Mid-term Economic Development Strategies for Ukraine

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Mid-term Economic Development Strategies for Ukraine

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Preface

In the 21st century, knowledge is the key factor in determining a country's level of socio-economic development. From this recognition, the Knowledge Sharing Program (KSP) was launched in 2004 by the Ministry of Strategy and Finance (MOSF) and Korea Development Institute (KDI). The KSP is designed to contribute to the socio-economic development of the targeted development partnership countries by sharing Korea's development experiences. The most distinguishing characteristic of the KSP is that it is demand-driven and participation-oriented. The program analyzes the problems from the partnership country's perspective and provides policy implications that can be practically implemented in the environment of the partnership country.

For Ukraine, the Ministry of Economy of Ukraine and the Embassy of the Republic of Korea in Ukraine held a meeting in January 2008, in which H.E. Minister Danylyshyn Bohdan Myhaylovic expressed his interest in Korea's development experience. The Embassy of the Republic of Korea to Ukraine put forward a request to the Ministry of Strategy and Finance of the Republic of Korea and KDI to undergo the KSP for Ukraine as its partnership country.

Hence, KDI has been working with the Ministry of Economy, Government of Ukraine since the beginning of 2008 on the KSP for Ukraine. The involved parties agreed to work on four specific research and consultation topics, which were chosen through in-depth pilot studies on the demand of Ukraine and also considering the specialization of the Korean development experiences. These are: 1) Consultation on Formulation of Mid-term National Development Strategy, 2) Effective Use of Energy in Ukraine; Learning from Korean Experiences, good or bad, 3) Investment in Infrastructure Development, 4) WTO membership and Export Promotion in Ukraine

I would like to take this opportunity to express my gratitude to the project managers H.E. Okyu Kwon, Dr. Dongho Jo and all the project consultants including Dr. Joon-Ho Hahm, Dr. Seok-Kyun Hur and Dr. Yong-Seok Choi for all their work in successfully completing the KSP for Ukraine. My sincere thanks also goes to H.E. Anatolii Maksiuta, First Deputy Minister of Economy and all Ukrainian officials and counterpart experts who actively supported the project. Lastly, I would also like to thank the members of the Office for Development Cooperation (ODECO) of KDI for their dedication and contribution to the project.

Upon this occasion of publishing the results of the KSP for Ukraine, I have a strong belief that the program results will be of great value for both Korea and Ukraine and I sincerely hope that through this Knowledge Sharing Program, the Ukrainian Government and relevant line ministry personals could benefit from the Korean experiences. I also hope our final report, which sets out policy recommendations from various perspectives could be used as a catalyst in bringing the Ukrainian economy one-step closer to further successful and sustainable economic development. The policy recommendations in this report, however, are based on Korean experiences and are solely the opinions and recommendations of the authors.

Oh-Seok Hyun
President
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Introduction

Since 2004, the Ministry of Strategy and Finance (MOSF) of Korea has conducted the Knowledge Sharing Program (KSP) projects for selected development parthership countries. The purpose of KSP is basically demand-driven and performance-oriented comprehensive consultation, by sharing specific knowledge and experience during the rapid Korean economic development. The projects are administered by the Office for Development Cooperation (ODECO) at Korea Development Institute (KDI).

MOSF and ODECO launched the KSP for Ukraine in January 2008. The first visit to Ukraine in July 2008 was conducted by a group of consultants, headed by H.E. Jong Chan Choi (Former Minister of Construction and Transportation), in order to explore the demand for the project from the Ukrainian perspective. After an intensive demand survey, 4 topics were identified. These topics were then finalized as the main consultation topics when the Korean consultants visited Kiev for the Pilot Study in August 2008, headed by H.E. Okyu Kwon (Former Depty Prime Minister). The topics that were chosen were:

- First, consultation on formulation of mid-term national development strategy *(Consultant: Dongho Jo; Ewha Womans University)*;
- Second, effective use of energy in Ukraine; Learning from Korean Experiences, Good or Bad *(Consultant: Seok-Kyun Hur; KDI)*;
- Third, investment in infrastructure development *(Consultant: Joon-Ho Hahm; Yonsei University)*;
- Fourth, WTO membership and export promotion in Ukraine *(Consultant: Yong-Seok Choi; Professor; Kyung Hee University)*

During the year of 2008 and 2009, the Korean KSP team organized the Interim Reporting Workshop, Policy Practitioners' Workshop, the Senior Policy Dialogue and the Final Reporting Workshop.

The Interim Reporting and Policy Practitioners' Workshop for KSP for Ukraine took place during 7-12 December 2008 in Korea. Headed by Mr. Anatolii Maksiuta, First Deputy Minister of the Ministry of Economy of Ukraine, the Ukrainian delegation was able to receive an in-depth report on the progress of the KSP for Ukraine, as well as gain first hand insight into Korea's financial and industrial sectors through various meetings with relevant officials and site visitations.

The Ukrainian delegation started off their official schedule on December 8, in the Conference Room at KDI with the Interim Reporting Workshop. The Vice President of KDI, Kwang-Eon Sul, welcomed the delegation which was followed by a special session on the "Causes, Resolution and Consequences of the 1997 Financial Crisis in Korea" by Dr. Joon-Kyung Kim, Professor at KDI School of Public Policy and Management. This session proved to be a timely session taking into consideration the economic situation of Ukraine.

During the rest of the Workshop, the Korean experts presented interim reports on their research topics, including presentations on Investment in Infrastructure Development, WTO Membership and Export Promotion and on the Effective Use of Energy and Natural Resources. The participants were able to conduct discussions on the issues which have contributed to the final KSP report.

Subsequently, during 9-11 December 2008, the delegation proceeded with the Policy Practitioners' Workshop. The delegation had meetings regarding Korea's experiences with the previous and current financial crisis with the Vice-Minister of the Ministry of Strategy and Finance Dongsoo Kim and Standing Commissioner of the Financial Services Commission Jong-Goo Yi. Special sessions were also arranged on Korea's Public and Private Infrastructure Management by the Public and Private Infrastructure Management Center (KDI) and on IMF and Korea's Experience by the Former Deputy Prime Minister Okyu Kwon.

The delegation was also able to gain first hand experience on Korea's industries and culture through visits to Samsung Electronics Suwon Complex, Gyeonggi Technopark Hanyang University Education-Research-Industry Cluster at Ansan and the National Assembly.

Through further research by the Korean experts, the Korean delegation presented their consultation outcomes in the Dissemination Seminar, which was held on 21 April 2009 at the Scientific and Research Institute of Economics, Ministry of Economy of Ukraine, Kiev.

Mr. Anatolli Maksiuta, First Deputy Minister of the Ministry of Economy, and more than thirty other Ukrainian participants welcomed the Korean experts. Throughout the Seminar, Ukrainian participants gave comments and asked questions regarding the findings of the results.

Furthermore, Mr. Okyu Kwon, Former Deputy Prime Minister held the Senior Policy Dialogue with H.E. Danylyshyn Bohdan Myhaylovich, Minister of Economy of Ukraine, on 24 April 2009. Minister Danylyshyn commented that the Ukrainian government is currently much occupied with overcoming the economic crisis and Ukraine is deeply interested in any recommendations that Korea may have. Mr. Okyu Kwon explained to the Minister the consultation results of four topics and they further engaged in discussions regarding Korea's past experiences relating to IMF issues and the current financial crisis.

In particular, Mr. Kwon emphasized the importance of full implementation of the IMF program. He said that this would mean that apart from restructuring of the financial and corporate sector, other sectors such as growth, organizations, rules and regulations should also be looked at more closely. He then commented on the organizations that should undergo restructuring and mentioned three core institutions essential to crisis management and economic reform: a unified financial supervisory body, a deposit insurance corporation and an asset management corporation. Lastly, Mr. Kwon stressed the importance of a step-by-step approach of all the above measures for a successful recovery and sustainable growth.

The Korean experts also held the Senior Policy Dialogue with Mr. Vladimir Makukha Deputy Minister of Fuel and Energy, on the 22 April 2009. At the same time a new team of Korean energy experts joined the Dialogue to talk about the future possibilities of the Second KSP Project for Ukraine, on the issues of energy efficiency and renewable energy.

Since the Final Reporting Workshop, the Korean experts finalized the research results and the Final reports are included in the present report, and the following brief summary of the findings are highlighted in the remainder of this introduction.

Consultation on Formulation of Mid-term National Development Strategy

From the commentator's point of view, the Strategy is very well organized and designed. We can say for sure that much effort has been put in by people including government officials and experts from research institutes in order to prepare the Strategy.

It includes candid evaluation of the Ukrainian economy. Furthermore it has a fine structure, accurate descriptions and concrete explanations. Hence all the necessary policies are included and thus no substantial changes are required. The Strategy guides the Ukrainian economy in the right direction of the policies in each economic field and already includes all the necessary

information and data. Despite the many recommendable aspects, it seems that there are several opportunities to improve the Strategy and these include:

(1) Slogan: It is better to present "Grand Slogan" or "Grand Vision" to attract people's interests and to induce their active & voluntary participation.
- The Korean examples;
* 1970s: "income US$ 1,000 and export US$ 10 bil.", 2000s: "747"

(2) Audience: If the target audience is the general public, it is better that the Strategy is written easier and shorter.

(3) Balance: The length, depth, dimension and the level of description needs to be balanced.

(4) Role of the government: It must mention what, when and how the government will do to achieve the goals, but currently the Strategy does not mention this.

(5) Consensus building: The preparation process of the Plan should be utilized for a venue for the government and private to think together about future changes and share views. Thus making the Plan is important, but the process of making the Plan is more important.

(6) Monitoring: It needs to incorporate monthly and annual monitoring systems.

(7) Incentives: It needs to provide incentives. Otherwise, it will likely lose binding power.

(8) Consistency: It needs to verify internal consistence using macro economic models.

(9) Priority: Currently the Plan is just a parallel listing of policies. Thus, it needs to prioritize the goals.

(10) Action Plan: More detailed action plans by each ministries are required.

Effective Use of Energy in Ukraine; Learning from Korean Experiences, Good or Bad

It seems common knowledge that the energy sector in Ukraine is suffering from huge efficiency loss, which is mainly attributable to the old energy facilities inherited from the former Soviet regime as well as the distorted incentives for energy consumption in households and industries. Thus, the symptoms are quite easily identified as such.

However, it is another and a more challenging question to implement energy programs and

policies and direct the Ukrainian economy and the energy sector policy directions towards renovating the old supply chains of energies and eliminating the distorted incentives of energy consumption of households and industries. A key element of the answer to this question would be "Money(resources)" (Another critical factor would be "political consensus" because any change in energy policy will affect the distributions of benefits and costs among the countably many involved.)

In response to these observations and discussions, we suggest the following recommendations based on our Korean experiences:

First, in order to raise more resources we recommend that the Ukrainian government should phase out distortive government subsidies of the energy sector. Due to low domestic savings rate and underdeveloped domestic financial markets, required resources for renovating the energy sector can not be properly obtained from the domestic financial market. Furthermore, the channel of foreign borrowing has been frozen since the outbreak of the global financial crisis. The money saved from the government subsidies on the energy sector could be redirected towards renovating the old energy infrastructures.

Second, it is recommended that the Ukrainian government should strengthen the capital budgeting system. Under the fortified capital budgeting system, each project will be evaluated on a sole ground of economic efficiency prior to allocation of resources. Also, the performance of the project will also be examined on a regular basis or along a capital budgeting cycle. Hence, enhanced transparency and profitability through a fortified capital budgeting system will make it easier to receive foreign borrowings (Positive to raising funds.)

In this regard the Korean Government has much to offer to Ukraine. Most of the theoretical models concerning the capital budgeting were devised by various experts from the academia or international organizations, such as IBRD. Korea, however, seems to be the only country to have a relatively long track record of putting the theory into practice and holding many valuable on-the-project know-hows.

Third, we recommend that privatization of the energy sector should be based on the ability of potential private entrants, both in terms of production efficiency and capital mobilization. Market dominant State Owned Enterprises have problems in cost minimizing and competition, guarantees better outcomes in most cases. It is, however, not always valid. Furthermore the number of market players is not a true measure for competition, either. Therefore the decision to privatize an energy sector should be made by taking into consideration the economic factors, such as the economy of scale, the economy of scope, and the competition enhancement. Anyhow, once the privatization procedure is taken, the proceeds from privatization should be matched with public capital investments for modernizing the energy sector. Otherwise, it would

be another way to leave the government share in the newly privatized forms and request that the private partners should spend their paid-in-capital on renovating the facilities.

In the paper we also make some recommendations in regard to supervising and regulating the energy industries and individual companies.

Investment in Infrastructure Development

Infrastructure investment is urgently required in Ukraine. Vast infrastructure networks are in serious disrepair and in need of modernization. Infrastructure reform and new investments are necessary in order to sustain stagnant productivity growth and lay a firm foundation for post-crisis economic recovery.

In order for the expansion of infrastructure investments to yield desired policy outcomes, two preconditions must be met. First, fiscal reform must be accompanied for more efficient mobilization of scarce public resources. Second, a solid and operational PPP framework must be established to induce more private investments in infrastructure. After reviewing the current state of infrastructure development in Ukraine as well as Korea's infrastructure development policies, this study presents key policy recommendations for Ukraine. The policy suggestions are organized around two themes: more efficient mobilization of existing public resources and the introduction of the best practice PPP framework for infrastructure investments.

As for the policy measures to raise efficiency in public resource mobilization, first, it is crucial to improve budget and fiscal framework with a longer-term perspective. Ukraine needs to strengthen its existing medium-term fiscal framework to make it fully operational in order to establish well-prioritized plan for infrastructure development. It is also required to closely monitor quasi-fiscal deficits arising from the SOEs in key infrastructure industries. Second, the public investment management process should be upgraded and institutionalized. In this regard, the government needs to introduce an effective scheme for preliminary feasibility study and tighten public expenditure monitoring by improving cost management and ex-post performance evaluation of public projects.

As for the measures to attract more active private participation in infrastructure investments, first, it is necessary to introduce a solid legal, regulatory, and governance framework corresponding to international best practices. The current draft law on PPP should be reviewed to strike the balance between the needs of private investors and the potential fiscal risk. The law should specify rights and obligations of all related stakeholders and the principles of tendering, contracting, risk sharing and conflict resolution. In addition to clarifying the role of a relevant government authority, it is also important to set up an independent PPP center, staffed with relevant experts in order to accumulate the necessary competence and capacity over time.

Once a legal and governance framework is introduced, it is important to make it functional and continuously self-improving. While Ukraine may need to start with transportation facilities such as roads, railways, and seaports, it can gradually expand to a wider spectrum of basic social infrastructure such as education, culture and welfare facilities. In order to maximize private participation, it is also crucial to diversify investor profiles by creating a market friendly environment. To encourage participation of financial institutions and foreign investors, the government needs to offer various incentives for PPP investments including tax reductions, cash grants, location support, and others. Creating collective investment tools such as infrastructure funds should also be instrumental to mobilizing savings in the capital market.

At its early stage of PPP development, it is inevitable to provide various governmental support schemes such as minimum revenue guarantee as well as credit guarantee for infrastructure financing. However, it is also critical to have an explicit scheme to limit fiscal risks that may arise from the governmental support for PPP. This is especially important for Ukraine, as the current draft law on PPP has been criticized as it practically undertakes full economic risk on the cost of the private partner. Along with the limit rule on the size of fiscal burden caused by PPP, the government needs to avoid excessive minimum revenue guarantee by introducing measures to reduce moral hazard incentives.

WTO Membership and Export Promotion in Ukraine

Enhancing export performance will be essential for the Ukrainian economy, not only to recover from the recent economic crisis but also to achieve sustainable long-term growth. While Ukraine's entry into WTO (on May 2008) is expected to provide a stable and predictable trade environment for Ukraine, it is also true that domestic policy space for export promotion available to Ukraine has been substantially narrowed down with the WTO membership. Given these circumstances, we suggest the following policy agendas.

1. Short-term policy agenda (within 2-3 years)

① Make full effort to successfully recover from the current financial crisis

The stable and liquid financial market is a prerequisite not only for macroeconomic stability but also for export financing. Thus all of the policy measures agreed upon by the IMF rescue program should be promptly implemented without delay including flexible exchange rate.

② Establish substantial structural reform throughout the economy

The Korean experience tells us that the economic crisis could be turned into an opportunity if appropriate structural reforms are implemented. Just after the 1997 financial crisis, the Korean government implemented extensive structural reform packages in four major areas (corporate sector, financial sector, labor market and social

security net, and public sector). In doing so, the "Big bang" approach rather than piecemeal reform approach should be taken.

③ Establish national agencies who can assist exporters in indirect ways

Entering export market involves various risks for the exporting firms. In order to promote export activity, it would be essential to reduce such risks. The WTO-consistent way to do this is to establish national agencies such as KOTRA, KEIC(Korea Export Insurance Corporation) and KITA. These agencies provide either extensive information on economic and political environment in the potential export markets or financial insurance on trade-related risks.

2. Medium or Long-term policy agenda (within 3-10 years)

① Establish an efficient system to support R&D activities

It is now well known that R&D activity is a precondition for competing in the international market and adapting to changes in demand and product development. Moreover, supporting R&D activity may be the only and the most important domestic policy that could be implemented by the government.

② Identify industries which can create dynamic comparative advantage in the medium-term

From the Korean experience we can learn that it is important to take one step ahead of the current level of economic development and comparative advantage. In this regard, Ukraine seems to be relatively well positioned to develop IT industries in the near future due to its high level of human capital (measured by education).

③ Search for 'trade-creating' FTA partners

On top of WTO accession, FTA formation may enhance trade performance of Ukraine. But it is important to choose FTA partners with which trade could be 'created' rather than 'diverted'. In this regard, it would be most beneficial if Ukraine promptly enters into FTA with the EU.

Mid-term Economic
Development Strategies for Ukraine

Chapter 01

Consultation on Formulation of Mid-term National Development Strategy

Chapter 01

Consultation on Formulation of Mid-term National Development Strategy

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1. A Brief Assessment on the Current Economic situation of Ukraine

1.1. The Background

The Mid-term National Development Strategy of Ukraine (hereinafter, the Strategy) for the period up to 2020, was prepared in order to implement the directive of the Cabinet of Ministers of Ukraine. The Strategy was finalized in February 2009, and was sent to the Korean KSP team.

Of course, it was not for the first time that the Ukrainian government prepared such a mid-term economic plan. For instance in 2003-2004, the "Strategy for Economic and Social Development of Ukraine Towards European Integration," which covered the period of 2004-2015, was prepared by the initiative of President Leonid D. Kuchma. At the time the National Institute for Strategic Studies, the Institute for Economics and Forecasting of the Ukrainian National Academy of Sciences, Ministry of Economy of Ukraine and other government executive bodies put together the plan.

For preparing the new Strategy, The Ministry of Economy was in charge with participation of all ministries and most of the government executive bodies with help by the Institute for Economics and Forecasting of the Ukrainian National Academy of Sciences, taking into account proposals from public organizations. The Strategy developers, together with other government executive bodies, carefully processed all proposals submitted by public organizations and scientists. In particular the following organizations were involved: UNDP

Blue Ribbon Analytical and Advisory Center, Analytical Project "Millennium Development Goals," the specialists of the Ukrainian National Academy of Sciences.

Proposals regarding the structure, content and annexes to the Strategy were discussed with the officials-in-charge of the government executive bodies at joint meetings in the Ministry of Economy, and thereafter had been coordinated based on these consultations. According to the approved structure, the ministries were required to submit their proposals according to their competence. Almost all ministries and departments presented their proposals and comments to the final Strategy, which were fully or partially taken into account during the working through process. At the coordination stage, several working meetings were conducted where separate provisions had been specified.

From May 2008 to November 2008, the Institute for Economics and Forecasting of the Ukrainian National Academy of Sciences worked on the world development trends, a SWOT analysis, evaluation of development scenarios and projections. From November 2008 to February 2009, the Ministry of Economy worked on the definition of strategic trends, mechanisms and targets for development up to 2020. At the final stage in February 2009, a consultation was held with World Bank specialists to include the Strategy recommendations of the IMF and World Bank into the text of post-crisis development of Ukraine.

After the Strategy was approved by the Cabinet of Ministers of Ukraine, ministries would start using it in their daily activities, primarily in the preparation of sectoral development strategies and ministries' policy plans. The tasks and activities provided by the Strategy will be funded from current state and local budgets, funds of enterprises, international financial institutions and investors.

1.2. The Structure and Main Contents

(1) Overview

The Strategy consists of six parts. Since the Strategy sent to the Korean KSP team was written in Ukrainian, it had to be translated to English. Therefore, some expressions may be different from the original intention.

- Part 1) World in 2020: Global Tendencies and Challenges
- Part 2) Potential of the Economic Development of Ukraine
- Part 3) Strengths and Weaknesses of the Ukrainian Economy, Favorable Opportunities and Dangers for Economic Breakthrough
- Part 4) Scenarios, Stages and Framework Conditions for the Development of Economy of

Ukraine until 2020

- Part 5) Macroeconomic and Financial Stability and Institutional Competitiveness in 2010-2012
- Part 6) Priorities for Implementation of the Strategy of Competitiveness of the Ukrainian Economy in 2013-2020

(2) Part 1

First of all, Part 1 of the Strategy reviews the global tendencies and challenges in the economic and social fields up to 2020. It includes 10 topics and their main contents are as follows:

〈Mega tendencies of world economic development〉

The development of world economy until 2020 will mark a number of significant influence in its tendencies, which will lead to essential changes in the overall picture of the world economy and modification of its organization. Two cycles of the paradigm have passed: cycle of development in the 1980s, cycle of growth in the 1990s and decade of stagnation is likely to end by 2010.

Rapid economic growth of China with a huge population will lead to a serious redistribution of resources in the world economy (which is already happening), and soon the resource base of the world economy will be overbought. The United States, of course, remains the leading country in the world, but this is leadership, which will be lost. Probable transition of China and India, and some other countries into new major global players transforms the geopolitical landscape.

〈Development of civil society〉

Economic, social and political modernization of Ukraine, aimed at establishing a democratic legal state and civil society, can not be regarded only as a result of internal factors of development of the country, because it is an integral part of a single global civilization process. The European civilization has created and continues to develop a cultural and genetic paradigm of modern constitutional liberalism, which is determined through the concept of rule of law, supremacy of law and civil society, which plays the role of guarantor, protector of human rights and citizens from any harassment.

The role of the Universal Declaration of Human rights and several other important international documents do not only establish the regulatory and legal environment that ensures the rights of man and citizen, but also provides a certain lifestyle. The Strategy for development

of Ukraine until 2020 should take into account the global tendencies and challenges as well as to elaborate measures for the development of civil society as an important share of world civil society.

〈Environment〉

The world is faced with natural challenges that require joint efforts in overcoming the consequences of natural disasters and also in solving problems that occur due to the global climate. These changes raise a number of important tasks for countries, regarding the evaluation of their impact on the natural, physical, social and economic system and development of an appropriate policy of adaptation and mitigation. Considering the long-term aspect, ignoring climate change will cease to activate economic growth, while inappropriate actions in the nearest decades can create a threat of destruction of economic and social activities in the second half of 21 century in a scale comparable with the war or economic depression.

Global warming, caused by increasing intensity of greenhouse gas emissions and transition through the threshold level, results to delays in development in humanity due to the reduction of agricultural productivity, growth in lack of water, flooding danger of coastal areas and extreme meteorological phenomenona, collapse of ecosystems (risk of extinction of 20-30% types), which increases the threat to humun health. 700 million worldwide feel shortages of drinking water. If precautionary measures are not introduced, the number could rise upto 3 billion people by 2025. Level of groundwater is reducing, while 40% of the population depends on watershed, controlled by several countries. Exploitation of many river basins are out of control. Complications of safe and sustainable access to water is leading to increased conflict and corruption. During the 21st century violation of water balance can result in significant environmental losses, such as violations of environmental systems, irrigated agriculture.

〈Development of human capital〉

In today's world the competitiveness of the country and its success in the world market to some extent is determined by the ability to keep and develop human resources. The conclusion made by analysts at EBRD on the content of reforms in Central and Eastern Europe is that the social component should be one of the key priorities as the main factor of productivity and competitiveness - intelligence and knowledge, which is primarily people and correspondently volume of investment in human development.

There is a tendency of growth of public expenditure in education in most countries. The share of public spending on education in the Ukrainian economy is sufficiently strong, the problem today is the effectiveness of their use. The traditional forms of employment were not enough for companies to adapt to new conditions of management. There was a need for

transition to non-traditional forms, in particular incomplete, secondary, temporary, seasonal, informal, self-employment and so on. The flexibility of the labor force largely appears in increase in its mobility and changes in this area related to the formation of multi-worker new formation.

Along with the problem of extremely high fertility appeared its antipodes - the problem of excessively low rate of birth, sometimes - lower life expectancy, distribution depopulation tendencies in some countries. Due to the low rate of birth, the important factor of increase of the population in most developed regions of the world and in particular the developed European countries, has become an international migration.

〈Land resource and agricultural market〉

Over the past 50 years, world demand for food has increased by 4 times, therefore, increased demand for land resources for its production. Due to the current food crisis, which according to the experts for some time will intensify, the emergence of new market opportunities is the ground to predict that the world will go through agriculture intensification. Reducing provision of land is compensated by stable tendency of increase in efficiency of productive land, because the level of intensification of agriculture is constantly increasing. Permanent increase of anthropological burden on fertile soils intensifies the ensuring of ecologically safe agriculture. In many countries the problem of shortage of irrigation water becomes very important. In the long term, the responses to these challenges will be achieved through new agricultural science, already existing current global tendency of reducing the rate of increase in the number of mankind.

Producing fuel from agricultural raw materials today is a key challenge to good security and important aspects of pricing conditions in the agricultural market. The main types of biofuels, which is consumed in the world today, are bioethanol and biodiesel. According to the FAO, it is expected that production of biofuels in the world will grow to 2020, which means that it will nearly triple, and prices will go up by 15-20%. The development of “green energy” was caused by rising prices of petroleum products and increase in demand and prices for relevant agricultural raw materials, but now it faces two important limitations: the increase in the price of food, lack of productive land and the necessity of compliance with environmentally safe crop rotation.

〈Industrial production〉

The acceleration of globalization and the formation of postmodern societies directly related to qualitative changes in the development of world industrial production. Despite the fact that the contribution of industry in creating the world’s GDP is two times less than contribution of

service sector and this gap between them keeps growing in favor of the latter, the industry remains the most important sector of material production. It is almost the main material in meeting the needs of the world's population directly or indirectly as a material basis for creating services. Moreover industry is the main object of the implementation of advanced science and technology, without which the growth of services would be impossible.

The lowest share of industry in GDP belongs to developed countries. The dynamics of the industry of developed countries meet the global trends and decreases annually, yielding to services (respectively 32 and 65.3% in 1990 against 25.5 and 72.9% of GDP in these countries in 2006). The most dynamic reduction of industry and growth of services in creating GDP are typical for countries with economies in transition. The reasons for such dynamics are not related to the qualitative improvement of industrial production and significantly increase its productivity, rather the opposite - they are the consequence of increasing degradation and deindustrialization production. Moreover, the structure and nature of services in these countries vary greatly in the worst side of those provided by developed countries. The smallest gap between the sphere of production and service sectors in creating GDP is for the developing countries.

This is a consequence of at least two circumstances: first, a sustainable rate of governments of developing countries, the rapid industrialization and the conquest of new niches in the world market for industrial products. Secondly, the deliberate policies of developed countries to transfer their production to developing countries with establishing the prerogatives of a service over the prerogative of production, confirms what is accelerated dynamic development for first and second slowed.

