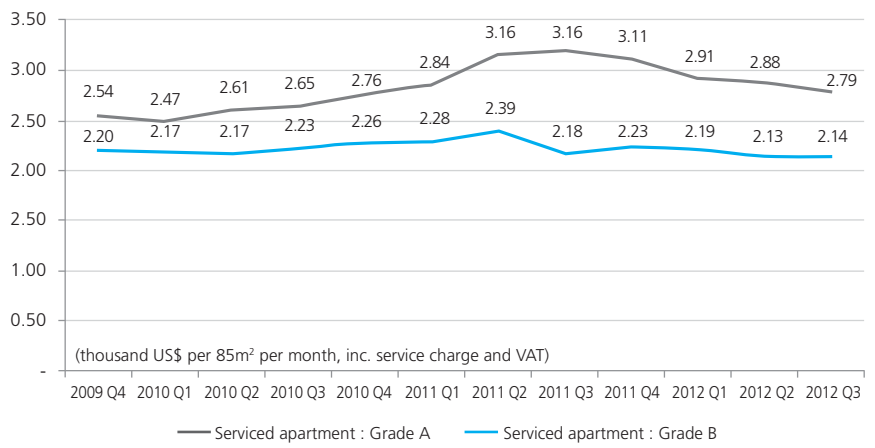
Housing prices in Hanoi and HCMC appear to be peaking out and decelerating from mid-2011 (See [Figure 3-15] for the price trend of the serviced apartment in HCMC). However, it is difficult to confirm as no official housing price indices currently exist in Vietnam, which is an important data infrastructure to gauge signals of spatial mismatch in housing market. The price level in Hanoi appears to be very high among Asian cities. (See [Figure 3-16] for PIR - Price-Income Ratios - for Hanoi and other cities.) That, however, is not based on validated statistics either.

[Figure 3-14] Total Housing Construction, by Property Type



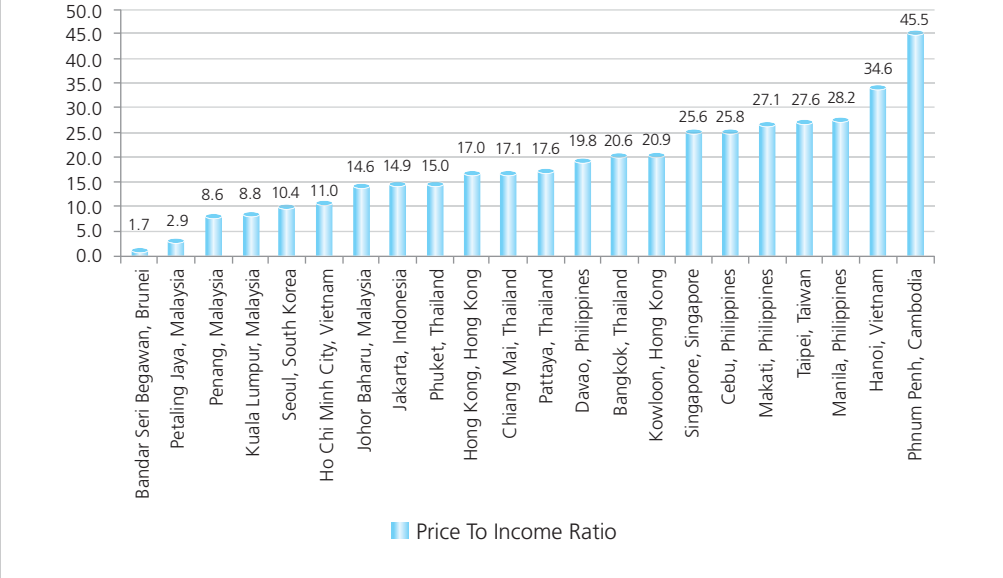
Data source: General Statistics Office of Vietnam

[Figure 3-15] Secondary Asking Price of Serviced Apartment in HCMC



Data source: CBRE

[Figure 3-16] PIR (Price-Income Ratio) for Hanoi



Data source: Numbeo (http://www.numbeo.com)
* Numbeo is database of user contributed data about cities and countries worldwide
* Numbeo's formula assumes and uses:
- net disposable family income, as defined as 1.5 * the average net salary
- that the average apartment has 90 square meters
- its price per square meter is the average price of square meter in city center and outside of city center

3.4. Section Summary

- Relatively low levels of urbanization & industrialization combined with low population densities in the major urban area → A large-scale nation-wide housing construction drive (similar to the 2 million units construction drive in Korea) does not appear to be needed yet.

- High inflation and under-developed banking sector → Developing an active and market-oriented housing finance system (for consumers & for producers) would be hard to develop, and a special circuit financing channel (similar to NHF in Korea) can be option to consider.

- Housing price downturn after the Global Financial Crisis (GFC) → It is important to properly monitor market signals for boom-bust of housing prices and construction activities, and to stabilize the market with appropriate policy instrument(s) if needed.

- Improving housing conditions but still over-crowding and informal (non-

permanent) housing structures being a policy issue to consider → Both quantity expansion and quality enhancement are policy dimensions to properly plan and execute.

- Lack of market data & statistics → Housing price indices (HPIs) and other housing & mortgage market statistics will have to be developed.

4. Social Housing Policy in Vietnam

4.1. An Overview of SH Policy in Vietnam

As mentioned earlier, the SH program in Vietnam was first promulgated in the Law on Housing of 2005 (which became effective in 2006), and its details are being shaped through a series of decrees and executive decisions since then. "Housing development strategy of Vietnam to 2020, and the vision to 2030," the housing development plan approved by the Prime Minister on 30/11/2011 appears to be a milestone for the program as well. Like in the Cheong-Gye-Chun example in Section II, the SH program's ultimate goal is to transform living conditions of low-income and other target consumers in major urban areas, as illustrated in [Figure 3-17].

The SH program aims to offer affordable housing units to four main classes of target groups: (1) cadres, civil servants, and public employees, (2) officers and professional armed forces, (3) workers in industrial parks, and university students, and (4) low-income individuals living in urban areas. The properties are built by public or private sector entities, and are transferred to consumers for sale, rent, or lease-purchase[4] to the target groups. (See <Table 3-4> for other program details.) These have been over 500,000 units of SH built and transferred between 2008 and 2012 along with other results delivered to date <Table 3-3>.

4) Lease-purchase means the advance payment of a certain sum of money by the lessee-purchaser of the house as agreed upon in the lease-purchase contract, who will pay the remaining payable amount as a rental on a monthly or periodical basis. Upon the expiration of the lease-purchase term, the house lessee-purchaser who has fully paid the rental will be granted a house ownership certificate by a competent state agency.

[Figure 3-17] Social Housing in Action: An Illustration

An old block of building needs to reconstruct in Vietnam
Source: http://www.hanoimoi.com.vn

More residential housing projects have been deploying in Vietnam
Source: http://nhadatvanminh.com.vn

Source: Re-quoted from Pham (2010), p. 99

〈Table 3-3〉 Overall of the SH Policy in Vietnam

Definition	• A house built by the state or an organiazation or an individual of any economic sector for sale, rent or lease-purchase* to the target group
Target Group	• Cadres, civil servants public employees • Officers and professional army forces • Workers in industrial parks and university students • Low-income individuals living in urban areas
Main policy ingredients	• Investment capital sources - Proceeds from sale, rent, hire-purchase of state owned housing units - Land use levies of housing development projects - State budget - Supported by voluntary contribution • Land stock - Reserved land stock from investors of commercial housing and new urban-area development projects(over 10 hectare) • Priority order - Must acomplish construction of SH before construction of commercial housing or new urban-area project • Incentives - Exemption of land use levies, land rent feess - Exemption or reduction of relevant taxes

〈Table 3-3〉 continued

	Social housing	Housing for low-incomes	Housing for student	Housing for workers
Capital resource	• State • Non-state	• Enterprises	• Central state • Local state	• Economic sector
Tarket groups	• Cadres*, civil servants, public employees • Officers, Professional army forces • Workers • Students • Low-incom individuals living in urban	• Households with: - Cadres, civil servants, public employees - Officers, Professional army forces - Land expropriation compensated by money	• Students of public and non-public universities, colleges, professional secondary schools, vocational colleges, vacational intermediate schools	• Woker of industrial parks, export processing zones, economic zones, hi-tech parks
Condition for rent or lease-purchase	• No house • Not rent or purchase state-owned houses before • No support or provision from state before • Owning house under 5m^2/person • Owning house under makeshift, damaged, dilapidated conditions • Low incom(lower than provincial regulations)	• No house • Owning house but acquired for clearance and compensated by money(not housing or land) • Owning small house • No allocation of housing and land by state		• Working at the industrial park • Priority - Outer-province workers - Low income - No house - House under makeshifr conditions

* Cadres are Vietnamese citizens who are elected, approved and appointed to hold posts or titles for a given term of office in agencies of the Communist Party of Vietnam, the State, socio-political organizations at the central level, in provinces and centrally run cities, in districts, towns and provincial cities, included in the payrolls and salaried from the state budget.

〈Table 3-4〉 Results of the SH Development To Date

Objects	Results
The poor* (2008~2012)	- Completed 530,294 households, reaching 99.85% - Central budget capital was over VND 4,000,000 billion
The poor in flood middle region	- A pilot construction for 700 households - In 7 provinces in central region for building flood shelters
In flood prone areas in Mekong Delta (2007~2020)	- Completed embankment for 139 projects, reaching 79% - Completed 13,425 houses, reching 39% - Settled 21,941 households in clusters and and embankments, reaching 38%
Student (2009~2015)	- Approved 95 project portfolios in 29 provinces and cities - Allocated fund is VND 12, 473.3 billiion for 2009~2013
Low-income people	- Completed 34 social housing projects(18,850 apartments), total investment of VND 5,920 billiion - Currently implement 32 projects(19,950 apartments), total investment of VND 8,580 billion
Industrial park workers (2009~2010)	- Completed 62 social housing projects(12,500 apartments), total investment of VND 2,800 billiion - Currently implement 39 projects(27,500 apartments), total investment of VND 6,800 billion

* The poor is those who must meet three conditions: 1) Under poverty line (average per capita income of VND 200,000/month or less in rural area, and VND 260,000/month or less in urban area), 2) No house or having temporary housing, damaged, dilapidated, at risk of collapse and not be able to improve their housing, 3) Not in the objects of housing assistance under the provisions

4.2. Housing Finance

4.2.1. Housing Development Fund

Housing Law and Decree No. 71/2010/ND-CP dated on 23/6/2010 has regulated in the Housing Development Funds (HDF) at the local level (provinces and central cities). HDF is a state financial institution operating under the principle of capital preservation, not-for-profit purposes. Charter of the organization and operation of this fund are issued by the Provincial People's Committee.

HDF is used for social housing development owned by state on local scale for low-income people to own or lease-purchase. Ho Chi Minh City allows public servants and officials to get loans from the fund to purchase or lease-purchase social housing.

Financial resources to form a HDF include:

- Proceeds from the sale, rental housing owned by local government
- The minimum 10% land use fee of housing development projects and new urban areas across the province
- Local government budget
- Capital raised from other legal sources prescribed by law

Due to the local budget constraint, only a handful of localities across the country have so far set up HDF. (Hanoi and Ho Chi Minh City have a housing development fund with capital of 1,000 billion VND, equivalent to U.S. $50 million). The number of social housing projects funded by HDF is very low due to limited financial resources. The performance of the local funds has not met actual demand.

4.2.2. A 'Rescue' Credit Package VND 30,000 Billion for Supporting Social Housings' Developers and Buyers

From January 2013, the Government provides VND 30,000 billion aid package through the recapitalization of State Bank to backing the commercial banks for 3 years (until May 31, 2016) in which it will enable these commercial banks to lend to developers of social housing projects and to the purchasers, leasers, lease-purchasers of social housing or commercial housing with unit area of less than 70m^2 at price under VND 15 million per m^2. The package has following terms:

- Favorable interest rate is 5% per year (year 2013 was 6%); following year with interest of 50% of commercial interest, but not exceeding 5% a year.
- The duration of loans for buyers is minimum 10 years and for developers of social housing is maximum 5 years.

Ministry of Construction shall publish a list of housing projects that meet required conditions to the bank for review, appraise and implement the loan.

The conditions for social housing developers to get loans is that the project must have been approved by the Provincial People's Committee; land acquisition compensation is done; site clearance and building permit are ready to immediately start construction.

The conditions for eligible buyers to get loan for lease/sale of social housing: A sale or lease contract with developer is required.

The conditions for eligible buyers to get loan for lease/sale of commercial housing with unit area of less than 70m^2 at price under VND 15 million per m^2:

- A sale or lease contract with developer is required;
- Do not own a house, or own a house but the living area is too cramped (the average housing area of less than 8 m^2/person);
- Having permanent residence permit at the city/province where housing project is located. In case of temporary residence, social insurance for more than a year is required.

4.3. Challenges Ahead

Based on the investigation so far, there seem to be three main obstacles to overcome for the SH program in Vietnam to be further extended and to deliver more results to the target groups. First, mobilizing financial resources appears to be a particular challenge. There are four main funding sources identified for the SH program: (1) Proceeds from the sale, lease, rent-purchase of state-owned houses, (2) 30% to 50% of land use levies in housing development projects in localities, (3) government budget, and (4) support and voluntary contributions. "The Housing Saving Funds" are proposed to be established, the funds based on the restructuring of housing development funds at the local level and to be contributed from workers' wages. Domestic and foreign organizations and individuals are encouraged to invest in the development of the funds with tax & land use fee incentives. It appears to be necessary for the Vietnamese government to consider and tap on several non-conventional funding sources, similar to the ones utilized by NHF in Korea: such as subscription savings (mandatory savings account for eligibility for supply of national housing under 85m^2 in Korea), issuance of housing bonds (National Housing Bond in Korea, sold to housing buyers and constructors making contract with government or public organizations), proceeds from pre-sales (financing from prospective consumer to constructors, along with a guarantee system to safeguard consumers from development uncertainties), and lottery revenue.

Second, unlike in Korea, there doesn't seem to be a national entity whose sole function is to provide SH (or affordable) housing for the whole country, similar to the KHC and KLDC. Under the Ministry of Construction (MOC), there are number of development agencies, with Housing and Urban Development (HUD) being the most significant one. As an illustration, HUD is leading the implementation effort of the "Housing development strategy in Vietnam to 2020, and the vision to 2030", but only a fraction of its development projects are assigned to SH delivery:

- In Phase 1 (2011 - 2015), HUD will build 1.66 million m^2 with a capital of 20 trillion VND, and only 10% or 3,000 houses will be SH units
- In Phase 2 (2016 - 2020), HUD will continue to invest in housing construction of 2.4 million m^2, with a total capital of 25 trillion VND, with about 25% or 12 thousand houses being SH units

Also, HUD develops condominiums, private houses, villas, etc. HUD is allowed to invest in projects nationwide, but is concentrating in Hanoi. There are other region-specific development agencies such as RESCO (Saigon Real Estate Corporation), a corporation under HCMC People's Committee whose operation tends to focus on HCMC and surrounding provinces.

Once a focal point in developing and allocating SH units is established, then MOC (along with the departmental steering committee on housing and urban development) will have to determine the types of land expropriation power to be assigned to such organization. To that end, the evolution of the land taking methods in Korea can be used as a benchmark. One related issue to consider in that vein is the mode of inter-departmental coordination between MOC and the General Department of Land Administration (GDLA), which belongs to the Ministry of Natural Resources and Environment (MONRE), on large scale land development projects.[5)]

Third, compared to Korea and other OECD countries, the target consumer groups for the SH policy are currently quite narrowly defined (as listed in Table 3). In particular, a more specific consistent definition of "low-income" households can be considered (which should vary across regions but can develop national criteria to do so). In addition, other broader groups of consumers who would need housing assistance from the public sector can be considered, such as elderly citizens under poverty level, and handicapped people.

5) The land administration system of Vietnam is a nationwide four-level system including the GDLA at the central level belonging to the Government, Department of Land Administration (DLA) at provincial level belonging to People's Committee of Province, Bureau of Land Administration (BLA) at district level belonging to People's Committee of District, and one/two Land Officers in each commune.

4.4. Section Summary

- SH policy still being in an early (& pilot) stage → It is necessary to develop a coherent, achievable, and measurable long-term plan and to periodically monitor its progress.
- Seemingly a narrow focus in target beneficiaries → Expanding target consumer cohorts and properly resourcing (financing) to be able to do that should be considered.
- Lack of a nation-wide institution to set and implement the program details → Establishing national entities for developing and for financing (for consumers & for producers) the SH programs is an option to contemplate.
- Mixing policy goals for the SH program with real estate market stabilization → A clearer delineation in policy objectives between affordability enhancement vs. market stability, and a separate set of policy instruments for the market stability can be considered.

5. Relevant Experiences of Korea (By Topic)

5.1. Overall Housing Market Conditions

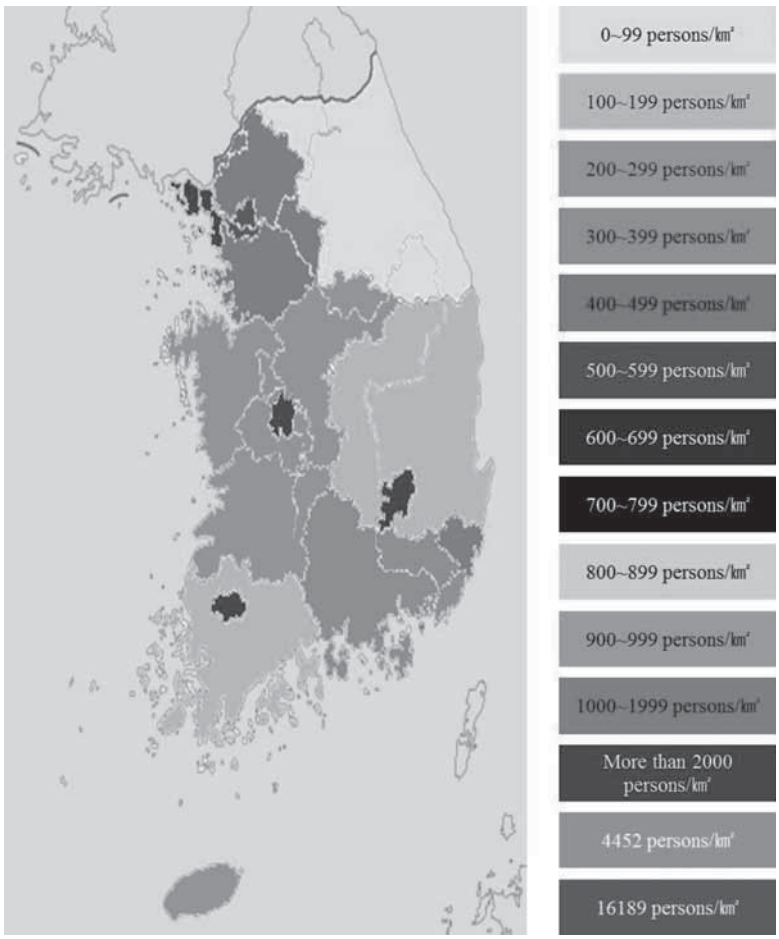
Korea consists of eight provinces and eight self-governing metropolitan areas with population close to 50 million as of 2011 (16.2 million in Seoul and 4.5 million in Busan, the second largest city). It is a country of very high population density: 16,567 people in Seoul (per km^2, as of 2011) and 4,509 in Busan (compared to 2,013 in Hanoi, and 3,389 in HCMC). The share of urban population is currently 83.4%, one of the highest among the OECD countries.

The historical evolution of the housing sector after the Korean War, along with the macroeconomic and housing market conditions are provided in Attachment 1. There are several points to highlight from that evolution process.

First, there has been a series of large-scale housing development projects initiated by the government since the end of the Korean War. Given that about 18% (or 3.3 million units) of housing stock was destroyed during the war, the government announced the presidential proclamation of building one million housing units within 5 years in September 1953, which was not realized due to the unrealistic financing plan. In response to the rapid population growth in the post-war era (from 20 million in 1949 to 25 million in 1960) and to the rising sub-standard housing units

(about 32% of all housing stock in Seoul in 1970s being squatter settlement), the government declared another large scale housing development plan in 1972, a 10-year plan for the construction of 2.5 million housing units. That plan was not realized either due to the lack of financial resource and of proper institutions to implement. Finally, in response to the unprecedented housing price hike in late 1980s, the plan for building 2 million housing units (within five years) was announced in 1989. Unlike the prior plans, this one was successful in that the promised quantity was delivered and the housing prices in Seoul and other major cities were stabilized after the project. After the project, the housing supply ratio– total number of housing units divided by total number of households - vastly improved, from 72.4% in 1990 → 93.3% in 1999.

[Figure 3-18] Population Density in Korea by Province (as of 2011)



Source: The authors

Second, a series of the anti-speculation measures were adopted, starting from the real estate speculation tax in 1967. Various policy measures were used, including the capital gains taxes (and a higher tax rate for those who own multiple housing units), the price limits on newly-constructed housing units (first introduced in 1977, abolished during the Asian Financial Crisis (AFC) in 1997~99, but re-introduced in the early 2000s to combat the rising housing prices in Seoul and other urban areas), and the special taxes on non-essential real estate holdings by corporations in 1978. Thanks to the broad-based financial liberalization after AFC,[6] the residential mortgage lending rapidly expanded in 2000s, and the lending restrictions (the LTV · DTI limits, and designation of the speculative zones) have been used as a new type of the stabilization policy tools.

Third, the rental housing development projects were initiated from the early 1990s, with the announcement of the construction of one million rental housing units in 2003 (within ten years) being a milestone event. There are various affordable rental programs in Korea right now, which are described later in this section. Recently, the Korean government announced the plan to implement a housing voucher program from fall 2014, the widely used housing allowance to low-income households in the U.S. and European countries.

Fourth, as discussed in Section II, various housing institutions are established from the early stage of industrialization and urbanization:

- National Housing Corporation (NHC) in 1962, to conduct housing construction and supply projects with a partial government financing (Re-named as "LH Corporation" in 2009 by merging with National Land Development Corporation)
- National Housing Bank (NHB) in 1969, to finance private citizens and housing suppliers (Privatized in 1997 as Housing and Commercial Bank)
- The First Comprehensive National Territorial Plan (CNTP) for 1972~81, to achieve "efficient utilization of territory for sustained economic growth" (Subsequent revisions to accommodate changes in development need)
- The National Housing Fund (NHF) accounts installed in NHB in 1973, to supply funding for affordable housing (for both producer and consumer financing)
- Other housing institutions established: The Korea Land Development Corporation (KLDC) in 1982; The Korea Housing Guarantee Corporation (KHGC) in 1998; The Korea Housing Finance Corporation (KHFC) in 2003

Ministry of Construction (MOC) (and its descendant ministries) has been the

6) Besides the expansion of the residential mortgage lending, there were other innovations in real estate finance after AFC, with ABS (Asset Backed Securities), MBS (Mortgage Backed Securities), REITs (Real Estate Investment Trusts), and the real estate PF (Project Financing) loans as a new construction financing method.

focal point in setting housing policies, while other ministries (Ministry of Finance & Planning, and Financial Committee in particular) are getting more involved in setting housing and housing finance policies.

Thanks to various government policies instituted, the housing conditions in Korea, both for quantity and for quality, vastly improved during the last three decades (Table 3-5). For example, between 1980 to 2010, the housing stock increased from 5.3 million in 1980 to 14 million in 2010; housing units per 1,000 people from 142 units to 302 units (for comparison, 450 for Japan, 420 for the U.S.); housing space per capita from 10m^2 to 25m^2; number of people per room from 2.1 person to 0.7 person; housing units with flushing toilettes from 18% to 97%; and, housing units with warm water from 18.3% to 98%.

〈Table 3-5〉 Selected Housing Indicators (1980~2010)

		1980	1985	1990	1995	2000	2005	2010
Housing sotck	1,000	5,318	6,104	7,160	9,204	10,959	12,494	13,884
Housing space per capita	m^2	10.1	11.3	13.8	17.2	20.2	22.9	25.0
Housing space per household	m^2	45.8	46.4	51	58.6	63.1	66	67.4
Number of people per room	persons	2.1	1.9	1.5	1.1	0.9	0.8	0.7
Housing unit w/ warm water	%	9.9	19.9	34.1	74.8	87.4	95.8	98
Housing unit w/ warm water-borne toil	%	18.3	33.1	51.3	75.1	87	94	97
Housing supply ratio*	%	74.4	69.8	72.4	86.0	96.2	105.9	112.9
Housing units/ 1,000 people	unit	142.1	150.9	169.5	214.5	248.7	279.7	302

* Housing supply ratio=(total housing units)/(total number of households); Based on the 2010 Census definition of household

Data Source: The Census of Population and Housing(various years)

5.2. On National Housing Fund (NHF)

Since its inception in 1962 as the national fund run by MOC, NHF has been instrumental in providing low-cost financing to both consumers and home builders involved with government-initiated housing programs in Korea. As shown in <Table 3-6>, there are three primary funding sources of NHF (besides the repayment of

outstanding loans and the transfer from previous year): issuance of the national housing bonds, the subscription savings by prospective home buyers, and the lottery fund. The accumulated fund is used for financing developers and construction firms who build low-income rental housing and other affordable housing projects initiated by the government. In the consumer side, the fund is used for low- and middle-income households in financing home acquisition as well as the Chonsei deposit (the unique key money based rental housing system in Korea) under the various affordable housing programs run by NHF.