〈World energy market〉

In the late 21st century the radical structural changes took place in the fuel and energy complex, which led to changes in organizational structures, the existing institutional framework and methods of state regulations not only on energy, but in general in the areas of natural monopolies. During this process, much is affected: the liberalization and globalization of world energy trade. The transition to a liberal model almost simultaneously happened in most areas of network power, which put doubt on the hypothesis that the transition to free competition is the result of natural development of energy. If this were so, the transition to competition in gas industry is not a coincidence in time with the processes of deregulation in other areas of natural monopolies and will not be held almost simultaneously in many countries with very different conditions. Traditional technologies of state control were "revolutionarily" replaced into competition and regulation designed to ensure the effectiveness of the use of previously established fixed assets sector.

Tendencies in the change of resource stocks, costs of production, supply and demand are indicated only for the short interval and in the local markets (bilateral, multilateral agreements). Reduction in demand due to recession of the U.S. economy may affect the price of oil downward by 20-30% already in July-August 2008, however, periodic fluctuations in prices towards the decline may provoke actions of financial speculators. In anticipation of the negative indicators of economic development financial speculators sell shares on the stock exchange and orient again the financial on oil futures.

〈Capital flows and international trade〉

The development of the world economy during 2008-2020 will create high demand for investment resources. In the mid-term perspective, the need for investment is largely determined by retirement and replacement of facilities established in the last quarter of the 20th century. If the development of world economy in the second half of the 20th century had depended in many countries on growing share of savings in GDP, then during 2008-2010 it is expected that this share will be reduced. It is accepted that the basic capital accumulation during the 2015-2020 will increase as one of the components of entering the economic system in a long wave of economic development.

The provision of the world economy by capital is largely determined by the size of corporate profits, because due to outgoing growth of labor productivity compared to the wave, the share of profits in national income of developed countries has reached record levels. Rapid transfer of production facilities and use of outsourcing in countries with low wages, and also immigration from developing countries negatively affects wages in developed countries. Expansion of foreign investment in developing markets is due to outrun pace of economic recovery and likely transformation of productive assets in these countries in one of the main sources of income and growth of capitalization largest TNCs. However, the inflow of funds to the markets of developing countries will be uneven, which threatens the emergence of crisis and is already reflected in the capital markets.

〈The world financial markets〉

New global and regional financial centers will be formed. The Gulf and South-East Asia, China, Russia and other BRIC countries will be presented as the leaders of economic development. Their role through accumulated gold reserves and positive trade surplus in the international financial system will grow. Exchange consolidation in the global liberalization will deepen through monetary policy, the introduction of new technology changes access to international capital markets and complex derivative of financial instruments, informatization of finance and implementation of financial engineering will lead to the development of global banking and insurance technology

The ageing of population in developed countries will result in 2020 to identify ways of financing pensions and strengthening of uncontrolled migration from developing countries. The crises in world capital markets act as a regulatory mechanism as the natural reaction of financial systems in the contradiction between the real and virtual economies, which are accumulated.

〈Innovation and technology〉

A global tendency in the development of innovative processes in the world economy in the period to 2020 is characterized by actions of economic tendency that are significantly affected by current economic crisis. The tendency will have a place in the case of an absolute majority of developed countries and the vast majority of developing countries and for the first dynamics of R & D cost will dominate similar rates of growth of GDP. One of the main consequences is the strengthening of economic factor in the role of knowledge in the development of world civilization. Forecast of research intensity of GDP shows the perspective of dominance in these countries and economic unions momentum of the index for 2009-2020.

(3) Part 2

Part 2 deals with potentials of economic development of Ukraine. As we can see Part 1 as the prospects of economic tendencies on the world level, this part reveals analysis on the Ukrainian economic conditions on the domestic level. Part 2 considers 11 topics and their major points are as follows:

〈The economy of Ukraine in the global environment〉

In the following 12 years, the Ukrainian economy like other countries will feel the impact of a global economic crisis which will peak probably during 2009-2010 and depression will continue until 2020. The result of the crisis will strengthen the gap between countries by levels of its development and bring about the emergence of new opportunities for countries which have the ability to rebuild its economic and innovative systems to develop new technological changes. In addition they will use substantially and productively scarce energy and resources human and financial. Conversely, there will be expansion of behind-dropped countries in the world development and can result in increasing their distance with winners. Thus, Ukraine armed with experience from its own errors and mistakes of other countries will get a new chance in global competition through the transformation of administrative-planning to a market economy.

In the first phase of economic transformation during 1991-2007, Ukraine was unable to use its chance fully to build an economy which is self-sufficiently independent and steadily growing and enter into the range of 50 most competitive countries. Ukraine is a country which has high

economic potential. In the early 1990s, Ukraine produced 5% of minerals of the world production, the area of arable land is 2.3% of the world even though the area territory is 0.45% and population is 0.77% of the world total.

Thus, Ukraine has a rather high starting-potential to build its self-sufficient high-tech economy but loses his battle in the competition with economies having less resource supply and economies having small markets. Ukraine is slowly walking down the stairs to the post-industrial stage of development. Almost all the years of forming socially-oriented market economy, the absence of long-term government priorities, strategies and responsibility for their full implementation has been substituted by short-term government policy documents that remove before the deadline of their actions. The gap between the contents of policy instruments and their implementation is a feature of all post-socialist countries including Ukraine and this is the main factor of their skidding and slow movement in reforms to move towards to high-income of country.

The effectiveness of the domestic market is one of the weakest positions of Ukraine in international comparison: by the Global Competitiveness Report in 2008, Ukraine took 101st place among 131 countries regarding the efficiency of markets. Given the importance of public institutions to support economic growth of many transition economies, the reform of public administration is one of the most difficult and at the same time important aspects of the transition process. The basic prerequisites for the competitiveness of the nation are formed by quality of institutions, along with infrastructure, macroeconomic stability and primary education forms.

〈Macroeconomic situation〉

During 2001-2007, Ukraine had positive macroeconomic indicators but in the economy there were signs of macroeconomic equilibrium which strengthened in 2007-2008. In 2000-2004, the driving force of economic growth in Ukraine was the export of goods and services including production of metallurgical, chemical and engineering industries. In 2005-2007, main contribution to GDP growth was ensuring domestic consumption which grew by an average of 18% annually mainly due to significant growth of real wages (17% per year), volume of bank loans (70% per year) and pensions. In 2006-2007, a significant contribution to GDP growth was also due to the expansion of investments volume (23% per year). The year 2008, was characterized by an extension of investment in fixed assets until 81.6 billion Hryvnia for the first quarter and decline for August-November because of the financial crisis which also adversely affect to growth, as real and nominal incomes of population.

In the period of 2004-2006, inflation (CPI) was already at a fairly high level, on average 11.5% per year, due to significant growth of rise of food prices and increased rates for utilities.

On the demand side, the acceleration of inflation was caused by a soft monetary and fiscal policy - significant interventions of 'National Bank of Ukraine' in buying foreign currency, rapid growth of bank lending and the substantial increase for the population transfers from the budget.

Financing the budget deficit, which was generally very small, an average of 1% of GDP over the past 5 years, was not the main factor in the growth of money supply. However, government spending grew by an average of 30% annually in real terms during 2004-2007. In 2006-2007, the volume of exports in dollar value increased by an average of 20% annually, mainly due to exports of metals (up for 22% per year), chemical products (19%) and machinery products (37%). But imports grew at a faster pace, an average of 30% annually through growth of energy prices and brisk investment activity. As a result, there is a negative trade balance formed in the year 2006, which increased in 2007. In 2007, therefore, current account deficit amounted to 3.7% of GDP.

A strategic task is occurring for further increase of savings volume, which increases its norm in the GDP structure by categories of final customer. We should not exclude the possibility of a higher accumulation according to technological challenges to modernization of the economy. But in this context we must resolve acute social affairs of consumption fund growth and poverty reduction, because now, still more than 50% of the population has a total cost per month per capita below subsistence minimum.

〈The formation of civil society〉

Regarding Ukraine, the civil society is just emerging. Thus its institutions have not received proper development. In comparison with present economic, political and spiritual condition of the country, the total analysis of the principles required when the civil society built, convinced us that not all components that are required in a civil society existed. Through sociological analysis of public opinion, such problems in the development of a civil society in Ukraine are found:

- High level of disquietude that the country does not solve painful socio-economic and political problems;
- Undervaluation by the people of their financial and economic situation of the country as whole;
- Critical attitude toward democracy development in the country;
- Low level of public confidence to all authorities;
- Low grade of assessment on electoral system of the country;
- Considerable pessimism of the people about the future of the country;
- Passive citizenship position of the people which implies the inability of citizens to

become aware of their influence to resolve important social issues;
- Low assessment on political parties' activity in general and the negative attitude to the existence of a multiparty system in particular.

According to State Statistics Committee of Ukraine, the number of civic associations increases from year to year. At the beginning of 2008, 2,819 civic associations were legalized with international and national status, which were 2.7 times bigger compared with 1997 and 2.1 times compared with 2001.

〈Recovery of demographic potential〉

Specification of the demographic situation in Ukraine at the period of independence consisted in unification of big depopulation and the deterioration of certain qualitative characteristics of the population. That can be seen quality as protracted demographic crisis. Ukraine on the background of most European countries is distinguished as some of the most disadvantaged levels for basic demographic indicators: the lowest birth rate levels in Europe and high level of mortality that makes the magnitude and sustainability of depopulation and hence accelerated pace of reduction in population.

Today the average life expectancy in Ukraine is lower than it was 45 years ago, upon that only from the beginning of 1990 it is reduced by nearly 4 years for males and 1.2 years for women. The main features of the present death rate of the Ukrainian people's are:

- High male over-mortality especially in the working ages and as a result, too big gap in lifetime expectancy between women and men;
- Excess mortality in rural areas;
- Localization of major losses from premature mortality in working ages;
- Preservation of conservative structure of death causes in which a high mortality rate from the endogenous reasons connecting with no less significant level of mortality from exogenous diseases;
- High mortality rate from causes related with alcohol abuse, from all external causes of death;
- Men face very high mortality rate (almost at ten times higher than in the EU) from infectious diseases including tuberculosis and AIDS, and the alarming rate of spread of HIV/AIDS.

Healthy life expectancy at the beginning of the current decade in Ukraine was 59.2 years and was for ten years less than in EU countries. Differences between Ukraine and the developed European countries in lifetime represent the various prerequisites for further not only demographic but also for social and economic development. Indeed, countries with sick people,

with low lifetime expectancy and high mortality of populations has less chance to build an efficient economy, achieve high rates of economic growth and well-being level for population. Thus, contemporary trends of matrimonial processes in Ukraine are: diversification in marriage relationship, in particular the proliferation of unregistered marriages, delay in matrimony age, ongoing process of making new family, increasing proportion of incomplete family, decease in children at family. In spite of the saving tradition of family life and its main functions done by family, in the matrimonial area of Ukraine there is a series of problems in serious conditions such as unstableness of marriages and expansion of orphaned children.

〈Labor supplies〉

Assessing the current trends of human potential formation and development can be determined by specialty of labor supplies which is the potential of the Ukrainian economy. According to the census, educational level of citizen's has increased especially concerning at the middle age category and the reason is by fixedness of frame of reference of population to obtain higher education. Simultaneously, the use of educational potential is marked by increase of employment of persons with higher education which shows about the return from investment in education.

If someone analyzes the distribution of employees at enterprises in the country by the levels of education and by the kinds of economic activities, we can say that areas such as agriculture, construction, industry, trade are dominated by workers with basic or incomplete higher education. With a complete higher education working in such areas as finance, real estate, public administration, education, etc.

Unemployment is one of the main risks that accompany a person in any country. It causes difficulties including economic losses and serious social, political and moral losses. Having compared the level of unemployment in Ukraine with other countries, it should be noted that it can be done with high development of human potential. The motivation for working activity in the country is sufficiently high. The problem is not so much the unemployment rate, but long-term unemployment which is a significant risk for society.

〈Education and health protection〉

In recent years, the quantitative indicators of children and youth affected by education (according to 2006, the share of population aged 7-22 years, more than 85%) is growing; students of HEI in III-IV level of accreditation and graduate students (according to 2006, almost 500 persons and 7 persons per 10,000 population), the total number of students (for the period 1991-2006 biennium, at 2.5 times), the number of universities III-IV accreditation levels (350 in 2006/07 academic year) and private HEI (199 in 2006/07 academic year) and the technical

training college (1021 in 2006).

According to the determination under the UN Millennium Declaration to Ukraine, one of the Millennium Development Goals will be achieved by 2015, guaranteeing quality education for life and reach more than half the economically active population over the next 3-5 years (according to 2006) in different forms and types of learning for life.

〈The property of land resources and climate changes〉

Dynamic land property and land use of Ukraine significantly differs from global trends. In 1990, dimension of agricultural lands in the total 60.4 million hectare was 42 million hectare (almost 70% of the territory) and land in cultivation (tillage and perennial plantations) 34.6 million hectare (57.3%). At the beginning of 2008, the area of agricultural land was 41.7 million hectare (decrease by 1%), land cultivation 33.3 million hectare (decrease by 4%). Transformation crisis has reduced the agricultural production in Ukraine. In 2007, per unit area of productive land, agricultural products were lower by 37% and per capita to 32% less than in 1990. But starting in 2000, Ukraine has had a trend of growth of agricultural production and the tempo of growth has recently been accelerated.

The vulnerability of Ukrainian agriculture to climate change objectively is determined by the geographical position of big arable land in arid and extremely arid steppe areas. Instability of yield and volume of grain production is largely related to the fact that this sector tends to be in the south-eastern regions which is close to the port of export infrastructure. In recent years, fluctuations in the grain markets of Ukraine reached higher levels than the fluctuations could be economically and practically controlled by policy of buffer stocks. Therefore the results were destabilization of prices, farm income, foreign and domestic trades. At the same time, during the agrarian transformation, potential of irrigated agriculture in southern Ukraine largely faded.

Favorable conditions for the development of the agricultural sector can be described as:

- Availability of reserved land resources for increasing agricultural production as extensive and also intensive nature;
- Possibilities of realization about agro ecological policy of using cultivated land, intensifications and further progress of agricultural productions; formation of favorable agro landscapes;
- Significant potential for large-scale production of environmentally friendly products and food products, traditional products for individual regions.

〈Agro-grocery domestic market and rural development〉

Despite the positive trend in growth of food production and consumption in Ukraine, food situation is not safe. In 2007, the volume of agricultural production was almost 40% lower than the level in 1990, and the rate of food consumption per capita decreased by almost a quarter. Today the average citizen of Ukraine consumes food almost a third less than food consumption of the developed countries. Reducing the affordability of price for the population of Ukraine was due by the ratio inflation process on the food market.

Capacity is determined by the national food market volume per capita of food consumption. In this regard Ukraine has two strategic tasks: First, per capita food consumption should reach the level of medical standards recommended to the norms of healthy food; second, the share of food expenditure in family income should reach the level of the developed countries. Since incomes should increase by five times in order to achieve this goal, it will not be solved in the forecasting period. But we can expect that by 2020 the share will decline from current 50% to 30%.

〈Industrial capacity〉

In 2006, the industrial production exceeded the level of the 1990s, recovering the fatal fall which happened at the beginning of economic reforms. However, the growing trend of production showed a general trend of increasing commodity masses which mostly use conventional technologies. Developed countries during this time inculcated a new paradigm of industrial development, which bases on technology, knowledge, innovation and information.

Types of industrial activities with high technology revealed itself as powerful generators of innovative development. With much better dynamics in innovation to increase production gradually, it slowly went over the top mould-breaking role in the transformation of innovative industrial complex. By innovation and technological level the production of the Ukrainian industry has been greatly inferior to developed countries, but the Ukrainian industry increases the potential for technological upgrade and modernization increasing its presence in the global industrial market.

〈National energy market〉

Ukraine is one of the top ten leading countries with coal deposits, potentially being able to meet fully its needs in energy resources. The economic potential of renewable energy today is estimated at 20 billion tons of equivalent fuel a year, twice the annual extraction of all types of organic fuel. The most resonant discussions taking place in Ukraine are the evaluation of potential and prospects of production of biofuels. Potentially, Ukraine has favorable conditions

for growing crops (canola, soybean, maize, sunflower and others) as raw materials for production of biofuels.

Energy balance of Ukraine has structural and price imbalances, which will worsen the performance of energy security. Dynamics of energy extraction of minerals in recent years demonstrates differently directed trends. The structure of primary energy consumption does not meet the existing resource potential of the state. Situation of analysis and trends of the internal energy market gives reason to believe that:

- Despite the normalization of mutual wholesale and retail market segments, energy problems remain low capitalization of profits;
- Mechanism of stabilizing oil market by administrative measures (agreements between government and corporations) gives only a temporary effect and does not relieve the problem of implementation of economic mechanisms of balance in the market (e.g. formation and use of reserve oil / oil).

It should be noted that the definition of strategic directions of socio-economic development by 2020 will provide an opportunity to identify appropriate targets in the energy strategy. On one hand, development of energy should not deter the growth of GDP over the unjustified increase in energy prices and the diversion of public resources for investment subsidies unprofitable production. On the other hand, economic growth is becoming a prerequisite for accumulation of capital, and therefore the modernization of the complex. Thus it is important to harmonize the priorities of economic and energy policies of Ukraine, the latter must be constantly adjusted and derivative.

〈National innovation system and technology〉

Status of innovation in the Ukrainian economy has now two trends. First, recorded at the end of 2007 the majority of the growth parameters of the process reflect fracture descending trend only in relation to the previous year. Second, the positive dynamics of last year to increase spending on innovation and growth of innovative active subjects had virtually no adequate reflection in the course of the process innovation, including new processes and new products. Thus, the search of financial, economic and organizational resources and relevant international markets for the implementation of the expanded scale of production and reproduction of export of high technology industry in Ukraine is the main economic challenge to the current stage of development.

(4) Part 3 and Part 4

Part 3 studies the strengths and weaknesses of the Ukrainian economy with favorable

opportunities and dangers for economic breakthrough for each issue. Therefore, it is a so-called SWOT analysis. Because part 3 consists of a very big table, it is almost impossible to make a summary and does not seem necessary to do it here.

Part 4 titled "Scenarios, stages and framework conditions for the development of economy of Ukraine until 2020" has 2 sections. The first section deals with scenarios of the economic development of Ukraine until 2020. The strategic direction of long-term development of the Ukrainian economy is estimated as 'investment-intensive' with a focus on improving the competitiveness (by optimistic analytic forecasts). The decade from 2011 to 2020 should become an important period of accelerating economic and social development of Ukraine through the implementation of progressive structural changes in the economy, deepening international integration and significant development of market mechanisms. If Ukraine fails to meet the abovementioned conditions, it would eventually join the category of countries dependant on development aid with accumulating burden of social conflicts. Thus, Ukraine should focus on creating conditions for an effective and dynamic economic growth based on investment and innovation that will help restructure domestic economy and provide steady improvement of the welfare of the population. National welfare is the key strategic objective of the economic policy.

Therefore, the Ukrainian government should determine its strategic objectives for economic and social development in 2010 ? 2020 as follows:

- Significant improvement of quality and efficiency of economic growth with maintenance of high rate of technological innovations;
- Achieving tangible results from structural and technological modernization of the economy and innovation investments;
- Improvement of standards and quality of life for population;
- Active integration of Ukraine into the world economic system and fulfillment of the requirements of international economic security;
- Systematic support and use of competitive advantages of Ukraine in the international stage;
- Narrowing the gap in economic development between Ukraine and developed countries.

According to the strategic goals identified above, the period under discussion was divided into three stages:

- Stage 1(2009): the period of overcoming the financial crisis and implementation of policy of economic stabilization;
- Stage 2(2010-2013): the period of large-scale economic restructuring, which will lay the foundations for sustainable long-term economic growth. Cyclical fluctuations must be

taken into account and intensification of reformatory efforts by the Government and Parliament is necessary;

- Stage 3(2013-2020): the period of stabilization of sustainable growth rate although there may be some slowdown in the dynamics of real GDP comparing to the prior period.

In stage 1 the key objectives that needs to be met before 2010 are 1) to minimize the consequences of the global financial crisis for Ukrainian economy, 2) to overcome stagflation and recession by taking effective anti-crisis measures, 3) to stabilize economic dynamics and evolution, 4) to establish a basic legal framework that would create favorable conditions for economic growth based on realistic evaluation of resources and opportunities. It is necessary to begin implementation of new economic policy based on new regulatory and control principles, which would include state guarantees of property rights and equal competition opportunities (including competition in privatization of property and resources that are now state-owned). During this period, it is also important to focus state investments on building and upgrading the entire range of industrial and financial infrastructure. Monetary and fiscal policies should be aimed at maintaining financial stability and reducing the debt burden on the economy.

Stage 2 should become a period of a large-scale economic restructuring, supported by full range of socioeconomic mechanisms such as accumulation of new investments, growth of competitiveness on both domestic and international markets, creation of more effective control levers for capital and labor flows. Implementation of such mechanisms would lead to the increase in efficiency of production. During this period Ukraine must target the problem of inflation by continuous monitoring of fluctuations in exchange and interest rates in order to ensure stability of Hryvnia in domestic and international markets. As economy supported with vigorous investment activity (including FDIs) grows, government share in the redistribution of GDP will decline.

During stage 3, the Ukrainian economy shall attain and maintain a sustainable and high growth rate, which may exceed growth rates of the previous period.

Long-term analysis of the dynamics of key macroeconomic indicators determines the intervals necessary for implementation of innovative and investment models of future development of the Ukrainian economy. Based on the results of such analysis, optimistic (investment-active) scenarios of macroeconomic development were introduced, which is based on predictions that Ukraine will attract substantial investments and Ukrainian products will become more competitive in world markets. The pessimistic (inert) scenario was calculated with taking into account possibilities of unfavorable dynamics in exchange rate and world prices as well as inert economic policy.

According to the analysis of possible variants of economic development in Ukraine, if in

2011 ? 2020, GDP growth rates are positive but low (less than 3.0 ? 3.5%) and investment activity is slow, in combination with almost exhausted traditional sources for economic growth, potential economic crises and external shocks and growing international competition, it would significantly weaken the position of Ukraine in the world, which would make modernization of its economy impossible and would drastically weaken its competitiveness. Such scenario do not comply with the long-term basic conceptual principles of socioeconomic development of Ukraine. Therefore, optimistic scenarios were chosen as strategic (principal) plan of economic development. The forecasts were derived according to possible development of situation both in Ukraine and in the world (i.e. based on internal and external-related assumptions).

The second section of the part 4 deals with the major components, steps and direction of implementation of the development scenarios. In fact, the section is a big table which contains policy targets by scenarios and by stages.

(5) Part 5 and Part 6

Part 5 describes the macroeconomic and financial stability and institutional competitiveness in 2010-1012 while part 6 explains priorities for implementation of the strategy of competitiveness of the Ukrainian economy in 2013-2020.

Part 5 has 7 sections: macroeconomic stabilization and institutions, people and sustainable development, technological breakthrough in the industry, removing infrastructure constraints, transition to high-efficiency agriculture and agro-processing production, establishment of the modern innovation system, and Ukraine and the world. Each section consists of direction, target indicator, and major steps to discuss what to do in detail during 2010-2012. Since these are a long list of detailed policy actions, the directions for each section will be introduced in a simple manner as follows:

〈Macroeconomic stabilization and institutions〉

- Macroeconomic stability
- Optimizing the role of the state and removing obstacles to the development of economic activity of businesses
- Development of competition in the domestic market
- Emergence of civil society and increase of the government effectiveness
- Strengthening the institution of property as the basis of market economy
- Development of financial markets

〈People and sustainable development〉

- Modernization of the health care system
- Modern and high-quality education and training
- Cultural development
- Development of physical culture and sports
- Creation of the market of affordable housing
- Coverage of vulnerable populations with social security
- Development of the pension system and social insurance system
- Development of labor potential
- Sustainable development of environment
- Adaptation to global climate change

〈Technological breakthrough in the industry〉

- The introduction of modern industrial technology innovation
- Technological change in the system of energy security

〈Removing infrastructure constraints〉

- Construction of modern transportation corridors and integration into the European infrastructure
- Development of railroad transportation and improvement of its safety
- Development of seaports
- Development of airports
- Renovation and upgrading of municipal infrastructure
- Development of modern means of communication
- Preparation and hosting the finals of Euro-2012

〈Transition to high-efficiency agriculture and agro-processing production〉

- Introduction of European principles of state support for agriculture
- Reorientation of agricultural production with consideration of climate change
- Increase in livestock production
- Increase in crop
- Integrated provision of consumers with domestically manufactured food products

〈Establishment of the modern innovation system〉

- Improvement in the system of generation of knowledge

- Formation of innovation infrastructure
- Development of intellectual property
- Enhanced demand for innovation and technology transfer
- Integration of scientific and technological potential of Ukraine into the world economy

〈Ukraine and the world〉

- Institutional Euro-integration
- Step-by-step integration of the domestic economy to the common market of European Community
- Integration of Ukraine into the European Union
- Development of relations with other countries

Part 6 has the same structure as the part 5. The only difference is that the former covers 2010-2012 while the latter covers 2013-2020. Thus, as shown above, we can introduce the directions for each section as follows:

〈Sustainable development〉

- Establishment of civil society in Ukraine
- Improving the quality of education
- Modernization of the health care system
- Solving demographic problems
- Improving the environment and quality of labor
- Increase of energy safety and improvement of energy provision

〈Establishing an effective national innovation system〉

- The growth of the state's role in financing innovation
- Strengthening the innovation of industrial production
- The innovative content of capital investment
- Development of high technology

〈Improving competitiveness in certain areas of the economy〉

- Financial sector and monetary policy
- Improving the efficiency and the share of the real sector
- The shift of industry to meet domestic markets
- The agricultural sector and rural areas
- Improving food

● Optimization of the structure of foreign trade

2. Case Study: Korea's Economic Development Plans

2.1. Introduction

There has been remarkable growth performance of the Korean economy over the past forty years. The economic growth rate was 8.7% per year on average between 1961 and 2000. Per capita income in current prices rose from less than US$100 in the beginning of the 1960s to about US$ 10,000 in 1995 and US$ 20,000 in 2007. However, this might not be imaged in the 1950s just after the Korean War.

The Korean War lasted for three years starting from 1950, and it made the economic condition worse by destroying more than half of the manufacturing capacity, railroad network, and electricity generating capacity of Korea. According to Table 1-1, the initial economic conditions in fact were not favorable at all for economic development.

Table 1-1 | Selected Macroeconomic Indicators in 1960

(unit: %)

GDP by Sector	
Agriculture, Forestry and Fishery	38.0
Mining and Manufacturing	12.1
(Manufacturing)	(10.0)
Others	50.1
Employment by Sector	
Agriculture, Forestry and Fishery	79.8
Mining and Manufacturing	4.9
(Manufacturing)	(4.5)
Others	15.3
Export (US$ mil.)	31.8
Import (US$ mil.)	329.1
Investment Rate	11.7
Domestic Savings Rate	4.5
Foreign Savings Rate	7.2

Source: The Bank of Korea (1962), Korea Statistical Yearbook.

The 1950s was basically a period for restoring the facilities which were destroyed during the war thanks to foreign assistance. Certainly, Korea's economic growth started when President Park Chung Hee came into power in 1961. The Five-Year Economic Development Plans (hereinafter the Plan) came from his administration at first, and then it worked efficiently until the 1990s. There had been seven Five-Year Economic Development Plans from 1962 to 1997, and those worked proficiently in each period. There would be explanations and evaluations of each Five-Year Plan in the following sections and are based on the book titled Korea's Development Policy by Chuk Kyo Kim published by Korea Institute for International Economic Policy in 2008.