〈Table 3-6〉 Sources of National Housing Fund

(unit: 100 million KRW)

	2001	2005	2010	2011	2012	2013
National Housing Bond	54,396	84,736	89,394	99,968	97,370	104,870
Subcription Saving	3,041	16,248	83,475	99,834	112,691	147,235
Lottery Fund	777	4,846	4,719	4,814	4,880	5,381
Loan Repatment	58,565	54,699	82,970	104,571	10,113	123,835
Transfer from Previous Year	12,211	43,928	43,579	83,424	104,791	112,305
Interest & Other Revenue	61,922	22,552	41,014	47,244	32,857	33,177
Total	190,912	227,009	345,151	430,856	453,722	526,803

Source: Ministry of Land, Infrastructure and Transport (National Housing Fund Operation Handbook, 2012)

〈Table 3-7〉 NHF's Consumer Loan Programs

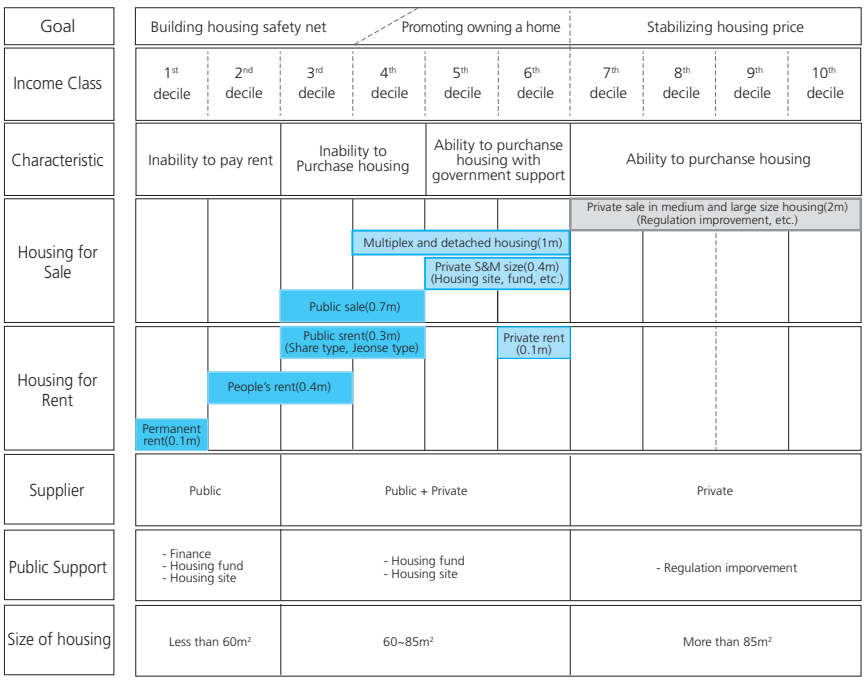
(unit: 100 million KRW

	2005	2006	2007	2008	2009	2010	2011	2012
Working Homebuyer	26,106	11,976	19,239	15,647	5,399	1,645	294	218
First-time Homebuyer	9,710	25,121	1,099	822	-	558	4,408	17,520
Working Jeonse tenant	11,257	15,348	21,897	32,170	34,780	33,463	47,881	47,671
Low-income Jeonse tenant	2,499	2,777	3,178	3,707	3,356	2,979	2,982	2,489
Existing house Jeonse(include child headed family)	1,486	2,810	3,453	6,309	9,522	11,415	12,134	5,832
Purchased rental housing	1,049	718	64	1,445	660	699	695	108
Total	52,316	60,009	48,929	60,100	53,717	50,759	68,394	73,838

Source: Ministry of Land, Infrastructure and Transport (National Housing Fund Operation Handbook, 2012)

In terms of the eligibility to the NHF's consumer loan programs, the following matrix sketches the main underlying factors considered. As shown in the figure, household income is the primary condition used in determining what types of housing assistance to be offered (or not offered): that is, different types of public rental housing for those with 4th income decile or below; publicly-assisted owner-occupied housing for those with 4th to 6th income deciles; and, private housing for those with 7th decile and beyond. In terms of predominant supplier of housing, the matrix classifies public suppliers for 1st and 2nd deciles, public and private suppliers for 3rd through 6th deciles, and private suppliers for 7th deciles and beyond. The target property size is also tagged to the income deciles: less than 60m^2 for the lowest two deciles, 60~85m^2 for 3rd to 6th deciles, and over 85m^2 for the higher income classes.

[Figure 3-19] Consumer Segmentation by Income and Other Attributes



Source: Chung (2013)

Over time, the NHF's policy focus shifted from owner-occupied housing to renter-occupied housing along with the housing allowance for low-income renters. In 2014, NHF plans include the assistance to various redevelopment projects in old urban areas as another policy focus, toward which the fund is about to change its name as National Housing and Urban Fund.

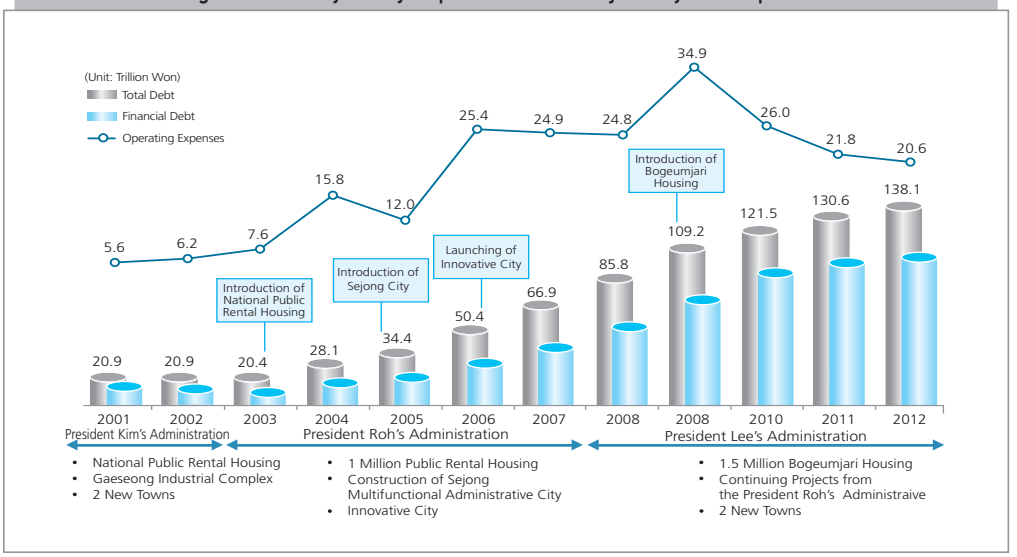
5.3. On the Land and Housing (LH) Corporation

The LH Corporation, the merged entity of National Housing Corporation and National Land Development Corporation, has been serving as the implementation arm of the public housing development programs in Korea, for both owners and renters. This government-owned corporation handles the entire process of public housing delivery – from land acquisition (via fair compensation), to land and housing development, to selling/renting to consumers. As shown in <Table 3-8> and [Figure 3-20], the LH Corporation managed virtually all public housing programs instituted by the different administrations, as well as various large-scale land development projects such as the satellite cities around Seoul, Gaesung Industrial Complex (the jointly-developed industrial park by South Korea and North Korea), and Sejong City (the newly-developed city that accommodates most of the executive branch of the national government).

〈Table 3-8〉 Key Housing Programs by Administration

	Kim DJ administration	Roh MH administration	Lee MB administration
Affordable housing	200k people's Rental Housing	1m People's Rental Housing	1.5m Bogeumjari Housing
Land development	Gaeseong Industrial Complex	Sejong/Innovation cities	Continuing Roh MH admin.
New city development	2 new cities	8 new cities	2 new cities

[Figure 3-20] Key Policy Implementation Projects by LH Corporation



Although it was instrumental in implementing public housing programs in Korea, the LH Corporation is currently facing an operational difficulty, and its institutional reform is being discussed in the policy circle. The main issue is the huge amount of debt accumulated over time (as shown in [Figure 3-20]) as well as the weak financial indicators, reflecting the large number of not so profitable public housing projects such as building and operating public rental housing complexes. Hence, it should be emphasized that appropriate role of housing institution and its operational and financial soundness have to be monitored and, if necessary, re-aligning its mission and operation is warranted.

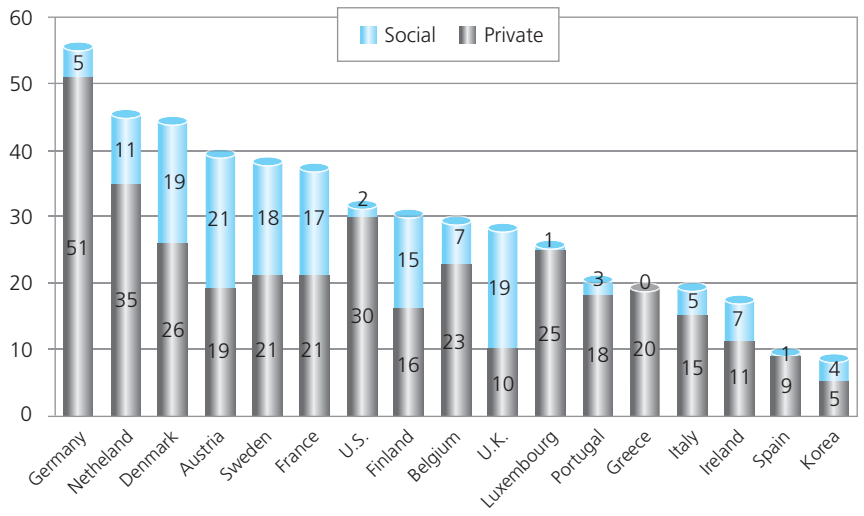
5.4. On the Development of Rental Housing

The Korean experience shows that the focus of housing policy shifts over time from owner-occupied to renter-occupied housing. Although the different administrations introduced various rental housing programs and continuously expand the rental housing stock, the share of public rental housing in total stock is still fairly small, only 4.1% (the OECD average being 9%). In so doing, various policy measures targeting both demand-side (e.g., housing voucher, and tax deduction of rental housing expenditure) and supply-side (e.g., tax credit for low-income rental housing developers and operators) can be considered. As an illustration, the eligibility rules of the different public rental housing programs in Korea are shown in <Table 3-9>.[7] In the long-run, a more advanced financing vehicle can be considered in owning and operating rental housing units, such as securitizing rental housing loans (to owners) via MBS (Mortgage Backed Security) and equity-financing via REITs (Real Estate Investment Trusts).

As shown in [Figure 3-21], share of rental housing (in total housing stock) and that of public rental housing vary widely among developed economies, which implies that there is no golden rule as the appropriate size of the rental housing sector in a given country. The size is dependent upon philosophy as to how to ensure housing affordability by instituting various owner-focused and renter-focused housing programs. Nonetheless, sizable and well-functioning rental housing sector not only enhances housing affordability but also helps stabilize the whole housing market and, hence, it is imperative to foster a properly-sized and active rental housing sector early on in the urbanization process.

7) As a brief description of each rental housing program, 'permanent rental housing' is targeting the lowest income group and is used permanently to that purpose; 'people's rental housing' is constructed or purchased housing units with government budget (via National Housing Fund) to be leased for a long time (e.g., 30 years) to low- and moderate-income families; 'purchased existing house to rent' is the program for purchasing existing housing units such as multiplex houses to be leased to low income households in urban areas; and, 'lease existing houses as Jeonse to rent' is the program for making Jeonse contracts on existing housing units for target household groups.

[Figure 3-21] Social and Private Rental Housing Stock across the OECD Countries



〈Table 3-9〉 Eligibility Rules of Public Rental Housing in Korea

	Permanant Rental Housing	People's Rental Housing
Time	1989~1993, 2008~Present	1998~Present
Purpose	Resident stability for the poor	Resident stability for the low-income class
Means	Rent after construction	Rent after construction
Quantity	25k→19k(reduced), 10k(2008)	Kim DJ administration 100m(2003~12) Roh MH administration 10k a year Lee MB administration 4k a year
Operator	Local governement, LH(Korea Land and Housing Corporation)	Central governement, Local governement, LH
Period	Permanant	30-year
Size	Below 40m^2	Below 85m^2
Eligibility	- 1st: Recipient of basic living, etc - 2nd: Below 50% of average income of urban worker - 3rd: Member of subscription saving - Asset criteria should be met	- Less than 50m^2: Below 70% of average income of urban worker (Preferential supply to below 50%) - 50m^2~60m^2: below 70% of average income of urban worker - 60m^2~85m^2: below 100% of average income of urban worker - Move in or not is determined upon the subscription points according age, number of family members, number of subscription savings payment, social vulnerable class and so on

〈Table 3-9〉 Eligibility Rules of Public Rental Housing in Korea (continued)

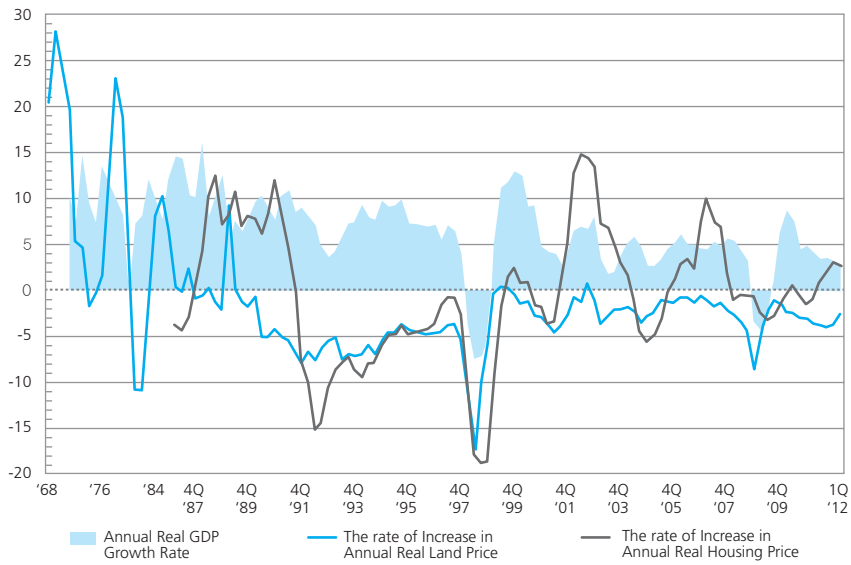
	Permanant Rental Housing	People's Rental Housing
Rent Condition	- Around 30% of market rent - Similar to the level of rent of people's rental housing to the member of subscription saving - The rent is gradually upward-readjusted every 2-year, if the income criterion is not met. - Renewal every 2-year	- Around 60~70% of market rent - Extra charge to rent, if the income exceeds criterion - Renewal every 2-year - No extension of the contract, if the income exceeds 50% of criterion
Time	2004~Present	2005~Present
Purpose	Resident stability for the lowest income class	Resident stability for the lowest income class
Means	Rent after purchase	Rent after Jeonse
Quantity	- Deliver 4.5k annually - Total 50k in 2005~15	2005: 2,167 units 2012: 64,917 units
Operator	Local governement, LH	Local governement, LH
Period	10-year	10-year
Size	Below 40m^2	Below 60m^2
Eligibility	- 1st: Recipient of basic living, etc. - 2nd: Below 50% of average income of urban worker or the disabled with below 100% of average income of urban worker - Asset criteria should be met.	- 1st: Recipient of basic living, etc. - 2nd: Below 50% of average income of urban worker or the disabled with below 100% of average income of urban worker - Asset criteria should be met.
Rent Condition	- Around 50% of market rent - In realty, similar to the level of the permanant rental housing and conversion from 30% of market Jeonse deposit into monthly rent(10% conversion rate) - Renewal every 2-year	- Deposit: 5%of Jeonse deposit(70m^2 in capital area, 50m^2 in megalopolis) - Rent: 2% of the rest, plus 0.5% for the allowance for bad debts - Renewal every 2-year

5.5. On Dealing with Real Estate Cycles and Market Instability

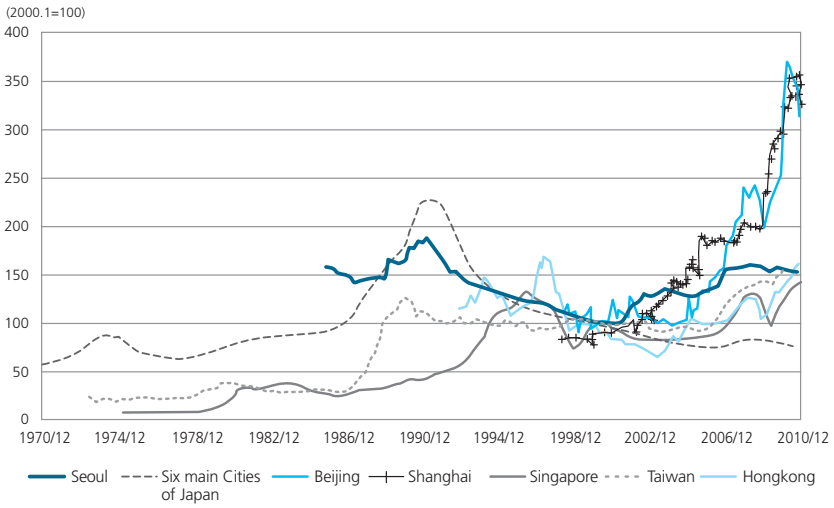
As shown in [Figure 3-22], there have been three pronounced housing price cycles in Korea since 1980s. It is also common among the Asian countries to face such cyclical housing movements along with the construction cycles (Figure 3-22). As to the underlying determinants of those price cycles observed, Cho, Kim, and Renaud (2013) identify three main factors: (1) the demand-supply mismatches - the sustained output and income growth along with the resulting industrialization and urbanization in the demand side, combined with the shortages of developable land and affordable housing in the supply side; (2) the liquidity shocks caused by financial liberalization, particularly in residential and non-residential mortgage lending, or by shifts in monetary or exchange rate policies; and, (3) the new construction booms along with various policy changes (e.g., large-scale land expropriation and compensation, eligibility rules to subscribe public housing, immigration policy, and so on). In addition, real estate taxes (on acquisition, holding, and re-selling) and housing

supply restrictions (summarized as the Composite Regulatory Index in <Table 3-10>) vary across the EA cities and are shown to work as a stabilizer or amplifier of the housing cycles.

[Figure 3-22] GDP & Real Estate Cycles in Korea (1968-2012)



[Figure 3-23] Real Housing Price Indices: Seven East Asian Primate Cities



Source: Cho and Kim (2014)

〈Table 3-10〉 Regulation of Housing Markets by Government

City	Composite Regulatory Index	Housing Supply Elasticity	Price Control on New Houses	Capital Gains Tax(Heavy Taxation System)	Recurrent Tax on Property Holding(Tax Rate)	Approximate Share of Total Housing Stocked Owned by The Public Sector
Seoul	16	0.04	○(Public and Private sector)	○(○)	○(<0.5%)	5%
Tokyo	8	0.99	×	○(×)	○(1~1.5%)	Na
Shanghai	8	-0.45	×	○(×)	×	<10%
Singapore	11	0.37	○(Public sector)	×	○(<0.5%)	83%
Hong Kong	2	1.1	×	×	○(<0.5%)	29%
Taipei	8	1.3	×	○(×)	○(0.5~1%)	1%

Note: All cities have acquisition tax or registration tax (stamp duty).
Source: Cho and Kim (2014)

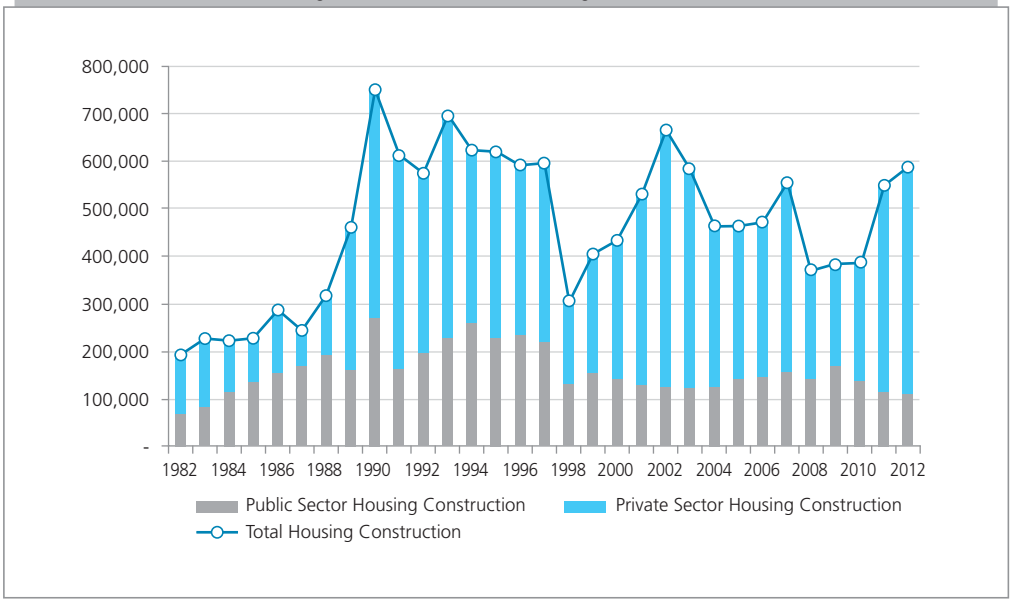
The Korean government adopted various policy interventions over time to stabilize the real estate markets, including price caps on new apartment units (for "pre-sales"), real estate taxes for acquisition·holding·re-selling housing, mortgage lending restrictions (DTI·LTV limits, "speculative zones"), along with the supply shocks like the two million housing units construction project. In using those policy instruments, it is important to consider an appropriate policy mix that can achieve the policy objective of stabilizing real estate markets with minimum side effect on market place, which is an on-going research in Korea and other countries.

One issue to emphasize related to setting a policy regime to stabilize real estate markets is a proper monitoring of market conditions by establishing data infrastructure, such as housing price indices (HPIs), housing construction and transaction volumes, and other housing market statistics. There are also various modeling issues involved, which policy makers and academia in a given country should be cognizant of in order to utilize those market data properly: namely, methodologies to estimate HPIs, econometric models to fit housing price dynamics, and housing demand models (e.g., the Mankiw-Weil model that is widely used in Korea in projecting aggregate housing demand and in setting long- and medium-term housing supply plans). See Cho and Kim (2012) and (2014) for relevant research issues in this vein.

5.6. On the Two Million Housing Construction Drive

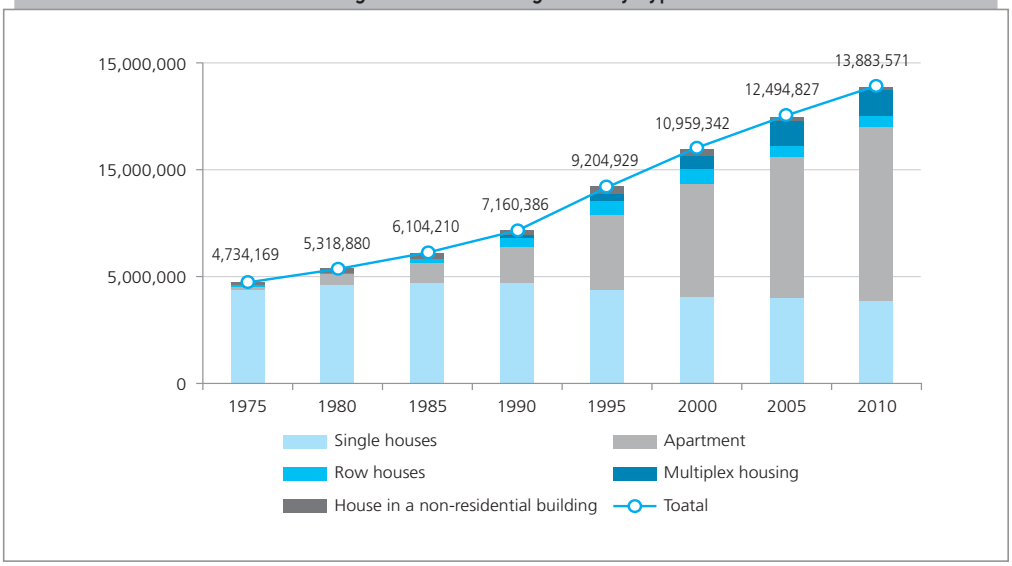
Housing became "a merit good" (one that is socially important enough that public sector has to be involved) in Korea in the late 1980s because housing prices went up much that securing a decent shelter got so unaffordable to most low- and middle-income households. In response, the Korean government initiated the milestone housing supply project in 1989, and delivered over two million housing units (about 30 percent of the total stock at that time) within four years. As shown in [Figure 3-24], the housing construction volume surged during and right after the project, and the dominant property delivered since then has been high rise apartments. The financing arrangement of the project is such that 68 percent of total cost by prospective buyers (via pre-sales), 22 percent by NHF, and 10% by the government general budget. Although it significantly contributed to resolving housing shortage and stabilizing housing prices, the project also inflicted several unintended consequences, such as poor building quality, inflated costs of building materials and construction labor, excess capacity in construction sector, and lack of diversity in building design. (See Cho (2013a) for further details of the project.)

[Figure 3-24] Trend of Housing Construction



Source: Ministry of Land, Infrastructure and Transport

[Figure 3-25] Housing Stock by Type



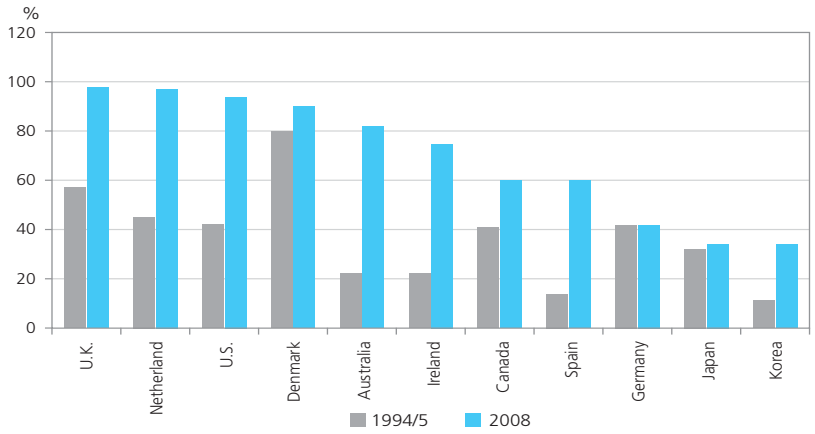
Source: Korea Statistical Information Service

5.7. On Development of the Mortgage Market

During and right after the Asian Financial Crisis, there were two particular liberalization measures in the financial markets: the interest rates, for both deposit and lending, liberalization, and the removal of the restriction on real estate lending by commercial banks. Since then the residential mortgage lending sector in Korea rapidly expanded, with MDO(Mortgage Debt Outstanding)-to-GDP ratio jumping from about 10 percent before AFC to 35 percent now (similar to those in Japan, Hong Kong, and France). The average annual growth rate of MDO was also very high, 9.2% for Korea in 2003~12 (10.9% for Spain (in 94-08), 9.2% for Ireland, and 5.9% for the U.S., as shown in [Figure 3-26]). The mortgage products are predominantly adjustable rate loans, often with short maturities (e.g., 3 years), non-amortizing, and with prepayment penalty.

The Korean government has been trying to expand share of more stable mortgage products, more than anything else, by introducing "conforming mortgage loan," the standard and stable loan type in terms of maturity, interest rate variability, underwriting criteria (LTV, DTI, and other underwriting conditions), and funding method (preferably a whole-sale funding via MBS or Covered Bond rather than bank deposits). Also discussed in the policy circle is to extend a mortgage insurance system to enhance affordability of home purchase for low-income or low-creditworthy consumer cohorts. (See Cho (2013a), and Kim and Cho (2014) for further discussion on the mortgage market development.)

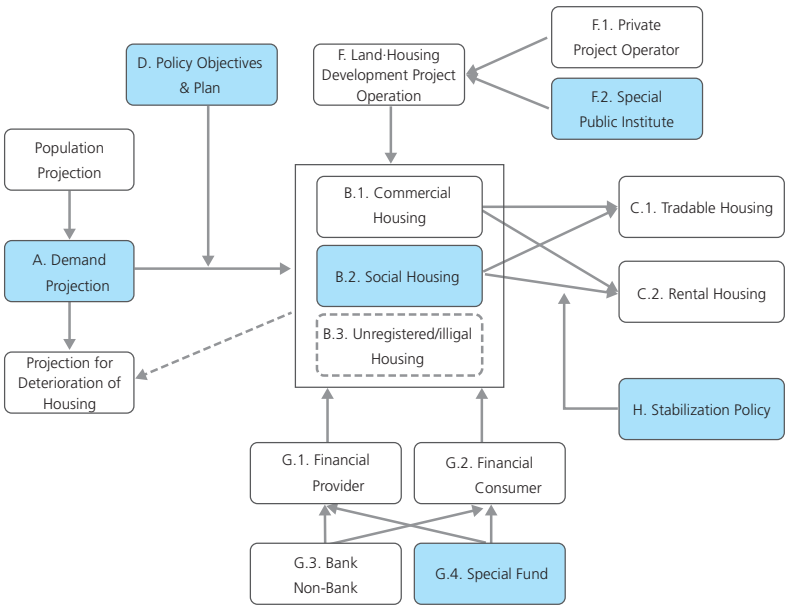
[Figure 3-26] MDO Growth Rates in Selected Countries



Source: Cho (2013b)

6. Policy Recommendations

[Figure 3-27] Housing Delivery System in Vietnam – Now and Future



6.1. Setting SH Policy in a Broader Context:

6.1.1. Consider a Phased Approach in Fostering the Housing Sector in Vietnam

- Phase 1 ~ Planning: Set a comprehensive plan for nation-wide land use and housing development (similar to the Comprehensive National Territorial Plan enacted in Korea in 1971, and the 10-year housing policy plan put together by the Korean government, the Korean MOC in particular)

- Phase 2 ~ Government-led housing development and allocation: Establish government-sponsored housing institution(s) to carry out housing policy goals set by the national government (such as the Housing Corporation, the Land Development Corporation, and the National Housing Fund in Korea, established in the early stage of economic development and urbanization)

- Phase 3 ~ Market-oriented housing development and housing finance system: Develop a more market-oriented housing development and delivery system as well as a more private sector driven housing finance system (as done in Korea with the liberalization of the residential mortgage lending after Asian Financial Crisis in 1997~99, along with the creation of the Korea Housing Finance Corporation as the mortgage securitization conduit)

- Phase 4 ~ Policy reform for long-term sustainability and efficiency gain: Monitor performance of the government-backed housing institutions, and make reforms happen when appropriate, to ensure long-term sustainability and efficiency gain in the housing sector (the current debate on re-aligning the functions of LH Corporation in Korea as an example)

6.2. Designing the SH Policy

6.2.1. Set a Measurable and Achievable Goal for SH Development

(in the "Science of Delivery" terminology, develop a "SMART," or Specific Measurable Achievable Relevant Time-bound, plan for SH development):

- Project overall housing demand via a credible statistical methodology (such as the Mankiw-Weil model that has been widely-used in projecting housing demand in Korea and other countries)

- Develop a quantitative housing construction goal based on the demand projection (for example, an yearly total construction volume in number of units

of certain sizes, a division between SH units and commercial housing units to be built in Vietnam, Hanoi, HCMC, and other locations for next 5 to 10 years)

- Monitor periodically progress in implementing the housing supply plan, and make appropriate adjustment when deemed necessary

6.2.2. Consider Modifications in Specific Terms of the SH Policy, in terms of:

6.2.2.1. Housing structure ~ Currently, SH units being defined as 3~5 story buildings with unit size range 16~32m2 (that is currently being modified); (a) In order to construct and deliver affordable housing units in a large quantity and efficiently, consider the high-rise apartments as in Korean (since the two million housing units construction project in the 1990s, about half of the housing stock in Korea right now has the apartment structure, which made it possible to mass-produce housing and to resolve the issue of housing shortage in Seoul and other cities efficiently and within short time period); (b) Develop a housing quality improvement program to convert the non-permanent structures and dilapidated Nha Ong units to better quality shelter through renovation and re-development projects within the SH policy (the housing environment improvement initiative in Korea, the on-going home improvement program by the Korean government, can be a benchmark)

6.2.2.2. Target consumer groups ~ Currently, civil servants, employees in armed forces, workers in industrial complexes, and university students being the main target groups of the SH policy; (a) Develop a national standard for the SH policy in terms of low-income and other target consumer cohorts (as discussed in Section 5, there are specific eligibility rules for the rental housing and owner housing programs in Korea, which can serve as a benchmark)

6.2.3. Separate Owner-SH Programs from Renter-SH Programs

(given that policy goals, target consumer cohorts, and delivery and operating mechanisms are generally very much different between the two according to the Korean and most other countries' experiences):

6.2.3.1. Consider developing a low-income rental housing program, with the Permanent Rental Housing Program in Korea as a benchmark

- Develop a consumer segmentation strategy for different SH projects (owner vs.

renter, and by housing size) along with detailed eligibility and operational rules for each project (see [Figure 3-19] and <Table 3-9> as the current practice in Korea on this issue)

- Consider alternative financing methods (alternative to wholly government funding) for constructing and operating SH rental units (such as PPP – Public Private Partnership, and LIHTC – Low Income Housing Tax Credit, the tax incentive program in the U.S. for private housing developers for low-income rental housing units)

- Set a clear division of labor between national government, local governments, NGOs, and other participants in administering the program (in selecting residents, setting and charging rent, managing delinquent renters, and so on)

- In a long-run, consider a tenant-based (rather than unit-based) SH rental program such as the housing voucher program being implemented in Korea and other developed economies

6.2.3.2. Consider a subsidized owner housing program, similar to the one instituted in Korea from the early stage of urbanization in the 1970s

- Enable the agency in charge of the program (likely to be MOC and its implementation arm) appropriate power for efficient and large-scale land expropriation (as being the case for LH Corporation in Korea from the early 1980s)

- Provide construction companies for owner SH units with low-cost subsidized construction loans (as being the case for National Housing Fund in Korea)

- Allocate completed units to prospective buyers by ensuring (1) them being the target home buyers of the SH program, and (2) prices of the end products to pass-through benefit of the low-cost development (similar to the price limits for newly-constructed apartment units in Korea)

6.3. Building an Institution for Nation-wide SH Development

6.3.1. Establish a nation-wide implementation arm of the SH policy, in terms of land expropriation and administering the development and allocation (similar to LH Corporation), whose sole responsibility being the SH development (refer Section 5.3 on the current practice of LH Corporation in Korea)

6.3.1.1. Consider beefing up the function existing development agency (such as HUD under MOC)or creating a new organization to that end

6.3.1.2. Explicitly define its function as implementing the national SH policy in Vietnam

6.3.1.3. Clearly define division of labor between the organization in question and private housing developers, to minimize a potential crowding-out effect in developing a well-functioning housing market

6.3.1.4. Consider implementing the land expropriation method(s) adopted by the Korean government (e.g., the land re-adjustment method before 1980s, and the public land development method from the early 1980s)

6.4. Building an Institution for Consumer and Producer Financing

6.4.1. Establish a nation-wide financing arm of the SH programs:

6.4.1.1. Consider National Housing Fund (NHF) in Korea as a "special circuit" funding vehicle, for both developers and consumers (have such agency develop nation-wide financing terms and underwriting criteria for developers and buyers of SH units; Refer Section 5.2 on the current practice of NHF in Korea)

6.4.1.2. Consider tapping alternative financing sources, especially for the owner SH program, such as subscription savings, housing bond issuance, pre-sales (or financing by prospective residents), lotto fund, and so on

6.4.2. Sequentially expand the role of banks and non-banks in offering financing services for SH programs (and to the commercial housing projects as well)

6.5. Implementing Real Estate Market Stabilization Policies

6.5.1. Consider instituting real estate market stabilization policies, such as taxes on purchasing, holding, and re-selling home and other real estate, mortgage lending restrictions (the limits on loan-to-value and debt-to-income ratios), and liquidation of unsold units via securitization (as done in Korea after the Global Financial Crisis)

6.5.2. Develop a data infrastructure to properly monitor market signals on real

estate cycles:

6.5.2.1. For the real housing sector, periodically compile national & local housing price indices (HPIs), arms-length transactions prices, housing starts (or building permits issued), & fair market rents

6.5.2.2. For the financial sector, regularly put together MDO(Mortgage Debt Outstanding), new mortgage issuance, delinquency rates, and so on

6.5.3. Consider developing EWS (Early Warning System) or other means to systematically monitor market turns (both upturns and downturns) and to help make informed policy decisions

6.6. Ensure Optimum Compensation

6.6.1. It is important to strictly manage a project zone from the moment of its designation, by establishing and implementing measures to prevent compensation-related speculations

6.6.2. It is necessary to manage site costs at an optimum level in order to continuously manage publicly announced land prices and to create a virtuous cycle for projects

6.6.3. After the announcement of a development plan, legal and systemic means need to be put in place in order to ensure the restitution of unfair development gain that is made by landowners and real estate developers from the development project

6.6.4. In order to ensure optimum compensation, it is necessary to receive feedback from those who are eligible for compensation and from the project implementer when calculating the compensation amount. It is also necessary to minimize compensation-related complaints by strictly managing the assessment body and by calculating the compensation amount in an objective manner

6.6.5. In the case of a complaint, it is important to promptly deal with it by identifying its causes and consulting expert groups

6.6.6. The existing system needs to be rearranged by establishing reasonable and standard compensation criteria. It is also necessary to consider the real, imperative implementation of the established criteria, in an attempt to improve public welfare by conducting a public project on time. Moreover,

a real estate statistical information system, in which actual market prices, land price change rates and publicly announced land prices appear, is also needed

6.7. Initiating a Pilot Housing and Urban Development Project by Forming an International Collaboration Team

6.7.1. To test and institute the above recommendations, set a pilot development project for a large-scale housing and urban development project in Hanoi or HCMC by forming a Vietnam-Korea collaboration team

6.7.1.1. Determine a proper location to consider a new town (similar to the Gangnam area or the 1st–generation new towns in Seoul)

6.7.1.2. Form a collaboration team of experts on urban planning, financing, construction, and environmental impact assessment (from the Korean end, experts from LH Corporation, research institutes, and other relevant organizations such as the Korean Export-Import Bank, private investment entities to be considered)

6.7.1.3. Establish a version-one plan in terms of urban design, infrastructure provision, financing methods (bond issuance to domestic and international investors, PPP, and others), regulatory review

6.7.1.4. Execute the developed plan to build and allocate planned SH and commercial housing units, along with development of other urban surrounding

6.7.2. Convene a dissemination seminar either in Hanoi or in Seoul, to collaborate on outcomes and lessons of the pilot development project and to discuss next steps

6.7.3. Develop a longer-term housing and urban development plan in Vietnam (including the SH programs to implement) based on lessons from the pilot project

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Appendix. Milestone Events and Policy Interventions in Delivering Affordable Housing in Korea(1950~2013)

〈Attachment〉 Milestone Events and Policy Interventions in Delivering Affordable Housing in Korea (1950~2013)

Time Period	Macroeconomic-Social Changes	Housing Market Conditions & Policy Involvements
1. The Post-war reconstruction period(1950s)	• End of the Korean War(1950~53) • Hyper inflation after the war(the IMF mission in Korea in 1954), and the macroeconomic instability in 1950s • Rapid population growth in the post-war era(16m in 1944→20m in 1949→25m in 1960) • Virtually an agrarian society(72% population living in rural areas as of 1960), with one of lowest per capita GDP figures(less than $100)	• Large scale demolition of the housing stock(18% of 3.3m housing units destroyed during the war) • The presidential proclamation of buliding 1m housing units within 5 years(Sep. 1953); Not realized due to the unrealistic financing plans • The ICA(Internatioanl Cooperation Administration) housing project in 1957, with KDB as managing the financing aspect • Total housing construction(1951~59): 733k(33% by government and 67% by private)
2. The dawning period of economic growth(1960s)	• The 1st and 2nd 5-year Economic Plans(1962~66 and 1967~71): Objectives-preparing industrialization, expanding SOC, achieving food self-sufficiency: Palnned annual growth rate of 7% • Construction of the Seoul-Busan expressway(1968~70), the 428km expressway(22.4m width) with a partial government financing(23.6% from the nation budget) • Development of the export industrial parks: The Guro Industrial Parks in the outskirt of Seoul(focusing on petro-chemical industries)	• Rising sub-standard housing units(about 20% of all housing stock in Seoul in 1960s being squatter settlements→32% in 1970s) • Establishing National Housing Corporation(NHC) in 1962, to conduct housing construction and supply projects with a partial government financing: Re-named as LH Corporation in 2009 by merging with National Land Corporation • Establishing National Housing and Commercial Bank(NHCB) in 1969, to finance privatecitizens and housing suppliers; Privatized in 1997 as Housing and Commercial Bank
3. The taking-off period of economic growth(1970s)	• Establishing the 1st Comprehensive National Territorial Plan(CNTP) for 1972~81, to achieve "efficient utilization of territory for efficient economic growth"; Subsequent revisions of CNTP to accomodate changes in development need • The capital Region Population Rearrangement Plan in 1978, to control building and extending factories within the capital region and to create conditions for residential zccommodation in the South of Han River • Development of the Gumi Industrial Park and the Changwon Industrial Park, to foster the heavy and chemical industries	• The 10-year plan for the construction of 2.5m housing units(1972) • The National Housing Fund(NHF) accounts installed in NHCH in 1973, to supply funding for affordable housing • A series of anti-speculation measures adoped: The anti real estate speculation tax in 1967, the price limits on newly-constructed housing units in 1977, the land transaction approval system, the anti-speculation taxes and the special taxes on non-essential real estate holdings by corporations in 1978

〈Attachment〉 continued

Time Period	Macroeconomic-Social Changes	Housing Market Conditions & Policy Involvements
4. The period of high economic growth and high real estate volatility(1980s)	• The urbanization being taking off, especially in Seoul and its vicinity: Population in the capital region rising from 5.2m(20%) in 1960→13m(34%) in 1980→21m(43%) in 2008 • Volatile macroeconomic conditions: The high growth propelled by the construction boom in Middle East in 1970s and 1980s: Cooling down in export due to the recessions experienced by trading partners in early to mid 1980s: and th booming economy after the 1988 Seoul Olympic	• The reduction in housing supply due to the anti-speculation policies along with the weakening macroeconomic conditions; The stimulus real estate package in early 1980s • The worsening housing supply ratio(total number of housing units/total number of household): 73.0% in 1980→70.9% in 1989 • The unprecedented and nation-wide real estate price hikes in late 1980s, the policy shift toward managing the real estate speculation
5. The period macroeconomic shock and of industrial restructuring (1990s)	• Privatization and de-regulation as the policy trends in early to mid-1990s: The sequential abolishment of the price limits for new housing from 1995, and the privatization of NHCB in 1997 • Establishing the real name registration for real estate asset ownership in 1995, contributing to enhancing the transparency in the real eatate and other asset markets • The Asian Financial Crisis(AFC) as a large-scale macroeconomic shock, causing a broad-based financial liberalization, de-regulation and industrial re-structuring	• The 2 million housing units construction project(1989~1993) including 250k rental units and 900k units in the capital region; Development of the five New Towns(or satellite cities) surrounding Seoul • Expanding the urban land supply via the "peudo-agricultural" land area(26.5% of total land area) • The vastly improving housing supply ratio: 72.4% in 1990→93.3% in 1999 • Housing prices being stabilized in Seoul and other areas, which plummeted during and right after AFC
6. The period of paradigm change in housing markets and housing policies(2000s)	• Rise of the consumer lending, both credit card(or non-collateralized) loans and mortgage(or real estate baked) loans; Establishment of the credit data repository(Korea Credit Bureau) • Development of the markets for advanced financial products, including ABS(Asset Baked Securities), MBS(Mortgage Baked Securities • The Global Financial Crisis(GFC) as another milestone in re-thinking housing policities: Stabilization of real estate market as a part of the macro-prudential regulations and balancing housing welfare(via public housing and housing voucher) with the stabilization policy	• Rapid expansion of the residential mortgage lending, causing a set of lending restrictions(the LTV·DTI limits, designation of the speculative zones, changing risk weights for the short-term adjustable rate mortgages) • The twin housing price cycles in early to mid 2000s, in particular, in Seoul and its Sothern neighborhood(the Gangnam area), due to the reduction in housing supply • Announcement of the construction of 1m national rental housing units in 2003~12(subsequently revised by various affordable housing initiatives in 2000s) • Announcement of the Bogeumgari housing project in 2008, with a plan to build 1.5m affordable housing units(0.8m for owning and 0.7m for renting) • Housing supply ratio: 100.6% in 2002→112.9% in 2010

Refernces: Cho, M., 2010, "The real estate stabilization policies in Korea," Presented at the CASS Conference in Beijing, September 2010; KSP, 2012, "Policy for the Construction and Supply of Affordable Housing in Korea," KDI Mudularization Project; Cho, M., and KH Kim, 2011, "Housing sector reform in Korea," Presented at the OECD Conference of Making Reform Happen, November 2010.

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Chapter 4

Korea's Land Compensation System and Improvements That Have Been Made to Ensure Optimum Compensation

Korea's Land Compensation System and Improvements That Have Been Made to Ensure Optimum Compensation

Yoo-soon Hwang (Korea Land & Housing Corporation)

Summary

In the case of any given Korea's public development project, the price of the project site is so high that it accounts for over 40% of the prime cost of land formation. Thus, the management of site costs is vital to ensuring a virtuous cycle of projects. Moreover, in addition to project cost management, optimum compensation is needed to protect citizens' property rights. This chapter introduces Korea's compensation system, its experience of compensation as well as improvements that have been made to ensure optimum compensation. Based on the lessons that have been learned from such experience, it makes policy suggestions to the Vietnamese government in an attempt to contribute to the efficient implementation of its public housing construction program.

The brief summary of the policy suggestions that are made by this research is as follows:

First, it is important to strictly manage a project zone from the moment of its designation, by establishing and implementing measures to prevent compensation-related speculations.

Second, it is necessary to manage site costs at an optimum level in order to continuously manage publicly announced land prices and to create a virtuous cycle for projects.

Third, after the announcement of a development plan, legal and systemic means need to be put in place in order to ensure the restitution of unfair development gain that is made by landowners and real estate developers from the development project.

Fourth, in order to ensure optimum compensation, it is necessary to receive feedback from those who are eligible for compensation and from the project implementer when calculating the compensation amount. It is also necessary to minimize compensation-related complaints by strictly managing the assessment body and by calculating the compensation amount in an objective manner.

Fifth, in the case of a complaint, it is important to promptly deal with it by identifying its causes and consulting expert groups.

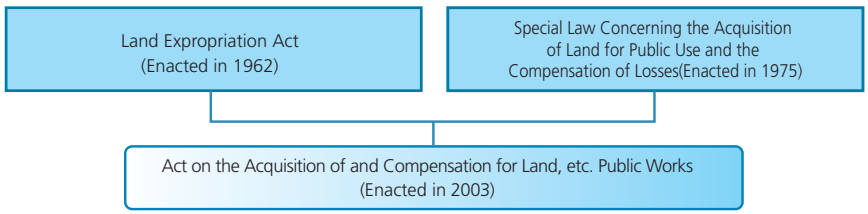
Sixth, the existing system needs to be rearranged by establishing reasonable and standard compensation criteria. It is also necessary to consider the real, imperative implementation of the established criteria, in an attempt to improve public welfare by conducting a public project on time. Moreover, a real estate statistical information system, in which actual market prices, land price change rates and publicly announced land prices appear, is also needed.

1. Outline of the Compensation System

1.1. Relevant Laws

In accordance with Article 23-3 of the Korean Constitution, the Korean law permits the expropriation and compensation of property rights that are carried out for public needs but at the same time, it requires fair compensation. In addition, the country's Land Compensation Act specifies matters related to compensation of losses that are caused after land was obtained or used for a public project after consultation or expropriation. The country's development project-related laws (e.g. Housing Site Development Acceleration Act, Bogeumjari (meaning "my house") Special Act, Housing Act, etc.) define diverse types of permission. The Land Compensation Act applies to compensation.

[Figure 4-1] Land Compensation-Related Laws



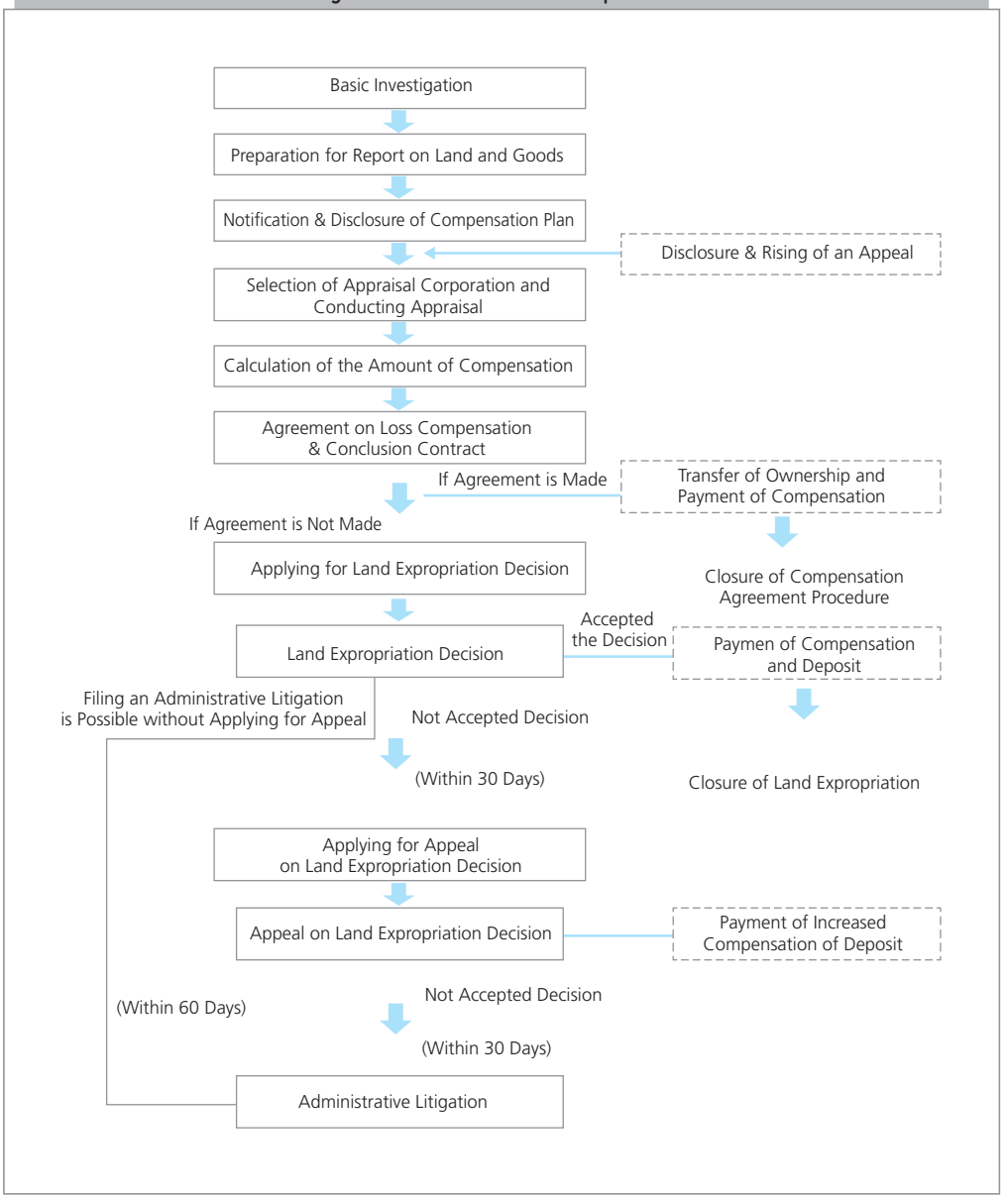
1.2. Basic Principles of Compensation

The first principle "compensation by the implementer" means that the losses that have been undergone by the owner are compensated by the project implementer. "Compensation in cash" means that compensation is paid in cash except the cases in which other laws have special clauses. "Compensation for each individual" means that the compensation amount of each individual is calculated. "Comprehensive compensation" means that if the same owner has multiple lots of land, compensation for all of such lots is combined and paid at the same time if the owner requests it. "Prohibition of counterbalancing with the profits generated by project implementation" means that even if the price of the remaining land rises with project implementation, compensation cannot be counterbalanced with the profits generated by the project. "Exclusion of development gain" means that even if the land price is changed because of the given public project, such a change is not considered when calculating the compensation amount.

1.3. Procedure of Compensation

The procedure of compensation includes a basic study, announcement of the compensation plan, consultation and finally, a decision of expropriation. The general procedure is summarized below:

[Figure 4-2] Procedure of Compensation



2. Calculation, Content and Method of Compensation

2.1. Approval of a Project

Approval of a project is an administrative action that regards the project as a public one under the Land Compensation Act and that provides the project implementer with the right to carry out expropriation in accordance with the procedure specified by the law.

2.1.1. Basic Survey for the Request of the Permission of a Project

As part of the procedure of project approval, a basic survey needs to be carried out to request the permission of the project. Such a survey involves the preparation of a land registration and aerial map, land register, aerial photograph, reports on land and its objects, information on national public land (whether it is provided at a cost or free of charge) and on the land that is on the boundaries of the project zone.

2.1.2. Effects of Project Approval

The approval of a project takes effect on the date when the implementer, type, region, detailed information on the land to expropriate or use are announced in an official gazette.

The effects of project approval are as follows:

- Land Expropriation Right

When the approval of the project is announced, the project implementer is given the right to expropriate the project zone in accordance with the procedure specified by the law.

- Determination of the Objects to Expropriate

If the scope of expropriation is confirmed based on the detailed information on the land that is provided at the time of project approval, a decision of expropriation can be requested, within the scope of land that has been announced.

- Limitation of the Scope of "Persons Concerned"

A person who is provided with a right after the announcement of project approval is not regarded as a "person concerned" so he or she cannot claim his or right by participating in the procedure of expropriation. Only the person to whom the existing right has been transferred is regarded as a "person concerned."

- Duty of Conserving Land

After the announcement of project approval, anyone can neither change the form and quality of land nor destroy / collect the objects that are needed for the public project, in order not to cause any obstacle to conducting the project in the zone.

- Right to Study Land and Its Objects

After the announcement of project approval, the project implementer can visit the land or objects to measure or study them, in order to prepare the launch of the project or to write reports on the land and its objects.