2.2. Five-Year Plans

(1) The First Five-Year Economic Development Plan (1962-1966)

When President Park Chung Hee seized power in 1961, Korea was one of the poorest countries in the world. The per capita GNP was about US$ 82, with almost half of the population living below the absolute poverty line. Naturally, the greatest concern of President Park was the eradication of poverty, which he thought could be achieved only though high economic growth. His vision was of a government-led development strategy, which could be better carried out through development planning.

The First Five-Year Plan was formulated by the EPB (Economy Planning Board). In the application of the First Plan, the main focus was put on targeting the economic growth rates along with modeling the needed production level of each industry and total size of investment. The government certainly embarked on investment planning. The supply of capital for the needs of industrialization led to the government's control of access to foreign borrowing and domestic credit. This was because of the conditions prevailing in the early 1960s - the extremely low domestic savings rate, the absence of a well-functioning financial and capital market, and the decline of foreign aid. First, in fact, the system of foreign-loan repayment guarantees (which required EPB approvals to loan seekers) contributed substantially to increasing the inflow of foreign capital. Second, there had been "indirect" financing for major industrial investments by government's policies. After recognizing its role as the predominant source of capital for industry in the early 1960s, the government resorted to the practice of "overloaning" by the central bank, which helped to forge close links between commercial banks and industries. Through the device of formally short-term but in reality long-term credit, commercial banks could play the role of industrial investment banks designed to finance the long-term investment needs of the economy. Korean enterprises willing to conform to the government's development priorities were entitled to borrow from commercial banks, amounts well in excess of the individual companies' net worth. This resulted in reducing the risk for foreign lenders, hence

massive foreign borrowing could flow in. The government also concentrated on mobilizing domestic resources for growth and employment in terms of printing of money. In addition, there was substantial increase in financial savings due to the normalization of interest rates in 1965 and the establishment of the National Tax Service in 1966.

The above strategies brought about unexpected obstacles such as (1) immediate budgetary deficit inflation partly caused by the mandatory savings policy that aimed to draw out the hidden capital to supplement limited financial resources, and (2) foreign currency inflation and the subsequent currency crisis caused by the unbalanced raid growth between the sudden increase in imports and the underachievement of plans for foreign capital inflows. Subsequently, the EPB initiated a major midcourse correction of the First Five-Year Plan beginning in November 1962, and announced a modified plan on February 1964, which targeted the latter three years (from 1964 to 1966) of the First Five-year Plan.

The modification plan concentrated on enhancing the implementation feasibility by reestablishing the targeted economic growth rate, size of capital investments as well as the plan for securing the needed capital. The projected overall economic growth rate was lowered from 7.1% to a percentage to be able achieve stable economic growth. Also, the ratio of capital investment to total available capital was decreased from 21 to 15.5% and the consumption ratio was increased from 79 to 84.5% to reflect the reality of resource allocation. The targeted amount of capital resources supply plan supported by foreign aid and foreign borrowing were lowered as well. The overall investment ratio was reduced to 17% by lowering the domestic savings ratio from 9.2 to 7.2% and the foreign savings ratio from 11.6 to 9.9%. However, this modified plan was not enacted for the major shift in economic development strategy towards export-oriented economic development based on foreign capital only after the three months of implementation as Vice Prime Minister Gi-young Chang became the head of the EPB in May 1964.

(2) The Second Five-Year Economic Development Plan (1967-1971)

A set of directives specifying the overall development targets was finalized and authorized in early 1965 by the Cabinet Council and was delivered to all of the ministries and associated agencies. These directives focused less on specifying the quantitative development targets and more on the core strategy of the Second Five-Year Plan, the expected priorities of capital investment areas, instructions to the ministries and associated agencies on how to develop the individual plans for investment projects of their own and specifying the deadline for submitting individual plans.

The Second Five-Year Plan was based on the three areas such as the Gross Plan, the Industrial Sector Plan, and the Capital Investment. Firstly, the Gross Plan was based on the

national income account including the gross target, finance, banking, and trade account, and was carried out by the Comprehensive Planning Division, Financial Resource Planning Division, and the Inflation Planning Division. Secondly, the Industrial Sector Plan was developed by categorizing all of the industries into 43 sectors and projecting the production level and the necessary capital for each based on input-output table and was carried out by the Comprehensive Planning Division and Capital Investment Planning Division to ensure the consistency and feasibility of the Second Five-Year Plan. Thirdly, the Capital Investment Plan was developed by first examining the investment-earning ratio, marginal effect to value-added, and marginal effect to trade account of the major investment plans, and then selecting and reflecting those investment projects that made economic sense to the Second Five-Year Plan. The Plan was carried out by the Capital Investment Planning Division and the Industrial Sector Working Groups. Major policies were to achieve the following objectives:

- To curb the increase in prices to the minimum possible level through the effective implementation of the financial stabilization program and the material demand and supply program, economization of consumption, and suppression of unessential and non-urgent investment;

- To further solidify the basis of economic stability and to maintain the domestic savings rate at 18.3% by inspiring the people with spirit of diligence and frugality and by promoting the public ownership of stocks and the floating of debentures;

- To push ahead with multi-faced export promotion politics, such as the expansion of facilities of export industries, development of new export items, increase in the export of strategic items and exploration of export markets in order to achieve the annual merchandise exports of US$936 million and invisible trade revenues of US$492 million;

- To suppress the import of unessential and non-urgent commodities and continue to promote and the home production of machinery and raw materials, in order to keep annual imports at an appropriate level;

- To rigidly select the industrial projects to be assisted with foreign capital, actively promote the foreigners' direct investments, and put emphasis in the inducement of foreign capital on long-term and low-interest financial loans under terms advantageous to the nation, with a view to regulating the foreign investments at appropriate levels;

- To endeavor to help develop science and technology as well as manpower resources through the inducement of technical know-how from advanced countries, strengthening of various training programs designed to secure technological manpower resources, expansion of facilities of vocational schools at various levels and positive utilization of

domestic research institutes.

In this period, Korea achieved an average annual economic growth rate of 9.7% with an investment rate of 26.4%. Rising troops to the Vietnam War helped tremendously in term of economic growth of Korea. However, there were problems of structural trade deficit due to focus on import of raw materials and production of labor-intensive export good. Also, problems of increasing foreign debt and over-investments on a few selective industries development of conglomerates and increasing domestic monopolies became serious. Unbalanced regional economic development and speeding up urbanization were left as matters of next Five-Year Plan.

(3) The Third Five-Year Economic Development Plan (1972-1976)

The First and Second Five-Year Plans were formulated and implemented during the decade of the 1960s. Through these plans, the government hastened national industrialization, expanded social overhead capital such as electricity and roads, which laid a firm foundation of agricultural developments and remarkably increased export. The successful implementation of the First and Second Five-Year Plans had brought about a new plan with a positive blue print.

The Third Five-Year Plan had been designed to reach new heights in the "prosperous 1970s," resolving various problems that were unavoidable which arose in the earlier stages of development. The guiding principles of this plan were as follows:

- To seek "harmony in growth, stabilization and a balanced economy." Along with stability, growth would be achieved and the welfare of the people would be promoted by distributing the fruits of development to all, including farmers and fishermen and those in low-income brackets;

- To realize a "self-sustaining economic structure" through further development of industry, improvement of the international balance of payments and the attainment of self-sufficiency in the major food grains;

- To ensure "balanced regional development" through comprehensive utilization of our national resources, including the development of the four major river basins and the expansion of road networks.

Certainly, the government announced major targets of the Third Five-year Plan. During the Plan period, the economy was scheduled to grow at an annual rate of 8.6%. Priority would be given to the following major targets: (1) the production of food grains would be increased and self-sufficiency would be achieved in major food grains. Furthermore, the incomes of farmers and fishermen would be raised and farmland rearrangement would be extended to facilitate farm

mechanization, (2) health and cultural facilities in farm and fishing villages would be expanded and electrification and the expansion of road networks in total areas would be promoted, (3) the international balance of payments position would be improved by achieving commodity exports of 3.5 billion dollars in the target year, (4) heavy and chemical industries would be constructed, thereby further improving the nation's industrial structure, (5) manpower would be developed, and employment would be maximized through the dramatic development of science and technology and the expansion of educational facilities, (6) the balanced development of such basic social facilities as electricity, transportation, storage, cargo handling, and communications would be pursued, (7) regional development would be expedited through the effective implementation of the four major river basins development programs and through the creation of industrial estates, (8) the welfare of the people would be enhanced through the promotion of housing programs, sanitation facilities, and social security programs and through the improvement of the working environment.

During the first half of the 1970s the external economic environment was subject to unexpected, sharp and sudden changes which affected the level of economic activity in Korea and its external trade and payments. Despite the balance-of-payments difficulties from 1974 to 1975 and an international environment less favorable than was expected when the Third Plan was formulated, Korea achieved most of the objectives set for the Third Five-Year Plan period. The rate of GNP growth during the plan period was about 11% a year, compared with the original target of 8.6%. Considerable progress was achieved in expanding the manufacturing sector, particularly in metals and chemicals and in developing capabilities for shipbuilding and manufacturing machinery. The progress in restraining inflation and reducing the reliance on foreign savings nevertheless fell short of original expectations because of the unfavorable external environment. Furthermore, even with employment growing at 4% a year, there was little improvement in the employment situation. More than 2 million jobs were created in the Third Plan period.

Table 1-2 | Selected Macroeconomic Indicators in 1973-1977

(Unit: %)

	1973	1974	1975	1976	1977
Economic Growth Rate	12.0	7.2	5.9	10.6	10.0
Domestic Savings Rate	22.8	21.9	19.5	25.3	28.7
Domestic Investment Rate	25.4	31.8	28.8	26.6	28.6
Export/GNI ratio	30.1	28.4	28.3	31.3	31.9
Import/GNI ratio	33.5	39.6	37.9	34.0	33.4
Inflation Rate	-	-	-	15.6	9.5

Source: The Bank of Korea, http://ecos.bok.or.kr/ (Search: February 17th 2009)
Information about inflation rates in 1973 -1977 and balance on current account is not provided from this source.

(4) The Fourth Five-Year Economic Development Plan (1977-1981)

The major goals of the Fourth Five-year Plan were to strengthen the balance of payments, to achieve structural shifts in the manufacturing sector in order to ensure the long-term viability of Korea's export-oriented development strategy, and to distribute broadly the benefits of growth by maintaining rapid employment growth and increasing the availability of essential services in rural areas. The Plan projected elimination of deficit in the current account of the balance of payments by 1979 and a surplus of US$ 1.2 billion in 1981. Even with the projected improvement in the balance of payments, the Plan estimated that direct foreign investment and gross disbursements of medium and long-term capital would have to reach about US$ 12 billion in current prices from 1977 to 1981, compared with about US$ 6 billion from 1972 to 1976. Strengthening the balance of payments and reducing the inflows of foreign savings would require a commensurate increase in the mobilization of domestic savings. National savings, exclusive of transfers, were projected to rise to 26.1% of GNP by 1981. In addition to significant improvements in the savings of the government and corporate sectors, household savings were projected to rise from 5.2% of GNP in 1976 to 6.7% in 1981.

The second major goal, which was structural shifts in manufacturing, should be seen in the context of shifts in Korea's comparative advantage. The Plan was based on the expectation that Korea's export markets for textiles, clothing, and other light manufactures had limited growth potential. Therefore Korea's comparative advantage would increasingly lie in such industries as machinery, electronics, and shipbuilding, which required more skilled labor and greater industrial sophistication. The output of these industries was projected to increase at 22% a year, which should boost their share of manufacturing output from 13% in 1975 to nearly 21% in 1981.

The third issue was to distribute broadly the benefits of growth by maintaining rapid employment growth and increasing the availability of essential services in rural areas. Rising employment had been the most important instrument for achieving an equitable distribution of the benefits of growth in Korea. Despite the success in reducing the rate of population growth to about 1.7% a year, the labor force continued to grow at more than 3% a year due to the baby boom after the Korean War. One major objective of the Fourth Five-year Plan was to increase employment opportunities at about the same rate as the labor force growth and thereby preventing an increase in unemployment. Given the proposed continuation of the labor intensive strategy, the principal determinant of the job creation rate was at the rate of GNP growth. Agriculture and services could not absorb large additions to the labor force if, at the same time, a reasonable growth in per capita incomes was assumed. Consequently meeting the employment objective required rapid growth of the manufacturing sector and continued emphasis on exports. The plan proposed to supplement rising employment with other measures to improve equity. The expansion of vocational training and middle and higher education would contribute to

improved productivity and earnings. Health outlays would increase as a proportion of total investment and the plan proposed special stress on preventive care and an innovative system of health delivery to serve low-income families. The family planning program would also be strengthened and basic infrastructure facilities would be further improved in rural areas.

To achieve these goals, the Plan proposed to continue the basic strategy of rapid, export-led growth, which had been successfully achieved since the mid-1960s. Fueled by growth of 16.5% a year in the volume of manufactured exports, GNP was expected to rise at 9.2% a year. The manufacturing sector, which now contributed 32% of GNP, was expected to increase at 14.2% a year and contribute 54% of incremental GDP at 14.2% a year and contribute 54 % of incremental GNP during the plan period. About 41% of the growth in manufacturing could be attributed to the increase in exports. The proportion was even higher in such sub-sectors as electronics, shipbuilding, textiles, and miscellaneous light manufactures. The share of manufactures in total exports was expected to rise to about 92% during the Plan period. As in the past, the expansion of manufactured exports was expected to be the primary source of improvement in the balance of payments. The manufacturing sector was also expected to be the principal source of employment growth.

Selective import substitution would continue in some sectors. In metals and chemicals the contribution of import substitution to growth was expected to rival that of exports; it was also expected to be significant in machinery. Nevertheless the net contribution of import substitution was expected to be small. Despite considerable efforts to increase the domestic supply of food grains and other agricultural products, the ratio of imports to total demand was projected to remain the same because of the limitations of Korea's natural resources. Demand for rice and barley, in which Korea attained self-sufficiency in 1975, was projected to be met entirely from domestic production.

Table 1-3 | Selected Macroeconomic Indicators in 1978-1982

(Unit: %)

	1978	1979	1980	1981	1982
Economic Growth Rate	9.3	6.8	-1.5	6.2	7.3
Domestic Savings Rate	31.0	30.2	24.7	24.6	25.7
Domestic Investment Rate	32.7	36.0	31.9	29.9	28.9
Export/GNI ratio	30.3	28.5	35.1	38.0	36.9
Import/GNI ratio	34.3	36.3	44.9	46.0	41.8
Inflation Rate	11.9	19.5	28.3	20.6	8.7
Balance on Current Account (US$ bil.)	-	-	-5.3	-4.6	-2.6

Source: The Bank of Korea, http://ecos.bok.or.kr/ (Search: February 17, 2009)
Information of balance on current account in 1978 and 1979 is not provided from this source.

The development strategy of the Fourth Five-Year Plan was basically sound, particularly emphasizing export growth and the proposed shifts in the structure of the manufacturing sector. But three basic issues impinged on the capacity of the Korean economy to realize the goals set out in the plan: the feasibility of projected growth in exports; the realism of the plan's assessment of investment requirements; and the availability of adequate resources for financing investment.

(5) The Fifth Five-Year Economic Development Plan (1982-1986)

The environment that Korea faced in entering the period of the Fifth Five-Year Plan was remarkably different from what prevailed in the years before the Fourth Five-Year Plan. First, the world economic outlook for the first half of the 1980s appeared much less favorable than in 1970s. In particular the conditions of the supply and price of oil were likely to continually demonstrate the present difficulties experienced by nearly all non-OPEC countries. In addition, the prospect of the world economy in the 1980s was rather pessimistic due to the threat of high and persistent inflation, which would prevail within industrialized and developing countries alike. The failure to find an alternative to the shaky dollar despite the long search, and the ever-intensifying protectionist mood among industrialized countries against exports of developing countries also helped to cloud the prospects of the world economy. Second, the most significant change in the domestic environment since the beginning of the Fourth Five-Year Plan occurred with the death of President Park Chung Hee. A significant change in the domestic environment had occurred in people's perceptions and demands. As the living conditions improved and contact with the outside world became more frequent and direct than in the past, people's perceptions of the current political, social and economic situations had been very much sharpened. Subsequently there were more intense and more diverse demands placed on the government. People consistently requested for a better quality of life in addition to improvements in material consumption. They demanded improvements in environment, urban transportation, health service, education, housing, and social security. They particularly sought for a better distribution of income and wealth as well as stable prices for food, shelter, and clothing. Also, during this period, inflation had attracted much greater concern than any other time in the past, mainly because of its rapid rate and the impact on the economy.

One could hardly deny that Korea's remarkable development and growth performance in the past had benefited from the direct control and intervention of the government in the process of economic decision making, its implementation and resource allocation. Nevertheless, in this period, there was a widely acclaimed view that, in the future, this type of direct control and intervention would be more detrimental to the growth of the Korean economy than serving as a stimulant. This view held that the Korean economy grew beyond the optimal size for effective direct control and that the economy has become too complex and too diverse to be managed by the government. The view therefore advocated indirect intervention by the government and

greater reliance on the market mechanism and personal motivation through incentives systems in major economic undertakings and resource allocation in the Fifth Five-Year Plan. Furthermore there were serious concerns about over-investment in heavy and chemical industries and their inefficiencies as a result.

Considering the changes in the international and domestic environment, the following were chosen as major objectives of the Fifth Five-Year Plan. The first objective was to solidify the foundation for long-term economic growth. This included issues such as the supply of major natural resources, keeping of shift in the industrial structure, long-run price stability and etc. The second objective was to establish the basis for long-term price stabilization which contained matters of inflation controls, domestic savings and original market's function. The next goal was to enhance the efficiency and the competitiveness of the economy. There was an objective in terms of improvement both in economic growth and social equity at the same time.

Despite a negative growth rate and high public unrest in 1980, the economy did rebound to attain an 8.1% growth rate by 1983. Exports recovered in mid-1983 and the economy began to gain strength. A good harvest in 1983 helped launch in December, a revised the Fifth Five-Year Plan, which amongst other things called for steady growth for the next three years, low inflation, and sharply reduced foreign borrowing. Capital liberalization was somewhat delayed with short-term consideration emphasizing mainly stabilization measures. Government restrictions on FDI were however relaxed substantially with recognition of FDI's role in promoting competition and transferring advanced foreign technologies. Specifically, the revision of the Foreign Capital Inducement Act in 1984 precipitated a major shift, abolishing restrictions on the foreign ownership ratio and the repatriation of capital. Furthermore, import liberalization gained momentum in 1984 as the country's external balance improved, raising the degree of import liberalization.

Table 1-4 | Selected Macroeconomic Indicators in 1983-1987

(Unit: %)

	1983	1984	1985	1986	1987
Economic Growth Rate	10.8	8.1	6.8	10.6	11.1
Domestic Savings Rate	29.0	31.0	31.2	34.9	38.4
Domestic Investment Rate	29.2	30.6	30.4	29.4	30.3
Export/GNI ratio	35.9	36.3	34.5	38.0	40.1
Import/GNI ratio	39.0	38.8	36.4	35.0	34.2
Inflation Rate	4.1	2.1	2.2	3.7	3.0
Balance on Current Account (US$ bil.))	-1.5	-1.3	-0.8	4.7	10,1

Source: The Bank of Korea, http://ecos.bok.or.kr/ (Search: February 17, 2009)

(6) The Five-Year Plans from the late 1980s to 1990s

President Roh Tae-woo, won the 1987 December election on a minority vote of just 37%, and was inaugurated as president in February 1998, which was hailed as the first peaceful transfer of presidential power in Korean history. He quickly sought to accelerate political democratization and market liberalization. Furthermore, the constitutional reform in 1987, activated under the strong nation-wide pro-democratic movement, and specifically, the inclusion of economic democracy placed a definite mark on the break away from the government-led discrimination policy stance of precious regimes. Specifically, the amendment in 1987 of Paragraph 2, Article 119 of the Korean constitution now reads: "the state may regulate and coordinate economic affairs in order to maintain the balance growth and stability of the national economy, to ensure proper distribution of income, to prevent the domination of the market and the abuse of economic power and to democratize the economy through harmony among the economic agent."

The introduction of "economic democracy" had significant economic consequences. Labor policy, for example, strengthened union's influences and favored wage increases - frequent and violent labor disputes increased, workers demanded greater involvement in management decisions by voicing "management democracy," and the tremendous wage hikes far exceeded the rise in productivity. While this trend occurred as a reaction to suppressed labor and human rights, the force of this reaction seemed too strong thereby shifting the pendulum too far to the left. Simultaneously, contrary to the general liberalization stance of the government, regulations on corporate activities and expansion were much strengthened.

Roh Tae-woo government's economic policies, largely driven by populist politics subdued under the weight of egalitarianism, were often found to be ill conceived and inconsistent. The full effects of policy mistakes were however cushioned initially by the favorable "three lows: but high financial costs, excessive administrative regulations on business activities, and low social overhead capital investment were typical of the period, gradually afflicted industrial and firm competitiveness and entrepreneurship. The late 1980s saw Korea's export competitiveness deteriorate due to labor disputes, rising interest rates and the sharply appreciating won. The US$ 8.8 billion trade surplus of 1988, on of the highest even by world standards, dwindled to practically nothing in 1989 and was followed by progressively larger deficits in the 1990s. Increasingly, technology became an important factor determining international competitiveness, and the failure of decades of policies trying to strengthen SMEs to provide high quality component parts at competitive prices started to become evident. However, despite the clear advantage of Korea's large corporations in gaining access to new markets and new technology and to reduce production costs increasing public sentiment against the chaebol together with populist politics, paved the way for an even stronger shift in policy toward emphasizing SMEs and regulating chaebol behavior. It is interesting to note that the Korea Fair Trade Commission

(KFTC), which should have emphasized promoting competition in the private sector has in fact, been a strong advocacy for SMEs and somewhat tended to adopt a singular goal of limiting chaebol activities and expansion. The crucial point is that the overall economy suffered as a result of the government's attempts to directly control economic concentration specifically by regulating chaebol behavior.

The macroeconomic picture began to deteriorate at the turn of the decade. From 1988, CPI inflation began to rise, from 7.1% in 1988 to 9.3% in 1990, and accelerated largely by surging labor costs and increased money supply. Of particular significance affecting the macroeconomic picture was the real wage increase, which in the manufacturing sector exceeded productivity growth from 1988/1989 through to 1994. This may be well attributed to wage inflexibility in the face of worsening labor shortage and increased power of labor unions in wage determination.

Internationally, particularly following the collapse of the Soviet bloc, the 1990s witnessed growing regionalization as economic trade blocs among countries of Europe and America began to be formed. With the World Trade Organization, a new regime in international trade was created that increased pressure to liberalize previously protected markets particularly in agricultural goods and financial services. President Kim Young Sam was quick to catch on and this time, on top of accelerated liberalization, announced globalization as a priority national goal. The government's effect to gain international legitimacy culminated in Korea's accession to the OECD in 1996, which seemed to signal Korea's entry into the rank of advanced countries.

Populist politics clouded by egalitarian sentiments again, and this time with a vengeance, characterized Kim Young Sam's economic policies having decisively neaten the main opposition party while campaigning on a platform promising reform of government controls and regulations. On his arrival into office, he immediately forced the disclosure of private assets of the public officeholders, expelled corrupt officials, called for the enactment of a law on officeholders' ethics, removed high ranking military personnel identified with the past regimes, reduced the size and role of the Agency for National Security Planning and the Defense Intelligence Command and introduced the "real name financial account system." A closer look underneath the government's tearing down of old regulations and the embracing of "market principles" to lead economic reform reveals a somewhat different picture. In reality, under Korea's formal liberalization and deregulation measures, there has always been strong influence on the private sector by the government. Financial retardation continued under the "kwanchi kumyung," while labor became increasingly militant and uncompromising as accelerated democratization impacted the economic sphere as well. The continued antagonism towards large corporations encouraged the government to put further pressure on the chaebol to comply with government regulations. Under such a hostile environment, it is no wonder that the economy gradually lost their competitive edge in an increasingly competitive world economy.

In the 1990s, apart from the deteriorating current account balance from 1994 onwards, Korea's macroeconomic picture in general looked rather positive. The opening up of the economy helped economic growth to increase from 3% in 1992 to 8.6% and 8.9 % in 1994 and 1995 respectively. Exports and imports surged to record levels, but the overvaluation of the Korean won did little to cushion the growing current account deficit. However, per capita income surpassed the US$ 10,000 mark in 1995, and in 1996 Korea joined the OECD. The unemployment rate was also impressive, recorded at an unprecedented 2%. Notwithstanding the high economic growth, inflation remained relatively stable at a 4% level throughout most of the 1990s.

Table 1-5 | Selected Macroeconomic Indicators in 1988-1997

(Unit: %)

	1988	1990	1992	1995	1997
Economic Growth Rate	10.6	9.2	5.9	9.2	4.7
Domestic Savings Rate	40.4	37.5	36.8	36.3	35.5
Domestic Investment Rate	31.2	37.4	37.2	37.8	36.1
Export/GNI ratio	37.6	29.1	27.4	29.6	33.4
Import/GNI ratio	31.1	30.2	28.7	31.1	34.5
Inflation Rate	6.1	8.4	6.2	4.6	3.4
Balance on Current Account (US$ bil.)	14.6	-2.0	-4.1	-8.7	-8.3

Source: The Bank of Korea, http://ecos.bok.or.kr/ (Search: February 17, 2009)

(7) Crisis and Structural Reforms after 1997

In 1997, consecutive bankruptcies of several larger chaebol (Korean industrial conglomerates), coupled with financial cries or foreign exchange instability in Thailand and other East Asian countries weakened investor confidence in Korea. As a result, foreign banks refused to roll over credit lines to Korean financial institutions and foreign investors pulled out of Korea. By mid-December 1997, Korea's foreign exchange reserves were almost depleted. Korea, like a number of other economically vulnerable crisis-hit countries, had no choice but to ask for a rescue package from the IMF. The crisis led to a sharp contraction of economic activity in 1998, a negative 6.7% growth, and the worst in modern Korean history. Many Koreans considered the 1997 crisis to be the most critical national crisis since the Korean War in the early 1950s, and the worst national disgrace since the 1910 Japanese Annexation.

Although one should acknowledge the contagion effect of the Southeast Asian crisis, the origin of the crisis should be traced back to long-standing structural weaknesses of the Korean economy. The government-led development strategy of the last 30 years was effective for rapid industrialization, thus enabling Korea to achieve remarkably high economic growth of over 8%

per year. However, it entailed some serious adverse side effects. Korea's corporate management and financial system lacked transparency, moral hazard was endemic and overall the economy was suffering from an absence of market discipline as a result of the collusive links between businessmen and politicians. Over the last several decades, Korea's chaebol pursued an excessively leveraged expansion policy based on "too big to fail." The Korean commercial banks that were not equipped with proper credit assessment and risk management tools continued to support chaebols because they knew that the government wouldn't allow the chaebol to go bankrupt. This led to pervasive moral hazard for both chaebols and banks, resulting in accumulation of non-performing loans in the financial sector. The financial liberalization beginning in early 1990s made the situation worse, as the banks relied increasingly on cheaper foreign borrowing, which led to a rapid increase in foreign liabilities. The Kim Young Sam government attempted a few measures to remedy these problems, but failed to do so due to internal resistance from the vested interest groups and weakening of international confidence in the Korean economy, inviting the financial crisis in November 1997.