2.2. Appraisal and Assessment / Calculation of Compensation

The project implementer selects one assessment body and each of the mayor (or provincial governor) and landowners recommends one body. As for the selection by the project implementer, there is no specific rule under the Land Compensation Act but the electronic method is generally used to ensure the transparency and objectivity of the selection process. Meanwhile, the recommendation of an assessment body by landowners requires the consensus of a majority of landowners whose combined land is at least half of the land that is eligible for compensation.

〈Table 4-1〉 Modification of the Criteria for the Selection of an Assessment Body

Maintained Criteria	Added Criteria
Criteria for the Recommendation by Landowners - Consensus of a majority of landowners whose combined land is at least half of the land that is eligible or compensation - Within 30 days after the end of the consultation period	Criteria for the Recommendation by a Mayor or Provincial Governor ① A pool of those who are eligible or recommendation is formed. ② A body is selected among those in the pool by drawing lots. ③ The process of forming the pool and drawing lots is open to the public. * The Ministry of Land, Infrastructure and Transport establishes and distributes the standard guidelines on the recommendation of assessment bodies.
Reason for the Modification: Revision of the Land Compensation Act (promulgated on June 1, 2012 and enforced on December 2 of the same year) - Shares of participation in the recommendation of an assessment body Before: Project Implementer (2/3) and Landowners (1/3) After: Project Implementer (1/3), Mayor / Provincial Governor (1/3) and Landowners (1/3)	

* Source: LH, Information on Compensation Bonds Issued by LH in 2013

2.2.1. Land Compensation

An amount of land compensation is calculated based on the objective situation in which the land is used in a general way. In other words, the calculation does not take into account the situation in which the owner would use the land with his or her subjective value or for special purposes. Regardless of the category of land that is on the record, an assessment is carried out based on the realistic situation of using the land, at the time of assessing the amount. If the land has obstructive structures, the assessment is carried out by imagining a situation in which there is no such structure. An assessment is also carried out based on the publicly announced price of standard land. In addition, the change rate of the land price as well as the land's location, shape, environment and use, which apply from the project announcement date to the assessment period, are also considered. If the land price changes as a result of the project, such a change is not considered.

[Figure 4-3] Structure of Assessing Land Compensation

[Method of Calculating the Compensation for the Assessed Land]

Land Compensation = ① Publicly Announced Land Price × ② Correction Considering the Current Date × ③ Comparison of Local Factors × ④ Comparison of Individual Factors × ⑤ Correction Considering Other Factors

① Publicly Announced Land Price: Adoption of the land price that was announced before the announcement of acknowledging the project (as of January 1)

② Correction Considering the Current Date: The price change from the price announcement date to the compensation date is taken into account to make a correction considering the land price change rate.

③ Comparison of Local Factors: Such a comparison is carried out if there is no standard land to compare in the vicinity (normally 1.00)

④ Comparison of Individual Factors: Comparison of faying surface roads, transportation and shape between the standard land and the assessed land

⑤ Correction Considering Other Factors: The gap between the publicly announced land price and the actual compensation amount is corrected by considering the desirable examples of compensation that has been assessed in the vicinity of the assessed land.

* Sample of the Result of Appraisal and Assessment

Location	Number of Lot	Land Category		① Comparative Standard Lot		② Time Adjistment	③ Regional Factors	④ Individual Factors							⑤ Other Factors	Applied Price (won/m²)
		Official Book	Actual	Mark	Officially Announced Land Price			Way	Access ibility	Environ ment	Lot	Admini stration	Other	Average of Sum		
Baebang -Myeon Seogyo-Ri	419-2	Dae	Dae	Baebang-Myeon Seogyo-Ri 377-2	370,000	1.05621	1.00	1.00	1.04	1.06	1.00	1.00	1.00	1.02	1.40	603,000

2.2.2. Compensation for Obstructive Structures

The principle is to compensate for obstructive structures at the amount that is equivalent to the cost of moving them. If moving them is difficult, if the moving cost exceeds the acquisition price, or if the implementer acquires the land to use for a public project, the compensation amount is equal to the acquisition price. As for buildings, the principle is to assess the land by considering the prime cost. However, in the case of housing buildings, if the price that is calculated by comparing transaction cases is higher than the one that is calculated by the "prime cost" approach, the "transaction comparison" approach is adopted. As for trees, fruit trees and ornamental trees are subject to assessment. Meanwhile, natural trees in forests and fields are not eligible for separate compensation because they are reflected by the land compensation amount when assessing the land.

2.2.3. Compensation for Sales Losses

Sales activities that are eligible for compensation are the ones that have been carried out continuously since the period before the announcement of project approval, in a legitimate place, after obtaining legitimate permission. In the case of compensation for temporary closing, compensation is made by adding the cost of sales facilities, cost of moving goods and extra expenses to the sales profits that would be made during the closing period (within three months). In the case of shutting down a business, compensation is made by adding to the two-year sales profits the losses that are caused by selling the fixed assets, raw materials, products and goods.

2.2.4. Compensation for the Livestock Industry

Compensation is made if incubation, egg gathering, livestock breeding and livestock farming activities have been officially reported under the Livestock Industry Act or if a person breeds at least a standard number of livestock animals (chicken: 200 / duck: 150 / pig: 20 / cow: 5). To make such compensation, the method of compensation for sales losses is used.

2.2.5. Compensation for Agricultural Losses

Compensation for the total area of farmland is based on the two-year average annual income that is generated from crops for each unit lot of farmland. Such an average is estimated by Statistics Korea.

〈Table 4-2〉 Criteria of Compensation for Agricultural Losses

(As of January 2013)

Province	Compensation (won /㎡)	Province	Compensation (won /㎡)
Gyeonggi Province	2,832	Jeonbuk Province	2,808
Gangwon Province	3,013	Jeonnam Province	2,908
Chungbuk Province	2,646	Gyeongbuk Province	3,700
Chungnam Province	3,017	Gyeongnam Province	4,353

2.2.6. Compensation for Tombs

The cost of moving tombs (determined by the implementer), cost of moving stone objects (appraisal and assessment), miscellaneous expenses (30% of the cost of moving tombs and cost of moving stone objects) and financial support for moving (1 million won) are combined to be paid.

2.2.7. Cost of Moving Out

A person who has owned and lived in a housing building and who is moving out is paid the two-month average monthly expenses of each urban workers' household. Such an average is announced by Statistics Korea. A tenant who has continuously lived in a housing building since the period of three months before the project announcement date and who is moving out is paid the four-month average monthly household expenses.

〈Table 4-3〉 Example of Payment (as of January 2013)

(Unit: won)

Number of Persons in the Household	Cost of Moving Out	Number of Persons in the Household	Cost of Moving Out	Number of Persons in the Household	Cost of Moving Out
1 person	3,017,760	2 persons	5,040,780	3 persons	6,832,850

2.2.8. Moving Plan

A moving plan is established and implemented for those who are about to lose their living space by supplying their housing buildings for the implementation of a

public project.

A "housing site for a mover" is provided to a person who has owned and lived in a legitimate housing building since the period before the project announcement date and who wants the supply of a housing site. Specific supply conditions apply: 265m^2 or less per lot in the case of a site for a single house that could also be used as a store and 330m^2 or less per lot in the case of a site for a single house that can only be used as a house. The supply price is equivalent to the land formation cost (prime cost) excluding the cost of installing basic living facilities.

A "house for a mover" is supplied to a person who has owned and lived in a legitimate house since the period before the project announcement date and who wants the supply of a house for a mover. Specific supply conditions apply: a house that is sold in lots whose area for exclusive use is 85m^2 or less. The supply price is equivalent to a regular parcel price excluding the cost of installing basic living facilities in the land area of the mover's house.

Meanwhile, the moving and settlement cost is provided to a person who has requested the payment of the cost and to a person who is eligible for the moving plan but who has been excluded from the supply of a housing site or house for movers. Such a cost is 30% of the assessed amount of the housing building that is eligible for compensation which ranges between 6 and 12 million won.

2.2.9. Living Plan

A living plan is established and implemented for those who have lost their job due to the implementation of a public project. Specific supply conditions apply: site of a commercial area of 20 to 27m^2 or a store in a commercial area. As for the supply price, the price of the site in a commercial area is calculated by appraisal and that of a store in a commercial area is equivalent to the average contract price of each m^2 of the same floor level in the same commercial area.

〈Table 4-4〉 Method of Calculating Compensation in Each Category of Compensation

Benefit and Protection of the Law That Are Infringed on	Category		Content	Calculation Method
Property Rights	Land Compensation (Land Ownership)	Land That Is Acquired	Regular land	Appraisal and assessment
		Land That Is Used	General use, use of basement and ground-level spaces	Appraisal and assessment
		Compensation for Remaining Land	Compensation considering depreciation / compensation for purchasing and accommodating	Appraisal and assessment
	Compensation for Rights to Properties Other Than Land	Rights Other Than Land Ownership	Surface rights	Appraisal and assessment
		Compensation for Objects Such As Buildings	Buildings, structures, trees and tombs	Appraisal and assessment
		Compensation for Rights	Mining and fishing rights	Appraisal and assessment
	Compensation for Accessorial Losses	Compensation by Paying the Costs That Have Already Been Generated	Cost of moving movable assets	Appraisal and assessment
			Moving cost	Calculated by the implementer
		Compensation for Labor Losses *Losses / disappearance of future profits that are caused by not being able to work	Compensation for sales losses / compensation for losses of the livestock industry	Appraisal and assessment
			Compensation for agricultural losses / compensation for leave of absence and unemployment	Calculated by the implementer
Non-Property Rights	Special Compensation for Housing Buildings	Moving plan (or cost of moving and settling down) / Cost of changing the living space		Calculated by the implementer
	Cost of moving to other farmland and fisheries			Calculated by the implementer

2.3. Compensation Method

2.3.1. Compensation in Cash

In accordance with Article 63 of the Land Compensation Act, compensation for losses is made in cash in principle, except the cases in which other laws have special clauses.

2.3.2. Compensation through a Bond

In the case of an absent landlord, 100 million won is paid in cash and the part exceeding this amount is paid in the form of a bond issued by the project implementer. An "absent landlord" refers to a person who has not been registered as the resident of the given city, district, town or township since the period of a year before the project approval announcement date.

〈Table 4-5〉 Compensation Bond

Category	Content		Note
Method of Issuance	Blank issue at face value		
Interest Rate	Expiration in 3 Years	Local Owner : Higher interest rate between that of a government bond (expiration in 3 years) and that of a fixed deposit (expiration in 3 years) Absent Landlord : Interest rate of a fixed deposit (expiration in 3 years)	As of February 2013 Expiration in 3 Years - Local Owner: 3.04% - Absent Landlord : 3.04% Expiration in 5 Years : 2.86%
	Expiration in 5 Years	Local Owner / Absent Landlord: Interest rate of a government bond (expiration in 5 years)	
Principal Repayment	Complete repayment at the time of expiration		
Interest Payment	Complete payment at the time of expiration at 1-year compound interest		

* Source: LH, Information on Compensation Bonds Issued by LH in 2013

2.3.3. Compensation in Land

If the landowner wants, land compensation can be made not in cash, but in land that is formed through the project. For land compensation, the payment of the transfer income tax is postponed until the moment when the land that is provided as "compensation in land" is sold.

2.4. Compensation Based on Consultation

After the calculation of compensation is finished, the project implementer must promptly provide the landowner and person concerned with a document requesting consultation on compensation which includes the consultation period, compensation amount and contract-related forms, in order to ask for the signing of a contract. Unless there is any particular reason not to do so, the consultation period must be 30 days or more.

"Consultation" refers to reaching an agreement on the gain and loss of rights to the land that will be expropriated. The company, landowner and person concerned must reach such an agreement after the approval of the project is announced. In short, "consultation" is a process of negotiation between the project implementer and the person whose land is expropriated who discuss the scope of the land to expropriate, expropriation period and compensation.

Under the Land Compensation Act, a negotiation is required before requesting a decision of expropriation. If a decision is requested without any negotiation, such a request is not accepted. Even if a decision is made in this case, such a decision is illegal and is nullified in principle.

Requesting consultation means encouraging or notifying it, and it is not an administrative measure. Thus, such a request is not subject to administrative proceedings.

Under the Land Compensation Act, a compensation committee can be formed to ensure the seamless implementation of a public project and serious consultation. Such a committee is formed by the head of the local government of the region where the public project is implemented and can be either an "arbitrary committee" or "compulsory committee." The creation of the latter is compulsory if the site is 100,000m^2 or more and the number of owners (including landowners) is 50 or more.

The committee is in charge of consultation and advice related to compensation issues and its purpose is to receive feedback from residents and to deal with complaints. However, the opinions of this committee don't have any binding force. A compensation committee is composed of a chairperson and 8 to 16 members. Its chairperson is the vice-mayor or vice-governor of the city, county or district where the project is conducted and its members include the landowners, persons concerned, lawyers, notaries, public servants of the local government of the region where the project is implemented and the project implementer.

A compensation committee is generally formed and managed before the period

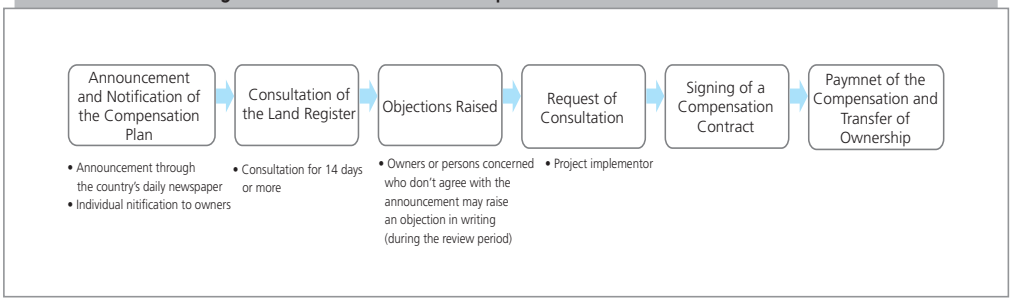
when the public reviews a compensation plan. It deals with the following matters; gathering feedback in order to calculate the compensation amount, fixing the scope of the remaining land, establishing a moving plan for residents, moving out public institutions that are located in the project zone and discussing matters that are regarded as necessary by the head of the local government among the matters that are requested by the landowners or persons concerned as well as other matters that are suggested by the head of the local government for discussion.

Through consultation, an owner who transfers a site (1,000m^2 or more in the case of the Seoul Capital Area and 400m^2 or more in the case of the other regions) is provided with a housing site. Specific supply conditions apply: a housing construction site whose size is between 165 and 265m^2. The supply price is based on appraisal in the Seoul Capital Area and it is 110% of the prime cost of land formation in the other regions.

If a contract is signed after consultation on negotiation is successfully finished during the consultation period, the project implementer pays the compensation amount. If consultation isn't successful or it is impossible, a decision of expropriation is requested to the local Land Expropriation Committee after the end of the consultation period so that a decision procedure can start. After the procedure, the compensation is paid or deposited.

If it is confirmed that consensus has been reached after consultation, the consensus is regarded as a decision of expropriation. In this case, the project implementer, landowners and persons concerned cannot raise any objection to the confirmed consensus or its content.

[Figure 4-4] Procedure of Compensation Based on Consultation



2.5. Decision of Expropriation

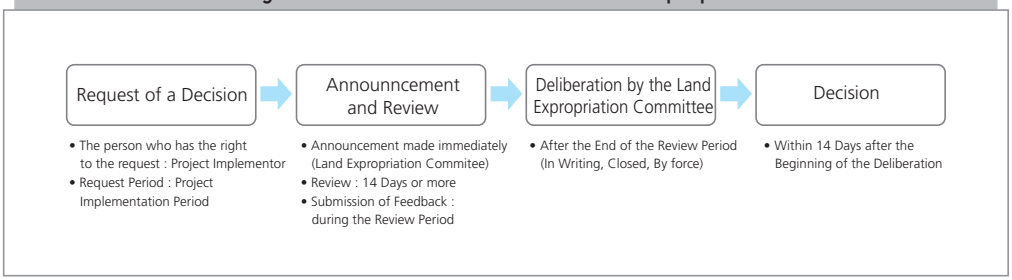
When purchasing land to implement a public project, if no consensus is reached between the project implementer and owner, the government's procedure called

"compulsory acquisition by the purchaser" begins under the law. A decision of expropriation, which is the last stage of expropriation, is an administrative measure that actually allows the project implementer to expropriate land, under the condition of paying or depositing compensation for the land. In this case, an administrative decision is made by the land expropriation committee from a third party's perspective. In general, only the project implementer can request the decision and the owner can ask for the request of a decision.

The land expropriation committee is an administrative body that has semi-legislative and semi-judicial authority. The Central Land Expropriation Committee is affiliated to the Ministry of Land, Infrastructure and Transport and local land expropriation committees are located in Seoul and metropolitan cities. The Central Land Expropriation Committee is composed of a chairperson and members whose number is 20 or less. A local land expropriation committee has a chairman and members whose number is 9 or less.

A decision of expropriation is made through the following procedure:

[Figure 4-5] Procedure of the Decision of Expropriation



In general, a decision of expropriation takes three to four months from the date of requesting the decision. Depending on the urgency of the decision, the period may be shortened by a month. It takes about 55 days from the decision date to the date of starting expropriation.

As for an application form requesting a decision of expropriation, the following criteria are considered: 1. Is the applicant entitled to request a decision? 2. Was the request made during the request period? 3. Does the application form include detailed information on the land and on the area belonging to the project? 3. Has the public announcement of the project been reported to the landowner? 4. Does the form have the name and address of the landowners and persons concerned? 5. Does the form include a document on the compensation suggested by the project implementer? 6. Does the form include information on the persons concerned? 7. Does the form specify co-owners' share?

The deliberation on the request is carried out in writing and it is not open to the public. In addition, the Land Expropriation Committee has the full right to make a decision. Meanwhile, the Committee cannot deliberate on elements that are not requested by the applicant. However, compensation may increase when making a decision.

A decision is made through a document and this document includes the content of the request, its reason and decision date. The chairperson and committee members who participated in the deliberation then sign the document.

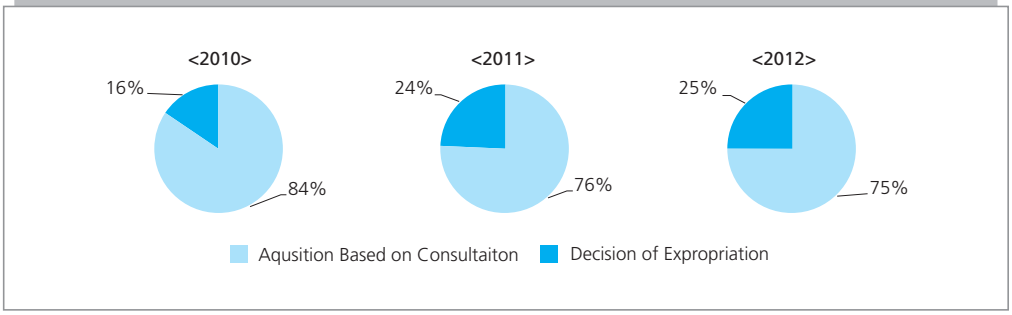
A decision document takes effect only after it is received by the parties related to expropriation. It is thus sent by registered mail (or through a system of delivery report) to the project implementer, landowners and persons concerned.

Once a decision of expropriation is made, all of the existing rights concerning the objects to expropriate disappear on the date of expropriation and the project implementer naturally obtains ownership under the law. The owner must transfer the objects to expropriate to the project implementer by the date of starting expropriation.

If an implementer or owner doesn't agree with the decision of expropriation, he or she may raise an objection within 30 days after receiving a document on the decision. In the case of disagreeing with the decision, an implementer or owner may start administrative proceedings within 60 days after receiving a document on the decision of expropriation. Meanwhile, if they have raised an objection, they may do so within 30 days after receiving a document on the decision made regarding the objection. Meanwhile, if it is significantly difficult to use the remaining land for its former purposes, as part of the land has been integrated into the project zone, and if the landowner requests the purchase of the remaining land, such a purchase may be made according to the criteria of defining the conditions of the remaining land.

As of 2012, acquisition of land based on consultation accounts for 75% of all cases and acquisition based on a decision of expropriation, 25%.

[Figure 4-6] Types of Public Land Acquisition (Consultation / Decision of Expropriation) (2010 ~2012)



2.6. Taxes Related to Compensation

An owner who has transferred his or her land under the condition of compensation must pay taxes including a transfer income tax, under the relevant tax laws. However, in the case of transferring farmland whose owner has lived there and cultivated the land for eight years or more, a transfer income tax is reduced by 100%. In the case of transferring the land that was acquired two years before the project approval announcement date, the transfer income tax is reduced by 20% for compensation in cash and 25% for compensation through a bond. As for compensation in land, imposing a transfer income tax is postponed until the disposal of the land that is received as compensation. Meanwhile, if a local resident acquires a property in the given metropolitan city (or in the neighboring city, country or district) within one year after the last time he or she received compensation, an acquisition tax is not imposed within the scope of the compensation.

2.7. Charge Imposed for the Restitution of the Development Gain

A development charge is imposed in order to optimally distribute the development gain after its restitution. In this way, speculation on the land can be prevented and the efficient use of the land can be encouraged. Projects on which this charge is imposed include development projects entailing reclassification of land (e.g. housing site development project, industrial complex development project and urban environment rearrangement project). The method of calculating the charge is as follows:

* Imposed charge = development gain [① land price at the point of completion - ② land price at the point of launch - ③ normal land price increase - ④ development cost] X burden ratio (25%)

The purpose of a farmland preservation charge is to ask those who are the only users of given farmland to pay an amount that is needed to conserve, manage and form the farmland. Such a charge is used for a farmland management fund (in the case of a farmland formation project and farmland bank project) and is imposed on any farmland to which the Farmland Act applies. The method of calculating the charge is as follows:

* Imposed charge = [area of exclusive use-reduced area] X 30% of the individually announced land price

A cost of forming alternative forest resources is imposed to a person who wants to receive permission to change the purpose of mountainous land. It is used for the conservation, management and formation of the land. The cost is imposed based on the area in which the form and quality of forests is changed (area in which forests are actually damaged).

* Amount per unit area of the cost of forming alternative forest resources (won/m^2): 2,560 for semi-conserved mountainous land / 3,320 for conserved mountainous land / 5,120 for the zone where changing the purpose of using mountainous land is limited

3. Improvements to Ensure Optimum Compensation

3.1. Major Problems Arising from the Process of Compensation

In Korea, a variety of problems, which surround the party in charge of compensation and the person who receives compensation, have arisen in the process of compensation. For example, land compensation amounts have continued to increase due to the Korean government's policy of actually applying publicly announced land prices and to the system of selecting an assessment body that is recommended by landowners, thus resulting in diverse forms of compensation-related speculation. Requirements that need to be satisfied for compensation have also increased, thus blocking seamless compensation and project implementation. Consequently, such problems related to compensation have constituted major obstacles to the efficient implementation of public projects.

3.1.1. Speculation Related to Compensation

Once the zone of a public project is designated, a variety of activities of compensation-related speculation have been generated. Examples of such activities are the construction of unlicensed buildings and change of the form and quality of land.

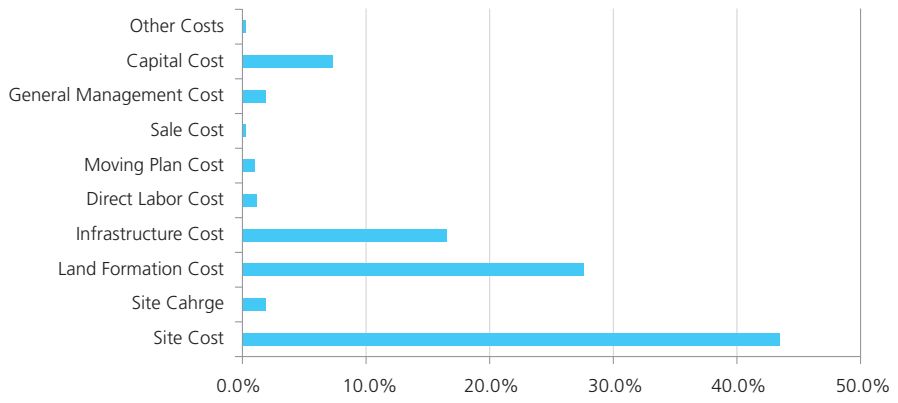
〈Table 4-6〉 Types of Compensation-Related Speculation Activities

Type	Purpose	Onsite Reality
Livestock	To be eligible for compensation and a living plan	They install a greenhouse on abandoned land inside farmland or a residential area and they take ducks, goats and dogs inside.
Beekeeping	To be eligible for compensation and a living plan	They install a hive that satisfies minimum conditions for livestock compensation and a living plan near a house, forest or ditch. Afterward, they actually do nothing to manage it.
Crops / Trees / Planting	To be eligible for compensation and a living plan	They install a greenhouse on abandoned land. They then plant crops, trees or wild ginseng.
Self-Employment	To be eligible for compensation and a living plan	They open a business place using their liberal professions that don't require any permission or registration, putting up a sign. Afterward, they actually do nothing to manage the place.
Greenhouse (Division of Land)	To be eligible for a living plan	They divide abandoned farmland or a greenhouse into minimum units that are eligible for a living plan, growing flowering plants or vegetables grown in facilities in each of the units. They then own each unit.

3.1.2. High Compensation Amount

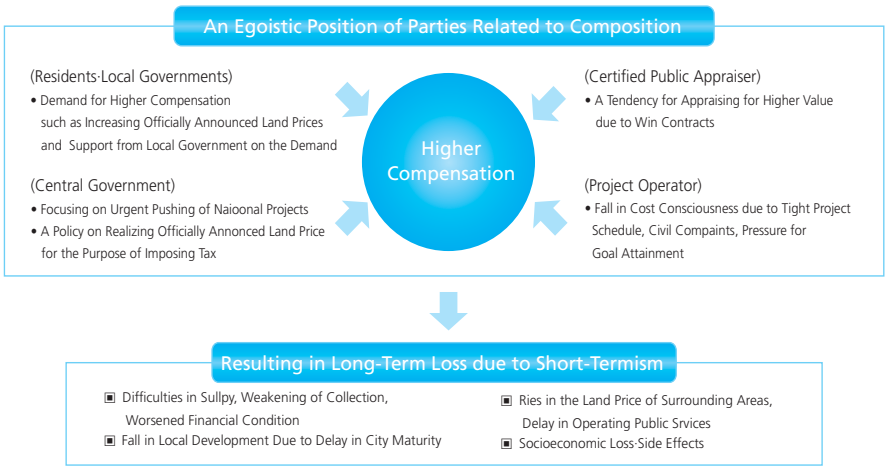
In the case of public development projects, the unit price of compensation and absolute amount of compensation have continued to increase. Consequently, the cost of the site has reached over 40% of the prime cost of land formation. Such high land prices have kept project costs high, thus leading to the financial burden, discouraged investment and high parcel prices in the area of social overhead capital.

[Figure 4-7] Portion of the Site Cost in the Prime Cost of Land Formation (LH, as of 2012)



Each of the parties related to compensation (residents, local government, central government, project implementer and assessment body) has its own position. Their pursuit of short-term gain has led to long-term losses: delays in the implementation of public projects, impediments to local development as well as socioeconomic losses.

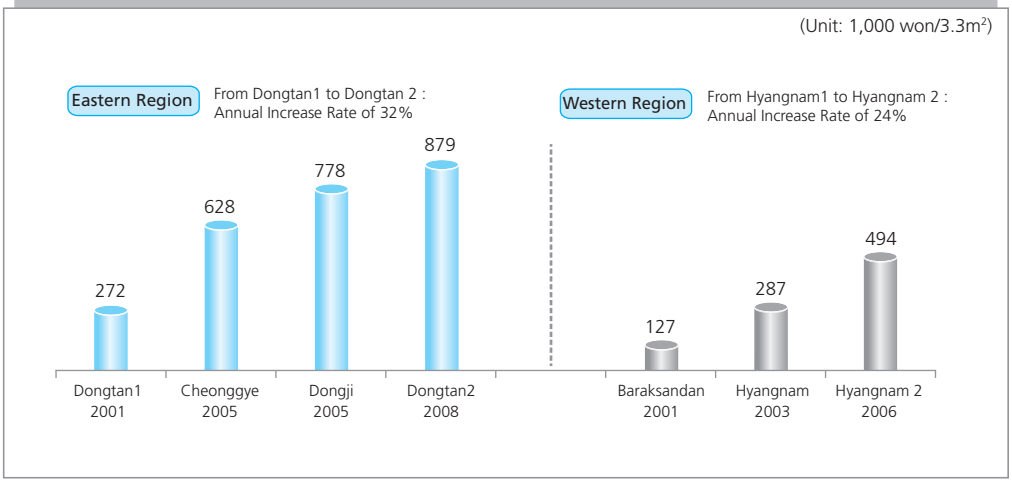
[Figure 4-8] Positions of the Parties Related to Compensation



Diverse factors, which include the policy of actually applying announced land prices, system of selecting an assessment body based on landowners' recommendation and active promotion of large-scale development projects, have led

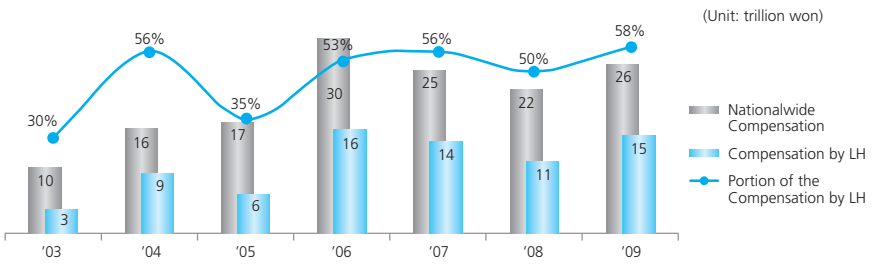
to the increase of the unit price of compensation and consequently, to that of land compensation amounts.

[Figure 4-9] Changes in the Unit Price of Compensation for the Project Zone Located in Hwaseong City, Gyeonggi Province (LH)



In addition, as large-scale public projects have been conducted, the absolute amounts of compensation have significantly increased.

[Figure 4-10] Changes in Annual Compensation Amounts (2003-2009)



Year	'03	'04	'05	'06	'07	'08	'09
Nationwide (trillion won)	10	16	17	30	25	22	26
LH (percentage)	3(30%)	9(56%)	16(53%)	14(56%)	14(56%)	11(50%)	15(58%)

3.1.3. Development Gain

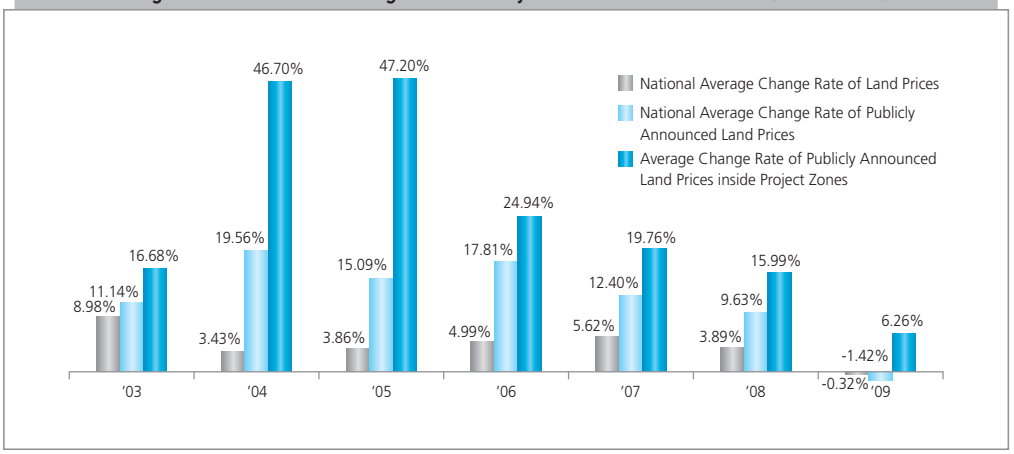
As a development project is conducted, the land price increases more than what is usually expected due to the modification of the land use plan and socioeconomic factors. Such an increase belongs to the project implementer or the landowner. Under these circumstances, not only the price of the project zone but also that of the surrounding area rises and such a price hike happens regardless of the landowner's efforts.

Such development gain is generated by the implementation of the public project and it is not regarded as being part of the objective value of land which is earned at the time of sale or expropriation. Thus, it is reasonable to exclude this gain when calculating compensation.

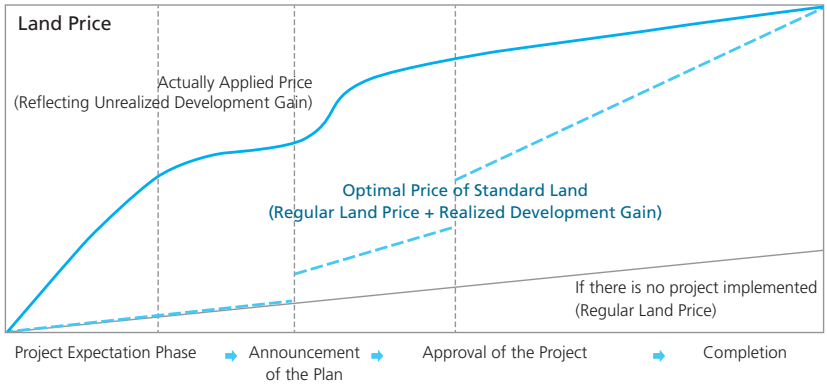
3.1.4. High Amounts of Appraisal and Assessment

The landowner, local government and appraisal and assessment body agree with each other to the idea of applying the publicly announced land prices. Consequently, the publicly announced prices of project zones have risen by 25.36% on average between 2003 and 2009. Such a price hike is generated because it reflects development gain that is expected to be made at the time of the announcement of a public project; A publicly announced price should reflect only the development gain that was actually made at each project stage. Such an excessive increase directly influences the assessment of compensation amounts.

[Figure 4-11] Annual Changes in Publicly Announced Land Prices (2003-2009)



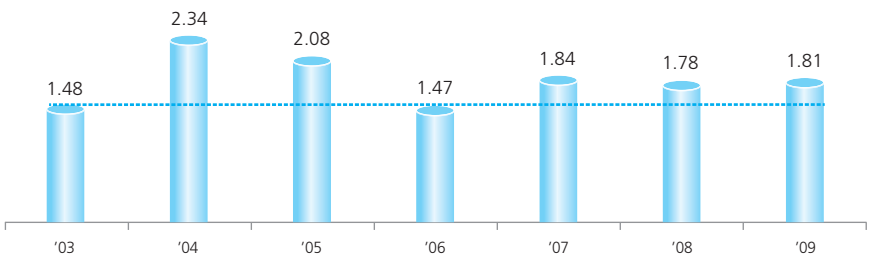
[Figure 4-12] Reasons of the Increase of the Publicly Announced Land Prices of Project Zones



Type of Increase	Project Zone	Comparison Period	Increase Rate of the Publicly Announced Price of Standard Land		
			Inside the project zone (A)	City / County / District (B)	Difference (A-B)
Significant Increase after a Public Announcement	Zone ___	2006~2008	317%	35%, 41%	279%p
	Zone ___	2005~2007	637%	31%	606%p
Significant Increase just before Public Consultation	Zone ___	2004~2005	117%	72%	45%p
	Zone ___	2008~2009	25%	0%	25%p

Meanwhile, the excessive consideration of other factors during appraisal and assessment also leads to the increase of calculated amounts. For example, cases of high compensation amounts in the vicinity of a project zone is considered. As a result, the gap between the publicly announced land prices and compensation amounts has widened and compensation amounts have continued to rise.

[Figure 4-13] Compensation Amounts Considering Other Factors (2003-2009)



Moreover, assessment bodies that are recommended by landowners have taken the lead in suggesting high assessment amounts, reflecting residents' interests and acting in favor of them.

〈Table 4-7〉 Difference in the Compensation Amounts Suggested by Different Assessment Bodies

Organization	Compensation Amounts (million won)	Assessment Body Recommended by the Owner (A)	Assessment Body Selected by the Implementer(B)	A/B
Corporation ○○	437,615	454,366	429,240	105.9%
Corporation △△	1,988,139	2,603,496	1,950,461	105.8%
Corporation □□	1,143,196	1,182,811	1,123,389	105.3%
Total	3,568,951	3,700,673	3,503,090	105.6%

* Source: Research by Anti-Corruption & Civil Rights Commission of Korea (September 2008) : Analysis of 29 compensation cases between May 2006 and October 2008.

3.1.5. Civil Complaints about Compensation

Citizens have a better understanding of compensation and they increasingly demand improvements in the quality of the compensation service. In addition, they actively seek the protection of their rights and cooperate with others who are eligible for compensation more strongly. Under these circumstances, diverse civil complaints about compensation have increased and those who are eligible for compensation tend to submit such complaints collectively.

〈Table 4-8〉 Changes in the Environment of Compensation

Increase of Social Demand	Active Request of Protection of Rights	Strengthening of the Cooperation among Those Who are Eligible for Compensation
Compared to the past, Koreans have a better understanding of compensation and they increasingly demand the improvement of the compensation service.	Koreans tend to collectively submit compensation-related complaints and they actively make use of the legal procedure of protecting their rights.	Those who are eligible for compensation share information and they raise objections if compensation amounts differ depending on zones and project implementers.
It is necessary to promptly respond to compensation-related to complaints and to strengthen onsite support in order to ensure the standardization of such responses.		

〈Table 4-9〉 Major Complaints about Compensation (LH / January to September 2003)

Category	Number of Complaints	Percentage (%)
Complaints about compensation (amount and payment period)	155	30
Decision of expropriation	16	3
Moving and living plans	97	19
Others	246	48
Total	514	100

3.2. Improvements That Have Been Made to Ensure Optimum Compensation

The Korean government and the country's major institutions in charge of public projects have made a variety of efforts to ensure optimum compensation. For example, they have revised guidelines on the prevention of compensation-related corruption by standardizing them and they have also established and implemented guidelines on the restitution of development gain. In addition, they have come up with criteria for the selection of assessment bodies in an attempt to improve the appraisal and assessment system. Moreover, they have strengthened their response to compensation-related issues and onsite support, in the context of citizens' increase of demand for a better compensation system, active protection of rights and strengthening of the cooperation among those who are eligible for compensation. They have also strengthened the existing compensation system by revising regulations related to compensation, in order to ensure optimum compensation.

3.2.1. Establishment and Implementation of Plans for the Prevention of Compensation-Related Speculations

In an attempt to prevent a variety of compensation-related speculations that take place in project zones after their designation, surveillance activities have been strengthened. Examples of this are signboards restricting activities in the vicinity of project zones, surveillance cameras in the areas where compensation-related speculations are expected, a system of rewarding residents who report speculation cases and designation of some local residents as honorary surveillance agents. Furthermore, project zones that are expected to struggle with speculation (e.g. new towns) are required to have professional security agents manage the zones. Finally, stricter criteria for a living plan have contributed to minimizing unfair gain.

〈Table 4-10〉 Revision of Relevant Guidelines to Prevent Compensation-Related Speculations (LH, 2012)

Guidelines	Improvement	Details
Detailed Rules on Project Sites	Unification of the Date of Establishing a Moving Plan (October 11, 2012)	• The date of establishing a moving plan for a site (e.g. industrial complex) must come before the public announcement of the project in an attempt to block compensation-related speculations and to ensure fairness for all types of projects.
	Improvement of the Compensation Agreement on the Removal of Obstructive Structures (June 27, 2012)	• If the owner of the obstructive structures remove them, he or she must do so in his or her own expense through a legal procedure under the Waste Management Act (to prevent thoughtless removal or sale).
Guidelines on the Management of Project Zones	Standardization of Regulations Related to the Prevention of Compensation-Related Speculations (December 7, 2012)	• Residents who report speculation cases are rewarded. A system of "honorary surveillance agents" and surveillance cameras are required. • It is necessary to come up with criteria for the calculation of the remuneration for the staff managing project zones and to standardize the recruitment of such a staff.

3.2.2. Efforts That Have Been Made to Ensure Optimum Compensation (e.g. Management of Publicly Announced Land Prices)

Efforts have been made to manage land prices at the beginning of projects, for example, at the stage of announcing a public project. In the case of the zones where the publicly announced land prices have increased unfairly and excessively, the issue has been dealt with in relation to conducting projects, by, for example, adjusting project priorities. Meanwhile, project management in each designated project zone has been strengthened. For instance, within a month after the public announcement of land prices every year, an analysis must be conducted to see how the changed public land price of a given project zone could influence the project itself.

By adopting a system of receiving implementers' feedback in 2008, land prices have been managed systematically at each phase of calculating publicly announced land prices. Moreover, compensation amounts are reasonably estimated to check if the project has business value and such estimated amounts are reflected at the time of calculating actual compensation in order to minimize actual changes in compensation amounts.

〈Table 4-11〉 Difference between Estimated and Assessed Compensation Amounts (LH, a zone where compensation started in 2009)

Average Unit Price (thousand won/m^2)	Zone —	Zone —	Zone —	Zone —	Zone —	Zone —	Zone —	Zone —	Zone —	Average
Estimated Project Cost (A)	1,050	40	256	250	311	334	26	242	494	
Assessed Amount (B)	1,192	50	235	288	334	288	23	240	613	
B/A	114%	125%	92%	115%	107%	86%	89%	99%	124%	106%

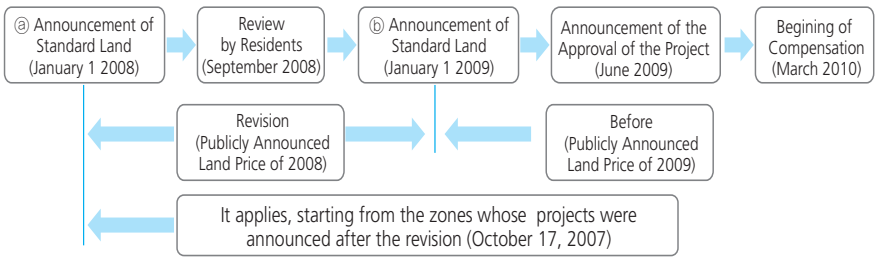
3.2.3. Exclusion of Development Gain

If a land price has been changed since the public announcement of a public project, compensation is calculated based on the land price that was publicly announced before the project announcement date. This is to prevent the landowner from making unfair development gain.

〈Table 4-12〉 Criteria for the Application of Public Land Prices That Are Retroactive to the Moment of Public Announcement

Before the Revision	After the Revision
Such criteria aren't specified by the law. - Guidelines on the assessment of land compensation: The difference with the publicly announce price of standard land is at least 1.3 times. (The difference between the price of the project zone and that of the city / county / district is at least 5 percentage points.)	Such criteria are specified by an enforcement ordinance. ① The area of the project zone is at least 200,000m^2 (excluding projects improving road shapes). ② The difference between the publicly announced land price of the project zone and that of the city / county / district is at least 3 percentage points. ③ The difference between the publicly announced land price of the project zone and that of the city / county / district is at least 30%.
Reason for the Revision: If a land price greatly changes after the announcement of a project, the publicly announced land price is retrospective to the period before such a change. Criteria for such a measure are specified by the law.	

[Figure 4-14] Example of Comparison between the Periods of Applying Publicly Announced Land Prices (before and after the Revision)



〈Table 4-13〉 Estimated Effects of Blocking Development Gain By Means of the Application of Public Land Prices That Are Retroactive to the Period of Project Announcement

(Comparison of the Average Annual Increase Rates of Public Land Prices of Standard Land)

Category	2003	2004	2005	2006	2007	2008	2009	Average
Country (A)	11.14%	19.56%	15.09%	17.81%	12.40%	9.63%	-1.42%	12.03%
Project Zone (B)	16.68%	46.70%	47.20%	24.94%	19.76%	15.99%	6.26%	25.36%
Difference (A-B)	5.54%	27.14%	32.11%	7.13%	7.36%	6.36%	7.68%	13.33%

⇒ If a price is retroactive to a period of a year before, development gain included in a land compensation amount is likely to be reduced by 5%.

Increase (20.23%) of the price of the project zone over the recent three years (2006 to 2008)
– normal increase of land prices (13.28%) x 9 months / 12 months ≒ 5%

By means of the development charge, property developers' development gain is restituted in order to contribute to a land management fund, thus reinvesting in local development.

3.2.4. Optimum Appraisal and Assessment

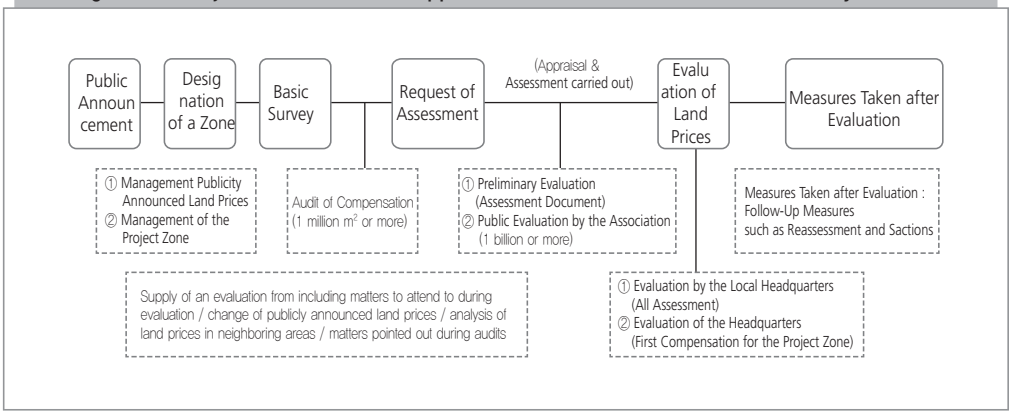
Appraisal and assessment are requested after a regular audit is carried out (to check if the study of the current land conditions was conducted appropriately) and necessary corrective measures are taken.

When signing a contract requesting appraisal and assessment, the contract must include a clause that requires the respect of the assessment form which includes matters to consider during an assessment.

An appraisal and assessment result must be reviewed by the public judging committee of Korea Association of Property Appraisers before the result is submitted. Meanwhile, if the assessed amount exceeds the estimated project cost by 5% or more, the acceptance of the assessment result is postponed and the business value of the project is reviewed again.

If an assessment body that is recommended by landowners carries out an assessment in an untrustworthy manner, the corporation to which the assessment body belongs is held responsible and the entire corporation is prevented from participating in the project. This is to encourage a trustworthy assessment.

[Figure 4-15] Systematic Review of Appraisal / Assessment Results at Each Project Phase



A real estate statistical information system, whose satellite map encompasses the estimated cost of a project, assessed actual market prices, change rate of land prices and publicly announced land prices, is used to ensure the more efficient estimation of the project cost and review of appraisal / assessment.

〈Table 4-14〉 Establishment of Criteria for the Reasonable Selection and Evaluation of an Assessment Body (Requests Made by LH in 2012)

Enforcement Ordinance and Rules of the Land Compensation Act	Guidelines on the Recommendation of an Assessment Body by a Mayor / Province Governor
- In the case of an unfair assessment, the project implementer may ask a third institution to review the case. - If an assessment body is recommended by a mayor / province governor, a pool of assessment bodies is formed by considering their capability and the process of recommendation is open to the public.	- After a pool of assessment bodies is formed, lots are drawn to select a body. (LH's request has been accepted.) - Criteria for the bodies that are excluded from recommendation should be clarified. In addition, it is also necessary to specify to which degree certain assessment bodies will benefit from favor.
Criteria for the Appraisal Assessment (set by the Ministry of Land, Infrastructure and Transport)	Stricter Review of Land Prices and Onsite Training
- Public land prices that are retroactive to the project announcement date are applied in order to exclude development gain. In addition, the criteria for the application of the land price increase rate of the neighboring area are specified by the law. - Active feedback is required to discuss the criteria for an objective assessment (e.g. selection of desirable examples of compensation and method of correction considering other factors)	- Land prices that are related to the assessment of compensation need to be reviewed more thoroughly. - Onsite training should be strengthened to build the capacity of the persons in charge of compensation. - Assessment bodies that unfairly assess compensation should be penalized more severely, thus encouraging optimum compensation.

3.2.5. Response to Civil Complaints about Compensation

In the context of the emphasis on the seamless implementation of major policy projects and significant increase of complaints about compensation, the staff does not have a sufficient understanding of prime costs compared to the past. In addition, appraisal and assessment are likely to involve many subjective elements. Therefore, the staff in charge of compensation needs to have stronger will and ability to carry out their work.

Under these circumstances, the employees are trained before starting their compensation work so that they can better understand prime costs. In addition, a "performance management indicator" has been adopted to encourage them to ensure optimum compensation.

〈Table 4-15〉 Adoption of a Performance Management Indicator Related to Compensation Work (LH, 2012)

(Indicator Evaluating Employees Working on the Review of Compensation)

Those Who Are Evaluated	Content of the Evaluation
Local Headquarters / Project Team	- The employee's experience of working on the estimation of optimum compensation (1 point) - His or her efforts to manage assessment bodies (0.5 points) - His or her efforts to manage the public land price of a given project zone (0.5 points)

In order to deal with complaints about compensation, the feedback of diverse expert groups (e.g. Advisory Committee on Compensation, Group of Research on Expropriation and Compensation and Anti-Corruption & Civil Rights Commission of Korea) has been gathered. Meanwhile, unfair assessments and compensation errors have been prevented by strengthening onsite support: response to questions about compensation, management of a compensation task force, revision of the practical manual on compensation and standardization of compensation work.

〈Table 4-16〉 Prevention of Compensation-Related Errors by Strengthening Onsite Support (LH, 2012)

Category	Content
Compensation Issues / Answers to Questions	- In an attempt to realize active onsite support, diverse compensation issues (e.g. cost of moving living spaces, retention of buildings, pro bono return of national / public land and those who can receive compensation for commercial activities) were reviewed. In addition, the answers of the Ministry of Land, Infrastructure and Transport to diverse questions were shared with the staff.
Management of a Compensation Task Force	- Current issues were shared and discussed and practical training was strengthened particularly for large project zones that had great ripple effects after the announcement of a compensation plan. institutional support / discussion of current issues / training on the review of land prices / training on the prevention of corruption
Revision of the Handbook on Compensation Work	- A synthesis was made to review the laws that have been revised, questions that have been answered and judicial precedents that have been generated after the launch of Korea Land & Housing Corporation (combination of Land Corporation and Housing Corporation). - Knowhow related to compensation work was shared and the work procedure was unified throughout the company.

〈Table 4-16〉 Prevention of Compensation-Related Errors by Strengthening Onsite Support (LH, 2012)

Category	Content
Support for the Standardization of Compensation Work	- The staff was informed of how to take a measure that replaces administrative execution by proxy, in order to carry out a project on time. - The staff was given a standard compensation plan which can be easily understood by local residents. - A checklist was made to prevent errors in the payment of a farmland preservation charge. - Suggestions for the improvement of onsite computer system were reviewed and reflected in real time to enhance work efficiency.

Such measures have contributed to preventing or minimizing civil complaints and to ensuring efficient compensation work.

The following table summarizes the above-mentioned problems of compensation and improvements that have been made to tackle them:

〈Table 4-17〉 Problems Related to Compensation and Improvements That Have Been Made

Problem	Improvements	Implications
• Compensation-related speculation	• Establishment of a plan to prevent compensation-related speculation	• Strict management of designated project zones
• High compensation amounts - increase of the unit prices of compensation - increase of overall compensation	• High compensation amounts - exclusion of development gain (retroactive to the period before such gain is made) - optimum estimation of compensation - link between publicly announced land prices and projects	• Strict management of publicly announced land prices
• Development gain made by property developers	• Restitution of unfair development gain - reinvestment in local development	• Consideration of how to restitute unfairly made development gain
• High assessed amounts - consideration of other factors - appraisal and assessment body recommended by landowners	• High appraisal and assessment amounts - strengthening of the review of assessment results - exclusion of untrustworthy assessment bodies	• Establishment of relevant guidelines

〈Table 4-17〉 Problems Related to Compensation and Improvements That Have Been Made

Problem	Improvements	Implications
• Civil complaints about compensation	• Efforts to resolve complaints about compensation early on - improvement of the staff's understanding - gathering of opinion from expert groups - establishment of a system of responding to compensation issues	• Efforts to minimize complaints about compensation

4. Conclusion

Since its enactment of the Land Expropriation Act in 1962, Korea has made a variety of improvements. The purpose of such improvements has been to solve diverse problems concerning the party in charge of compensation and the one who are eligible for compensation and to ensure fair and optimum compensation, in the process of conducting public development projects (e.g. new town projects dealing with the Seoul Capital Area's housing issues).

Considering Korea's experience of making compensation and process of improving its compensation system, the following implications and policy proposals could contribute to the compensation that will be necessary for the implementation of the public housing construction program that is currently promoted by the Vietnamese government:

4.1. Strict Management of a Designated Project Zone

From the moment of designating a project zone, a plan to prevent compensation-related speculation needs to be established and implemented. It is also important to ensure optimum compensation and prevent or minimize civil complaints about compensation by strictly managing the designated zone.

4.2. Management of Publicly Announced Land Prices and Site Costs

Compensation is greatly influenced by the publicly announced land price that is available at the time of compensation. It is thus necessary to regularly manage

publicly announced land prices. In particular, it is important to manage site costs at an optimum level in an attempt to create a virtuous cycle for projects.

4.3. Restitution of Development Gain

It is necessary to come up with a legal and institutional means to restitute unfair development gain that has been made by landowners and property developers from a certain project since the announcement of the development project plan.