Since signing the IMF-supported assistance program, Korea swiftly implemented a wide rage of economic reform measures. These were all directed toward rebuilding market confidence, as well as expediting economic restructuring. Prompt and decisive reforms quickly restored financial market stability and thereby allowed the Korean economy to enter a transition period in 1999, and then a normal path of economic growth in the year 2000. The goal of economic policy of the Korean government during the first five months under the IMF program from December 1997 to April 1998 was to stabilized the foreign exchange market and accumulate foreign reserves through the maintenance of high interest rates and tight monetary policies. Since the onset of the crisis, the Korean government's most critical concern has been easing the immediate liquidity crisis and restoring intentional confidence. To this end, on December 2, 1997, Korea and the IMF reached an agreement on a financial aid package totaling US$ 58.35 billion, which included loans from IMF, World Bank and the Asian Development Bank and other countries. The accelerated disbursement of financial aid from the IMF, IBRD, and ADB greatly eased the short-term liquidity shortage. Korea also successfully converted its outstanding foreign short-term debt to medium-term debt. This led to a short-term economic rebound and allowed Korea to successfully issue US$ 4 billion in global bonds in New York on April 8, 1998. Reflecting improved investors confidence, international creditor banks increased their rollovers of maturing debt from 32.2% in December 1998 to as high as 100% in early June 1998.

Aside from the government initiatives, the Korean people also demonstrated their resolve and unity through various voluntary programs, most notably the nationwide campaign for gold collection. During this time, a landmark labor bill was passed to legalize layoffs for managerial reasons. With the gradual stabilization of the won/dollar exchange rate, economic restructuring was the next priority, especially in the financial and corporate sectors. By September 1998, the

first round of financial sector restructuring was completed. Many ailing financial institutions were either shut down or suspended and viable banks obtained "clean-bank" status with 10-13% BIS capital adequacy ratios through recapitalization as well as sales of NPLs to the Korea Asset Management Corporation (KAMCO). At the same time establishing institutional frameworks for restructuring and corporate governance and prompting public sector efficiency have also been top priorities. In September 1998, the Korean government launched a bold economic stimulus package aimed at jump-starting economic recovery, including a 15 trillion-won supplementary budget. A flexible monetary supply and interest rate cuts were implemented to boost domestic demand, help ease the credit crunch, and to prevent further deterioration of the manufacturing base. In the same month, the government completed the first round of financial restructuring by massive recapitalization in major banks and cleaning up bad loans. This provided momentum for substantial progress in restructuring efforts. Corporate-sector restructuring focused on implementing workouts and business swaps known as Big Deals among the top five conglomerates. The following table shows the outcomes from Korea's crisis management.

Table 1-6 | Selected Macroeconomic Indicators in 1997, 1998 and 1999

(Unit: US$ billion)

	1997	1998	1999
GDP Growth (%)	4.7	-6.9	9.5
Current Account	8.1	40.6	25.0
Inflation Rate (%)	4.5	7.5	0.8
Exchange rate (won per US$)	1,415.2	1,207.8	1,145.4
Total External Liabilities	15.2	148.7	136.4
Usable Foreign Reserves	8.8	48.5	74.2

Source: Ministry of Finance and Economy

Not all of the outcomes from Korea's crisis management have been positive, as adverse consequences have inevitably arisen in the course of the reform process. Korea's unemployment rate dramatically increased from 2.7% on October 1997 to its peak of 8.7 % in February of 1999. Overall personal income shrunk, and the income gap between the rich and the poor also grew wider. This was a serious matter not only in moral terms, but also in view of maintaining social cohesion.

2.3. Role of Government in Economic Development

(1) From Resource Planning to Policy Planning

In the three decades of economic planning experiences in Korea, the EPB was responsible for formulation and implementation of the Five-Year Plans. The EPB, which was a super ministry in the sense that its minister was concurrently a deputy prime minister, was also responsible for the government budgeting, and monitoring and evaluation of performance since 1981, in addition to many other functions. In this sense the EPB was considered to have appropriate institutional power to carry out its function of economic planning and policy coordination. Within the EPB, the actual responsibility for development planning activities was placed on the Bureau of Economic Planning which was headed by a director-general and consisted of six to seven divisions. At the level of functional ministries, the Office of Planning and Management, which was a higher-level organization than the bureaus, handled all three functions: economic planning, budgeting and performance monitoring and evaluation. In addition to these permanent government organizations responsible for economic planning, many ad hoc working committees were organized at the time of plan formulation to increase the participation of many experts and opinion leaders from the private sector, as well as the representatives of industrial associations, in the planning works.

Although the formal planning organizations did not change much during the three decades of Korea's planning experiences, the function of Five-Year Plans changed significantly, along with changes in the targets and strategies of each plan, roughly from resource planning to policy planning. The First Five-Year Plan that was hurriedly drawn up by the military government in 1961 without much help from foreign experts was basically a comprehensive resource plan. It envisioned the allocation of all available resources in the economy by consolidating all investment projects including those to be undertaken by the private sector, although it was based on shaky statistical data available at that time. The contents of the Second Plan were substantially improved compared with the First Plan in the sense that is was formulated on the basis of more reliable data with a much wider participation of Korean bureaucrats and experts as well as foreign advisors. In fact, both the macro econometric model and the sectoral or input-output planning model, which were more reliable than before, were developed and applied for planning procedures beginning with the Second Plan. The Second Plan still carried the character of a comprehensive, resource planning, since it emphasized sector by sector material balances and attempted to consolidate all investment projects for the whole economy.

Beginning with the Third Plan, the function of planning certainly changed from the previous resource planning to policy planning. Realizing that it was actually not possible to plan and implement all allocation of economic resources, the government turned to the form of policy planning which emphasized the presentation of major policies for guiding the private business

sector decision makings, while listing only major investment projects in the plan. In order to change the function of economic planning, beginning in the Third Plan, the government had to emphasize empirical researches on the system of incentives and other policy issues in the course of plan formulations. In any case, the three additional five-year plans following the Third Plan continued to maintain the characteristics of policy planning although the policy emphasis of each plan changed, reflecting progress in economic development over time.

Beginning with the Fifth Plan, an indicative planning method was introduced at the state of plan formulation, with a view to enhance the effectiveness of policy planning. In other words, policy forums were held at the early stages of plan formulation to gather consensus on important policy issues, and also at the final stage of plan formulation to invite comments on the draft plan before the formal promulgation. Those who were usually invited in the forum were government and non-government experts of related fields, representatives of business associations and other interest groups and opinion leaders from mass media.

(2) Mechanism of Government Intervention

From the above discussion, it was analyzed that the Korean economic plans shifted from a form of resource planning to policy planning. What exactly were the points of policy planning for the Korean government in major areas of economic development?

〈National Budget〉

Though the national budgeting process, the government played an important role in the mobilization and allocation of resources throughout the 1960s and 1970s. The ambitious increase in government spending in 1961 and 1962 and the resulting budget deficits contributed to inflation. To stabilize the economy, government spending was reduced from 17.2% of GDP from 1960 to 1964 and to 14.6% from 1965 to 1969. The resumption of growth in government spending was gradual and consistent with the increase in revenue, thus avoiding serious inflationary pressure. In addition, the relatively efficient use of the budget by the government in playing its role in resource mobilization is attributable to the improvements in tax administration, which protected tax collectors from political interferences.

〈Public Enterprise〉

A government's most visible intervention instrument is public enterprises. From the early 1960s onwards, the Korean government actively used this tool, either by establishing new public enterprises or expanding existing ones. Public enterprises constituted a leading sector in the national economy in that they grew substantially more rapidly than the economy as whole. During the initial period of economic take-off, public enterprises were represented by their

contributions to capital formation, value added, employment and technological development.

Privatization of public enterprise is important to reduce government involvement in the economy and expand the scope of market forces. Although 11 public enterprises were privatized in 1966 and 7 were privatized in 1980, the government started to launch an active program in the summer of 1998 to privatize 11 public enterprises and their 52 subsidiaries. Five public enterprises were to be privatized by the end of 1999, while the other six were to be sold more gradually. In addition to greater efficiency, the objectives of this plan were to improve the quality of services, generate revenue for restructuring and to obtain foreign exchange by selling assets to foreign investor. Progress in implementing the privatization plan has helped reduced the size of the public enterprises from 108 enterprise sin 1998 to 91 in 1999, while cutting employment from 210,000 to 186,000 over the same period of time. Fiscal revenue of 3.3 trillion won (0.7% of GDP) was generated in 1999. The government intended to sell its remaining holdings in four public enterprises and 20 subsidiaries in 2000, generating about 3.5 trillion won of fiscal revenue.

〈Regulatory Measures〉

Since the 1960s, the government has actively intervened in the market to channel the nation's limited resources to favored sectors. In addition to the financial instruments, the government utilized power and authority to directly influence the economic behavior of the private sector. One such case was the enactment of the Price Control Act 1961, which used ceilings to control the prices of give essential commodities: rice, barley, coal, anthracite, and fertilizer. However, price controls were neither effective nor efficient because of administrative difficulties in surveillance as well as market distortions such as black-market trading, quality declines, and sales avoidance. Their prices were subject to authorization by government ministries; one advice was cooperative pricing, by which prices were determined through an agreement among the producers with guidance rendered by the government.

Another regulatory action was the enactment of the Monopoly Regulation and Fair Trade Act of 1980. The major objectives of the Act were to ensure free market competition and protect consumers by controlling the abuse of monopolistic or oligopolistic power and prohibiting the formation of new companies wielding such power. However, numerous and unnecessary administrative regulations have undermined national competitiveness and become the cause of corruption and misconduct. Such regulations tended to stifle the initiative and creativity of the private sector. Establishing a more market-oriented economy and strengthening competition requires changing the role of the state in the economy and in society. A key aspect of this objective is to reform the regulations the govern firms and individuals. The 1997 Basic Act on Administrative Regulation attempted to establish a comprehensive and long-term approach to regulatory reform aimed at promoting private-sector initiative and creativity as a

means to improve the quality of life and enhance national competitiveness. To this end, it established five principles to guide the use of regulatory powers as follows:

- Eliminate, in principle, all anticompetitive economic regulations;
- Improve the efficiency of social regulations in areas such as the environment and health;
- Shift from ex ante control to ex post regulation;
- Base all regulations on adequate legal authority;
- Benchmark global standards.

〈Inducement Policies〉

In terms of tax policies for desired resource allocation, indirect taxes have become the major source of government revenue. However, the greater reliance on indirect taxes expressed the limited scope of the government's efforts to improve income distribution, as the tax burden imposed by indirect taxes was somewhat regressive in nature. The government applied various tax incentives and disincentives, such as preferential depreciations, subsidies, tax exemptions and holidays for the promotion of certain industries, and differential commodity tax rates to discourage consumption of luxury commodities. Secondly, regarding the financial sector as a tool of supporting the development plan, in the early 1960s, interest rates on savings offered by banks were unrealistically low, obstructing the flow of private funds into the official financial market and thus fueling inflationary pressures. This in turn hampered efficient allocation of financial resources. On the other hand, the low lending rates encouraged business firms to become excessively dependent on bank funds and to indulge in speculative activities. In order to curtail theses malfunctions, the Interest Realization Program was implemented between 1965 and 1968. Under this program, high interest rates were applied to both bank deposits and loans.

For foreign exchange policy matters, in the mid-1960s, the shortage of foreign exchange became a serious issue as the demand for financing for development projects increased. From then onwards, the exchange rate was viewed as a critical policy instrument. Hence, a managed floating system was introduced in 1965 to reflect the market forces as closely as possible in determining the exchange rate. This reform naturally encouraged exports on one hand and discouraged imports on the other. In the late 1970s, however, the government failed to heed market forces and delayed a necessary devaluation of the won for some five years until 1980. Although the relatively lower rate of foreign exchange lightened the financial burden on business by decreasing real principal and interest payments on foreign loans, it naturally discouraged merchandise exports. The problem was not apparent because of the inflow of foreign exchange earnings from overseas construction projects.

2.4. Lessons from Korea's Economic Development Plans and Policy Experiences

Korea's outstanding economic and social performances are attributable to the interaction of various factors, the relative importance of which cannot be easily gauged. Political stability and strong leadership's commitment to development were the prerequisites for economic development. The labor force in the early 1960s was cheap, but educated and industrious. This backlog of human capital combined with the formulation of an outward-oriented industrial development strategy in the early 1960s laid the foundation for remarkable economic growth in the following decades. What kind of useful lessons can we draw from the Korea's development policy experience? The most important lessons can be summarized as follows.

First, the government played a key role in initiating and promoting economic development, particularly in the early stages of development. In the early 1960s, Korea was more or less in a state of low level equilibrium trap characterized by a low savings and investment rate, low economic growth, and high population growth. In order to break the vicious circle of poverty, the government pursued the state-led development strategy, intervening directly in resources allocation. The five-year development plan was launched, aimed at high economic growth through a systematic allocation of resources. The government established a strong central planning agency, the Economic Planning Board, for its effective implementation and set industrialization as a primary goal of development policy. It engaged in an active role in steering the development process in terms of reforming its administration, coordinating investment activities, targeting certain industries for promotion, undertaking direct investment in key industries, and infrastructure development, etc. In other words, the government played the role of prime mover in the development process.

Second, the importance of the role of the market should be overlooked in Korea's development process. Although the government intervened extensively in resource allocation in the early stages of development, it also tries to nurture the functioning of market mechanism by gradually liberalizing the economy. In the 1960s, the government began to liberalize trade with export liberalization first, followed by import liberalization. The import liberalization policy was suspended in the 1970s due to the worsening balance of payments situation and an industrial policy shift directed at promoting heavy and chemical industries. Coming into the 1980s, the government made renewed efforts for liberalization because the policymakers realized that, considering the growing complexity of the economy, resource allocation should be left to market forces. Thus, the liberalization policy went far beyond a trade regime, extending to financial, industrial, technology and competition policies. The liberalization policy was accelerated in the 1990s, as the Korean economy was rapidly integrating into the world economy. Although the liberalization policy in Korea was not smooth and uninterrupted, there is no doubt that it made a major contribution to Korea's rapid growth and development over the

past four decades.

Third, related to the second, is the strong adaptability of government policy to changing economic environments. The government adopted different policies at different states of development, to cope with changing economic environments. In the 1960s, the government pursued the export drive policy of light manufactured products because Korea had a comparative advantage in labor-intensive industries. In the 1970s, the capital-and technology-intensive industries were promoted to cope with rising protectionism for labor-intensive products in developed countries. When serious structural problems were caused by the heavy and chemical industry drive policy, the government quickly responded in the early 1980s, by introducing extensive trade liberalization combined with intensive support for manpower and technology development aimed at improving industrial competitiveness. The liberalization policy accelerated in the 1990s when the Korean economy was rapidly integrating into the world economy. This strong policy adaptability enabled the Korean economy to sustain continued high economic growth over the past several decades.

Fourth, the Korean experience reaffirms the importance of an outward-oriented development strategy. Korea's overall development strategy has been outward-oriented during the entire period under review except in the 1970s, during which import substitution policy was greatly emphasized. It should however be noted that the promotion of heavy and chemical industry in the 1970s, was conceived to improve the structure of exports so as to exploit Korea's changing comparative advantage in the world market. The government returned to an export-led growth policy as soon as the import substitution policy showed negative effects. Even though the outward-looking strategy is vulnerable to external shocks, as demonstrated by two rounds of oil shocks and the 1977 financial crisis, it is still a better option than an inward-oriented strategy, because it not only provides opportunities for an enlarged market, but also facilitates inflow of capital and technology, which are largely lacking in developing countries.

Fifth, the Korean experience also suggests that import substitution policy ought to be complemented by trade, manpower, and technology policies. Korea is one the handful of countries that succeeded in infant industry protection. Korea provided massive financial and fiscal support for import-substituting heavy and chemical industries in the 1970s, which created a lot of problems such as inflation, inefficiency, overinvestment, and balance of payments difficulties. Korea could overcome these problems by introducing a series of market-friendly reform measures, such as reducing government subsidies and liberalizing trade while supporting industrial technology and manpower development. These combined policy efforts played a decisive role in enhancing industrial competitiveness, implying that fiscal and financial support is not a sufficient condition for a successful import substitution policy, and more importantly, its excessive use could lead to a considerable distortion in resources allocation.

Sixth, human resource and technology development played a crucial role in Korea's rapid industrialization process. The Korean government placed a great emphasis on education, manpower training, and technology development as early as 1962, when the First Five-Year Plan was launched. The policy-makers knew that, given Korea's poor natural resources and high level of education, manpower and technology development would be the most effective way of facilitating the industrialization process. This is because industrial development cannot be successfully implemented unless supported by manpower training and technology development. For this reason, from the First Five-Year development plan, the government made systematic policy efforts for technology and manpower development in line with Korea's changing comparative advantage.

Finally, the Korean experience shows the importance of social and political stability in the development process. The rapid growth in Korea, which began in the early 1960s, would not have been possible without social and political stability. The social environment was conductive to economic development, since Korea had a homogenous society with no serious regional and religious conflicts. Korea's political environment has also been, in general, favorable for economic development throughout the entire period under review. There were some political crisis in the late 1970s and also in the late 1980s, but these did not last long and the economy did not suffer much.

3. Comments and Suggestions for the Mid-term National Development Strategy of Ukraine

3.1. Overall Assessment

From the commentator's point of view, the Strategy is very well organized and designed. We can say for sure that much effort has been put in by people including government officials and experts from research institutes in order to prepare the Strategy. The annex is an example. It has about 50 pages consisting of various kinds of tables and graphs and it implies that people who were involved in preparing the Strategy spared no pain.

Furthermore, the Strategy has so many positive and recommendable aspects. Firstly, the Strategy has a fine structure. It consists of six parts and the parts are well connected to each other. Part 1 describes the global tendencies and challenges for the period which the Strategy covers, and then part 2 analyzes the potentials of the Ukrainian economy. Therefore, we can say that the part 1 and 2 are a review of the current and future economic conditions respectively. Based on the explanations of part 1 and 2, part 3 examines the strengths and weaknesses of the

Ukrainian economy with the favorable opportunities and dangers for economic breakthrough. Part 4 examines the scenarios, stages and framework conditions for the Ukrainian economic development until 2020, which is an absolutely necessary part to figure out possible policies for the future since scenarios, stages and framework conditions provide basic assumptions and guidelines of the Strategy. Part 5 and 6 are conclusions that contain the specific policies according to the issues concerned.

Secondly, the Strategy shows accurate and candid descriptions about the Ukrainian economy. Even though the Strategy is a government document, it does not seem to overvalue the current economic situation of Ukraine. Such a stance should be very highly evaluated, because provisions of proper policy directions are not possible without accurate and candid descriptions. As a result, the policies which the Strategy presents are correct and are not misleading.

Thirdly, the Strategy gives concrete explanation with convincing data, documents and references. What is important is not purely to prepare the Strategy but to guide the Ukrainian economy to develop in a desirable direction. In order to do so, the Strategy should be reliable to the Ukrainian general public and potential investors as well. Thus, such an effort to review and explain the current Ukrainian economic condition objectively and concretely, utilizing various sorts of data, documents and references is highly recommended.

Therefore, no substantial changes are required. The Strategy guides the Ukrainian economy in the right direction of the policies in each economic field and already includes all the necessary information and data. Despite the many recommendable aspects, it seems that there are several opportunities to improve the Strategy and these will be reviewed in the following section.

3.2. Suggestions on the Style and Contents

(1) Grand Slogan

First of all, the Strategy does not have ‘Grand Slogan’ or ‘Grand Vision.’ However, it is absolutely necessary for the Strategy to present ‘Grand Slogan’ or ‘Grand Vision’ for attracting general public’s interests in the Strategy, drawing their agreements with the Strategy and inducing their active and voluntary participation in the program which the Strategy specifies. It is also better for appealing to potential investors and international financial organizations.

In the process of promoting the Five-Year Economic Development Plans, Korea had had such ‘Grand Slogans’ or ‘Grand Visions.’ For instance, “Let’s be richer” was a grand slogan

provided by the Korean government in the 1960s. Since Korea was a very poor country, the slogan was extremely appealing. The Korean people could have a dream that they were really able to be rich if they worked hard following the directions of the Plans, and finally the dream turned out to be a reality.

In the early 1970s, the slogan was "Income US$ 1,000 and export US$ 10 billion by 1980." The slogan was effective because it presented a concrete target to the Korean people in figures. The Korean people could read the strong will of the government from the slogan and they themselves could join actively in the programs of the Plan. In fact, Korea was able to attain the goal three years earlier than the target year.

The slogan in the late 1990s was "parallel development of democracy and market economy." By that time, the Korea was not a low-income level country anymore and already acquired a membership in OECD. Thus, one of the strong desires of the Korean people was to see a politically free and democratic country since Korea's economic progress had been so fast while political development had been relatively slow. With this slogan, the Korean people started to believe that the government would really try hard to develop democracy in order to reach a politically free state.

The current government of Korea led by President Lee Myung Bak, "747" was adopted as a grand slogan. In fact, it was also used as a slogan for the presidential elections. The first 7 in the slogan "747", represents 7% of the economic growth rate, while the last 7 means the 7th strongest economy in the world or G7. The 4 in the middle, stands for per capita income US$ 40,000. The slogan "747" could be very easily memorized by the Korean general public because it was reminiscent of Boeing 747. In this sense, it was a very nicely designed slogan since it gave hope to the Korean people that the Korean economy could again take off like a plane.

(2) Audience

If the Strategy is published and the target audience is the Ukrainian general public, it is recommended that the Strategy is shorter and more comprehensive. The present Strategy is too long to read all the pages especially for the general public. In addition, the Strategy seems to be too difficult. If the Strategy is for the general public, it does not need all the complicating in-depth information and all the procedures to reach the conclusion.

The Strategy should not be an academic paper, but a 'blue print' of the government to give hope for the future to the people. Therefore, it is recommended to focus on the main points and core messages for the Ukrainian government to deliver. For instance, the explanations about the prospects of world population in part 1 are too specific and the Ukrainian general public do not need to understand all the trends occurring in the world concerning on population issues.

Of course, the present Strategy sent to the Korean KSP team may be merely a manuscript and not a final document and thus the government officials and experts who participated in preparing the Strategy intentionally tried to include all the information and data for their own works and for sharing the information with others. Perhaps this is why it is too long and too difficult in some parts.

When the Strategy is finalized, thus, it should be written shorter and easier. As an alternative, the government may have a long version of the Strategy for reference whilst preparing a shorter and easier version for publication.

Also the Strategy needs its writing style to be polished. For instance, expressions such as "in our view" are to be avoided since the Strategy itself is an official document of authority of the government. In the same sense, footnotes are not recommendable and it is better to be included in the main text.

(3) Balance

A balanced length and depth are preferred for the Strategy. Otherwise, it could be confusing and tedious for readers. Also some people could feel that the Strategy is not well organized. In part 1, for example, some sections describe only global tendencies. However others even include the evaluation of the Ukrainian economic situation in addition to global tendency. Furthermore some sections are comparatively too short, both in part 1 and part 2.

The dimension and the level of description are also different depending on sections. Some sections discuss the current condition on the world and/or EU level, but others only on the domestic level in part 1. Furthermore several sections in part 1 even include not only economic trends and conditions but also policy directions of the Ukrainian government. Part 2 has the same problems. For instance, some sections explain only policy environment but others extend to the policy targets in part 2.

Similar problems can also be pointed out in the other parts from 3 to 6. Thus, it is necessary to check the balance of all the parts.

Because the Strategy is an official document concerning the future economic policies of the Ukrainian government, one of its major purposes is to help people to understand the government's policy directions under the current global and domestic economic situation. In order to fulfill such a purpose, confidence in the Strategy is inevitable. The balance of each part and section is one of the important factors to ensure confidence of the people as well as the contents.

(4) Role of the Government and Consensus Building

The Strategy is a 'blue print' of the government in nature for the future of the Ukrainian economy. Therefore, the Strategy must mention what, when and how the government will do to achieve the goals presented in the Strategy. However, the present Strategy does not specify the role of the government.

In direction 1.1 of the part 5, for instance, the Strategy presents major steps to achieve the macroeconomic stability such as "restructuring and optimization of the state food reserve" or "promotion of modernization of power generating equipment in order to reduce fuel consumption." But the Strategy does not say what, when and how the government will restructure and optimize the state food reserve or to promote modernization of power generating equipments. As a result, the Strategy and the mentioned major steps are very likely to be accepted as only political declaration or rhetoric by the people.

The major reason why the government builds a Strategy is to define the target goals of the economic policies and action programs of the government and thus to guide the economic activities of the people and private enterprises. This is why the Strategy is called a 'blue print.' Hence the Strategy should show first the role of the government. Also the Strategy must specify efficient division and cooperation between the government and the private sector. If needed, the Strategy should outline the ways of how and to what extent the government will assist the private activities. Only in this case will the people and private enterprises be able to prepare themselves for the future and the Strategy will have a chance to be successful in achieving the goals.

Consensus building is also very critical during the process of preparing the Strategy. In order to make the Strategy successful, every economic agent such as the government, household, and enterprise should be able to share the goals and motivation and to be willing to participate in the policy programs suggested in the Strategy. Thus, the process of preparing the Strategy should contribute to consensus building among all the economic players in the market.

In the Korean case, the government provided several opportunities in order to make consensus before finalization of the Plan. First of all, consensus among the economic ministries is a top priority. Thus members of each sub-group which were assigned to prepare the manuscript for the specific topics, which included government officials from related ministries. They truly worked together and had very serious discussions about the assessment of the current situation and future policy directions. From these, they could share common perceptions. In addition, the government had held public hearings to collect majority views on the topic. In the hearings, not only were the government officials who were involved in preparing the Strategy present, but university professors, specialists from private economic research institutes, and

executives from private enterprises joined and tried to make consensus.

Thus it is very highly recommended to prepare a venue for the government and private sector in the preparation process of the Strategy so that various parties can think about the future changes and share the common view and goals. In this sense, making the Strategy is meaningful, but the process of making the Strategy is more meaningful.

(5) Monitoring and Binding Power

In fact, whether the Strategy exists or not, itself is not of great importance. What is much more important is to develop the economy and make the country prosperous. Since it is easier to achieve economic development if the Strategy or a guideline is prepared, it is recommended to prepare mid-term and long-term the Strategy.

Once the Strategy is prepared, the next step to develop the economy is to execute the Strategy. Hence monitoring becomes important. Without a proper monitoring scheme, the Strategy is likely to turn out to be pieces of papers which nobody is concerned about. Therefore, it is essential to incorporate a monitoring scheme in the Strategy.

In the Korean case, various kinds of monthly and annual monitoring schemes existed. For instance, Monthly Economic Review Meeting was conducted to monitor macroeconomic conditions, which was headed by the President himself. There was also Monthly Expansionary Council of Export Promotion to check the trends of exports, which was headed by the minister of commerce and trade. In addition, there was an annual evaluation for each ministry by the President. There were also internal and external evaluation teams to monitor the progress. Therefore all the participants had to exert themselves to achieve the goals.

Korea had utilized such monthly and annual meetings to modify the Plan. Since the Korean Plan covered a period of five years, it had to reflect changes of economic conditions. In fact, the Korean government thought that it would be inevitable to modify the Plans during the period in order to reflect evaluations, changes of domestic and international economic environments, changes of the government policies, and so on. The monthly and annual meetings were providing places to discuss whether to modify the Plans and approve the modification.

Incentives are also important to execute the Strategy. Otherwise, the Strategy will be likely to lose binding power. In the Korean case, only when a program was listed in the Plan, was a budget allocated. Furthermore the ministry budget was very closely connected with the performances of the programs in the Plan. Thus, every ministry participated very actively in preparation of the Plan and endeavored very hard to fulfill the goals.

For additional binding power, the Korean government provided various kinds of incentives to the government officials directly. If the government officials were successful in meeting the targets, they were allowed special promotions, financial benefits, medals of honors, various kinds of intangible benefits, and so on. If they failed to meet the targets, on the other hand, their ministries had to suffer reduction of subsidies and curtailment of their budget. Furthermore, it sometimes happened that ministers were dismissed and the government officials who were in charge of the programs were downgraded.