4.4. Realization of Optimum Compensation

In addition to managing the project cost, it is important to protect citizens' property rights by ensuring optimum compensation under the relevant laws. When it comes to calculating a compensation amount, it is necessary to understand that the amount must be neither too high nor too low.

When calculating compensation, it is necessary to reflect the feedback of the person who is eligible for compensation and that of the project implementer. It is also necessary to systematically review an assessed amount at each project phase and to strictly manage assessment bodies.

Moreover, it is imperative to minimize complaints about compensation by objectively calculating compensation. For example, a compensation amount can be calculated objectively by having a third assessment body carry out an assessment so that actual market prices can be reflected. Such a measure could contribute to the realization of optimum compensation.

4.5. Efforts to Deal with Complaints about Compensation Early On

If a complaint about compensation arises, it is important to promptly detect its cause and to take an appropriate measure. In an attempt to deal with major issues related to complaints, it is necessary to actively gather feedback from expert groups specializing in compensation in order to deal with complaints early on.

It is also necessary to establish a system of responding to issues on complaints and to consider how to strengthen onsite support.

4.6. Rearrangement of the Compensation System

As the realization of optimum compensation is a prerequisite for the seamless implementation of a project, it is necessary to rearrange the existing system by, for

example, coming up with reasonable and standard criteria for compensation.

In particular, if the parties fail to reach consensus on compensation following consultation, the payment of the compensation amount is delayed. Consequently, the project is delayed and the project cost increases. Furthermore, in the worst case scenario, the project may be cancelled. Thus, if relevant conditions are met, it would be necessary to consider compulsory acquisition.

As part of a medium and long-term plan, it is necessary to establish and utilize a real estate statistical information system which encompasses actual market prices, the change rate of land prices and publicly announced land prices. Such a system would be very useful for the realization of optimum compensation.

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Chapter 5

Support to the Revision of the Law on Environmental Protection of Vietnam

Support to the Revision of the Law on Environmental Protection of Vietnam

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Summary

Vietnam's Law on Environmental Protection (LEP) was enacted in 2005 and being implemented since July 2006. LEP, consisting of 15 chapters and 136 articles, is an integrated environmental law dealing with various environmental matters of air and water pollution, solid waste management, nature conservation, etc. Since its implementation, the LEP contributed significantly to the Vietnam's environmental protection, meeting the demands of socio-economic development of Vietnam.

However, according to the Book of Sharing Korean Development Experiences with Vietnam, Social Sciences Publishing House in Vietnam, 2012, the LEP 2005 was confronted by questions of consistency and appropriateness in provisions and articles, and there are overlaps and discrepancies between LEP and other related legal documents as well as overlaps of environmental management responsibilities among governmental agencies during the course of enforcement.

In addition, according to the VEA, there have been number of new emerging issues such as a well balance among social, economic and environmental benefits, climate change, green growth, and so on. The revision of the 2005 LEP has been included in the Law Making program of the National Assembly (tenure XIII). A revised LEP should be submitted to the National Assembly in 2013, promulgated in 2014. Other sub-law documents are scheduled to be enacted and promulgated in 2015.

The VEA is intending to incorporate new environmental policies and environmental management systems which are currently in practice in Korea to revised LEP. Sharing of Korea's environmental knowledge and experience will contribute to best applicable and implementable LEP for betterment of Vietnam's environmental quality as a whole.

It is useful for Vietnamese to review the analysis of economic implications of the legal order around environmental regulations in Korea. Though the Constitution of Korea adopted the liberalism in 1962, economy in 1960s and 1970s wore on the character of deep intervention into market by the government with assistance of legal statutes. Afterwards 1980s, while Korea aimed at the market-oriented economy, the legal order which contained a number of administrative directions and regulations could not advance toward the paradigm of liberalism and otherwise incepted the principle of regulation in the wave of liberalism.

Our research has the purpose of following historical experience with maintaining of order through the environmental laws after establishing government in Korea with that of Vietnam, comparing several factors which menace yet maintenance of legal order in Korea, and then predicting the phase and course of the legal order in Vietnam. Our research has also the purpose of comparing an institutional pathway to establishing the 'rule of law' protecting the property rights of people, enhancing the transactions in market, and contributing the sustainable economic development in Vietnam which has taken resemble the Korean model in some respects.

Environmental law is a complex and interlocking body of statutes, common law, treaties, conventions, regulations and policies to materialize the people's right to a healthy and pleasant environment and to protect the natural environment in accordance with the Article 35 of the Constitutional Law of the Republic of Korea.

Analyzing some experiences of Korean environmental laws, there are such negative lessons from Korean experiences as legal pluralism, diversification of management system, enactment of special act and its frequent revision, excessive delegated method for subsidiary legislation, lack of internationality and insufficient role sharing and allocation of authority between regional environmental office and local government.

Nevertheless, there are also such positive lessons from Korean experiences as the strict command & control system and the specific environmental standards. In respect of command & control system under Korean environmental law system, there are emission-permit criteria (Air Pollution Control Act §16), discharging fee added (Act for Improvement of Atmospheric Environment in Metropolitan §17), emission-permit criteria (Water Quality Control Act §32), discharging-water quality criteria (Sewerage

Act §7), criteria for control & prevention (Land Environment Conservation Act §16), criteria for management of waste disposal facilities (Waste Management Act §31), toxicants criteria (Hazardous Chemical Materials Management Act §2. Sub.3).

In respect of environmental standards, there are minimum environmental standards (Framework for Environmental Policy Act §3. Sub.8), establishing environmental standards (Decree of the Framework for Environmental Policy Act §2), specific standards of consultation for EIA and SEA (Environmental Impact Assessment & Strategic Environmental Assessment Act §2.Sub.5), as well as several controlling statutes of air pollution control, water quality control, sewerage, land environment conservation, waste management and hazardous chemical materials management.

Given the legislative visions of VEA and the experiences of Korean environmental laws, some recommendations after the new bill of 2014 are necessary in the fields of re-enforcement of command & control system, specification of environmental standards and connecting the LEP and the environmental penal code.

Firstly, the relevant laws including protection of the marine environment and islands, environmental protection for river water, environmental protection for other water sources, environmental protection for soil, environmental protection for air and waste management should establish the re-enforcement of command and control system.

Secondly, specification of environmental standards and technical requirements about the content of technical regulation on environment, requirements for technical regulation on surrounding environment quality, requirements for technical regulation on waste, environmental standards, and types of environmental standards should be implemented through the decree or the circular following the new LEP of 2014.

Thirdly, the advance of criminal and civil reliefs against environmental violations should be established by way of connecting the LEP and the environmental penal code, clarification of constituting an environmental crime, enlargement of monetary penalty and introduction of the civil penalty.

1. Background

Environment protection have become a great concern of the government, the party and other local authorities in recent years. According to the Discussion Paper of 2014 by the local partner, although some achievement have been made in terms of environment protection, the situation has become complicated requiring urgent

actions such as increasing environmental pollution; some incidents still happening; inapporirate expolitation of natural resources; illigal logging and wild life trading; invasion of exotic species. Such problems are ubiquitous.

Vietnam's the Law on Environmental Protection (LEP) which had revised the old LEP of 1993 was enacted in 2005 and being implemented since July 2006. The current LEP, consisting of 15 chapters and 136 articles, is an integrated environmental law dealing with various environmental matters of air and water pollution, solid waste management, nature conservation, etc. Since its implementation, the LEP contributed significantly to the Vietnam's environmental protection, meeting the demands of socio-economic development of Vietnam. The structure of the current LEP of 2005 is hereafter.

The Law on Environmental Protection (LEP) in Vietnam

Structure of the LEP of 2005, Vietnam
Ch.1 General Provisions
Ch.2 Environmental Standards
Ch.3 Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment
Ch.4 Conservation and Rational Use of Natural Resources
Ch.5 Environmental Protection in Production, Business and Service Activities
Ch.6 Environmental Protection in Urban Centers and Residential Areas
Ch.7 Protection of Marine, River and Other Water Source Environment
Ch.8 Waste Management
Ch.9 Prevention of, Response to Environmental Incidents, Remedy of Environmental Pollution and Rehabilitation of Environment
Ch.10 Environment Monitoring and Information
Ch.11 Resource for Environmental Protection
Ch.12 International Cooperation in Environmental Protection
Ch.13 Responsibilities of State Management Agencies, Vietnam Fatherland Front and Its Member Organizations for Environmental Protection
Ch.14 Inspection, Handling of Violations, Settlement of Complaints and Denunciations Related to Environment, and Compensation for Environmental Damage
Ch.15 Implementation Provisions

According to the Discussion Paper of 2014 by the local partner, enforcement and execuation of the LEP is still ineffective showing some weakness. Infringing of the law seems increasing and becoming sophiticated, particularly many cases related to industries, import-export sector, craft villages, hazadours waste, food hygene, biodiversity and urban environment. Envrionmental crime have increasingly intricate and crafty to cope with law enforcing agencies.

The legal system for regulation including the environmental realm is generally reflective of the economic development stage. The environmental legal system in each country has evolved from the era of clean-up law into the era of environmental law with the influence of economic situation. The Vietnamese environmental legal system has been also undergoing such phases.

[Figure 5-1] Evolution of Environmental Law

Where is the Vietnam Legal System?

However, according to the Book of Sharing Korean Development Experiences with Vietnam, Social Sciences Publishing House in Vietnam, 2012, the LEP of 2005 was confronted by questions of consistency and appropriateness in provisions and articles, and there are overlaps and discrepancies between LEP and other related legal documents as well as overlaps of environmental management responsibilities among governmental agencies during the course of enforcement.

Before evaluating the effectiveness of the actual implementation of Vietnamese environmental law, we have to take much considerations into several aspects such as issuing detailed regulations and guidelines for implementation and other documents by relevant authorities to direct the implementation of environmental legislation, assessment of legal information dissemination and education work in the field of environmental protection, and assessing the level of law compliance by individual and institutions in the field of environmental protection.

The level of environmental law compliance in Vietnam depends especially upon the frequency of environmental law violations, the behaviors of violators and the popularity of violations in the courses of production, importation, exploitation, wildlife use and waste permit, and the causes of violations deriving from industrialization, linear sanctions, non-consistency or weak punishment.

2. Challenge & Response in Vietnam

2.1. Air Pollution in Hanoi

The air in Hanoi and Ho Chi Minh City contains dangerous levels of benzene and sulfur dioxide, experts say. Levels of one of the most dangerous pollutants, microscopic dust known as PM 10, are moderate compared with other developing Asian cities, but could worsen if Vietnam chooses to build coal-fired power plants to meet the demand for electricity, which is growing at double-digit annual rates.

Pham Duy Hien, an expert on pollution, says Hanoi and Ho Chi Minh City have PM 10 levels of about 80 micrograms per cubic meter, double the level in Bangkok and well above the guideline of 20 set by the World Health Organization. Beijing and New Delhi have dirtier air, with levels of 142 and 115, respectively. At the heart of Vietnam's air pollution problem is dirty fuel, according to Hoang Hai Van, managing editor of the newspaper Thanh Nien, which recently published a series of groundbreaking articles on the topic.

The Vietnamese companies authorized to import fuel are resisting buying higher-quality fuel because it is more expensive. They don't want to import fuel of better quality because they don't want to see a fall in profits. The government is divided on the issue. The Ministry of Trade saw the fuel import business as a cash cow, while the Vehicle Registration and Inspection Agency said poor-quality fuel was negating any benefits of higher emissions standards.

The irony for Vietnam was that for several years, it had pumped higher-quality "sweet" crude oil offshore that could produce clean-burning fuel if refined properly, according to Hoang Viet Cuong, a technical consultant and a former employee of Petrolimex, the Vietnamese national oil company. But with no refineries of its own, Vietnam must send the crude abroad. Vietnamese have very high-quality sweet crude, but then they imported low-quality refined oil.

2.2. Lax Enforcement of Law

Another environmental problem in Vietnam is lax enforcement. Vehicle inspectors have a reputation for accepting bribes, vehicle owners and drivers say. The going rate for a passing grade is around 200,000 dong, or about $12, they say. At an inspection station in the Phap Van neighborhood of Hanoi, Do Van Hoa, the head of the station, says about 30 percent of vehicles do not even pass the existing emissions tests, which are well below Euro II standards and do not apply to motorcycles. But Mr. Hoa denies accepting bribes.

"It is not the case that we pass the vehicles if someone offers us money," Mr. Hoa said. "We have cameras," he added, pointing to the four corners of an inspection station reeking of car emissions. Euro II regulations apply only to new vehicles, said Mr. Thanh, of the Vehicle Registration and Inspection Agency, and there is no plan to subject existing cars and motorcycles to more rigorous inspections. "You'll have to be patient and wait until they die out," he said.

But there are also signs of rising awareness about air quality, environmentalists say, and they are encouraged that in a country where information is still tightly controlled, the authorities allowed publication of critical articles like the series in Mr. Van's newspaper. "People were recently outraged after 17 local brands of soy sauce were found to contain a carcinogenic chemical," he wrote in an editorial. "They should, however, realize that fuels with high pollutant levels are worse than soy sauce since, no matter who uses the fuels, everyone breathes the same air."

2.3. Water Pollution in Hanoi

Arsenic-laden sediment that washed down from the Himalayas eons ago underlies vast stretches of Asia, from Pakistan to China. When it gets into underground aquifers, as has happened in Bangladesh, it can contaminate public water supplies and cause illness and death. Now researchers say arsenic is leaching into a major drinking-water aquifer that serves Hanoi, Vietnam. The culprit, they say, is pumping from private wells, which is draining that aquifer and drawing water from others that contain arsenic. But the poison is moving more slowly than scientists had feared, and the city still has years or even decades to take protective measures.

The study, by Vietnamese scientists in collaboration with researchers from Columbia University's Lamont-Doherty Earth Observatory and elsewhere, was "the first to show that a previously clean aquifer has been contaminated," said the lead author, Alexander van Geen, a geochemist at Columbia. It was published by the journal Nature. Whether arsenic leaches into underground water depends on the balance of iron and decaying plant material in the aquifer. The chemical process is only partly understood, but iron seems to bind to the arsenic, while carbon in the decaying plants slowly dissolves the iron, and the released arsenic flows into the plume.

Those elements flow through the sediments much more slowly than water does. The team's 31 research wells in areas of Hanoi near the Red River showed that aggressive pumping of a safe aquifer over the last 20 years had pulled water more than a mile in from a contaminated one. But over the same period, the plume of arsenic contamination — indicated by a streak of gray sand through the safer rust-colored sediments — had moved less than 400 feet. Arsenic in some areas is 10 to

50 times higher than levels considered safe, Vietnamese officials said. The city plans to install a filter plant, but many Hanoi residents rely on the private wells that are making matters worse.

2.4. Constraints & Disadvantages

According to a report of 2010 by the Ministry of Justice (MOJ), Vietnam, there are some constraints & disadvantages on implementing laws governing environmental protection in the matters of technical norms and national standards, environmental impact assessment, definition of powers for statement management, handling of violations by the Penal Code, provisions of dispute resolution, environment monitoring, regarding fees, deposits and funds management, organizational structure and staffing, funding and financing mechanisms, and equipment.

2.5. Strategy for the Legal Effectiveness

Ministry of Justice (MOJ) in Vietnam, 2010, recommended four successive key factors for strengthening the effectiveness of environmentally legal implementation work. Vietnam government, firstly, should review and improve the system of environmental legislation including development of normative legal documents, finalization of regulations on environmental standards, improvement of regulations on environmental impact assessment, improvement of regulations on waste management, provisions on publicizing information, regulations on environmental dialogue, and regulations on environmental protection fee; secondly, should strength the inspection and handling of violations; thirdly, should improve conditions to ensure the monitoring of law enforcement; and fourthly, should enhance the effectiveness of state management in specific aspects of pollution control and waste management, rehabilitating and improving the quality of environment, preserving biodiversity, communications and raising awareness, technology and science, international co-operation, and socializing environment protection work.

Given such successive key factors, the Vietnam government already established new goals to achieve before embarking on the making the new Law on Environmental Protection (LEP) bill of 2014, such as developing the revised version of the LEP which meets the requirements to strengthen existing legal provisions to supplement emerging environmental issues and to introduce new environmental policies and management tools applicable to Vietnamese environment; constructing integrated environmental legal system with revised LEP and relevant sub-laws of Socialist Republic of Vietnam; facilitating environmental management among government agencies and provincial environmental authorities in Vietnam; strengthening capabilities of environmental law enforcement by way of some workshops, seminars and training opportunities with foreign countries including Korea.

3. Framework of The LEP 2014 in Vietnam

3.1. Structure of the New Bill 2014

The new bill of LEP 2014 in Vietnam is composed of 19 chapters from general provisions to implementation provisions. Environmental planning (ch.2), climate change adaptation (ch.3), environmental protection of environmental components (media: river, land & air) (ch.5), daily life (ch.7), environmental technical regulations (ch.10), social organizations, socio-occupational organizations, residential community (ch.14), and testing (ch.17) are the concept newly added under the new LEP. The full chapters of the new LEP are as followings:

The New Bill of LEP 2014 in Vietnam

Ch.1 General Provisions
Ch.2 Environmental Planning, SEA and EIA
Ch.3 Environmental Protection in the Exploitation of Natural Resources and Climate Change Adaptation
Ch.4 Environmental Protection of Marine and Islands
Ch.5 Environmental Protection of Environmental Components (Media: River, Land & Air)
Ch.6 Environmental Protection in the Manufacturing, Trade and Services
Ch.7 Environmental Protection in Daily Life Activities
Ch.8 Waste Management
Ch.9 Pollution Treatment, Environmental Rehabilitation and Improvement
Ch.10 Environmental Technical Regulations and Environmental Standards
Ch.11 Environmental Monitoring
Ch.12 Environmental Information and Report
Ch.13 Responsibility of State Management Bodies in Environmental Protection
Ch.14 Rights & Obligations of Vietnamese Fatherland Front, Social Organizations, Socio - occupational Organizations, Residential Community towards Environmental Protection
Ch.15 Environmental Protection Resources
Ch.16 International Cooperation on Environmental Protection
Ch.17 Inspection, Testing & Handling of Violations
Ch.18 Compensation for Environmental Damage
Ch.19 Implementation Provisions

3.2. Principles of Environmental Protection

As a leading philosophy, principles of environmental protection of the new LEP in Vietnam are as followings(§4 para 1 to 6): (1) environmental protection is responsibility and obligation of all organizations and individuals (2) environmental protection must be in harmony with economic development and social security,

biodiversity conservation and sustainable development, adaptation to climate change, protection of the national environment must be connected with protection of the regional and global environment (3) environmental protection must be give the priority and be in connection with conditions of geography, economics and society (4) environmental protection activities must be carried out continuously and give priorities to preventing environmental pollution, environmental incidents and environmental degradation (5) organizations, individuals using environmental components, enjoying benefits from environment have obligation to contribute finance to environmental protection; organizations and individuals cause pollution, incidents and degradation to environment must be responsible for remedy, compensation of damages and other responsibilities according to regulations of law (6) the State shall manage environmental protection in a uniform manner.

3.3. State Policies on Environmental Protection

The environmental law expresses the environmental policy. State policies on environmental protection in the new LEP are as followings(§5 para 1 to 10): (1) to encourage and facilitate all organizations and individuals to participate in environmental protection activities; check, supervise implementation of environmental protection activities (2) to step up propaganda, education and mobilization in combination with application of administrative, economic and other measures to build discipline and environmental culture (3) to preserve biodiversity; exploit and use natural resources in an effective manner; develop clean energy sources and renewable energy; enhance the recycle, reusing and reduction of wastes (4) to solve serious and repugnant environmental pollution issues proactively; pay attention to environmental pollution at population communities (5) to diversify capital investment sources for environmental protection; encourage the investment mechanism toward public-private investment forms; arrange separate funds for environmental activities in the annual state budge with the rate increasing together with general growth; expenditure sources for environmental protection are managed uniformly and priorities are given to main fields in environmental protection (6) to grant land and tax preferences for environmental protection activities, business production premises and environment-friendly products; Encourage organizations, individuals to consume environment-friendly products (7) to increase human resource training on environmental protection (8) to develop environmental technology science; give priority to transfer and application of environment-friendly advanced technology (9) to expand and enhance international cooperation on environmental protection; fully realize international commitments to environmental protection, and (10) to combine environmental protection activities, natural resources protection with active adaption to climate changes; ensure the environmental security.

3.4. Encourage of Activities

Some activities might be encouraged in the new LEP for the Environmental protection (§6 para 1 to 12). Such activities include (1) communicating, educating and mobilizing of all the people to participate in environmental protection; keeping environmental sanitation and protecting natural landscapes and biodiversity (2) protecting and economical using of natural resources (3) reducing, collecting, recycling and reuse of wastes (4) developing and using of clean and renewable energies; reducing of ozone-layer-depleting greenhouse gas; activities to adapt to climate changes (5) registration of environment–friendly establishments and products (6) scientific research, transfer and application of technologies for treating and recycling wastes; environment-friendly technologies (7) investing in the construction of establishments to manufacture environmental protection equipment and tools; produce and trade in environment-friendly products; and provide environmental protection services; undertake environmental audits (8) conservation and developing indigenous gene pools; crossbreeding and import of gene sources of economic value and environmental benefit (9) building of environment-friendly villages, hamlets, agencies, production, business and service establishments (10) developing of self-management activities and environmental sanitation services in population communities (11) formatting of environmental sanitation-keeping lifestyle and habits, abolition of environment-unfriendly customs and practices (12) contributing knowledge, resources and finance to environmental protection activities.

3.5. Prohibition of Acts

The new LEP prohibits totally several acts against the environment (§7 para 1 to 17) including (1) destroying and illegally exploiting forests or other natural resources (2) exploiting and catching natural living resources by destructive means, tools and methods, during seasons and in quantities banned by law (3) exploiting, trading, consuming and using rare and precious wild plants and animals on the banned lists issued by competent state agencies (4) burying toxic substances, radioactive substances, wastes and other hazardous substances outside prescribed places and contrary to technical processes for environmental protection (5) discharging wastes not yet treated up to environmental standards; toxic, radioactive and other hazardous substances into the land or water sources (6) emitting smoke, dust or gases with toxic substances or odor into the air; dispensing radiation, radioactivity and ionized substances at levels in excess of permitted environmental standards (7) causing noise and vibration in excess of permitted standards (8) importing machinery, equipment and means that do no meet environmental requirements (9) importing and transiting wastes from abroad into the Socialist Republic of Vietnam in any form (10) importing and transiting animals and plants not yet quarantined; microorganisms outside permitted lists (11) producing and trading

in products harmful to human health, living organisms and ecosystems; producing and using construction raw materials and materials containing toxic elements in excess of permitted standards (12) encroaching upon natural heritages and nature conservation zones (13) damaging works, equipment and facilities in service of environmental protection activities (14) carrying out illegal activities or living in restricted zones where human health and life is exposed to extreme environmental danger, as identified by competent state agencies (15) covering up acts of destroying the environment, obstructing environmental protection activities, distorting information resulting in bad consequences on the environment (16) abusing power, rights in excess of authorized rights or lack of responsibilities of authorized persons to perform regulations on environmental protection in wrong way, and (17) other prohibited acts related to environmental protection as provided for by law. Such prohibitions have the function of environmental regulation.

4. The Impact of Economy on the Environmental Law

4.1. The Rule of Law and Economic Order

As is generally known, the economic system of Vietnam is based on the socialism, which is different from the situation of Korea, wherein economic system has been based on the capitalism, whereas the economic system for a time was based on the socialism from 1948 to 1953. Nowadays Vietnam has achieved a great deal of economic development. So, in the future, Vietnam will undergo the transit from the socialism into the capitalism or the state-managed capitalism like China. In that case, the legal system including environmental laws might be also changed according to the economic system. The experience of Korea relating to the law and the economic development will be helpful to innovate the legal system toward economic prosperity for the future in Vietnam.

As the supreme principle applying to the whole legal order according to the Constitution, the rule of law in Korea established the so-called market-oriented social economic order which adopted the liberty and ingenuity in economy as the first doctrine and then allowed intervention and adjustment to market order by the government for equity of resources-allocation as the second doctrine.

If the economic modernization will be achieved, as the politics prefers sustainable growth, so demand a risk management from the government and enlarge intervention and adjustment by the government to establish a production-state or welfare-state; nevertheless, the politics is confronted with the limit of public choice owing to collective choice without obvious common goals and then experienced the

failure of government.

New institutional economics insists that the law out of several institutions plays an important role in economic development and promotion of growth, and that the state should not intervene incessantly in the economy but maintain sustainably the economic trend.

According to the general theory of the law and economics[8], some constitutional economists who claim to stand for 'good institutions' advocate the possibility of constitutional revolution such as reformation of parliamentary institution and building up good rules, meanwhile, under the public good which can be set up objectively, we should overcome the free riding problems and escape from the risk of radicalism.

When Korea as well Vietnam will build up the good institutions, we should institutionalize the due process of the law such as prior notice, transparency, prohibition of over-infringement and predictability through positive interpretation of the constitution in the stage of founding the substantial policies and administering them.

Intervention by the government abiding by the social constitutionalism might give birth to increase of administrative plans, permissions, approvals, and initial expenses of enterprises ; and then might bring about making a mistake in the realm of tax policy, open market operation and price control.[9] Finally such intervention might give rise to making, an error such as a lawbreaker would obtain a profit by offense without suitable penalty according to his liabilities.

4.2. Legal Order at the Turning Point in Economic System

Korea has acquired a lot of experience between the so-called Washington consensus and the so-called Beijing consensus. As the recent foreign exchange war between the USA and China is full of suggestions, besides the worldwide consensus believing a perfect and fair market under the neo-liberalism is quaking, the states and governments have trouble to control the overwhelming power of globalized capital and market.

I think that Vietnamese in front of the new environmental code should observe the Constitutional Principles relating to the execution of environmental laws. At the

8) Chun Jaekyoung, 『*Law and Economic Development in Korea*』 (Korea Legislation Research Institute: 2010), §20

9) *Ibid*., §22

turning point in economic system, the current Constitution of 1987 in Korea provides several legal orders comprised of fundamental principles such as people's sovereignty, liberal democracy and rule of law ; and also provides fundamental values such as nation wealth concurring with peace and human dignity encompassed with right to enjoy happiness, equal protection, property rights, and right to live humanly. Such principles have influenced the execution of environmental laws in Korea as well as Vietnam.

According to the Constitutional theory of regulation innovation and paradigm shift, it is necessary that legal order itself should be changed instead of changing program under the old legal order. Because constitutional economists emphasis minimal regulations, consistency of policies and balanced finance according to the EU model for the purpose of transforming the present trans-boundary economic consolidations into the future legal systems.

Comparing with the experience in Korea, institutional improvement to overcome the time lag between policy and law in Vietnam would not take place spontaneously unlike the social evolution theory but should be purposely pursued by evaluating serenely imperialism and colonial heritage, and then conquering authoritarianism and ideological conflicts. Vietnam had the experience of colonization and war as Korea until the recent era, so there would be some hindrance toward the overcome of past-side effects.

Vietnam likewise Korea to which the failure of government has been accumulated resulting from the controlled economic order and the cozy relationship between politics and business should accept sincerely the small government which the neoliberal economists insist, suppress financial expansion, aim at revolution of banking conditioned by stable monetarism, and advance the green economy of job under the so-called green growth policy.

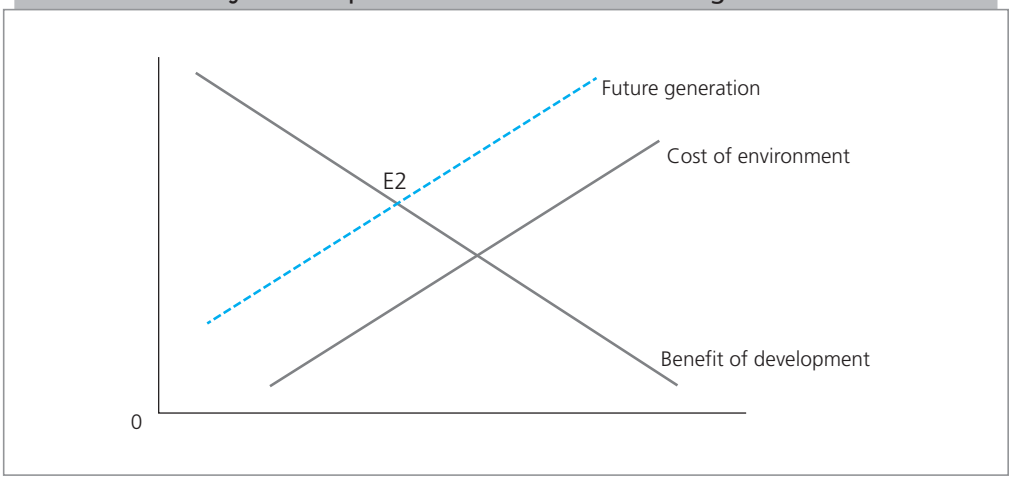
Narrowing the gap between the rich and poor in Vietnam is getting more and more important likewise China and Korea. In Vietnam, as the portion of market economy will be enlarged, so the gap between th rich and poor will also arise. Though it is generally recognized that the market prefers to the efficiency which the economics follows up, whereas the government prefers to the equity which the jurisprudence follows up, such efficiency and equity should be harmonized each other beyond the veil of ignorance like the theory of John Rawls in the mixed economic system.

The harmonization of efficiency and equity I economy is going to request the government regulations. According to a doctrine of the law and economics, however, the economic undertones of the legal order implicates that the law should

support economic development and minimize the expenses of social conflicts, therefore the liberalism and regulationism should make a compromise each other to deal effectively with the failure of government, falling short of public goods, unemployment and price, financial expansion, social welfare on the same basis, and regulatory reform, etc.[10)]

Sometimes, the development of environmental laws seems to acquire the regulation under the law, so the legislation of much environmental statutes is apt to come to the failure of government owing to much regulation. Equilibrium of environmental regulation, however, depends upon the intersecting point between the cost of environmental preservation and the benefit of economic development beside the portion of future generation.

[Figure 5-2] Equilibrium of Environmental Regulation



4.3. Trap of Overflowing Foreign Currency

For the purpose of rapid economic development, some developing countries are apt to borrow the foreign currency from abroad. But the excessive dependence upon foreign currency makes the economy vulnerable. Vietnam is likely to be entrapped to the trap of overflowing foreign currency. For much of the past five years, Asia has been feasting on the money that flowed in as investors, leery of low yields in the West, poured into the region. Economists say the Federal Reserve's decision to keep pumping money into the American economy is only a temporary reprieve for Asia — one that could tempt policy makers in the region to put off the structural changes they believe are essential to improve long-term growth prospects across the region.

10) *Ibid*., §29

Deprived of urgency in attracting inflows, many countries spent much of that time doing very little to lower hurdles to investment, cut back on red tape or reduce the dominance of state-owned businesses, analysts have long complained.

Many now fear that the continued flow of cheap cash and signs of renewed vigor in China could prompt still more delays. "As long as money is cheap, there is less pressing need for structural reforms," said Frederic Neumann, co-head of Asian economics at HSBC in Hong Kong. The region can cope with rising indebtedness — another issue that worries many analysts — he said, even if interest rates creep up. "But you can not have slowing productivity growth and rising debt — that's a combination that is not sustainable, and that could come to a head in the next two to three years unless policy makers implement far-reaching structural reforms."

Asia's emerging economies are, on the whole, better positioned than they were during the financial crisis that shook the region in 1997 and 1998. Infrastructure shortfalls, for example, are most pronounced in Indonesia and India, but they are also prominent in Vietnam, the Philippines and Thailand. In many countries, including China, often inefficient state-owned businesses dominate the market and make it difficult for smaller, privately owned companies to operate. Red tape and restrictions on acquiring land or businesses impede foreign investment in many countries. And fuel subsidies have sapped the budgets of countries like India, Thailand and Malaysia.

4.4. New Emerging Issues in Vietnam

In addition, according to the Vietnam Environment Administration (VEA), there have been number of new emerging issues such as a well balance among social, economic and environmental benefits, climate change, green growth, and so on. The revision of the 2005 LEP has been included in the Law Making program of the National Assembly (tenure X III). A revised LEP should be submitted to the National Assembly in 2013, promulgated in 2014. Other sub-law documents are scheduled to be enacted and promulgated in 2015.

The new LEP is expected to be passed by the National Assembly (NA) at the NA session in 2014. According to the Report of 2014 by the local partner, some specialists in Vietnam do believe that, development of a good law is important, and on the other hand, to ensure the laws will be implemented effectively is even more important. In order to implement the new LEP, an action plan for relevant responsibile agencies and authorities from the central to local level is needed. The plan will aim at introducing new contents of the law to state agencies; professional organizations; political and social entities; occupational organizations; stakeholders in private sector and even to the level of grass root such as civilians. Due to a deficiency of the state budget, implementation of the new LEP needs strong support

both technically and financially from international partners.

According to the Discussion Paper of 2014 by the local partner, the capacity building programs might be needed to execute the new legal revision including the short-term capacity building from now to December 2014 to call for support from donors for MONRE/VEA to develop the National Program on capacity strengthening for enforcement of the new LEP after the approval by NA (expectedly in June 2014) and the long-term capacity building to cooperate with international partners for an effective implementation and enforcement of the new LEP is strengthened.

According to the Discussion Report of 2014 by the local partner, activities for capacity development need supports or should be undertaken by Vietnamese government/MONRE for LEP enforcement or enforcement capacity development. Such activities as followings should be in the National Program on strengthening capacity for LEP enforcement, which is expected to be issued in December 2014:

Reviewing the current under-law documents to amend, supplement them according to the new LEP; developing work plans and training material to introduce the new LEP for different audience from the central to local level through media, internet, workshops, seminar etc.); organizing technical trainings for LEP enforcement targeting officials of state agencies and institutions from central to local level; conducting surveys on current status of facilities for law enforcement and develop proposals to mobilize all available resources; developing and proposing cooperation and responsibility demarcation mechanism among relevant agencies/ authorities for LEP enforcement; and then developing a M&E system to monitor LEP enforcement with specific indicators.

For each target group, we should know what capacities are needed for LEP enforcement and what actions should be taken to improve these capacities. The important targeted groups are Ministries/agencies at the central level, local government such as PPC, People Councils, DONREs and others at local level, CSO, research institutes, Research training institutes in central and provincial cities, Mass media, NGOs and Communities/representatives of local areas etc.

According to the Discussion Paper of 2014 by the local partner, activities anticipated from now to December 2014 are the same as followings: identifying needs and tasks for LEP implementation including developing under law documents in consistent with the new LEP in timely manner and developing an implementation plan for the LEP once the law comes into effect; studying and assessing the capacities of different stakeholders (survey, gap analysis, proposing comprehensive measures); studying good practices of other countries and apply in Vietnam (exchange with experts, international organizations); developing a national program on

strengthening capacity for LEP enforcement; organizing workshops and seminars to consult with experts, relevant stakeholders on the detail proposal; collecting comments and opinions of state agencies and local governments; finalizing the proposal and then developing an action plan to carry out the proposal for capacity.

The VEA is intending to incorporate new environmental policies and environmental management systems which are currently in practice in Korea into the revised LEP of Vietnam. Sharing of Korea's environmental knowledge and experience will contribute to best applicable and implementable LEP for betterment of Vietnam's environmental quality as a whole.

5. Feasibility of Experience Sharing

5.1. Purpose of Experience Sharing

Our research has the purpose of following historical experience with maintaining of order through the environmental laws after establishing government in Korea, analyzing several factors which menace yet maintenance of legal order, and then predicting the phase and course of the legal order. Our research has also the purpose of finding out an institutional pathway to establishing the 'rule of law' protecting the property rights of people, enhancing the transactions in market, and contributing the sustainable economic development in Vietnam.

5.2. Environmental Laws at Market-oriented Economy

It is useful for Vietnamese to review the analysis of economic implications of the legal order around environmental regulations in Korea. Though the Constitution of Korea adopted the liberalism in 1962, economy in 1960s and 1970s wore on the character of deep intervention into market by the government with assistance of legal statutes. Afterwards 1980s, while Korea aimed at the market-oriented economy, the legal order which contained a number of administrative directions and regulations could not advance toward the paradigm of liberalism and otherwise incepted the principle of regulation in the wave of liberalism. I guess the situation of Vietnamese market nowadays is similar to that of Korea in 1980s. Therefore it would be better for Vietnam to reflect the situation of environmental laws since 1960s following the economic development. The important Acts from 1960s to 2010s when the statutes relating to the public nuisance have developed in Korea are as followings:

In 1960s:

- Waste Cleaning Act (1961)

- Water Supply and Works Installation Act (1961)
- Environmental Pollution Prevention Act (1963)
- Act Relating to Toxic & Hazardous Substances (1963)
- Sewerage Act (1966)
- Act Relating to the Protection of Birds, Mammals and Hunting (1967)

In 1970s to 1980s:

- Environmental Conservation Act (1977)
- Compound Waste Treatment Corporation Act (1979)
- Natural Park Act (1980)
- Environmental Pollution Prevention Corporation Act (1983)
- Waste Control Act (1986)

Since 1990s:

- Framework Act on Environmental Policy (1990; 2008) including §14 to §16 (national environmental master planning), §17 (environmental preservation master planning for middle term), §18(provincial environmental preservation planning) and §19 (local environmental preservation planning)
- Framework Act on Sustainable Development (2007)
- Environmental Education Promotion Act (2008.3; 2008.9)
- Framework Act on Low Carbon and Green Growth (2010; 2011) including §40 (framework planning for adaption to climate change), §41 (framework planning for energy), and §50 (framework planning for the ESSD)

The environmental law is a complex and interlocking body of statutes, common law, treaties, conventions, regulations and policies to materialize the people's right to a healthy and pleasant environment and to protect the natural environment in accordance with the Article 35 of the current Constitutional Law of the Republic of Korea. Environmental protection concerns, according to the Environmental Protection Agency (EPA) of the USA, span a wide variety of issues, including clean air, water quality, chemical security, and environmental aspects of other major issue areas, such as energy, transportation, disaster relief and cleanup, and defense.

6. Progress of Environmental Law in Korea

6.1. Economic Implications of the Legal Order

Though the Constitution of Korea adopted the liberalism in 1962, economy in 1960s and 1970s weared on the character of deep intervention into market by the government with assistance of legal statutes. Afterwards 1980s, while Korea aimed at the market-oriented economy, the legal order which contained a number of

administrative directions and regulations could not advance toward the paradigm of liberalism and otherwise incepted the principle of regulation in the wave of liberalism.

6.2. Progress of Economic Order and Law in Korea

After the Second World War, although the world economic order maintained free trade trend under the GATT and IMF system until late 1960s, come back to the protective trade from 1970s on account of the first oil shock and unstable value of the US dollar resulting from economic recession.

In the meanwhile, the resource-based nationalism which was brewed up 1970s bore vehement power availing of the Islamic Revolution (1978) in Iran, economy of 1980s in Korea recorded growth minus and upsurge of foreign-exchange rate falling on the so-called October 26th Accident(10 · 26) that the President at that time was assassinated in 1979 and the political turmoil thereafter.

WTO which was launched forth in 1995 based upon the Marrakech Declaration, April 15, 1994 has accelerated the free trade and also admitted FTA which has been contracted between two nations or regions for the purpose of enhancement of trade between contracting parties.

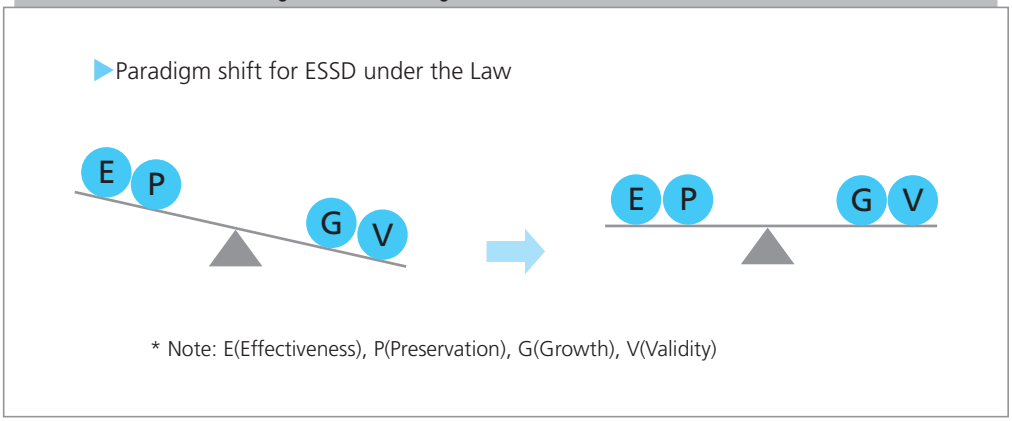
Korea has begun to prepare contracting procedure for FTA since 1998. According to the official gazette of Korean government, the Korea-Chile FTA, the Korea-European Free Trade Association FTA and the Korea-ASEAN FTA were contracted thereafter. Korea has just yet negotiated the Korea-USA FTA and the Korea-China FTA, etc.

According to a comparative research of the law and economics in Korea, watching out a blind belief in capitalism, the legal order could not itself prevent the stagflation comprised of unemployment and inflation while the finance market is bewildered and the burble in real estate market collapsed ; and the legal order, moreover, is confronted with discrepancy such as window dressing settlement, hostile M&A, slush fund and unfair transaction. Korea has been engaged in resolving such economic problems through the revision of legal system including environmental laws.

Korea admitted the cozy relationship between politics and business and the coercion from outside by a major country since the Constitution of 1948, established the controlled economy system on the basis of a series of the 5-year economic development plan under the Constitution of 1962, and then achieved the so-called unbalanced but compressed growth during 1970s and 1980s. Vietnam nowadays might take notice to the experience of Korea during such passed periods. Since

1990s, Korea has been trying to thrive in the concept of ESSD (Environmentally Sound and Sustainable Development) under which the legal effectiveness and environmental preservation has the same weight and value as the economic growth and legal validity.

[Figure 5-3] Paradigm Shift for ESSD under the Law



7. Environmental Law Structure of Korea

7.1. Command and Control System for Prevention of Pollution

- Clean Air Conservation Act ('90, '08)
- Environmental Health Act ('08, '09)
- Indoor Air Quality Control in Public Use Facilities, etc. Act ('96, '07)
- Noise and Vibration Control Act ('90, '08)
- Foul Odor Prevention Act ('04, '08)
- Special Act on Metropolitan Air Quality Improvement ('03, '08)
- Persistent Organic Pollutants (POPs) Control Act ('07.1, '07.4)
- Water Quality and Ecosystem Conservation Act ('90, '08)
- Management of Drinking Water Act ('95.1, '08.3)
- Act Relating to the Han River Water Quality Improvement and Community Support ('99, '08)
- Act on the Nak-dong River Watershed Management and Community Support ('02, '08)
- Act on the Guem River Watershed Management and Community Support ('02, '08)
- Act on the Yeong-san & Sum-jin River Watershed Management and Community

Support (‘02, ‘08)
- Sewerage Act (‘66, ‘08)
- Act on Special Measures for the Control of Environmental Offenses (‘91, ‘07)

7.2. Nature Conservation System

- Natural Environment Conservation Act (‘91, ‘08)
- Act on Antarctic Activities and Environmental Protection (jointly enacted) (‘04, ‘08)
- Wildlife Protection Act (‘04, ‘08)
- Natural Park Act (‘80, ‘08)
- Special Act on the Ecosystem Conservation of Islands such as Dokdo Island (‘97, ‘07)
- Wetland Conservation Act (jointly enacted) (‘99, ‘08)
- Environmental Impact Assessment Act (‘99, ‘08)
- Soil Environment Conservation Act (‘95, ‘07)
- Act on the Protection of the Baekdudaegan Mountain System (jointly enacted) (‘03, ‘08)
- National Trust Act on Cultural Heritage & Natural Environment Assets (jointly enacted) (‘06, ‘08)

7.3. Waste Management and Recycling System

- Waste Control Act (‘86.12 /‘07.12)
- Act on the Disposal of Sewage, Excreta & Livestock Wastewater (annulled) (‘91.3 / ‘07.9)
- Act on the Management and Use of Livestock Manure (jointly enacted) (‘06.9 / ‘08.3)
- Act on the Promotion of Saving and Recycling of Resources (‘92.12 / ‘08.3)
- Act on Resource Recycling of Electrical and Electronic Equipment and Vehicles (jointly enacted) (‘07.4 / ‘08.2)
- Act on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal (‘92.12 / ‘08.2)
- Act on the Promotion of Construction Waste Recycling (‘03.12 / ‘08.2)
- Promotion of Installation of Waste Disposal Facilities and Assistance, etc. to Adjacent Areas Act (‘95.1 / ‘08.2)
- Metropolitan Landfill Site Management Corporation Act (‘00.1. / ‘07.4)

7.4. Environmental Economic Management System

- Act on Promotion of the Purchase of Environment-Friendly Products ('04.12 / ‘08.3)

- Act on Environmental Test and Examination ('06.10 / '08.3)
- Environment Improvement Expenses Liability Act ('91.12 / '07.5)
- Environmental Management Corporation Act ('83.5 / '08.3)
- Environmental Dispute Adjustment Act ('90.8 / '08.3)
- Act Relating to Special Accounting for Environmental Improvement ('94.1 / '08.2)
- Development of and Support for Environmental Technology Act ('94.12 / '08.3)
- Korea Environment & Resources Corporation Act ('93.12 / '08.3)
- Water Supply and Waterworks Installation Act ('61.12 / '08.3)
- Framework Act on Low Carbon, Green Growth ('10.1 / '11.4)

7.5. General Analysis of Experiences in Korea

Analyzing some experiences of Korean environmental laws, there are such negative lessons from Korean experiences as legal pluralism, diversification of management system, enactment of special act and its frequent revision, excessive delegated method for subsidiary legislation, lack of internationality and insufficient role sharing and allocation of authority between regional environmental office and local government.

Nevertheless, there are also such positive lessons from Korean experiences as the strict command & control system and the specific environmental standards. In respect of command & control system under Korean environmental law system, there are emission-permit criteria (Air Pollution Control Act §16), discharging fee added (Act for Improvement of Atmospheric Environment in Metropolitan §17), emission-permit criteria (Water Quality Control Act §32), discharging-water quality criteria (Sewerage Act §7), criteria for control & prevention (Land Environment Conservation Act §16), criteria for management of waste disposal facilities (Waste Management Act §31), toxicants criteria (Hazardous Chemical Materials Management Act §2. Sub.3).

In respect of environmental standards, there are minimum environmental standards (Framework for Environmental Policy Act §3. Sub.8), establishing environmental standards (Decree of the Framework for Environmental Policy Act §2), specific standards of consultation for EIA and SEA (Environmental Impact Assessment & Strategic Environmental Assessment Act §2.Sub.5), as well as several controlling statutes of air pollution control, water quality control, sewerage, land environment conservation, waste management and hazardous chemical materials management.

8. Environmental Impact Assessment Act

8.1. Framework in Vietnamese Law

The current LEP of 2005 of Vietnam provides several articles relating to the environmental impact assessment such as principles for formulation and application of environmental standards (§8), contents of national environmental standards (§9), system of national environmental standards (§10), requirements on surrounding environment quality standards (§11), requirements on waste standards (§12), issuance and declaration of application of environment quality standards (§13). The new bill of LEP has also such articles as the system of technical regulation on environment (§95), principles for building technical regulation on environment (§96), content of technical regulation on environment (§97), requirements for technical regulation on surrounding environment quality (§98), requirements for technical regulation on waste (§99), promulgate and publish the application of technical regulation on environment (§100), environmental standards (§101), the types of environmental standards (§102), and build, appraise and publish the environmental standards (§103). But there are running short of concrete and specific criteria for strategic environmental assessment [SEA] or environmental impact assessment [EIA] in the form of decree or circular outside the LEP of 2005 as well as the new LEP bill of 2014.

8.2. SEA of the LEP in Vietnam

The LEP of 2014 in Vietnam has 8 subjects of the strategic environmental assessment (SEA)(§8 para. 1 to 7) which are as followings: (1) Strategy, master plan for social – economic development of social economic regions, key economic areas, economic corridors, economic belt (2) Master plan for socio-economic development of the provinces and centrally run cities (3) Strategy, planning for development of economic zones, export processing zones, hi-tech parks, industrial parks, manufacturing, business and service zones on nationwide (4) Strategy, master plan for development of sector and domain at national, regional and provincial scales that have major impacts on the environment (5) Strategy, planning for exploitation and using of natural resources at the scale of more than two provinces (6) Master plan for urban construction (7) The adjustment of strategy, planning having period from five years or more of subjects 1, 2, 3, 4 and 5 of this Article.

For the implementation of strategic environmental assessment, agencies assigned to make strategies, planning stipulated in Article 8 shall have to elaborate strategic environmental assessment reports (§9 para 1) ; strategic environmental assessment shall have to make together with the process of implementation of strategies, planning (§9 para 2) ; results of implementation of Strategic environmental assessment shall have to be considered, integrated to the contents of documents

of strategies, planning (§9 para 3) ; and on the basis of results of strategic environmental assessment, agencies assigned to elaborate strategies, planning shall have to make Strategic environmental assessment to submit to competent agencies for appraisal (§9 para 4).

In the contents of environmental assessment strategies, the agency or entity in charge of making strategic environmental assessment should describe the reason, the need, the legal basis of the mission strategy, planning; the method and implementation of strategic environmental assessment (§10 para 1); make a brief description of content strategy or planning (§10 para 2); describe the condition of the natural environment and social-economic regions are likely to be affected by the strategy, planning (§10 para 4); assess the suitability of the perspective, the goal of the strategy, the planning with the view, the objective of protecting the environment (§10 para 6); evaluate and forecast the trends of the main environmental problems in the case of implementation strategy or planning (§10 para 5); consult with the parties concerned in the process of implementing strategic environmental assessment (§10 para 6); and propose adjustment of strategy, planning and preventative solutions to minimize the adverse impact on the environment (§10 para 7).

8.3. EIA of the LEP in Vietnam

The LEP of 2014 has also the provisions of environmental impact assessment (EIA). Relating to implementation of environmental impact assessment, project owners shall implement environmental impact assessment by themselves or hire consultancy service organizations to do so. The owners of projects must be responsible in front of the law on results of elaborating environmental impact assessment reports (§14 para 1). The implementation of preliminary environmental impact assessment shall be regulated as follows: a) subject specified in Clauses 1 of Article 13 and the projects in the list of the Government to implement the preliminary environmental impact assessment in stage of report of investment b) the report of preliminary environmental impact assessment is presented in the investment report or similar document of the project c) the report of preliminary environmental impact assessment shall be submitted to the Ministry of Natural Resources and Environment for written opinions d) the results of preliminary environmental impact assessment is one of the basis so that the competent authority to consider and decide on the next steps of the project (§14 para 2).

The implementation of environmental impact assessment shall be regulated as follows: a) subject specified in Article 13 shall be subject to environmental impact assessment b) results of the environmental impact assessment are shown in the form of environmental impact assessment report (§14 para 3). Project owners must re-perform environmental impact assessments in the following cases: a) failure

to implement the project in 36 months from the date of issuance of the decision approving the report of environmental impact assessment b) change the location of the project against the plan set out in the approved report of environmental impact assessment c) increase the size and capacity than the alternatives given in the approved report of environmental impact assessment d) change the contents of the project so that increase the negative impacts on the environment than alternatives given in the approved report of environmental impact assessment (§14 para 4). The project owner is responsible for allocating funds for the implementation of environmental impact assessment (§14 para 5).

8.4. Public Participation of the LEP in Vietnam

The LEP of 2014 has a good process of public participation in the form of consultation in the implementation of environmental impact assessment. Owners of projects must take consultation from all levels of People's Committees where the project is implemented and communities affected by the project. For a project located entirely within a commune, project owners shall hold consultation with the commune – level People's Committees; for a project located in two or more communes in the same district, project owners shall hold consultation with the district – level People's Committees; and c) for a project located in two or more districts, project owners shall hold consultation with the provincial – level People's Committees (§15 para 1). The following cases shall not have to take consultation: a) investment projects in the manufacture, business and service of which the environmental impact assessment report has been approved for the infrastructure construction investment b) investment projects outside the territorial waters of the Socialist Republic of Vietnam or undefined administrative responsibilities c) investment project of national secret regulated by the Government (§15 para 2).

The Article 16 of LEP 2014 provides the method to proceed with consultation in the implementation of environmental impact assessment. To take opinions from the People's Committees, communities directly affected by the project is done in the following manner: a) owner of projects send a document to the People's Committees and organizations directly affected by the project together with the summary of the main investment items, environmental issues, environmental protection solutions of the project for consultations; b) within thirty (30) working days from the date of receipt of the opinions request, the People's Committees and organizations shall have a written reply to the project; c) encourage project owners to send written request for opinions from relevant specialized organizations (§16 para 1). Owner of the projects has responsibility to coordinate with the People's Committees for taking consultation from local communities directly affected by the project. Dialogue results are recorded in minutes signed by the representative of participants of consultation (§16 para 2). Project owners shall have responsibilities for explaining the acceptance

of consultations in the report of environmental impact assessment (§16 para 3).