(6) Preparation Time and Simulation

According to the report from the Ukrainian government to the Korean KSP team, it took about 10 months to prepare for the Strategy. The report says that the Institute for Economics and Forecasting of the Ukrainian National Academy of Sciences had been working on the world development trends, a SWOT analysis, evaluation of development scenarios and projections from May 2008 to November 2008. Since then, until February 2008, the Ministry of Economy had been working on the definition of strategic trends, mechanisms and targets for development up to 2020.

Compared with the Korean case, the preparation time is much shorter. The Korean government had spent 2 years in average to preparation for the Plan. Moreover there was an overall evaluation process about the performances after the Plan period ended, and this lasted for about 1 year. Roughly speaking, therefore, it took almost 4 years to make a Plan. Of course taking more time does not necessarily guarantee better results. If more time is spent, however, the probability of making the results better becomes higher. At least, it seems that 10 months is not enough to prepare for a concrete and systematic Strategy.

Taking more time is also better for consensus building. As mentioned earlier, process of preparation of the Strategy is more important than making the Strategy itself. Since more time implies more opportunities to hold hearings and meetings for consensus building before finalization of the Strategy, it is recommended to take more time before finalizing the Strategy.

In the Korean case, the training of the government officials had been emphasized as well. The Korean government sent working groups abroad for study and training during the preparation period in order to make better Plans. The Korean government had also spent a substantial amount of budget for preparation of Plans. All these were possible because the Korean government spared plenty of time in preparation of the Plan.

More time is also needed for simulation of the Strategy. Every policy presented in the Strategy should be consistent to each other. Furthermore the growth rates in each sector of the economy should not be contradictory to the overall economic growth rate. The budget constraint

should also be taken into account of. Therefore, it is recommended to verify internal consistence using macro economic models.

(7) Policy Priority

Taking the budget and time constraints into account, the government cannot pursue all the goals and targets at the same time with equal priorities. However, the present Strategy seems to be simply a collection of parallel listing of policies and little emphasis is made on more important and urgent policy goals. For example, part 5 lists up 36 directions in total. However, nothing is mentioned about which ones are more urgent. The same problem is applied to the major steps. Direction 1.1 in part 5, for instance, presents 46 major steps, but it is not clear at all which one the government would put more emphasis on and thus would execute first.

Part 6 has the same problem. Although part 6 uses the term 'priority,' there is no clue which one has higher priority among the 'priorities.' For instance, the section 6.1.2 in part 6 lists 7 priorities and 24 steps. However, it is impossible to figure out the real priority among these.

It is natural that all the goals, projects, and policy measures cannot be given the same priority due to the budget and time constraints. Therefore, it is recommended to prioritize the goals and policy measures when the Strategy is finalized. In prioritization of the goals, presenting a time schedule according to the priority would be an option.

(8) Civil Society

As properly mentioned in the Strategy, civil society is very crucial for sound, reliable and efficient economic development in the long run. In recent years the United Nations, other international institutions have significantly expanded their relationships with the civil society. In fact, activating the civil society is also global tendency. It is also true that the civil society is just emerging in Ukraine.

Thus it is understandable that the Strategy stresses nurturing the Ukrainian civil society. However, we need to be careful since there are pros and cons.

In the Korean case, several big NGOs have acted like political pressure groups to maximize their own interests and not for the society as a whole. Sometimes they were even accessible to bribery and corrupted. However, it was not easy to accuse them since they already became too big. Furthermore they were partly funded from the government budget. Hence it was ironic in Korea to see that the NGOs which were sponsored by the government criticized the government and the government had to negotiate with them in order to avoid criticism.

While fostering the civil society on one hand, the Ukrainian government should keep in mind the following from the very beginning on the other hand. First, civil society should be independent from the government, especially in terms of budget. Second, transparent decision mechanisms within the civil society are needed. Third, the civil society should not be a political pressure group based on its own interests.

(9) Efficiency of Public Administration

The government is like a locomotive in economic development. Especially in the stage of less developed economies, the role of the government becomes even greater. The fact that the government is preparing the Strategy implies that the Ukrainian government itself recognizes clearly the significance of the government's role for making future economic progress under the current situation.

Only efficient governments would be able to contribute to the economic development. If the government is inefficient and full of corruption, it rather becomes an obstacle to the economic progress. As a result, the Strategy would be meaningless.

Therefore, a clear vision and understanding of the future of the Ukrainian economy by the government officials is a prerequisite for the success of the Strategy. In other words, the government officials themselves should be confident in the future of the Ukrainian economy. Increasing job skills and quality of works is also important. Thus the government should be able to invest substantial amount of resources into human capital.

Deregulation and a slim government are also of significant importance. In order to reach a level of an advanced economy, the market mechanism should fully be in function. The continuous intervention and regulation of the government only becomes a barrier to economic development. Deregulation and a slim government are also necessary to eradicate corruption of government officials.

In order to achieve these goals, clear rules and international standards must be adopted. Furthermore the Ukrainian government should try hard to enhance transparency in policy making. In addition, harmonious cooperation among ministries is also important. Each ministry should be able to consult very closely with another ministry during the process of execution of the Strategy as one wheel engages with another wheel.

However, the Strategy does not mention at all about an efficient government. Thus, it is very greatly recommended to have an additional section for the reform of the government in the Strategy.

(10) Detailed Action Plans

The Strategy is required to outline detailed action plans. Of course, it is very good to set direction-indicator-major steps as in part 5. Part 6 has the same pattern: theme-priorities- steps.

However, the Strategy needs to present concrete and specific action plans. In fact, most indicators-major steps and priorities-steps in part 5 and 6 are much too abstract. In part 6, for instance, the Strategy presents "preventing abuse of monopoly." In order for the Strategy to be effective, it should include detailed action plans of 'how' to prevent abuse of monopoly. Another example is "enhancing cooperation with international organizations." Once again, there is no information or programs in the Strategy concerning 'how' to enhance cooperation with international organizations. Almost every policy presented in the Strategy carries the same problem. Therefore, preparation of detailed action plans by each ministry is very highly recommended.

Mid-term Economic
Development Strategies for Ukraine

Chapter 02

Efficient Use of Energy in Ukraine
-Learning from Korean Experiences, Good or Bad-

Chapter 02

Efficient Use of Energy in Ukraine
-Learning from Korean Experiences, Good or Bad-

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1. Introduction

The purpose of this study is to suggest various ways of transforming the Ukrainian economy into a more energy efficient one. It is confirmed by various reports from international organizations, such as IEA (International Energy Agency) and OECD (Organization of Economic Cooperation and Development) that Ukraine wastes a substantial portion of energy produced before it reaches the hands of final consumers and both Ukrainian households and firms consume more energy than their counterparts in other countries. Considering how crucially energy efficiency impacts economic growth, it is almost unanimously agreed that the Ukrainian government should assign the highest policy priority to solve the current energy situation.

By definition, energy efficiency can be measured in both demand and supply sides: In the demand side, it indicates what level of commodity production (or service) could be achieved by a certain quantity of energy inputs[1]. On the other hand, in the supply side, it measures how much energy can be produced from natural resources. Of course, it is another concern to take into consideration the search for new sources of energy, domestic or foreign (e.g. explorations for new petroleum and gas deposits) as well as new energy (e.g. fuel cells, solar power, wind and so on.)

1. Consider a case that an old refrigerator or a machine is replaced by a new one, which consumes less electricity for a given energy service. The amount of energy savings would imply the enhanced energy efficiency.

In detail, we start our discussion by investigating the present and past situation of the Ukrainian energy sector. Next, we briefly describe the market structure of the Ukrainian energy sectors. Then, we evaluate energy efficiency of Ukraine by cross-country comparisons, and identify factors of aggravating it. These are the main contents of Section 2.

In Section 3, we describe Korean experiences from practicing various energy saving programs as well as carrying out structural policies on energy industries. First, we categorize various energy usage related programs in Korea in two groups (demand and supply sides) and discuss their relative performances-benefits and costs. Second, we characterize the energy industrial policies of Korea as compromise between the economy of scale (or scope) and market competition.

Section 4 suggests policy recommendations based on the above discussions. Why is the energy sector issue so special to the Ukrainian economy? Who and what are to blame for inefficient production and use of energy? What are the major sources of inefficiencies in the Ukrainian energy sector? This section tries to provides an (at least a partial) answer as to how Ukraine can eliminate these inefficiencies and achieve higher energy efficiency.

Finally, Section 5 concludes.

2. Ukrainian Context

2.1 Historical Perspectives

The current status of the energy sectors in Ukraine are best characterized by the presence of the former Soviet Union and the current Russia.

First, legacies of former Soviet Union have mainly determined the demand side conditions of Ukraine. For example, the Soviet gas industry was born in Ukraine in the 1930s, and most of the infrastructure was built from then and Ukraine is still a central part of the gas pipeline network even as the focus of activity has moved to Western Siberia. Since the collapse of the former, public investment on the energy sector has been reduced. Currently, a large part of electricity generation, transmission, and distribution systems as well as gas pipelines are to be replaced.

Equally it is remarkable that under the old Soviet planned economic regime[2], the Ukrainian economy was specialized on heavy industries, such as steel, aircraft, and ship building in

addition to agriculture[3]. Such concentration resulted in heavy energy consumption. Furthermore, physical capital in these industries, not timely replaced, consumes more energy than in other countries. These examples demonstrate direct consequences of the former Soviet regime.

The old legacies of the Soviet Union have also been transcended indirectly. Subsidies on energy prices, which date back to an era of the planned economic system, continue to exist and distort the ways households and firms consume energy and discourages them from pursuing higher energy efficiencies and replacing the old household (or production) facilities. The amount of those subsidies put a huge burden on the fiscal soundness (as is mentioned in several IMF reports).

Second, the presence of Russia constrains the supply side conditions. Ukraine heavily depends on Russia for petroleum and natural gas, which amounts to approximately 70% and 40% of Ukrainian consumption, respectively. Denieper-Donetsk oil field accommodates only a small portion of domestic demand for petroleum. On the other hand, Russia delivers natural gas to western European countries through the pipeline passing Ukraine[4]. Russia's gas is sold to Europe at prices indexed, with a lag, on oil prices. Roughly 20% of Gazprom's (the national gas company of Russia) gas shipments to Ukraine is given as payment for transit (over an average of more than 1,000km). Thus, the recent gas dispute with Russia, which repeated since 1992, confirmed that each country needs the other for different motives and the relationship will continue for some time.

2.2 Current State

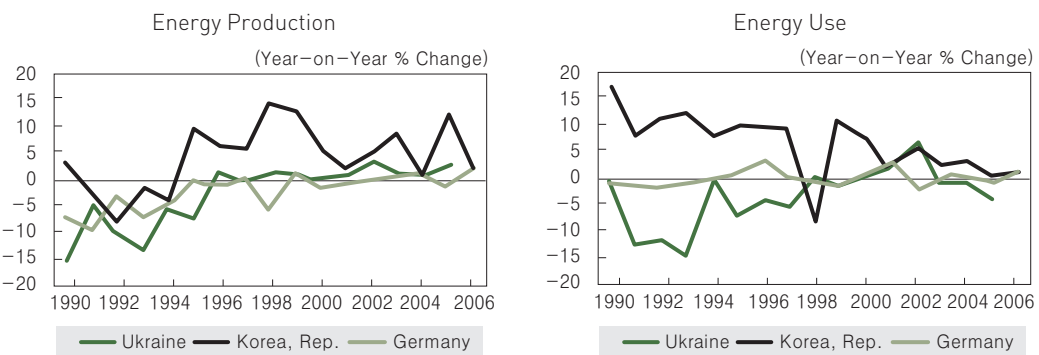
A general profile of the Ukrainian energy sector is characterized by high dependency on imported fossil fuel with about 80-90% of oil and 75-80% of natural gas. The country, to a large extent, depends on Russia as its energy supplier. While 25% of the natural gas in Ukraine comes from internal sources, about 35% comes from Russia and the remaining 40% from Central Asia through transit routes that Russia controls. At the same time, 85% of the Russian gas is delivered to Western Europe through Ukraine.

In spite of the high external dependency, Ukraine is one of the least efficient countries in the world in terms of energy consumption per dollar of GDP (3.5 times more then the average

2. In that time, Ukrainian economy was the second largest in the Soviet Union.
3. Agriculture, still a major industry of Ukraine, is also evaluated to be a significant source of energy loss, which in turn is attributable to the old and less efficient equipment.
4. "Nord Stream pipelines" passing through the Germany (of course detouring Ukraine territory) are planned while US will help Ukraine in renovating the old pipelines.

European index) by the United Nations in its "Millennium Development Goals." Furthermore, Ukraine is ranked high in the list of the biggest carbon dioxide emitting countries in the world[5]. Such low efficiencies in the enterprises of fuel and energy complex and in other industries including transportation and agriculture are attributable to the obsolete industrial and municipal facilities inherited from the former Soviet era as well as the shortage of capital investments for replacement.

Figure 2-1 | Energy Production and Energy Use



Source: WDI, World Bank and Energy Balances of Non-OECD Countries, IEA/OECD (2008).

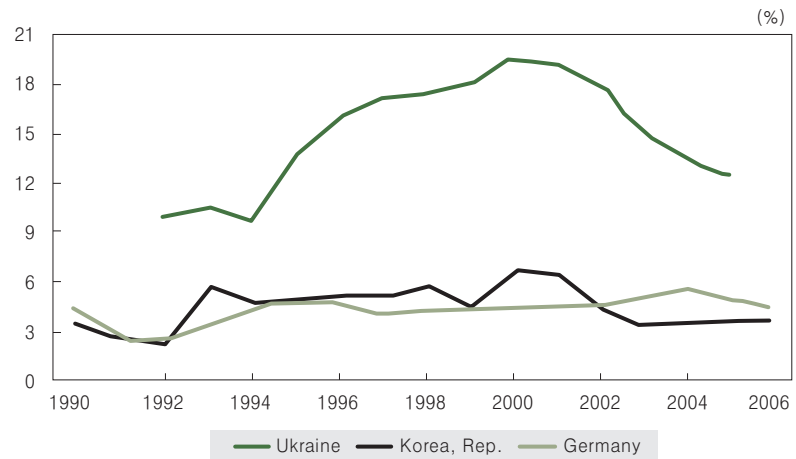
The Ukrainian government is more aware of using renewable energy and implementing energy conservation measures as a national strategy. A major factor that increases Ukraine's interest in renewable energy is sad to say but the Chernobyl nuclear power plant catastrophe in 1986, which still echoes in high-public awareness regarding use of atomic power plants.

In this section we compare energy production and use of Ukraine with those of Korea and Germany. Korea is singled out as an example of still improving energy efficiency whereas Germany is chosen not only due to her geographical closeness but also due to her high level of energy efficiency already achieved.

Figure 2-1 points out how persistent and substantial impact the hyperinflation in the early 90s had on the energy production and use of Ukraine until the introduction of a new currency Hryvnia in 1996. Under the hyperinflation, both supply and demand of energy drastically

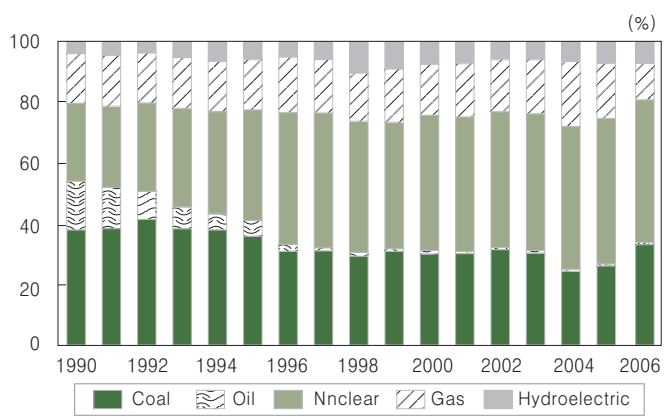
5. According to "The Millennium Development Goals Report" by the United Nations, the country has the greatest emission levels per unit of GDP among CIS countries next to Russia. The total emissions were 246 million tons of carbon equivalent in 1990, which placed Ukraine the sixth highest among the 42 countries surveyed.

Figure 2-2 | Electric Power Transmission and Distribution Losses (% of output)



Source: WDI, World Bank and Energy Balances of Non-OECD Countries, IEA/OECD (2008)

Figure 2-3 | Ukraine's Composition of Electricity Production



Source: WDI, World Bank and Energy Balances of Non-OECD Countries, IEA/OECD (2008)

declined. In the same period, however, real GDP also plummeted. Hence, we could not claim that falling energy consumption and production in 1990s raised the energy efficiency.

Figure 2-2 exemplifies the efficiency loss by showing the proportion of electricity lost in the process of transmission and distribution. Compared with Korea and Germany (whose losses do not exceed at most 6%), the electricity system of Ukraine loses 12%~20% of the power

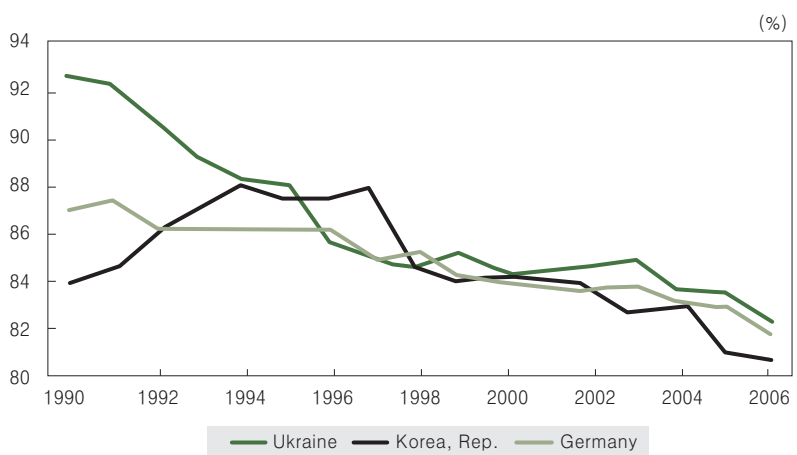
generated. Also taking the generation division into consideration, the efficiency loss of electricity sector of Ukraine would increase. District heating is another leakage of efficiency loss. Not timely managed and replaced, heat loss before it reaches households is substantial.

Nuclear power is the main source of electricity and its portion has increased almost consecutively since 1990 (see Figure 2-3). In contrast, coal lost its No.1 position after 1995. The increasing portion of generation through nuclear power in a country, which experienced the catastrophe in Chernobyl, seems a tragic irony, but it clearly shows how hard Ukraine has tried to reduce its dependency on Russia for fossil fuel energy.

In response, dependency on the fossil fuel energy has shrunk from 93% (1990) of total energy consumption to 84% (2005). As of 2005, the share of fossil fuel energy in total energy consumption of Ukraine is slightly above that of Germany. Such a tendency seems closely related to the tendency that power generation using fossil fuels were replaced by nuclear power.

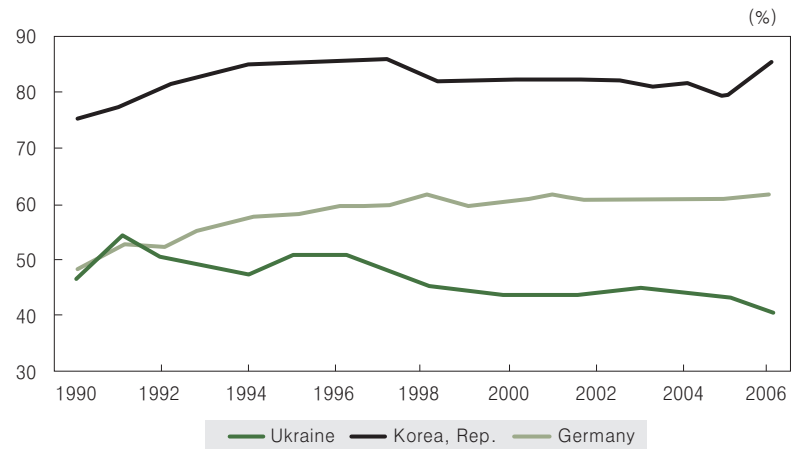
Unlike Germany and Korea, Ukraine holds domestic sources of fossil fuel energy, such as natural gas and petroleum. Thus the portion of energy imports in total energy use is much lower than the other two countries (see Figure 2-5 and Figure 2-6). Another discrepancy of Ukraine from Korea and Germany is the decreasing time trend. The economic hardships in the early and mid 1990s must have shrunk the total energy use of Ukraine. The share of energy imports, however, decreased more sharply and persistently in the late 1990s. In this context, we can also link the decreasing trend with the increasing portion of generation by nuclear power.

Figure 2-4 | Fossil Fuel Energy Consumption (% of total energy consumption)



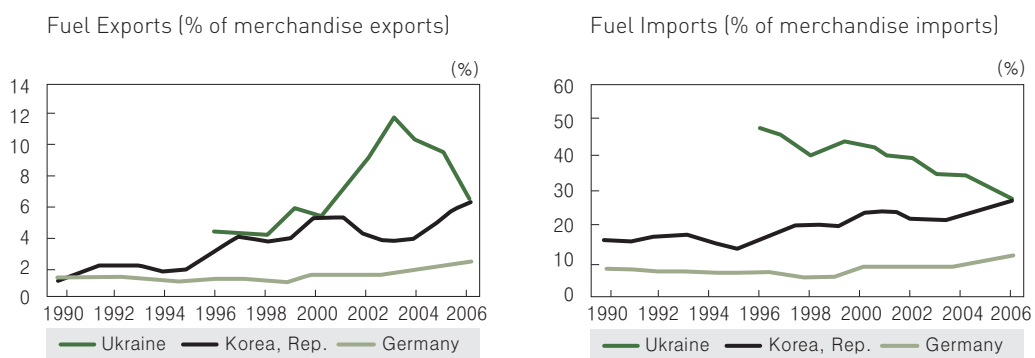
Source: WDI, World Bank and Energy Balances of Non-OECD Countries, IEA/OECD (2008)

Figure 2-5 | Energy Imports, net (% of energy use)



Source: WDI, World Bank and Energy Balances of Non-OECD Countries, IEA/OECD (2008).

Figure 2-6 | Fuel Exports and Imports



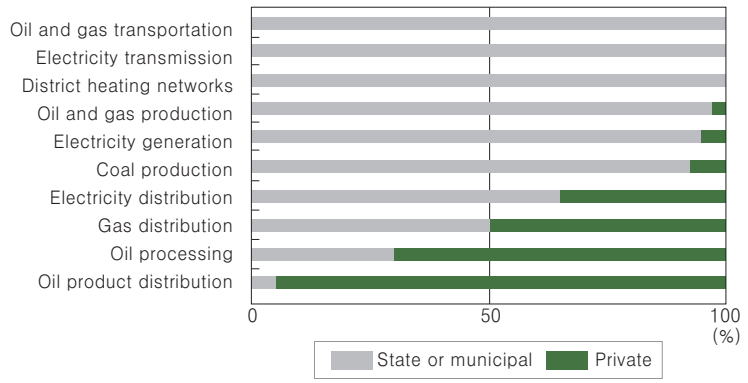
Source: WDI, World Bank

2.3 Market Structure of Energy Industries

Still under the legacies of the former Soviet planned economy, most of the energy firms are owned by the central and local government. As of 2006, the sectors of oil and gas transportation, electricity transmission, and district heating networks[6] are completely owned by

6. Most district heating networks are under municipal ownership.

Figure 2-7 | Ownership Structure in the Ukrainian Energy Sector, Early 2006



Source: IEA estimates based on information provided by the government and other sources.

the state and the municipalities. Oil and gas production, electricity generation, and coal production are partly privatized but the level of privatization is unsubstantial.

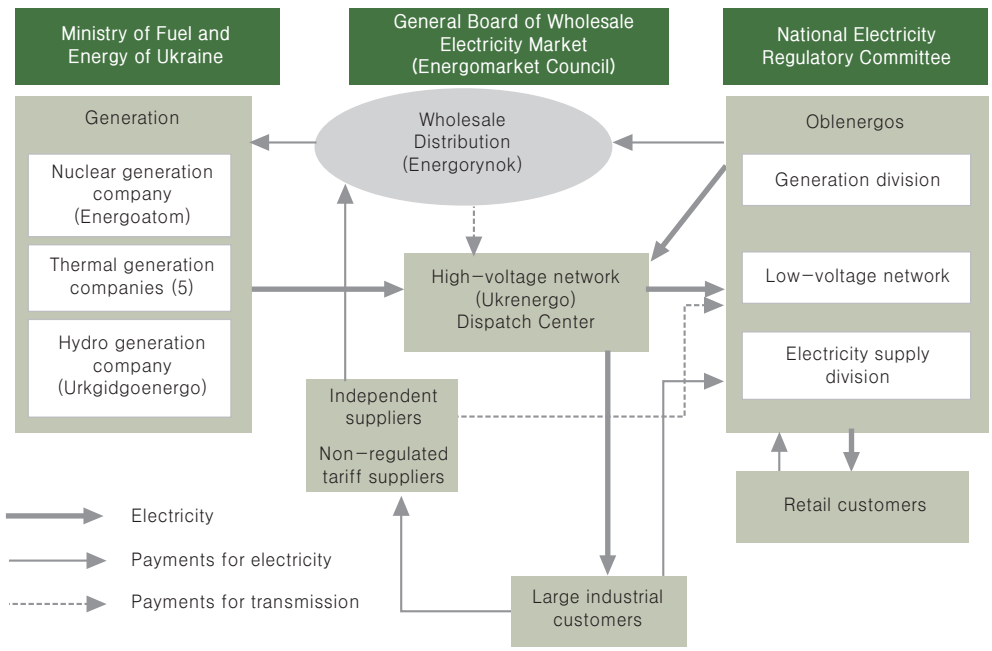
Another notable point in regard to the ownership structure is that privatization is more actively pursued in the distribution of electricity, natural gas[7] and petroleum in addition to oil processing. Especially, over 90% of oil product distribution is privatized. Such bias in privatization is not surprising and it might have resulted from the fact that energy distribution/sales guarantees stable cash flows while requiring relatively light initial burden of capital, which attracts private entrepreneurs. Still it remains a concern whether the privatization guaranteed voluntary participation of all market participants and fair competition among them, which would bring about different social welfare outcomes.

(1) Electricity: Industry Structure and Ownership

In the mid-1990s, the government re-structured the power sector to allow for competition between electricity producers. It split the ownership and management of the sector into generation assets, the transmission network, distribution assets and the power market (Energorynok). In principle, this split was a wise move. However, blurry division of business scope (for example distribution companies' ownership of significant generation assets) limits its effectiveness. The sector was unbundled in the mid-1990s as part of the broad power sector reform that included establishment of an independent regulator and steps toward privatization.

7. Gas distribution pipelines are state-owned but about 50% of companies that operate these pipelines are in private hands.

Figure 2-8 | Structure of the Electricity Market



Source: compiled by CASE Ukraine from Energy Strategy of Ukraine till 2030.

At present, most of the Ukrainian power sector is still in the hands of the state, as privatization did not proceed as quickly as initially anticipated. In 2004, most of the non-nuclear generating and distribution assets were consolidated into a single state company, the Energy Company of Ukraine. On the other hand, the wholesale power market still exists and operates, but it is even less clear than before how much competition the sector supports, particularly given the dominance of the Energy Company of Ukraine.

(2) Oil and Gas Industry

In petroleum industry, Naftogas of Ukraine[8], a 100% state owned enterprise, is a major supplier both in the markets for petroleum and natural gas, which covers most of business area ranging from exploration and production to distribution and trade. Such dominance of Naftogas, however, is not always sustained. A few exceptions are oil refineries and processing as well as distribution and trade of oil and gas.