8.5. Implementation System in Korea

The purpose of the Environmental Impact Assessment Act of Korea is to promote the pleasant and safe livelihood of nationals by making a project environmentally friendly and enabling sustainable development through advance assessment and investigation of environmental impacts from the project when making and executing the plan of operation for such project subject to the assessment of environmental impacts (§1). The term "assessment of environmental impacts" under para 1, Article 2 means devising a plan (hereinafter referred to as an "environment conservation plan") for avoidance or reduction of harmful impacts on the environment by investigating, forecasting and assessing environmental impacts from the execution of projects when making the plan of operation for projects subject to the assessment of environmental impacts under Article 4.

EIA systems in Korea are divided into three types which are Strategic Environmental Assessment (SEA), EIA, and Small Scale EIA. The purpose of the SEA is to review the appropriateness of the pertinent plan and feasibility of a

〈Table 5-1〉 Subjects for Strategic Environmental Assessment

Policy Plan	Development Master Plan
1. Conformity with environment conservation plan 1) national environmental policy 2) international environmental trend, agreement, and standard 2. Connectivity·consistency of the plan 1) Connectivity with higher plan and related plans 2) Consistency with objective and content of the plan 3. Appropriateness·sustainability of the plan 1) appropriateness of the spatial plan 2) sustainability of the environmental capacity 3) appropriateness of demand and supply	1. Appropriateness of the plan 1) connectivity with higher plan and related plans 2) appropriateness of the alternatives and analysis 2. Validity of the location 1) conservation of natural environment (1) biodiversity·habitat conservation (2) conservation of topography and eco axis (3) effect on the surrounding natural landscape (4) conservation of aquatic environment 2) Stability of living environment (1) conformity with environmental standard (2) appropriateness of wastewater treatment facilities (3) efficiency of resource and energy circulation 3) Harmony with socioeconomic environment

Source: Environmental Impact Assessment Act Enforcement Decree, Attached Table 1, Korea

location from an environmental stand point by checking its conformance with the environment conservation plan and analysis of alternatives when a policy or plan affecting the environment is proposed. SEA for policy plan performs the evaluation on the conformity with the environment conservation plan, continuity, consistency, appropriateness, and sustainability of the plan.

In 2011, 452 cases of SEA Report (previously Prior Environmental Review Report) were prepared in Korea. Among which, urban development had the most, 156 cases, followed by road construction 33, industrial complex 33, ports 39, and public water surface 36. Unfortunately, the SEA of policy plan was not reflected as the target plan including Urban Master Plan with the objection from development offices. However, the development master plan includes most of the plans related to EIA projects, which advanced the evaluation start time about a year compared to the previous EIA. This means the environment is considered from the beginning stage of a plan.

The purpose of the EIA is to secure an environment friendly and sustainable development, and healthy and pleasant national life through the prediction and evaluation of environmental impact by plans and projects and preparation of environment conservation measures, when a plan or a project that can affect the environment is implemented. Therefore, the EIA is to provide environment conservation measures and alternatives that are economically and technically available for sustainable development based on the results of scientific survey and prediction. If a plan or project is concentrated at a specific location or time, the cumulative effect is to be considered. In addition, the results of the EIA should be prepared concisely and easy for residents and decision makers to understand. The law states that sufficient information on the target plan and project of EIA should be provided to everyone so that residents can actively participate in the process of EIA. Project owner must notify the Minister of Environment and approval organization of the starting of the construction. He/She must designate a chief manager to maintain the implementation of the agreements and notify it to the Minister of Environment and approval organization. The approval organization is in charge of the supervision of the agreements and if an agreement is not fulfilled, he must order the required actions or stop the construction in its entirety or a portion of it. Also, project owner must monitor the effect of the project on the surrounding environment after the start of construction and notify the Minister of Environment and the chief of the approval organization.

In Korea, a total of 412 cases of EIA were prepared in 2011. Similar to SEA, 42 urban developments, 64 road constructions, and 92 industrial complex accounted for most part of the cases. One peculiar point was that the substantial portion of 25 tourism complexes and 29 sports facilities were golf course construction projects, representing a unique condition of Korea. Small Scale EIA is aimed to evaluate

the environmental condition for the project areas smaller in size than projects for environmental impact assessment and need planned development in an area where conservation is required or difficult development is concerned.

8.6. EIA on Greenhouse Gas

The Environmental Impact Assessment (EIA) on greenhouse gas in Korea has been executed since 2010 and the result of the assessment showed that it is effective for reducing the greenhouse gas which is due to development business. On the 5th of February, 2012, the Ministry of Environment (MOE) announced that as a result of implementing EIA on 53 development businesses for the past two years (2010~2011), 11.47 million tons of greenhouse gases have been reduced. EIA is a policy for evaluating and effectively reducing greenhouse gases which are emitted during the process of development businesses. The policy requires the businesses to establish plans to reduce greenhouse gases through land use, improvement on energy efficiency, resource recycle and etc. The reduced 11.47 million tons are 4.7% of 2020's goal for national greenhouse gas reduction, 244 million tons. Also, the amount is 15.6% of Posco's annual emission, 73.52 million tons. In addition, the reduced amount is 35.4% of the BAU, 32.39 million tons, the expected amount of emission when any separate reduction plan is not devised. Based on the average market price of EUA, economical effect of 216.7 billion won per year is expected. The ministry is planning for more reduction of greenhouse gas by expanding EIA in the future. To expand the reduction of greenhouse gas emitted during the development business, current 5 business industries – energy, city, industrial estate, road and tourism complex – for evaluation will be expanded to all 18 businesses from 2012. Strategic Environmental Assessment is also planned to establish the low carbon green development from the basic plan establishment phase.

8.7. Role of the Governmental Institute

One of the major characteristics of Korean EIA System is that there is a professional review organization. Korea Environment Institute (KEI) is a government - supported research institute under Prime Minister's Office and conducts research related to environmental policy and review of environmental assessment reports. The review of environmental assessment reports is defined in the Environmental Impact Assessment Act, and the MOE can ask for a review opinion of the KEI, a professional agency, while reviewing SEA Reports and EIS. Therefore, the KEI reviews the assessment reports requested by the MOE and returns its opinion to the Ministry of Environment, and then the Ministry of Environment can adjust, supplement or agree on the project plan based on the review. The licensed EIA consulting company acts as a proxy to prepare the draft and final EIS, Post EIA reports, and simplified assessment reports. To perform environmental assessment agency, one must

register at the Ministry of Environment with the following requirements; technical manpower and equipment for EIA consulting company, registration form, project owner's registration card, status of technical capacity and qualification documents, facility and equipment specifications. All work performed for EIA must be reported to the MOE by January 31 each year.

9. Analysis and Recommendation

We have reviewed the EIA System in Korea and major entities, and unique characteristics of the Korean system compared to other advanced countries are summarized below. First, the EIA System was prepared by the stage and size of a plan. SEA in the policy plan stage and development master plan stage, EIA in the development project and Small Scale EIA are prepared, which differentiates the assessment procedure and contents by the level and size of the plan. In particular, the SEA System is very important considering the fact that there are only few countries that stipulate strategic impact assessment in the policy stage. Second, target plans and projects are clearly specified without the introduction of screening. The introduction of screening is different by country, while scoping, draft, final, and post monitoring are commonly practiced procedures in most countries. Countries where EIA systems are well developed by the municipal ordinance often introduced screenings in the EIA by law. On the contrary, the environmental assessment in Korea clearly defines the target projects by type and size of the project by law as the EIA system by the municipalities in Korea is still insignificant. Third, the central government, the Ministry of Environment, has a big authority and responsibility with the consultation function for the projects by municipalities or private projects. The foundation of the professional review agency, KEI, made it possible to provide efficient review of assessment reports in the aspect of consistency and professionalism. We believe that the characteristics can provide a positive suggestion to the systems in developing countries including Vietnam. For the EIA System to be a political tool for sustainable development, the roles and responsibilities of planning organization and approval organization should be reinforced. In the EIA System in Korea, the roles and responsibilities of the Ministry of Environment is well defined, but there is still a lack of environmental assessment departments or professionals in the planning organization and approval organization. As a result, some cases happen when the conception or direction of a plan is not environmentally friendly, which causes continuous conflict with the environment. Environmental assessment cannot have good results just by the efforts of MOE or environmental experts. Planning organization and approval organization should change the perception on the process and continue to practice.

10. Framework Act on Low Carbon, Green Growth of 2010

10.1. Introduction

In order to provide various institutional strategies to promote the low-carbon green growth in an effective and systematic manner, the government enacted the Framework Act on Low Carbon, Green Growth (December 29, 2009), which became effective on April 14, 2010. The Framework Act on Low Carbon, Green Growth is a comprehensive law addresses the climate change and energy issues, as well as comprehensively defines the green technology and R&D, change and support of the green industries, green country, city, buildings, transportation, and green life, holds significant meaning as and it is important that the law is related to the new national development strategy. Article 48 of the Framework Act on Low Carbon, Green Growth and the Article 38 of its Enforcement Ordinance specify the role of the government to establish and execute measures for the Adaptation to Climate Change.

10.2. Grounds for Enactment

The foremost reason for the enactment of the Framework Act on Low Carbon, Green Growth is to implement measures to effectively address climate change and energy issues and promote sustainable development, which are partially implemented by various ministries and offices pursuant to respective Acts and subordinate statutes, by flexibly bringing them together or integrating them. The second reason is to build the implementation system for green growth, such as the establishment of the Presidential Committee on Green Growth, to implement low carbon green growth strategies in an efficient and systematic manner, for the sake of creating the green technology and the green industry to ensure that the economy and environment are harmonized, encouraging green buildings, and helping people to lead a green life. The third reason is to devise a variety of institutional systems to promote low-carbon green growth in the region.

10.3. Major Provisions

10.3.1. National Strategy for Low Carbon, Green Growth (Article 9)

The government shall establish and enforce the national strategy for low carbon, green growth, which shall include the targets of the State's policies for low carbon, green growth, the strategy for promotion, and main tasks of promotion, after bringing a proposed bill to the Presidential Committee on Green Growth and then to

the State Council for deliberation.

The following items should be included in the national strategy for low carbon, green growth:

- Matters concerning the realization of the green economic system (Article 22);
- Matters concerning green technology and green industries;
- Policies for coping with climate change, policies on energy, and policies on sustainable development;
- Matters concerning the green life, the green homeland (Article 51) and the low-carbon traffic system (Article 53);
- Matters concerning international negotiations and cooperation in relation to low carbon, green growth, including climate change;
- Other matters necessary for low carbon, green growth, including procurement of financial resources, taxation, financing, training of human resources, education, and public relations activities.

10.3.2. Basic Principles for Materialization of Green Economy and Green Industries (Article 22)

The government shall strengthen the national economy and materialize the economy pursuing sustainable development by reducing the use of fossil fuels step by step and fostering green technology and green industries. The Government shall, whenever it establishes and enforces a national policy on green economy, facilitate harmonious development between the economy and the environment and give balanced consideration to various areas, such as finance, industries, science and technology, environment, national land, and culture, from a comprehensive perspective.

The government shall endeavor to enable the industrial structure of large consumption of energy and resources to be converted into the low carbon, green industrial structure step by step through creation of new green industries, conversion of existing industries into green industries, and connection between related industries. The government shall seek for balanced development between regions in promoting low carbon, green growth and shall provide low-income groups with support and care to protect them from being neglected.

10.3.3. Fostering of and Support for Green Economy and Industries

The Government shall enhance the soundness and competitiveness of the national economy, search for and foster new green industries with high growth potential, and prepare measures for fostering and supporting a green economy and

green industries.

Measures for fostering and supporting a green economy and green industries shall include the following matters:

- Matters concerning the gradual conversion of the conventional, industrial structure into a green industrial structure;
- Targets for the medium- and long-term and for each phase for facilitating green industries and the strategy for the facilitation;
- Matters concerning the fostering of, and support for, green industries for new growth engines;
- Matters concerning the conversion of existing, national infrastructure, including electricity, information and telecommunications, and traffic facilities, into an environmentally friendly structure;
- Matters concerning the fostering of the industry of advisory services for green management;
- Matters concerning the training of human resources for green industries and the creation of job opportunities.

10.3.4. Establishment of and Support for Companies for Investment in Green Industries (Article 29)

A green industries investment company for the purpose of distributing earnings therefrom to investors may be established by investing its assets in green industries, etc., to boost technological development related to green industries and facilitate the development of green industry businesses. The government may, if a public institution intends to invest in a green industries investment company, provide all or some of the funds therefor.

10.3.5. Basic Plan for Coping with Climate Change (Article 40)

The Government shall establish and implement a basic plan every five years for coping with climate change for a planning period of 20 years, after bringing a proposed bill to the Presidential Committee on Green Growth and then to the State Council for deliberation.

The basic plan for coping with climate change shall include the following matters:

- Tendency and forecast of domestic and overseas climate changes and changes in concentration of greenhouse gases in the atmosphere;
- Current status and outlook of the emission and absorption of greenhouse gases;
- Establishment of medium- and long-term targets for the reduction of emission

of greenhouse gases and countermeasures for each area by phase;
- International cooperation in coping with climate change;
- Cooperation between the State and local governments in coping with climate change;
- Research and development for coping with climate change;
- Training of human resources for coping with climate change;
- Measures for adaptation, such as monitoring, forecasts, and evaluation of impacts of climate change, evaluation of weakness therefor, and prevention of disasters;
- Education and public relations activities for coping with climate change;

10.3.6. Basic Plans for Energy (Article 41)

The government shall establish and enforce a basic plan for energy every five years for a planning period of 20 years, after presenting a proposed plan to the Energy Committee under Article 9 of the Energy Act and then to the Presidential Committee on Green Growth and the State Council consecutively for deliberation.

The basic energy plan shall including the following matters:

- Trends and prospects of domestic and overseas demand and supply of energy;
- Measures for stable securing, import, supply, and management of energy;
- Matters concerning the targets of demand for energy, the composition of energy sources, the saving of energy, and the improvement of the efficiency in the use of energy;
- Measures for the supply and use of environmentally friendly energy, such as new and renewable energy;
- Measures for the safety control of energy;
- Matters concerning the development and diffusion of technology related to energy, the training of professional human resources, international cooperation, the development and use of natural resources of energy, and welfare in energy.

10.3.7. Reporting on Quantity of Emitted Greenhouse Gases and Quantity of Consumed Energy (Articles 42 and 44)

The government shall establish medium- and long-term targets and the goals attached to each particular phase, in order to cut greenhouse gas emissions, save energy, improve energy efficiency, and expand the dissemination of new and renewable energy. Each entity that emits greenhouse gases or consumes energy above a certain level shall report the quantity of greenhouse gases emitted and the quantity of energy consumed to the government every year.

10.3.8. Establishment of Integrated Information Management System for Greenhouse Gases (Article 45)

The government shall establish an integrated information management system for greenhouse gases with which it shall develop, verify, and manage the State's quantity of green house gases emitted and absorbed, the emission and absorption factors, and various information and statistics related to greenhouse gases. The government shall, when it prepares and manages various information and statistics and establish the integrated information management system, reflect international standards therein to the fullest extent possible to improve expertise, transparency, and reliability. The government shall analyze and verify various information and statistics and announce the results thereof to the public every year.

10.3.9. Cap and Trade System (Article 46)

The government may operate a system for trading emissions of greenhouse gases by utilizing market functions in order to accomplish the State's target of reduction of greenhouse gases; the method of allocation of the allowable quantity of emission, the methods of registration and management, and the establishment and operation of an exchange shall be provided by another Act separately.

10.3.10. Management of Greenhouse Gases in Traffic Sector (Article 47)

The government shall establish standards for average energy consumption efficiency of automobiles and standards for allowable emission of greenhouse gases from automobiles respectively to promote energy saving by improving average energy consumption efficiency of automobiles and to maintain a pleasant and appropriate atmospheric environment by reducing greenhouse gases in exhaust gases from automobiles, but shall allow auto makers (including importers) to choose one of such standards to avoid double regulation and shall ensure that measuring methods do not overlap.

10.3.11. Diffusion of Culture in Production and Consumption for Green Growth (Article 57)

The Government shall establish and implement appropriate measures for saving and utilizing energy and resources efficiently and reducing greenhouse gases and pollutants throughout the entire course of production, consumption, transportation, and disuse of goods.

The government shall ensure that the pricing of goods and services shall be linked

to and reflected in the consumption of energy and the emission of carbon and that correct information thereon shall be disclosed and communicated to consumers.

The government may establish and operate an information management system with which the consumption of energy and resources and emission of greenhouse gases and pollutants in the entire course of production, consumption, transportation, and disuse of goods and disposal of goods can be analyzed and evaluated and the information on results thereof can be stored and used.

The government may establish and implement measures to require manufacturers and distributors of goods to indicate and disclose information on the quantity or grade of greenhouse gases and pollutants generated in the entire course of production, consumption, transportation, and disuse of goods and disposal of such goods so that consumers can easily ascertain such information, in order to facilitate the use and consumption of green products, and dissemination thereof.

10.4. Education and Public Relations Activities for Practice of Green Life (Article 59)

The government shall ensure that industrial entities and citizens can participate voluntarily in policies and activities for low carbon, green growth and that they can practice green life culture in their daily living by expanding education and public relations activities for low carbon, green growth. The government shall strengthen school education of low carbon, green growth by developing textbooks and teaching materials and training teaching staff members so that citizens can get used to practice of green life from the time when they are young and also strengthen educational courses integrated with and linked to general education programs, occupational education programs, basic continuing education programs.

11. Allocation & Trading of Greenhouse-Gas Emission Permits

11.1. Background

Korea enacted the Act on the Allocation and Trading of Greenhouse-gas Emission Permits according to the Article 2 of the Framework Act on Low Carbon, Green Growth. The purpose of this Act is to achieve national targets for-reducing greenhouse gas effectively by introducing a system for trading greenhouse-gas emission permits through market mechanisms pursuant to Article 46 of the Framework Act on Low Carbon, Green Growth. The term “greenhouse gases” means

greenhouse gases defined in subparagraph 9 of Article 2 of the Framework Act on Low Carbon, Green Growth. The Act on the Allocation and Trading of Greenhouse-gas Emission Permits comes into effect on the 1st of January in 2015.

11.2. Establishment, etc. of Master Plans for Emissions Trading System

The Government shall establish a ten-year master plan for the emissions trading system (hereinafter referred to as "master plan") every five years, which shall define the objectives of, and basic direction for, medium- to long-term policies on the emissions trading system (§4 para.1).

Master plans shall include the following(§4 para.2): (1) matters regarding the current status and projections for the domestic and international markets for the emissions trading system (2) matters regarding the basic direction for the operation of the emissions trading system (3) matters regarding the operation of commitment periods for the emissions trading system, considering national greenhouse gas reduction targets (4) matters regarding projections for greenhouse gas emissions produced as a consequence of economic growth, new investment in each sector and type of business, and the expansion of facilities (referring to places of business producing greenhouse gases or part of such places of business; hereinafter the same shall apply) (5) matters regarding economic implications, such as the fluctuation of prices of energy and other commodities following the operation of the emissions trading system (6) matters regarding measures for supporting domestic industries, considering international trade intensity, carbon intensity, etc. (7) matters regarding schemes for the link with international carbon markets and international cooperation (8) other matters regarding the effective operation of the emissions trading system, including financing, the nurturing professional human resources, education, and public relations, etc.

When the competent authority under Article 8 demands the Government to revise a master plan or the Government deems it necessary to revise the master plan in accordance with international negotiations, etc. on climate change, the Government may review the validity of the proposed revision to revise the master plan (§4 para.3). When the Government intends to establish or revise a master plan, it shall gather opinions from relevant central administrative agencies, local governments, and interested parties (§4 para.4). The establishment of and revision to a master plan shall be finalized through deliberation by the Presidential Committee on Green Growth established under Article 14 of the Framework Act and the State Council, as prescribed by Presidential Decree: Provided, That the foregoing shall not apply to modifications to minor matters prescribed by Presidential Decree (§4 para 5).

11.3. Establishment, etc. of Plans to Allocate National Emission Allowances

The Government shall establish a plan to allocate national emission allowances for each commitment period (hereinafter referred to as "allocation plan") by no later than six months prior to the beginning of each commitment period in order to effectively achieve national greenhouse-gas reduction targets, which shall include the following (§5 para.1): (1) matters regarding the total amount of greenhouse gas emission allowances (hereinafter referred to as "total emission allowances") set considering national greenhouse-gas reduction targets; (2)matters regarding the total number of emission permits for the pertinent commitment period and for each compliance year based on total emission allowances; (3) matters regarding sectors and types of business eligible for allocation of emission permits; (4) matters regarding the standards for the allocation of emission permits for each sector and type of business and the amount allocated to each sector and type of business; (5) matters regarding the standards for the allocation of emission permits for each compliance year and the amount allocated for each compliance year; (6) matters regarding the standards and methods for the allocation of emission permits to business entities eligible for allocation under Article 8; (7) matters regarding the method for the allocation of emission permits, where emission permits are allocated onerously under Article 12(3); (8) matters regarding the criteria for recognition of the outcomes of earlier reduction under Article 15; (9) matters regarding the number of emission permits in reserve under Article 18 and the criteria for distribution of emission permits in reserve; (10) matters regarding the carryover and borrowing of emission permits under Article 28 and matters regarding the guidelines for offset and the operation thereof under Article 29; (11) other matters prescribed by Presidential Decree necessary for the allocation and trading of emission permits for the pertinent commitment period.

When the Government prescribes the matters under subparagraphs of paragraph (1), it shall consider the situation of each sector and type of business for the application of the emissions trading system, the impact on international competitiveness, etc. (§5 para.2) If the Government deems it necessary to revise an allocation plan due to sudden changes in a domestic or international economic situation, technological advancement, etc., it may examine the validity of the revision to revise the allocation plan (§5 para.3). When the Government intends to establish or revise an allocation plan, it shall hold a public hearing to gather opinions from interested parties and shall reflect opinions presented in the public hearing in the allocation plan, if it finds such opinions are rational (§5 para 4). An allocation plan shall be finalized through deliberation by the Committee on Green Growth and the State Council, as prescribed by Presidential Decree: Provided, That the foregoing shall not apply to modifications to minor matters prescribed by Presidential Decree (§5 para.5)

12. Positive Lessons From Korean Experiences

12.1. Command & Control System

The environmental legal system on the whole consists of the regulation itself. Thereof the so-called command and control is the basic tool for legal effectiveness. Vietnam had already a superior environmental code, but which is weak in the field of powerful regulation. Vietnam might share experiences with Korea about such command and control system under the environmental law system. The major command and control system of environmental law system in Korea is as followings:

- Air Pollution Control Act: Emission-permit Criteria (§16)
- Act for Improvement of Atmospheric Environment in Metropolitan: Discharging Fee Added (§17)
- Water Quality Control Act: Emission-permit Criteria (§32)
- Sewerage Act: Discharging-water Quality Criteria (§7)
- Land Environment Conservation Act: Criteria for Control & Prevention (§16)
- Waste Management Act (§31): Criteria for Management of Waste Disposal Facilities
- Hazardous Chemical Materials Management Act: Toxicants Criteria (§2. sub.3)

12.2. Environmental Standards

An environmental standard is a policy guideline that regulates the effect of human activity upon the environment. Standards may specify a desired state (e.g. lake pH should be between 6.5 and 7.5) or limit alterations (e.g. no more than 50% of natural forest may be damaged). Environmental standards are a set of quality conditions that are adhered or maintained for a particular environmental component and function. The different environmental activities have different concerns and therefore different standards. Although Vietnamese environmental code has already several sections of environmental standards, the concreteness thereof is running short of. Korea has many strict and effective regulations, which are as followings:

- Framework for Environmental Policy Act: (Minimum) Environmental Standards (§3. sub.8)
- Decree of the Framework for Environmental Policy Act: Establishing Environmental Standards (§2)
- Environmental Impact Assessment (and Strategic Environmental Assessment) Act: Specific Standards of Consultation for EIA and SEA (§2. sub.5), supported by (Controlling) Acts of Air Pollution Control, Water Quality Control, Sewerage, Land Environment Conservation, Waste Management and Hazardous Chemical Materials Management

12.3. Surplus Comments and Request on the Report

Dr. Nguye Ngoc Sinh, President of Vietnam Association for Conservation of Nature and Environment said that he would like to express his thanks to Dr.Chun Jaekyong for his impressive report. According to Dr.Nguye Ngoc Sinh, Dr.CHUN's report is constructed rationally, contains a lot of information which can serve as a valuable reference. The report gives a general picture of experiences in formulating the environmental legal system in Korea. The report provides many recommendations which are valuable for environmental protection in Vietnam.

For the recommendations on strengthening the effectiveness of environmental protection law enforcement. Please emphasize some priorities. Please provide further about the Korean experiences on the solutions of "socialization/privatization of protection environment". This content is very important for Vietnam.

For the recommendations on improving the command and control system. At present stage of the process of amending LEP, it is not feasible to realize the recommendation on systematically and basically improving the command and control system of soil, water, air, river, marine, and waste. It is noticeable that in Korea, there are almost no transnational river, no cross-border smoke, therefore, experience of this matter is limited. The relevant legal system in Korea is almost fully done and synchronous, whereas the Vietnamese legal system is not that case.

For the recommendation on environmental standards, Dr.Nguye Ngoc Sinh agrees with Dr.CHUN about his recommendations. Korean relevant experiences are very good, however, Vietnamese should make reference to environmental standards of ASEAN countries. It is necessary to have a specific plan for improving the environmental standard system in Vietnam, which should be included in decrees of guiding the implementation of the amended LEP.

For the recommendations on connecting the LEP and the Environmental Penal Code. In Vietnam's Penal Code, there is one chapter regulating environmental crimes (Chapter 18). The problem is how to concretize environmental crime constitution and level of penalty. It is necessary for Vietnam to learn Korean experiences in this field. There are many opinions that an environmental court following the model of Australia should be established. Dr.Nguye Ngoc Sinh wants to have Dr.CHUN's opinion about this aspect later.

13. Conclusion

Given the legislative visions of VEA, Vietnam and the experiences of Korean environmental laws, some recommendations after the new bill of 2014 are necessary in the fields of re-enforcement of command & control system, specification of environmental standards and connecting the LEP and the environmental penal code.

Firstly, the relevant laws including protection of the marine environment and islands, environmental protection for river water, environmental protection for other water sources, environmental protection for soil, environmental protection for air and waste management should establish the re-enforcement of command and control system.

Secondly, specification of environmental standards and technical requirements about the content of technical regulation on environment, requirements for technical regulation on surrounding environment quality, requirements for technical regulation on waste, environmental standards, and types of environmental standards should be implemented through the decree or the circular following the new LEP of 2014.

Thirdly, the advance of criminal and civil reliefs against environmental violations should be established by way of connecting the LEP and the environmental penal code, clarification of constituting an environmental crime, enlargement of monetary penalty and introduction of the civil penalty.

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