8. The company was the counterparty in the recent gas dispute with Gazprom of Russia.

Table 2-1 | Ukraine's Oil and Gas Industry Structure

	Exploration and production	Transmission	Refining and processing	Distribution and trade
Oil	- Naftogaz of Ukraine (97% of production) • Ukrnafta • Chornomor-naftogaz - Others(3% of production) • Nadra of Ukraine (exploration) • State-owned and private companies	- Naftogaz of Ukraine • Ukrtransnafta	- Private/foreign companies with some state share (6 refineries)	- Naftogaz of Ukraine • Naftogaz • Ukrnafta - Others • Private and foreign companies
Gas	- Naftogaz of Ukraine(96% of production) • Ukrgazvydo-buvannia • Chornomor-naftogaz • Ukrnafta - Others(4% of production) • Nadra of Ukraine(exploration) • State-owned and private companies	- Naftogaz of Ukraine • Ukrtransga(ote-side of Crimea) • Chornomornaftogaz (in Crimea)	- Naftogaz of Ukraine • Ukrgazvydo-buvannia(2 gas processing plants and 1 condensate stabilisation unit) • Ukrnafta(3 gas processing plants)	- Naftogaz of Ukraine • Gas of Ukraine - Regional gas supply companies (Naftogaz of Ukraine's share 〉50% in 19 companies; 10-50% in 6 companies)

2.4 International Comparison

The low energy efficiency of Ukraine is easily checked by cross-country comparison. Each red dot in Figure 2-9 denotes per capita energy consumption[9] and real GDP of a country, all of which are logarized for eliminating the unit difference. By regressing log (per capita real GDP) on log (per capita energy consumption), we draw a blue line indicating the average amount of energy that is required to reach a certain level of income in the world. In other words, it shows the level of income a country with mediocre energy saving technology can achieve by spending

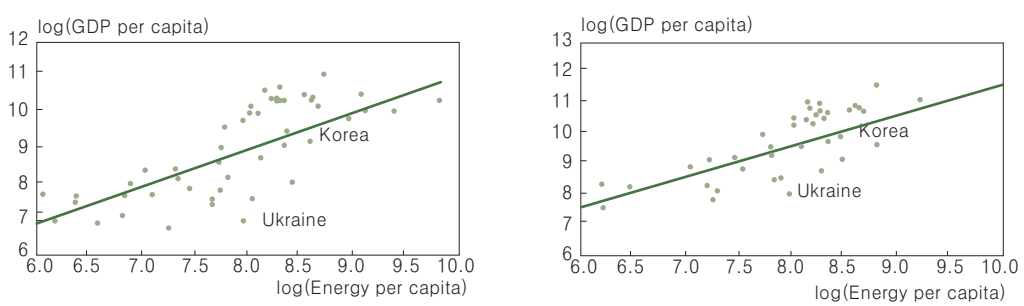
9. For calculation, different types of energy are summed after being converted into the equivalent amounts of petroleum.

a certain quantity of energy.

The two graphs, left and right, compare the observations of two different years - 2003 and 2007 [10]. Looking into the graphs, we can easily recognize that Korea is almost on the blue line whereas Ukraine is below the line. To rephrase, the graphs demonstrate that Ukraine did not achieve the level of income that other countries could reach with the same amount of energy input. On the other hand, it is quite inspiring that the energy efficiency of Ukraine was improved between 2003 and 2007. The amount of energy use stayed almost the same but the real GDP increased. Accordingly, the location of Ukraine got closer to the world trend (the blue line). Summing up, it is clear that Ukraine improved her energy efficiency in recent years but she still fell short of the international standards.

Figure 2-9 | Contribution of Energy Consumption to Production: A single variable case[11]

$$\ln(Y/N) = \alpha_0 + \alpha_1 \ln(E/N)$$



The above graphs are easy to understand but report results from matching only one explanatory variable (logarized per capita energy use) to the dependent variable (logarized per capita real GDP). Therefore, the above argument about the Ukraine's low energy efficiency should be examined for robustness in a multi-variable setting.

As for the controlled variables or other determinants of the aggregate production function, we choose physical capital (K), labor input (L), and the quality of labor (q) and divide them by

10. These two years are singled out because 2007 is the most recent WDI data available and 2003 is the most remote data on Ukraine's energy consumption which was recorded in WDI.
11. In a regression equation nest, (Y, N, E) stands for real GDP, population, and energy use respectively. Of course, E is a sum of various energy uses converted into petroleum.

the number of population (N) for rescaling. Then, we regress log (per capita real GDP) on their logarithms. The estimation results are displayed in Table 2-2. In consideration of t-value, only the coefficient of the logarized per capita energy use is statistically significant, which demonstrates the importance of energy efficiency on economic growth.

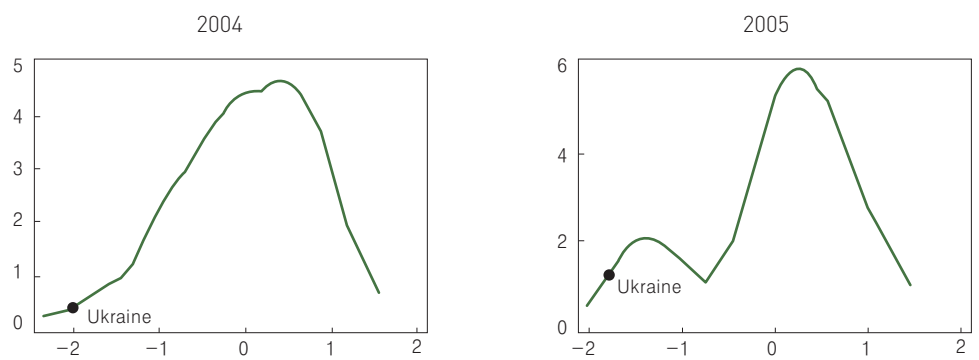
Table 2-2 | Contribution of Energy Consumption to Production: A multi-variable case

$$\ln(Y/N)=\beta_0+\beta_1\ln(K/N)+\beta_2\ln(L/N)+\beta_3\ln(E/N)+\beta_4\ln(Q)$$

	2004		2005	
$\ln(K)$	0.05	(0.63)	0.15	(1.29)
$\ln(L)$	0.56	(0.41)	0.19	(0.09)
$\ln(E)$	0.93	(3.01)	1.90	(3.58)
$\ln(Q)$	0.36	(1.27)	-1.16	(-1.46)
Constant	0.21	(0.04)	-5.12	(-0.64)
# of obs.	41		26	
R−square	0.71		0.62	

Note: Numbers in ( ) is t-value.

Figure 2-10 | The Density Functions of Residuals from Multi-variable Regression



From the multiple regression results in Table 2-2, we calculate the corresponding residual for each country. Depending on whether it is located below or above zero, we could measure the relative energy efficiency of a country from the global standard. Figure 2-10 shows a pattern consistent with Figure 2-9. It also supports that the energy efficiency of Ukraine was improved between 2004 and 2005, but still fell short of the world average.

Next, we examine the time series of logarized real per cpaita GDP and per capita energy use and their first order differences[12] for Ukraine and Korea. From the left graph we see that the level of energy efficiency of Ukraine is lower that that of Korea. On the other hand, the right hand side shows the relationship between the economic growth and the growth of energy use. It shows that the growth of the Ukrainian economy is more vulnerable to the changes in energy use than that of Korea.

Figure 2-11 | Cross-time Relation between Energy Use and GDP

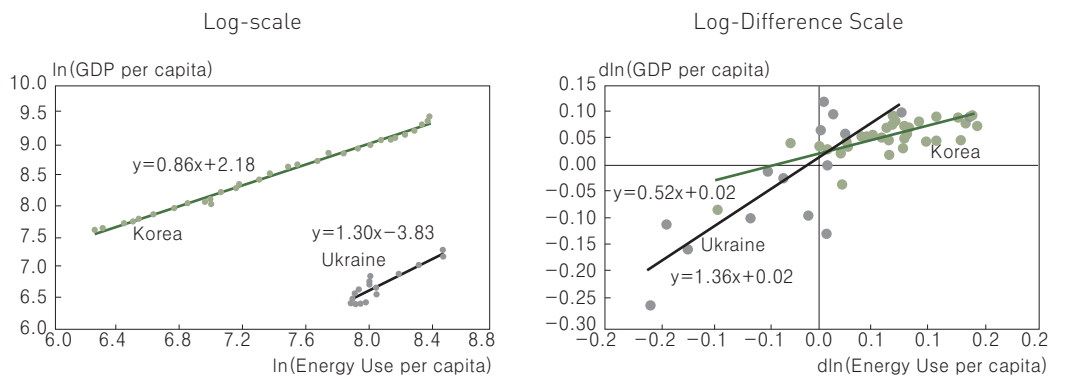
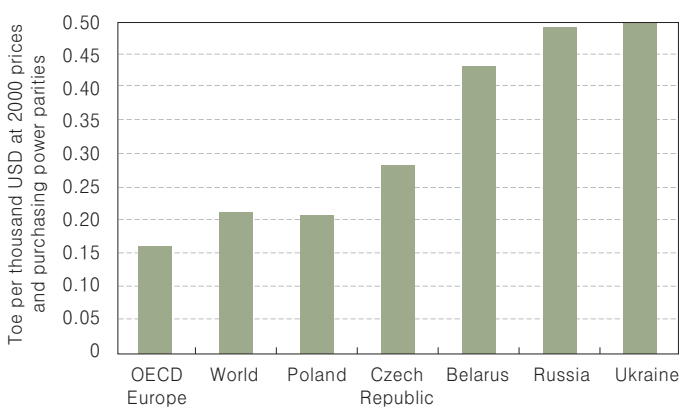
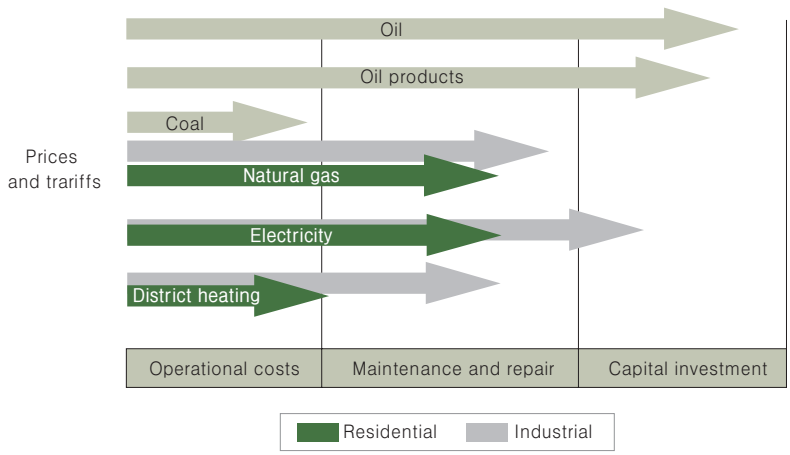


Figure 2-12 | Energy Intensities in Ukraine and Other Countries in 2004



12. By differencing the logarized value of a variable, we approximate the growth of the original variable.
$\ln X_{t+1} - \ln X_{t+1} = \ln \frac{X_{t+1}}{X_t} = \ln(1+g^X_{t+1}) \approx g^X_{t+1}$, if g^X_{t+1} is very close to 0.

Figure 2-13 | Energy Prices and Tariffs Compared to Costs, June 2006



Source: IEA estimates based on information provided by the government and mass media.

Energy intensity is measured by the energy use per unit of output, whose inverse is a measure for the energy efficiency. According to Figure 2-12, the energy intensity of Ukraine is three times greater than that of OECD European countries.

The low efficiency of energy sectors in Ukraine is not wholly attributable to the obsolete facilities for production, transmission and distribution of energy. It is also induced by the distorted energy price schemes. A substantial portion of the government expenditure is allocated to the energy industries in the form of a price subsidy, which in turn discourage households and firms from taking efforts in saving energy usage.

Figure 2-13 shows that price subsidy is heavily provided to district heating. Especially, the current prices of district heating and coal for residential are slightly greater than the operational costs, and those of natural gas and electricity barely cover the sum of operational, maintenance and repair costs. Compared with the other sources of energy, oil and oil products are priced rather fairly but their prices are not enough to cover the capital cost of investment.

2.5 Third Parties' Views

There have been various literatures on the Ukrainian energy issues, which directly or indirectly reflect the international recognition on the importance of this issue. Among them, we choose reports from the IMF and the World Bank and introduce their recommendations for the situation.

(1) IMF Report (Request for Stand-By Arrangement, 2008.Nov.)

Aware of the energy issues and their causes, the Ukrainian government has taken the following structural reform measures in the energy industries since 2000:

(i) Eliminated the culture of non-payment in the energy sector (2000-2002)
(ii) Adopted legislation to mutually offset and restructure debts in the energy sector (2005)
(iii) Adopted cash payments for gas transits through Ukraine, rather than payments in kind (2005).

These measures seem consistent with the principles of economics but may not provide a fundamental solution to raising the energy efficiency of Ukraine. According to the IMF report, consumers in Ukraine now pay only 10-40 % of the international price of gas. This subsidization encourages overuse and through the required budget subsidy (or unpaid taxes) distorts spending and taxation. Furthermore, considering the limited government budget, the subsidies should have been allocated in renovating and extending the current capacity of energy supply through public physical capital investment. Reduction (and ultimate abolition) of energy subsidies seems quite promising in that it doesn't add fiscal burden while guiding all the participants of energy markets to a socially desirable direction. The recent global financial crisis has frozen a channel of foreign borrowings. To make it worse, Ukraine is now passing the center of the crisis[13][14]. In advent of such an adverse scenario, this approach seems to be one of not so many policy options.

In response, the Ukrainian government plans to phase out the direct subsidy to consumers over a three year period, and the indirect subsidy (through energy transformers who use gas) by mid-2010. The Ukrainian government intends to protect their schedule by reforming the regulatory framework to reduce political influence. The policy of raising energy prices will add about 1 point to CPI inflation in 2008, and about 4 % in 2009. Also, it will reduce the fiscal subsidy by 0.4 % of GDP in 2009.

13. An IMF program of Ukraine last year requires rapid and transparent information flow of energy related statistics in addition to reducing energy subsidies. Following the plan, the Ministry of Economy will provide quarterly information on actual levels of communal service tariffs in all regions for major services (heating, water supply, sewage and rent). In addition, the Ministry of Economy and European Integration, the State Housing Policy Committee, and the National Energy Regulatory Commission, will provide the methodology underlying the tariff calculations for full cost recovery, including electricity and gas.
14. In addition on a monthly basis, no later than the 25th of the following month, the government (based on information by the Ministry of Fuel and Energy, the Ministry of Economy and European Integration, STA, MoF, NERC, and Naftogaz) will provide IMF staff with information in electronic form (in an agreed format) on financial indicators in the gas, electricity and coal sectors, including sales, tariffs, arrears, payments to the budget, subsidies, and debt.

The only one concern in putting this plan into practice is how to get and maintain political consensus. The existing subsidy provides direct and present benefits to households and firms while the cost is hidden. Furthermore, it will take some time to see the positive effects of the program. Hence, it is critical for the success of the program that strong coordination on this specific issue should be formed among the different political parties.

In addition, the recommendations of IMF include the following reform measures:

- Implement strategies to make Naftogaz internationally competitive.
- Implement Ukraine's coal mine restructuring plan.
- Enhance independence of National Electricity Regulatory Commission.
- Stimulate energy savings by allowing prices to reflect costs.

(2) World Bank (2005, 2006, 2008)

Support from the World Bank for the energy sectors has been significant and has increased with a sequence of sector investment loans. The Hydropower Rehabilitation Project ($106 million) was approved in June 2005 and the Power Transmission Project ($200 million) was approved in August 2007. Further investment operations are envisaged in support of a long-term Energy Reform and Development Program based on the country's own action plan for stabilization in the energy sector. Since the World Bank is more directly involved in the energy sectors of Ukraine, its diagnosis and recommendations of Ukrainian case are more sector specific and concrete (though consistent with the IMF report on major points).

To begin with, the World Bank's report remarks the distortionary effects of energy subsidies as follows:

"Ukraine's level of public fixed capital/investment over the past few years lags behind that of the new EU member states. Subsidies, hidden under the category of capital transfers to enterprises, are known to crowd out private investments in infrastructure. For example, subsidies to the energy sector and related quasi-fiscal activities (underpricing of energy) have worsened the financial position of energy companies and their ability to attract investments."

The report mentions another dimension of distortion that utility subsidies[15], while originally aimed to protect the poor population from large energy expenditures, mainly benefit the better-off quintiles in large cities. Substantial portion of energy subsidies concentrates on subsidizing district heating, whose coverage is limited to city dwellers and excludes rural residents

15. Among the three Mechanisms of Transfer-Pension, Subsidies, and Social Transfers, subsidies are of our direct concern in that they are mostly waivers provided to households to partially cover their utility bills.

accordingly. In this sense the energy subsidies are regressive.

In response the World Bank (Taking the Next Steps in Energy Sector Reform, 2005) provides the following prescriptions to enhance the efficiency of energy markets:

(1) Maintain hard budget constraints on energy producers, intermediate suppliers and consumers to encourage them to reduce energy intensity as well as dependency.

(2) Phase out under-pricing and cross-subsidization in line with coal sector restructuring. Also quickly reduce subsidies on coal.

(3) Implement the Law on Debt Restructuring of the Energy Sector and adopt a strategic plan for further restructuring, ownership transformation and private sector participation in the energy sector.

(4) Improve corporate governance and foster the commercialization of majority state-owned energy companies based on transparent performance targets contracted with the corporate management and supervised by independent boards.

(5) Foster competition in coal and electricity supply through further market opening and gradual liberalization of the wholesale electricity trade.

(6) Strengthen the financial and administrative independence of the energy regulator (NERC) and gradually introduce the main regulatory principle governing the EU gas and electricity market.

(7) Improve capital budgeting process and encourage donor financed investments and projects[16]. Capital budgeting encompasses all the processes contributing to the efficiency based (or priority based) government resource allocation. Thus, it consists of planning, budgeting, implementation and audit. By continuing to improve PFM (Public Financial Management) systems, Ukraine could attract more donor funding of external sources.

16. This point is emphasized in "Creating Fiscal Space for Growth: A Public Finance Review"(2006) by the World Bank.

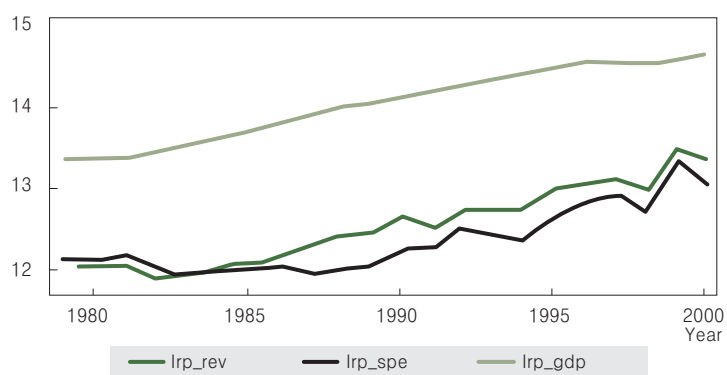
3. Korean Experiences

At the initial stage of industrialization dating back to the early 1960s, the domestic financial market of Korea had not been fully developed. On the other hand, demand for capital investment was enormous. Thus, foreign borrowing was the only way of meeting the capital demand.

Considering that private entities at the time did not have sufficient credit records to get funds from foreign financial institutions, they could not get the funds for themselves. Hence, the Korean government borrowed money from other countries and rationed it in the domestic market through financial institutions according to the so called "the 5-year economic plans." The 5-year economic plans set the priority of the national agenda and the energy industry has always been on top of the list.

Foreign borrowings were concentrated on public and private projects for building social infrastructure including energy related facilities. Particularly, in order to exploit the economy of scale and scope as well as network effect (which is very typical in the energy industry), under the constant shortage of funds, the Korean government adopted a "Choose-and-Concentrate" policy.

Figure 2-14 | Fiscal Trends of Korea[17] along the Path of Economic Growth



Source: Monthly Statistical Bulletin , Bank of Korea

17. The above variables are measured in logarized per capita real terms

In the meantime, fiscal consolidation also widened room for government intervention in the energy sector and contributed to the rapid growth of energy sector in Korea. Figure 2-14 shows the time trends of real GDP, government expenditure and revenue (in logarithms). The green line (fiscal revenue) is located above the orange line (fiscal expenditure) since the early 1980s, which can be seen as fiscal surplus on a consolidated budget. Ignoring the surplus attributed to the National Pension Program, the fiscal balance would be very close to zero[18].

Table 2-3 | International Comparison of Government Spending on Economic Affairs

(Unit: % of GDP)

	USA(1999)	GER(1996)	FRA(1993)	UK(1998)	CAN(2000)	KOR(2000)
Economic Affairs	2.9	5.4	4.6	2.2	4.4	6.1
Fuel and Energy	0.0	0.1	0.5	0.0	0.3	0.2
Agriculture, Forestry and Fishery	0.5	0.6	0.1	0.2	0.8	1.5
Mining, Manufacturing and construction	0.0	0.4	0.1	0.1	0.0	0.6
Transportation and Communication	1.8	2.4	0.8	0.8	1.9	2.4
Others	0.5	2.0	3.0	1.1	1.3	1.4

Source: *Government Finance Statistics Yearbook*(IMF, 2001)

Compared with other countries, the proportion of government spending on economic affairs of Korea is greater than that of other developed countries. The proportion in Korea declined over time and was recorded at 6.1% in 2000, which is still higher than other countries, which can be seen in Table 2-3 and confirms the presence of the "Choose-and-Concentrate" policy.

Another notable point is that most of the government budget assigned to economic affairs was spent on building SOCs. This is in contrast with Ukraine, where most of the budget is spent on price subsidization of energy. Such SOC oriented fiscal budgeting contributed to extending the Korean energy related infrastructure in a couple decades.

In addition, the detailed list of programs, which the Korean government has taken either from the demand or supply side, so far in order to promote the energy use efficiency, are briefly summarized as follows:

18. Several economists claim that such a long-run tendency of fiscal balance resulted from implicit "Expenditure-within-Revenue" principle (Hur (2007)).

● Demand Side Policies

(i) Differential energy prices of oil, gas, and electricity are applied to different usages and times. For example, a non-linear (progressive) pricing scheme of electricity with respect to season, time, voltage, and usage is in practice.

(ii) The government provides subsidies to investment in energy saving technologies, household products and production facilities. Those subsidies are given in the form of tax incentives or direct subsidies.

(iii) Direct regulations on energy consumption (such as daylight saving time and alternate uses of passenger cars)

● Supply Side Policies

(i) Initially most energy sectors (except coal mining) were monopolized by State Owned Enterprises (SOEs), and their market dominating positions were changed as Korean economy grew (later in details).

(ii) Outbound FDI in search of new energy supplies abroad. Government Loan Programs (GLPs) of low interest rates are available at every stage of searching for natural resources ranging from exploration to developing and production. Furthermore, in order to reduce the risk exposure of private entities at the stage of exploration, a certain type of GLP may offer a financial contract, a composite of debt and equity.

(iii) Several R&D projects for new sources of energy (such as hydro, solar power, fuel cell, etc) are currently being processed under so called "New Renewable Energy Policy," which President Lee Myung-Bak has initiated.

3.1. Development Strategy (Industrial Policies)

The growth of the energy sector (electricity, petroleum, gas and so on) in Korea cannot be alienated from that of Korean economy. Along the path of economic growth the Korean government has taken the following steps in sequence.

Phase I : Setting up Government Owned Enterprises covering each energy sector
Phase II: Privatize the GOEs by public offerings
Phase III: Enhance market competition by allowing private entrants in the energy market

In Phase I, a monopolistic supplier in each energy field was established with the intention of exploiting the economy of scale and scope as well as network externalities[19]. At the initial stage

19. Korea Electric Power Corporation (KEPCO, formerly known as KECO) was established and owned 100% by the government. Three regional electric companies (Chosun, Kyungsung and Namsun) were merged to form a single national electric power company KEPCO.

of industrialization, the Korean government had to elect a few areas, to which limited foreign borrowings could be allocated. Needless to say, under the so-called "Select-and-Concentrate policy," energy industries were on the favored side.

In Phase II, the government owned monopolists were privatized by public offerings[20]. At this stage a major rationale for privatization was to enhance cost efficiency. Consider a natural state owned monopolist in an energy sector. Then, regardless whether the company holds the decreasing long run average cost or not, the pricing scheme of the state owned company would be like adding a certain mark-up to the average cost. Thus, an internal incentive to minimize production cost would be weaker. The most popular economic solution to this problem is to privatize the firm and let shareholders audit and eliminate inefficiencies.

Another solution would be to introduce a competitor. At the same time of privatization, the Korean government tried to deprive each supplier of its market dominant position, which led to the next phase. In Phase III, the government allowed new entrants in the energy market in order to raise allocation efficiency through facilitating competition. This program was premised on the assumptions that (1) developments in the IT industry reduces the economy of scope in the energy sector and (2) the vertical structure of the energy industry, such as generation and sales divisions in the electricity market, may have smaller or no within-division economy of scale. Accordingly, any four companies, each of which belong to one of the following four divisions, generation, transmission, distribution and sales, can provide electricity to the final consumers with no additional costs incurred. On this ground, the Korean government allowed multiple regional suppliers in the generation and sales divisions of electricity[21].

3.2. Demand Side Programs

(1) Differential Pricing

Differential energy prices of oil, gas, and electricity are applied to different usages and times. In case of electricity, a higher unit price is levied on the greater usage amount. Table 2-4 shows the current electricity rates charged by Korea Electric Power Corporation (KEPCO). Electricity for households is charged by the progressive 6 step pricing where as uses for other purposes are differentially priced either by peak/off-peak usage or usage intensity or pre-defined grouping[22]. In terms of sales prices, electricity provided to agriculture is cheapest and

20. KEPCO shares were listed on the Korea Stock Exchange (1989) and New York Stock Exchange (1994). In 1989, Korean government sold 21 % of her shares to the public.
21. The power generation business of KEPCO was spun off into six power generation subsidiaries. Hence, competition was introduced to the power generation industry.

residential and general purposed uses are most expensive. However, comparison of mere average unit prices for difference usages may not be appropriate in the following sense: Charges for electricity include not only the generating costs but also the costs of transmission, distribution and other maintenance activities. Hence, electricity used for a certain purpose may be priced higher or lower than that for another purpose.

Table 2-4 | The Current Electricity Price Scheme

Usage	Coverage	Charge	Price per Unit (Sales Price/Cost)
Residential	Residential (incl. APT)	Progressive pricing in 6 steps	94.78 (122)
General	Public, Sales	Differentiation by Season (High rate in July~Aug)	97.68 (125)
		Differentiation by hour (more than 1,000kW)	
Educational	School, Library, Museum	Differentiation by Season	77.20 (99)
Industrial	Mining, Manufacturing	Differentiation by Season	64.56 (83)
		Differentiation by hour (more than 300kW)	
Agricultural	Agriculture, Fish farming	Differentiation by groups(A,B,C)	42.45 (55)
Street Lighting	Street, Bridge, Park.	Uniform pricing	71.47 (92)
Average			77.85 (100)

For fair comparison, we take a measure of sales price/cost*100. Setting the average to 100, residential and general purpose uses are priced 22%~25% above their provision costs whereas agriculture and industrial purposes pay 35%~57 less than the costs. These results provide a strong evidence of cross-subsidization in the electricity market of Korea: Electricity consumption of agriculture and industries are subsidized by other sectors- households and small business.

In principle, cross-subsidization may bias resource allocation towards the favored area. At the initial stage of industrialization, cross-subsidization in favor of certain industries may expedite the economic growth led by those industries. However, cross-subsidization cannot sustain forever and has to halt once the designated sector has grown fully. Otherwise, it will distort the resource allocation. Therefore, in the near future the Korean government will have to reduce the current pattern of cross-subsidization and apply a non-differential price scheme to any usage.

22. Street lighting is the only exception of uniform pricing.

(2) Sectoral Energy Saving Programs

The 5-Year Energy Management Plan is prepared by the Ministry of Knowledge Economy and Korea Energy Management Corporation (KEMCO)[23]. Under the plan, Energy Saving Companies (ESCOs) are encouraged to establish its own energy management programs with provision of financial and tax incentives on favorable terms and conditions. The major target area for such incentives are directed to facilitate dissemination of higher-efficient energy appliances and facilities, earlier replacement of old and low-efficient energy using appliances like boilers and pressure vessels. Here are a few remarkable subprograms.

First, as for manufactures of transportation vehicles, Fuel Efficiency Grade Labeling Program and Average Fuel Efficiency (AFE) program are in practice: The latter requires vehicle manufacturers to comply with the fuel efficiency standard set by the government while the first demands them to attach a fuel efficiency grade label in each vehicle they produce.

Second, in building construction, higher energy-efficient appliances and architectural systems are mandatory to use.

Third, in constructing public infrastructure, energy management programs of the large-scale public investment projects (e.g. airport, harbor and railroad facilities) should be assessed before being launched. In addition massive energy supply systems like combined heat and power generation (CHP) and district heating is encouraged in the major industrial complexes and densely-populated residential and commercial areas. To facilitate investment in energy-savings in these fields, KEMCO provides financial and technical incentives to ESCOs.

(3) Energy Audit Program

An energy audit consists of detailed evaluation of the subject firm's energy efficiency, technical and economical analyses of its energy facilities, and recommendations as to energy conservation opportunities that include changes in operating practices or energy-consuming equipment in order to reduce energy bills.

Under the current program, high energy-consuming companies over 2,000 TOE[24] (annually)

23. KEMCO is a government agency responsible for the implementation of energy conservation policies and energy efficiency improvement measures. It was established in 1980 by the Ministry of Commerce, Industry and Energy under the "Rational Energy Utilization Act". Its primary function is nation-wide energy management by providing services that vary from technical and financial support to administrative services, thereby pursuing global professional agency in the face of climate change, to create energy culture to improve energy efficiency, to develop & disseminate next generation energy. For the detailed information on this organization, visit http://www.kemco.or.kr.

are required to submit energy audits as demanded by the Rational Energy Utilization Act (Article 32) as of 2008. On the other hand, small business companies under 5,000 TOE of energy consumption are able to receive 70% of the energy audit fee from the government.

The benefits of an energy audit can be categorized as follows: First, it financially contributes to a reduction in operating costs or an increase in profits for an organization. Second, it assists the management of a facility or a building, or improves its productivity or safety. Third, it provides environmental benefits that have an additional value outside the organization by reducing CO2 emissions.

Another key player in energy audits is a certified energy audit agency. Currently, there are 37 agencies operating in Korea, including KEMCO. Each of these agencies has accumulated a wealth of expertise through the endeavors of their energy professionals and/or engineers.

As of 2007, the energy audit agencies carried out 383 auditing in 2007. Table 2-5 shows that 429,013 toe/yr of total energy consumption could be saved after the audits. It is an approximate 4.6% potential saving rate. While energy audit fee paid to energy audit agencies was 11,886 thousand USD, potential energy saving cost (cost reduced by energy saving) was 169,824 thousand USD/yr which is 14.3 times higher than the audit fees. Total investment cost for improvements was 326,788 thousand USD and payback period was about 1.9 year. Potential CO2 reduction was 1,086,377 tCO2/yr.

Table 2-5 | The Current Gas Prices

Subject	Unit	Thermal Part	Electric Part	Total
Total Energy Consumptions of HECCs in 2007	Toe/yr	5,634,941	3,738,329	9,373,271
Potential Energy Savings	Toe/yr	250,344	178,669	429,013
Savings Rate	%	4.4	4.8	4.6
Potential Svaing Cost	(1,000 USD/yr)	115,577	54,247	169,824
Investment Cost	(1,000 USD/yr)	199,814	126,974	326,788
Payback Period	yr	1.7	2.3	1.9
Potential CO2 Reduction	(tCO_2/yr)	748,027	338,350	1,086,377
Quantity of Improvements	EA	1,079	2,444	3,523

24. TOE is an abbreviation of 'ton of oil equivalence'.

(4) Energy Inspection Program

KEMCO inspects boilers and pressure vessels at the design, manufacture, installation and operation stages to prevent accidents and help them be used energy-efficiently. Through the inspection of energy-using facilities, KEMCO can prevent accidents, lengthen facility operating life by proper maintenance and correct use, and effectively cope with the United Nations Framework Convention on Climate Change (UNFCCC) by contributing to the reduction of energy consumption.

In 2007, the total number of inspected boilers and pressure vessels amounted to 68,557 of which 757 or 1.1 % were proven to be substandard. KEMCO's inspection activities have greatly contributed to improving the efficiency and safety of the energy-using appliances.

(5) Energy Efficiency Program

Currently, the Ministry of Knowledge Economy (MKE) and KEMCO are operating three energy efficiency programs: the Energy Efficiency Standards & Labeling Program; e-Standby Program; and High-efficiency Appliance Certification Program.

Under the Energy Efficiency Standards & Labeling Program, high energy consuming products are rated and an Energy Efficiency Label (graded 1 to 5) is attached to the products at the time of purchase. Those which fail to reach the Minimum Energy Performance Standards are not allowed to manufacture and sell. All Korean manufacturers are subject to this program. Specifically, KEMCO applies the energy consumption efficiency grade label to 17 items and the minimum efficiency standard label to items such as domestic gas boilers, three phase induction motors.

Save energy
Energy-Saving Label

E-Standby Program exists to promote the widespread use of energy saving products that decrease standby power consumption. The products that meet the energy saving standard suggested by the government are entitled to bear the Energy Saving Label. Specifically, this program is directed toward 22 types of office equipments and home electronic products.

The purpose of the High-efficiency Appliances Certification Program is to single out those products that perform above the certain standards. Certified products may bear the High-

efficiency Equipment Label and certificates are also issued. The program is directed toward 41 types of products including induction motors, boilers, and lighting appliances.

In order to spread the energy saving products as much as possible, MKE and KEMCO are taking all the efforts, such as:

(i) Preferred purchasing for the energy saving products from Public Procurement Service
(ii) Obligatory use of the certified products by public institutions and for constructing specially defined buildings
(iii) Test Fee Support for Certification for Medium & Small Sized Enterprises.

(6) Subsidies to the Installation of Facilities Using New and Renewable Energy

The Korean government has increasingly provided subsidies to firms, which purchase energy facilities based on new and renewable energy. These subsidies, though not statistically verified, are likely to bring about positive effects as follows: They directly benefit the purchasing firms so that they can reduce their dependence on fossil fuels. In the meantime, the market for the facilities using new and renewable energy is growing, which in turn pays the suppliers and encourages them to reinvest on R&D.

Table 2-6 | The Size of Government Subsidies

(Unit: Million KRW)

Year	1993~99	2000	2001	2002	2003	2004	2005	2006	Total
Subsidy	5,809	700	735	1,200	2,075	4 , 696	21,868	27,784	64,867

Table 2-7 | Installed Systems in 2006 Classified by Renewable Sources

Renewable Source	Total Capacity	No. of Systems
PV Power System	2,255kW	77
Solar thermal heating system	5,688m^2	44
Geothermal system	4,744RT	41
Anaerobic digestion system	20ton/day	1
Wind power system	10kW	1
Concentrative lighting system	97m^2	3

3.3 Supply Side Programs

(1) Loans and Tax Incentive Programs for NRE (New and Renewable Energy)

The government provides long-term, low-interest loans for the customers or manufacturers of NRE systems which have been completely commercialized. The objective of the program is to expand the deployment of NRE systems as well as to promote commercialization of large-scale facilities.

Installation loans are provided when the customer installs the NRE system, while operation loans are provided to the manufacturer of NRE facilities or to operate and manage such facilities. Loans are provided for up to 90% of the total cost (up to 80% for large corporations). Furthermore about 10% of total investment in installation of NRE systems can be deducted from income tax or corporate income tax.

Table 2-8 | Outstanding Loans of NRE

(Unit: Million KRW)

Classification	'83~'01	2002	2003	2004	2005	2006	Total
Installation Loans	277,663	16,278	47,495	49,985	100,026	119,642	611,089
Operation Loans	4,605	702	280	0	1,828	831	8,246
Total	282,268	16,980	47,775	49,985	101,854	120,473	619,335

(2) Government R&D Funding for NRE

The Korean government has increased her investment in R&D projects for NRE. Her funding concentrates on the following four areas: Fuel cell, photovoltaic power, wind and coal)

Table 2-9 | Annual R&D Investment for NRE

(Unit: Million KRW)

Year	'88~'00	2001	2002	2003	2004	2005	2006	2007	Total
# of Projects	367	54	50	69	116	44	65	55	820
Gov. share	101,855	24,212	25,853	32,963	58,788	79,370	115,788	120,900	559,729
Private share	72,370	11,718	13,906	18,015	31,668	42,499	76,912	91,041	358,129
Total	174,225	35,930	39,759	50,978	90,456	121,869	192,700	211,941	917,858

(3) Government Loan Program for Energy Explorations

Government loans are not limited to NREs. The Korean government also provides loans to the fossil fuel projects at various stages ranging from exploration to production. Loans to exploration trials are more interesting because most uncertainties are not eliminated and energy companies cannot easily receive funds from the capital market until the exploration stage ends. In response, the Korean government provides special loans to exploratory projects, whose payment conditions are hybrid of a bond and an equity.

Details of the loan contract are as given in Table 2-10. It applies a lower interest rates than the benchmark of 3-year government bond and requires a certain portion of profit sharing for 10~15 years, if the project turns out to be a success. Otherwise, the borrower is exempted from paying the remaining debt. Such features were designed to relieve the risk exposure of the energy companies and attract more exploration trials for fossil fuels.

Table 2-10 | Government Loan Program for Energy Explorations

Started	1982 (with modifications of 22 times)
Loan Size	• KW 3 trillion (up to 2007) • Petroleum and Gas (KW 2.3tril.), Mineral (KW 0.8 tril.)
Payment Condition	• Applied interest rates – For domestic projects, KOR gov't bond 3yr minus(-) 1.25%, – For international projects, KOR gov't bond 3yr minus(-) 2.25% • Period : oil & gas - 15yrs (from the exploration stage), 10yrs (from the development & production stage)
Administered by	Korea National Oil Corporation, Korea Resources Corporation

3.4. Summary

The energy programs practiced in Korea so far can be divided into the following five groups: First, at an industrial level, a sectoral development strategy, based on the initial Choose-and-Concentrate policy and the three-phased development scheme, was practiced.

Second, cross-subsidization through differential pricing or tax treatments both have pros and cons. Depending on the directions of subsidization it may expedite the growth of an industry and induce the early adoption of energy saving technologies or delay the restructuring of another[25]. Equally, it is notable that the measure of cross-subsidization should be abolished in the long-run. Otherwise it would distort the resource allocation.

Third, government loans and subsidies are provided in various forms in order to encourage the development and adoption of energy saving technologies. However, information asymmetry between borrowers and the government cannot be eliminated completely. Hence, frequent evaluations of each loan or subsidy program should be made based on the track records.

Fourth, various energy saving programs including sector-specific ones, audit, inspections, efficiency certification are put into practice. These measures, compared with the above ones, require minimum cost. But for effective implementation, an institution to oversee them should be established. In the case of Korea, KEMCO is in charge for this role.

Fifth, direct regulations on energy consumption (such as daylight saving time and alternating uses of passenger cars) were tested. Though not increasing the government debt, they incurred substantial social cost.

4. Policy Implications

4.1 Directions

The low energy efficiency of Ukraine can be recognized quite clearly from various sources. Also, it is evident that Ukraine should renovate the old supply chains of energy in order to achieve higher efficiency in producing and distributing energy. In detail, Ukraine needs to replace antiquated facilities of energy production, transmission, and distribution. At the same time, energy market incumbents should be encouraged to innovate further, invest more, and enhance transparency. Needless to say, the Ukrainian government should identify and eliminate the distorted incentives in energy consumption of both firms and households.

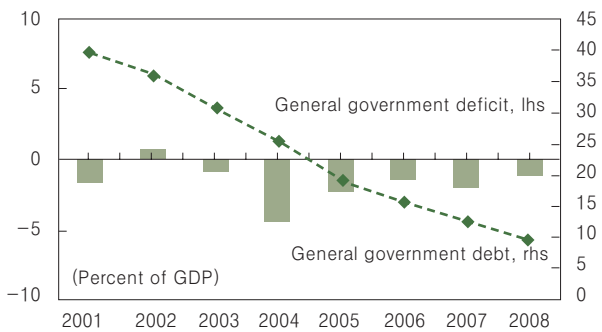
Korea suffered from the same symptoms of low energy efficiency. Along the passage of growth, the Korean government has taken various measures to enhance the energy efficiency while investing massive portions of fiscal money on SOCs including energy related facilities. Therefore, the energy efficiency of Korea has been raised following the income growth. From a global perspective, the current efficiency level of Korea falls short of other developed countries. Furthermore, all the policy measures were not successful. However, Korean experiences can help Ukraine to improve the energy efficiency.

25. From Table 2-4, agriculture is the most heavily subsidized sector, which may contribute (at least partially) to her deferred restructuring.

Before making any recommendations based on Korean experiences, we have to check whether all the relevant economic environments of Ukraine are similar to those of Korea. Otherwise, a policy program, which was once successful in Korea, may not be successful in Ukraine and vice versa.

(1) Fiscal Balance and Government Debt

Figure 2-15| Fiscal Deficit and Government Debt of Ukraine



Source: Ukraine: Selected Issues, IMF Country Report No.08/22, IMF, 2008

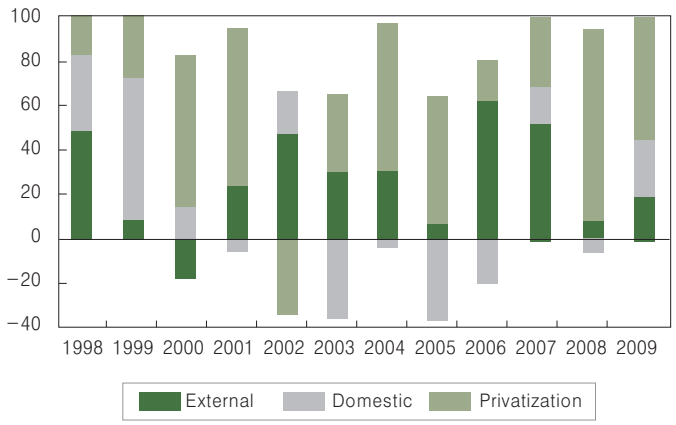
The government debt to GDP ratio has declined from 40% (2001) to 10% (2008). Such relatively low government debt implies that Ukraine could afford more energy related projects. In contrast, the fiscal deficit to GDP ratio holds a negative sign from 2001 to 2008 except 2002, which implies that the Ukrainian government paid the debt by privatizing SOEs (State Owned Enterprises).

(2) Sources of Government Financing

Ukraine receives funds from three sources: domestic, foreign borrowings, and proceeds from privatization. Among them, since 2000, foreign borrowings and privatization have been two major sources of the government funding. Proceeds from privatization contributed to shrinking the relative size of the government debt as seen in Figure 2-15, but they cannot be sustained. On the other hand, due to the global financial crisis, the government would have trouble in having access to the international financial market.

Figure 2-16 | Composition of Government Financing

(Unit: %)



Notes : 1) 2002 and 2007 are preliminary
2) 2009 is projected by IMF staff
3) In 1998-2002, based on consolidated government finances

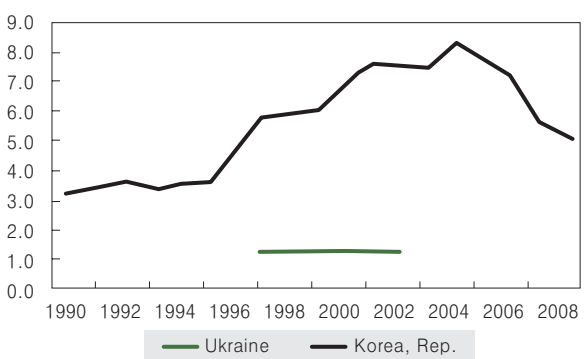
Sources : Ministry of Finance; NBU; IMF staff estimates and projections.

(3) Domestic Financial Market

It is quite surprising that money multipliers are smaller than any other country, which is true for any definitions of money-M1, or M2, or M3. The size of a multiplier is a good proxy for the development of the domestic financial market, in that the multiplier is defined to be the ratio of deposits to currency minus (-) 1.

Figure 2-17 | Money Multiplier (M1) of Ukraine and Korea

(Unit: %)



Sources: IFS, IMF and BOK.

Figure 2-18 | Money Multiplier (M2) of Ukraine and Korea

(Unit: %)

Figure 2-19 | Money Multiplier (M3) of Ukraine and Korea

(Unit: %)

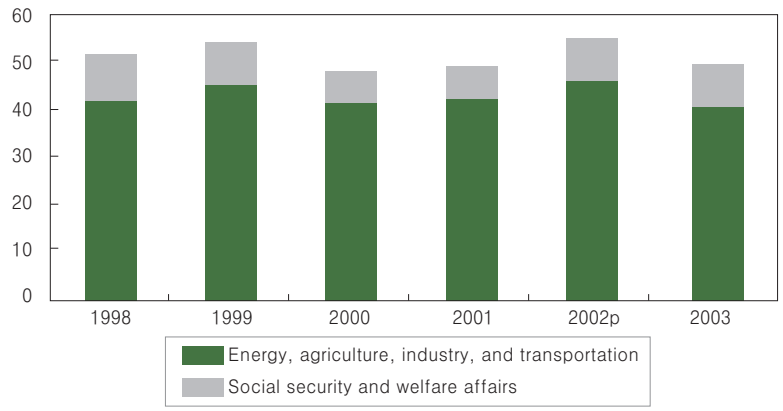
The multiplier for M1 is very close to 1 and those for M2 and M3 do not exceed 2, which imply that Ukrainian households do not trust banks and rather keep their money under a mattress. Therefore, the Ukrainian government may have difficulty in getting funds from the domestic loan market.

(4) Pension and Welfare Programs

In a consolidated budget, public pensions and welfare programs take over 40% of the government expenditure. In addition to heavy subsidies on energy prices, such a high portion of public pension and welfare programs are suspected to crowd out public capital investment.

Figure 2-20 | Consolidated Government Expenditure (Composition)

(Unit: %)



Notes: 1) p is preliminary. 2) Transportations are excluded in 2003.
Sources: Ministry of Finance; NBU; IMF staff estimates and projection

4.2. Measures to Take

Aforementioned, Ukraine as well as the Ukrainian government knows the directions Ukraine should move towards. A remaining question is "how do we get there?" A crucial part of an answer to this question is money, that is to say "how to finance, allocate, manage funds for renovating and restructure the current energy industries." In this regard, this issue returns to an issue of infrastructure financing.

First, in raising money, Ukraine may rely on two sources - domestic and foreign borrowings. Contrary to our anticipation, however, they are not quite open. The domestic financial market has not yet grown up, which is indicated by the low domestic savings rate and small money multipliers. On the other hand, the international finance market has been frozen since the outbreak of the global financial crisis. Access to foreign borrowings is more limited for Ukraine since she just experienced the currency crisis[26]. Therefore, at least now it seems that the only available measure in this regard is to phase out distortive government subsidies on the energy

26. Another source of foreign funding could be obtained from utilizing the Kyoto Protocol. The goal of the Kyoto Protocol is to reduce emissions of CO2 by setting up country-level emission quotas and to allow international trade of emission rights. Under this treaty, Ukraine could sell large amounts of unused assigned emission rights to other countries, and use the proceeds in renovating the old energy facilities. In this regard, EBRD researchers expected that Ukraine would recieve the most benefit among the eastern European countries from the Kyoto Protocol.

sector. As was agreed in the recent consultation with IMF, reduction in government subsidies on energy prices will induce Ukrainian firms and households to replace old energy inefficient equipments and adopt energy saving technologies. The current energy price scheme, based on huge government subsidies, distorts private incentives and defers the adoption of energy saving technologies.

Second, in allocating money, it is crucial that each project should be examined and evaluated on a sole ground of economic efficiency prior to allocation of resources. In addition to determining where to allocate the limited funds, it is equally important to determine how to spend the government money. There are various ways of allocating government resources to the selected energy projects. To name a few, equity investment, bond financing, hybrid financing (between equity and bond), loan guarantee, and sales or purchase guarantee. Among them, which vehicle of financing to choose depends on the development stage of domestic financial market and/or external borrowing conditions, information asymmetry and fiscal soundness.

Third, in managing money, the performance of each project should also be evaluated on a regular basis. Based on this and the previous point, we recommend that the Ukrainian government should strengthen capital budgeting (and Public Finance Management, PFM)[27], which in turn will guarantee more transparency and allocation efficiency. In this regard the Korean government can provide much help to Ukraine. The crucial concepts and analytical framework used in the capital budgeting process were devised by many experts in international organizations, such as IBRD. Korea, however, is one of very few countries that have track records of putting theory into practice and have gained many valuable on-the-project know-hows. Eventually, transparency and rigorously examined profitability through a fortified capital budgeting system will make it easier to get foreign borrowings.

Fourth, as in the case of Korea, privatization and market restructuring should be tried only for efficiency gains. Market dominant SOEs tend to have problems in cost minimization. In addition economy of scale and scope become weaker by the remarkable developments in IT technologies. In that case, the government needs to introduce competition by taking options, such as privatizing the whole or a division of the existing SOEs and/or allowing new private entrants.

Competition guarantees better outcomes in most cases but not always. Furthermore the number of market players is not a true measure for competition, either. Thus, we move to the next point.

Fifth, even before privatization, SOEs should be properly supervised and guided by

27. Korean system of capital budgeting is introduced in Appendix.

reasonable targets of service. In the mean time, the target of services should be designed in the following way: (i) it should evaluate both output and input/output ratio, (ii) the input/output ratio should be compared with the current ratios of other countries whereas output growth should with its own past figures, and (iii) managements of the SOEs should be rewarded based on (ii).

Also, after being privatized and/or new entrants are allowed to enter, the market participants should be properly regulated if economy of scale/scope and network effects are likely to result in natural monopoly.

Sixth, the Korean energy saving programs introduced so far will be effective (at least risk-free or cost -free). Without much adaptation they can also be applied to the Ukrainian case. The only concern is that Ukraine needs independent organizations to oversee all these audits and evaluation programs, like KEMCO in Korea.

KEMCO[28] is a government agency responsible for the implementation of energy conservation policies and energy efficiency improvement measures. It was established in 1980 by the Ministry of Commerce, Industry and Energy under the "Rational Energy Utilization Act". Its primary function is nation-wide energy management by providing services that vary from technical and financial support to administrative services, thereby pursuing global professional agency, in the face of climate change, to create energy culture to improve energy efficiency, to develop and disseminate next generation energy.

5. Concluding Remarks

It seems common knowledge that the energy sector in Ukraine is suffering from huge efficiency loss, which is mainly attributable to the old energy facilities inherited from the former Soviet regime as well as the distorted incentives for energy consumption in households and industries. Thus, the symptoms are quite easily identified as discussed in this chapter.

However, it is another and more challenging question to implement energy programs and policies and direct the Ukrainian economy and the energy sector policy directions towards renovating the old supply chains of energy and eliminating the distorted incentives of energy consumption of households and industries. A key element of an answer to this question would be "money (resources)." (Another critical factor would be "political consensus" because any

28. For detailed information on this organization, visit http://www.kemco.or.kr.

change in energy policy will affect the distribution of benefits and costs among the countably many involved.)

In response to these observations and discussions, we suggest the following recommendations based on our Korean experiences: First, in order to raise more resources we recommend that the Ukrainian government should phase out distortive government subsidies on the energy sector. Due to low domestic savings rate and underdeveloped domestic financial markets, required resources for renovating the energy sector cannot be properly obtained from the domestic financial market. Furthermore, the channel of foreign borrowing has been frozen due to the outbreak of the global financial crisis. The money saved from government subsidies on the energy sector could be redirected towards renovating the old energy infrastructure.

Second, it is recommended that the Ukrainian government should strengthen the capital budgeting system. Under the fortified capital budgeting system, each project will be evaluated on a sole ground of economic efficiency prior to allocation of resources. Also, the performance of the project will also be examined on a regular basis or along a capital budgeting cycle. Hence, enhanced transparency and profitability through a fortified capital budgeting system will make it easier to receive foreign borrowings (positive to raising funds).

In this regard the Korean government has much to offer Ukraine. Most of the theoretical models concerning the capital budgeting were devised by various experts in Academia or International Organizations, such as IBRD. Korea, however, seems to be the only country to have a relatively long track record of putting the theory into practice and holding many valuable on-the-project know-hows.

Third, we recommend that privatization in the energy sector should be based on the ability of potential private entrants, both in terms of production efficiency and capital mobilization. Market dominant State Owned Enterprises have problems in cost minimizing and in most cases, competition guarantees better outcomes. It is, however, not always valid. Furthermore the number of market players is not a true measure for competition, either. Therefore the decision to privatize an energy sector should be made putting all the economic factors, such as the economy of scale, the economy of scope, and the competition enhancements. Anyhow, once the privatization procedure is taken, the proceeds from privatization should be matched with public capital investments for modernizing the energy sector. Otherwise, it would be another way to leave the government share in the newly privatized forms and request that private partners should spend their paid-in-capital on renovating the facilities.

In the paper we also made some recommendations in regard to supervising and regulating the energy industries and individual companies.

Government Spending on Public Infrastructure is managed by the following four project evaluation scheme.

(1) Preliminary Feasibility Study (PFS): Ex-ante
(2) Re-assessment Study of Feasibility (RSF)
(3) Re-assessment of Demand Forecast (RDF)
(4) Program Evaluation (PE): Ex-post

(1) Effective Preliminary Feasibility Study(PFS)

What is PFS?

PFS is a short and brief evaluation of a project to produce information for budgetary decision -administered by the Ministry of Strategy and Finance (MOSF) and managed by PIMAC (Public and Private Infrastructure Investment Management Center) at KDI. In naming, the meaning of a word "PRELIMINARY" is two-folded: One is "provisional", and the other is "preceding a (detailed) feasibility study". PFS is provided the legal framework by the National Finance (NF) Act of 2006.

Coverage of PFS

All new large-scale projects with total costs amounting to 50 billion Won ($50 million USD) or more are subject to PFS. Before the NF Act, PFS was centered on infrastructure projects and later has expanded to non-infrastructure (e.g. R&D) projects. Local government and PPI (Private Participation in Infrastructure) projects are also subject to PFS if central government subsidy exceeds 30 billion Won. However, the following types of projects are exempted from PFS:

- Typical building projects such as government offices and correctional institutions
- Legally required facilities such as sewage and waste treatment facility-Rehabilitating projects and restoration from natural disaster
- Military facilities and projects related with national security

Achievements of PFS

So far the allocation of 82 trillion Won for 147 non-feasible projects, or 43.8% of 168

trillion Won for 335 projects had been prevented through PFS[29].

Figure A-1 | Flowchart of PFS

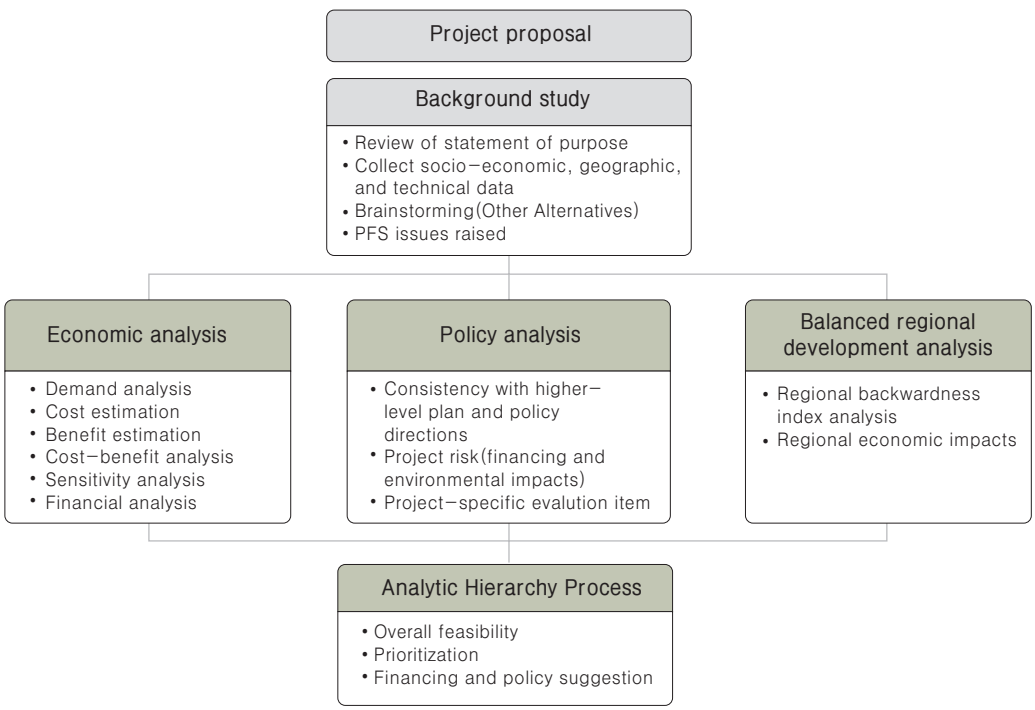


Table A-1 | Number of PFS by Sector (1999~2007)

(unit: No)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	Sum
Road	11	11	20	9	11	24	11	27	30	154
Railway	8	7	14	8	7	13	6	10	4	71
Seaport	1	5	1	2	3	1	2	5	1	21
Culture & Tourism	3	2	5	2	5	2	1	5	-	25
Water Resources	1	1	-	5	5	3	3	1	-	19
Others	1	4	1	4	2	12	7	4	10	45
Sum	19	30	41	30	33	55	30	52	45	335

29. Total government expenditure is 238.4 trillion Won, and government expenditure on transport and regional development is 18.4 trillion Won in 2007.

Table A-2 | Proportion of Feasible Projects by Sector (1999~2007)

(unit: %, No)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total Projects (A)	Feasible Projects (B)	(B)/(A)
Road	45.5	27.3	30.0	33.3	72.7	87.5	36.4	63.0	63.3	154	86	55.8
Railway	50.0	57.1	35.7	75.	71.4	53.8	83.3	40.0	25.0	71	38	53.5
Seaport	100.0	80.0	100.0	50.0	100.0	100.0	100.0	40.0	0.0	21	15	71.4
Culture & Tourism	100.0	0.0	40.0	0.0	0.0	100.0	100.0	40.0	0.0	25	10	40.0
Water Resources	100.0	100.0	0.0	0.0	60.0	66.7	66.7	100.0	0.0	19	10	52.6
Others	100.0	75.0	0.0	75.0	50.0	66.7	71.4	50.0	60.0	45	29	64.4
Sum	63.2	50.0	34.1	43.3	60.6	74.5	63.3	53.8	57.8	335	188	56.2

(2) Re-assessment Study of Feasibility (RSF)

RSF adopts the same methodology and implementation procedure as PFS. Under Total Project Cost Management System[30] (TPCM), RSF is conducted if -TPC has increased by more than 20 % (excluding price escalation and increase in land acquisition cost) of the cost endorsed by the MOSF at the previous phase of the project, or if the PFS has not been conducted although it falls under the PFS coverage.

At the time RSF is carries out, the corresponding project might have already begun. Even if so, RSF team could makes judgment whether to continue or to stop the project. Compared with PFS, RSF emphasizes to find alternatives to cut down size and cost of a project.

(3) Re-assessment of Demand Forecast (RDF)

Under TPCM, RDF is to verify the adequacy of demand forecast with latest information available, reflecting changes in project environment. RDF can be conducted at any phase

30. TPCM is a device that budget ministry monitors expenditure on public investment and checks increase in project cost throughout the project cycle from planning to construction completed. It covers
(i) projects whose construction period exceeds two years,
(ii) civil engineering works whose TPC exceeds 50 billion Won (USD 50 million), or architectural projects whose TPC exceeds 20 billion Won (USD 20 million);
(iii) projects implemented by the central government or its agents, or by local governments or private institutions that include central government funding.

throughout the project cycle from planning to construction completed when a substantial decrease of demand is anticipated due to material changes in the premises on which demand forecast has been made or errors have been found in demand forecast, or more than five years have passed since the latest demand forecast had been conducted. When the demand forecast for a project has decreased by 30% or more, the MOSF conduct RSF and decide whether to continue or to stop the project.

Table A-3 | Number of Projects with Substantial Change in TPC

Year	Total projects under TPCM(A)	Increase in TPC by over 20%(B)	Decrease in TPC by over 20% (C)	B/A(%)	C/A(%)
1994	218	-	-	-	-
1995	207	19	2	9.2	1.0
1996	159	19	2	11.9	1.3
1997	189	20	2	10.6	1.1
1998	183	17	2	9.3	1.1
1999	459	15	2	3.3	0.4
2000	483	24	23	5.0	4.8
2001	602	26	13	4.3	2.2
2002	602	10	15	1.7	2.5
2003	667	15	27	2.2	4.0
2004	698	26	20	3.7	2.9

Note: B/A(%) has decreased and C/A(%) has increased since 1999.

The amount of requested TPC has dropped significantly after 1999, which is attributable to RSF. In details, the request for TPC increase in % of TPC has dropped from 26.4% (1996~1999) to 4.4% (2000~2003), and the amount of TPC adjusted in % of TPC has also dropped from 11.1% to 1.0.

Table A-4 | Amount of TPC Change Before and After 1999

(unit: %)

	1996~99	2000~03
Request for TPC increase in % (A)	26.4	4.4
TPC adjusted in % (B)	11.1	1.0
(B)/(A)	42.1	22.7

Table A-5 | Number of RSF by Sector (2003~2007)

(unit: No)

	2003	2004	2005	2006	2007	Sum
Road	5	3	4	10(2)	9(1)	31(3)
Railway	6(1)	-	-	1	1(1)	8(2)
Port	-	-	-	-	2	2
Buildings(Museums & Tourism)	4	2	2	4	2	14
Water Resources (Dam)	-	-	1	2	1	4
Others	-	-	-	2	-	2
Sum	15(1)	5	7	19(2)	15(2)	61(5)

Note: The number in parenthesis is number projects that were stopped as a result of RSF.

(4) Program Evaluation

This program aims to conduct in-depth evaluation on projects of great significance in policy implications, projects that overlap between ministries and that are inefficient, projects that have been repeatedly disputed in the National Assembly, projects that need enhanced efficiency in expenditure after the verification of project performance, and projects that need continuing expenditure increase and that require examination on the project operation system.

The Program Evaluation Division at PIMAC of KDI conducts in-depth evaluation of programs on request from MPB, whose main issues are as follows:

- Relevance: How well the objectives and needs of a program are established and coincide with the policy?
- Efficiency: How efficiently the inputs are used to produce the outputs and results?
- Effectiveness: How much do the impacts of a project contribute to the aim of a program and general goals?
- Utility: Is the demand satisfied as a result?
- Sustainability: How long will the positive effect last if the project discontinued?

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Mid-term Economic
Development Strategies for Ukraine

Chapter 03

Investment in Infrastructure Development

Chapter 03

Investment in Infrastructure Development

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1. Introduction

Economic growth and the provision of adequate infrastructure are closely interrelated. Well developed infrastructure can raise industrial competitiveness by enhancing productivity and capacity to innovate. Infrastructure development also promotes international trade and foreign direct investment. It also helps reduce poverty and thus improve welfare and income distribution.

Despite its central role in economic development, the gap is growing between infrastructure requirements and public funding capacities of countries. Demand for infrastructure services has increased substantially due to economic expansion and globalization. Population growth and aging also requires countries to expand the stock of infrastructure. However, trends toward smaller governments and fiscal consolidation have undermined public funding capacities for infrastructure financing. Rising social expenditures, such as public healthcare and pension costs have also raised fiscal burdens. Furthermore, the current global financial crisis is expected to put a deep strain on the fiscal soundness of countries all over the globe.

Especially in developing countries, there remains a large unfulfilled demand for the provision of adequate infrastructure. As shown in Table 3-1, while the annual infrastructure investment need for 2005-2010 is estimated to be around 2.07% of GDP for the world as a whole, it is even larger at 5.47% for developing countries. The infrastructure investment needs are high for low income countries and in the regions such as East Asia and Pacific, South Asia, and Europe and Central Asia.

Hence, challenges for developing countries are how to invest efficiently without undermining fiscal soundness, and how to ensure the upkeep and consistent maintenance of infrastructure. In resolving these challenges, private sector involvement in infrastructure provision has recently emerged as a preferred method. If we look at the composition of infrastructure investment by funding sources in Figure 3-1, infrastructure financing still remains largely dependent upon the public sector even if a significant share is attributable to the private sector. The private sector participation helps reduce spending without deferring the benefits of social overhead capital (SOC). It can also raise efficiency in providing infrastructure services and lead to better quality services at lower costs. Yet, along with those positive effects, the private sector participation may also involve risks such as increased contingent liabilities for the government. Hence, it requires a careful and adequate institutional framework.

Table 3-1 | Expected Annual Infrastructure Investment Needs (2005-2010)

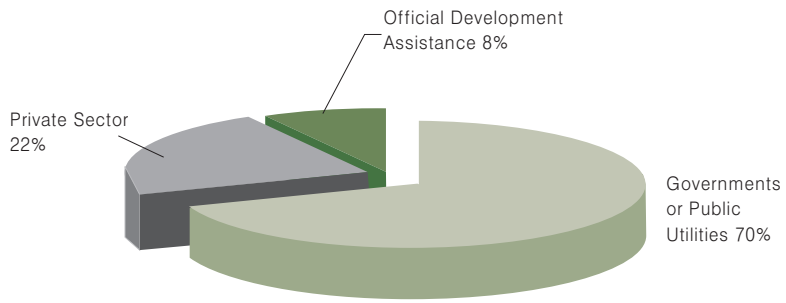
	New		Maintenance		Total	
	US$Mn	%GDP	US$Mn	%GDP	US$Mn	%GDP
By Income Group						
Low Income	49,998	3.18%	58,619	3.73%	108,607	6.92%
Middle Income	183,151	2.64%	173,035	2.50%	356,187	5.14%
High Income	135,956	0.42%	247,970	0.76%	383,926	1.18%
Developing Countries by Region						
East Asia & Pacific	99,906	3.67%	78,986	2.90%	178,892	6.57%
South Asia	28,069	3.06%	35,033	3.82%	63,101	6.87%
Europe & Central Asia	39,069	2.76%	58,849	4.16%	97,918	6.92%
Middle East & N. Africa	14,884	2.37%	13,264	2.11%	28,148	4.48%
Sub-Saharan Africa	13,268	2.84%	12,644	2.71%	25,912	5.55%
Latin America & Caribb.	37,994	1.62%	32,878	1.40%	70,82	23.02%
All Developing Countries	233,139	2.74%	231,654	2.73%	464,793	5.47%
World	369,09	50.90%	479,624	1.17%	848,719	2.07%

Note: GDP deflator used is an average of the 2005-10 projections

Source: Fay, M. and T. Yepes, "Investing in Infrastructure: What is Needed from 2000 to 2010?" World Bank Policy Research Working Paper No. 3102, July 2003

This chapter analyzes the current state of infrastructure development in Ukraine by focusing on the challenges and investment needs. Given that Korea has overcome similar challenges in its development stages, we draw policy lessons for Ukraine from Korea's experiences on infrastructure development. In particular, we focus on Korea's framework for public-private partnership (PPP) in infrastructure. After reviewing Korea's PPP scheme, this chapter draws and presents key policy recommendations for the Ukrainian government.

Figure 3-1 | Infrastructure Investments by Funding Source, 1990s



Source: Leautier (2007), Public Private Partnership in Infrastructure: A Step Forward, World Bank KDI Conference

2. Infrastructure Investment in Ukraine

2.1. The Imperatives of Infrastructure Investment in Ukraine

Ukrainian economy is currently faced with risks and challenges from the on-going global financial crisis. The economy is suffering from large external shocks and difficulties in access to international financing. With global economic downturn, its export recovery is limited despite the large exchange rate correction. While significant tightening of monetary and fiscal policies may be necessary to improve external imbalances, a steep fall in GDP growth and declining domestic demands require expansionary macroeconomic policies. Already tight fiscal space is getting narrower as public resources are required for financial and corporate restructuring. Rising unemployment and cost of maintaining social safety nets also leave little room for infrastructure financing.

However, infrastructure investment cannot be delayed in Ukraine. Investment in infrastructure is urgently required in order to lay foundations for post-crisis economic growth as the depreciation of existing capital assets is large in Ukraine. As emphasized by the World Bank, Ukraine's inherited capital stock has undergone little modernization during the last 15 years of independence (World Bank 2007). Aging population and changing demographic trends also imply that significant productivity improvements are required for Ukraine.[1]

2.2. Infrastructure Investment Needs and Fiscal Space in Ukraine

In order to upgrade and reform the infrastructure sector, Ukraine has to deal with some challenges. First of all, Ukraine is faced with considerable wear and tear in key social overhead capital. For instance, 80% of road coverage needs repair and 20% needs urgent repair. While Ukraine needs to improve quality of infrastructure services, the structural reform in infrastructure industries have been delayed. Furthermore, there remain various fiscal problems. Fiscal resources for infrastructure financing are in serious shortage, and long-term financing is almost impossible as budgetary planning horizon is only short-term (1 year). The allocated capital should also be used more efficiently with better designed project priorities.

As shown in Table 3-2, infrastructure related industries account for a large part of economic activities in Ukraine. As of 2007, transport industry accounted for 11.7% of GDP and the energy, gas and water industries accounted for 3.6% of GDP. In 2005, the transport, energy, gas, and water industries combined employed 13% of national labor force. Nonetheless, Ukraine falls behind other transition economies in infrastructure reform. Table 3-3 and Figure 3-2 show indicators of structural reform in major infrastructure industries across countries.[2] As can be seen, Ukraine is far behind its competitor nations especially in energy, railways and transport, and telecommunications industries. It also lags behind other CEE countries in every major infrastructure industry except in electric power. Especially in railways and water sectors Ukraine seem to fall behind Central and Eastern European countries.

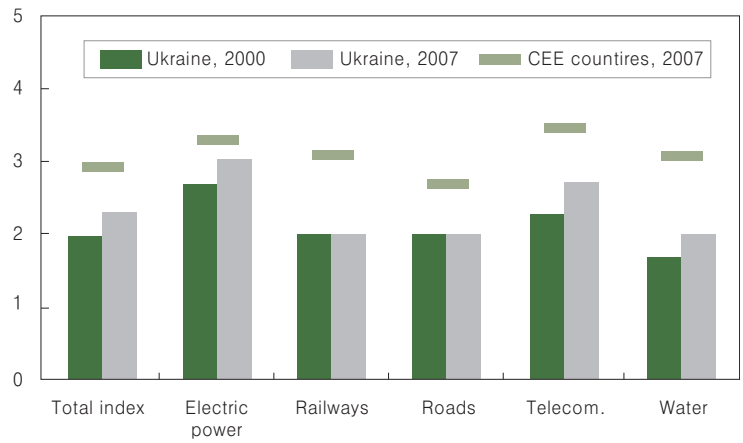
Table 3-2 | Major Infrastructure Industries of Ukraine

	2000	2001	2002	2003	2004	2005	2006	2007
Transport								
% of GDP	13.0	13.6	13.7	14.6	13.6	12.2	12.7	11.7
% of Employed	7.9	8.0	8.1	8.2	8.3	8.3	-	-
Production and Distribution of Energy, Gas and Water								
% of GDP	6.8	6.2	5.7	5.1	4.0	3.9	4.3	3.6
% of Employed	3.8	4.1	4.3	4.5	4.8	4.7	-	-

Note: Transport includes railways and roads.
Source: Internal Document, Ministry of Economy, Ukraine, 2008

1. In Ukraine recent total factor productivity (TFP) growth has been boosted by rising capacity utilization and the reduction of hidden unemployment, which would not last much longer. (World Bank 2007)
2. The indicator ranges from 1 to 4 with higher values indicating more progress. For instance the indicator of the Institute for Economic Research and Policy Consulting is determined based upon evaluations on detailed items in the areas of commercialization and privatization, tariff reform, and regulatory and institutional development.

Figure 3-2 | European Bank for Reconstruction and Development (EBRD) Infrastructure Structural Change Indicators



Note: CEE denotes the group of Central and Eastern European countries
Source: IMF Country Report for Ukraine, No. 08/227, July 2008

Table 3-3 | Indicators of Structural Reforms in Infrastructure

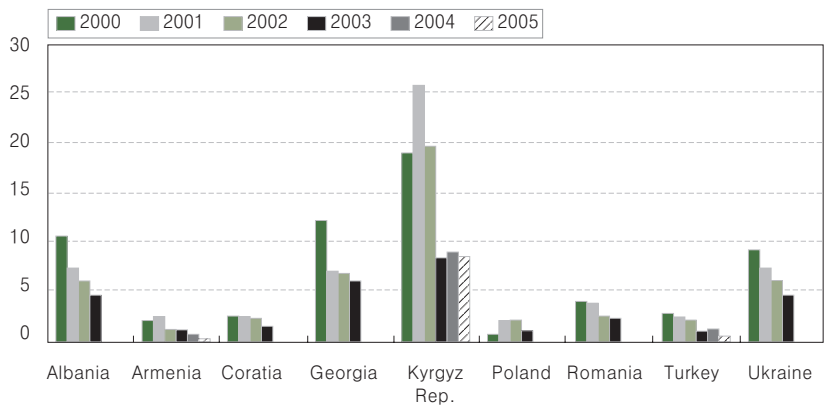
Country	Energy	Railways & Transport	Roads	Telecom	Water Supply
Ukraine (Institute for Economic Research and Policy Consulting)	2.58	1.79	2.37	2.53	2.03
Ukraine (European Bank for Reconstruction and Development)	3.0	2.0	2.0	2.7	2.0
Bulgaria	3.7	3.3	2.7	3.7	3.0
Kazakhstan	3.3	3.0	2.3	3.0	2.0
Lithuania	3.3	2.3	2.3	3.7	3.3
Poland	3.3	4.0	3.0	4.0	3.3
Romania	3.7	4.0	3.0	3.3	3.3
Russia	3.0	3.0	2.0	3.0	2.3

Source: Internal Document, Ministry of Economy, Ukraine, 2008

Table 3-4 shows the progress in the structural reform indicator over time. Overall reform progress has been stagnant recently although there have been slight improvements in telecommunications and power sectors during the 2006-07 period. Among other factors, high

losses, nonpayment of bills, and tariffs lower than cost hurt financial performance of overall infrastructure industries, hampering the structural reform and creating implicit government subsidies that may require eventual bailouts. For instance, the hidden costs of power and water sectors are shown in Figure 3-3 and Table 3-5. (Kessides and Khan 2007)

Figure 3-3 | Total Hidden Cost of Power Sector as % of GDP



Source: Kessides, C. and S. Khan, Infrastructure, Chap.4 in Gray, C., Lane, T. and A. Varoudakis eds. Fiscal Policy and Economic Growth - Lessons for Eastern Europe and Central Asia, World Bank, 2007.

Table 3-4 | Progress in Structural Reforms in Infrastructure Sectors

Sector	Nov 2000	May 2000	Nov 2001	May 2002	Nov 2002	May 2003	Jun 2004	Jul 2005	Aug 2006	Sep 2007
Telecom	2.31	2.36	2.24	2.22	2.26	2.29	2.41	2.40	2.50	2.53
Railways	1.29	1.39	1.49	1.54	1.56	1.79	1.73	1.78	1.80	1.79
Roads	2.16	2.19	2.19	2.19	2.21	2.32	2.30	2.29	2.37	2.37
Power	2.37	2.49	2.51	2.51	2.49	2.60	2.56	2.56	2.57	2.58
Gas	1.89	2.04	2.09	2.06	2.05	2.04	2.06	2.06	2.04	2.03
Water	1.36	1.42	1.42	1.47	1.51	1.57	1.61	1.61	1.61	1.60

Source: Institute for Economic Research and Policy Consulting, Sep. 2007

Along with the stagnant structural reform, infrastructure investment requirements are large in Ukraine. As shown in Table 3-6, according to the estimates of the World Bank, the investment requirements in energy, transport, housing & communal services sectors combined are 49 billion US$, which is approximately 30% of 2007 GDP.

Table 3-5 | Total Hidden Cost for Water as % of GDP (2001 US$)

	2000	2001	2002	2003	2004	2005
Armenia		0.88	1.55	1.59	1.09	0.69
Georgia	1.35	1.62	1.28	1.06	0.86	0.57
Poland	0.15	0.15	0.17	0.16	- -	- -
Ukraine	0.11	0.28	0.34	0.32	- -	- -

Source: Kessides, C. and S. Khan, Infrastructure, Chap.4 in Gray, C., Lane, T. and A. Varoudakis eds. Fiscal Policy and Economic Growth - Lessons for Eastern Europe and Central Asia, World Bank, 2007.

Table 3-6 | Public Investment Required over the Next 10 Years

Sector	Billion USD
Energy	30
Transport	5
Housing and Communal Services	14
Agriculture and Land Reform	9
Health, Education, Social Protection	6.5
Environmental Protection	15
Market Supporting Institutions	4
Others	16.5
Total	100

Source: Ukraine - Creating Fiscal Space for Growth, World Bank, 2006

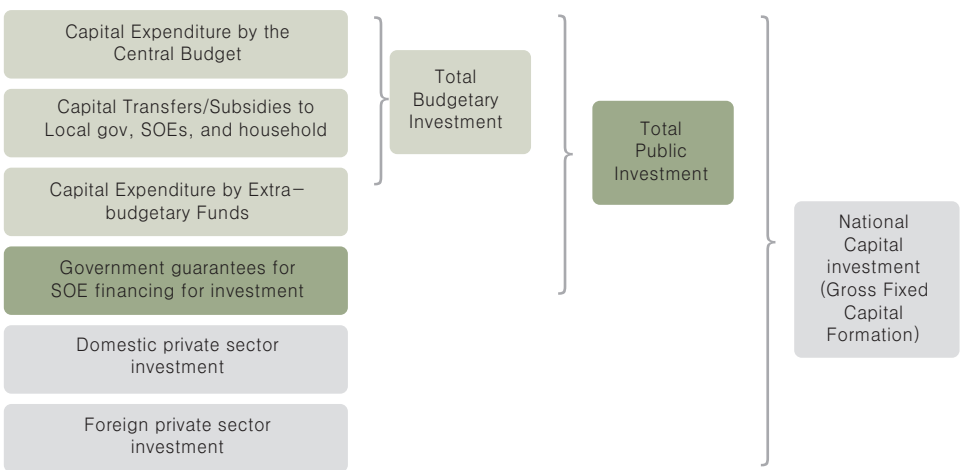
Table 3-7 | Gross Fixed Capital Formation (GFCF) in Ukraine and Neighboring Countries (average for 2002-2005)

	Belarus	Latvia	Lithuania	Poland	Russian Federation	Slovak Republic	Ukraine
real growth, %							
GDP	9.2	8.7	8.3	4.2	7.0	5.3	8.0
GFCF	20.7	18.2	12.5	4.3	11.5	4.5	9.2
In % of GDP							
GFCF, total	26.8	27.2	24.0	18.2	18.3	25.5	19.9
GFCF, private	23.5	22.5	n.a.	15.0	15.8	21.5	17.4
GFCF, public	3.4	4.7	n.a.	3.2	2.5	4.0	2.6

Source: Cho, Junghun (2008), "Public Investment in Belarus: A Case Study Applying the Framework for Reviewing Public Investment Efficiency," World Bank-KDI International Conference, Nov. 2008

Despite the large investment requirement, fiscal space for public infrastructure investment is tight in Ukraine. As shown in Figure 3-4, national capital investment and gross fixed capital formation can be unbundled into public and private sector investment. (Cho 2008) Total public investment consists of total budgetary investments including capital expenditures by the central budget as well as extra budgetary funds, and government guarantees for state owned enterprises (SOE) financing. As Table 3-7 shows, Ukraine falls behind Belarus, Latvia and Slovak Republic in terms of the gross fixed capital formation, undermining its long-term growth potential.

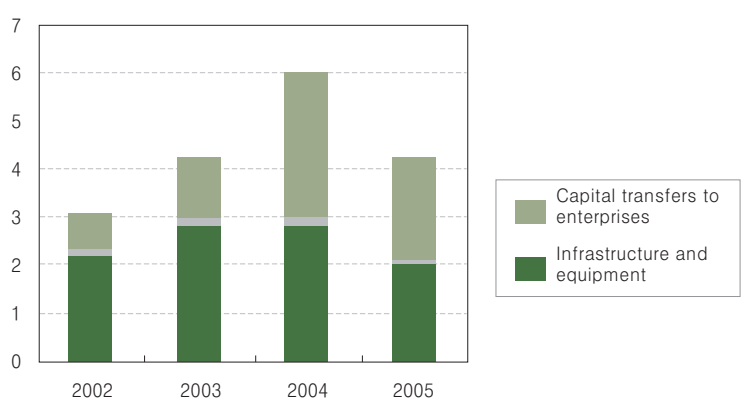
Figure 3-4 | Unbundling National Capital Investment



Source: Cho, Junghun (2008), Evolution of Public Investment in Transition Economies: Belarus Country Case Study, World Bank - KDI International Conference, Nov. 2008

Figure 3-5 | Composition of Public Capital Investment in Ukraine

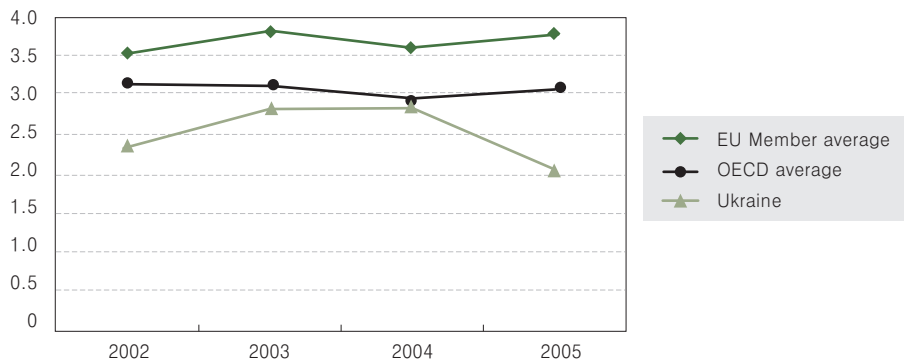
(Unit: % of GDP)



Source: Ukraine - Creating Fiscal Space for Growth: A Public Finance View, World Bank Report No. 36671-UA, Sep. 2006

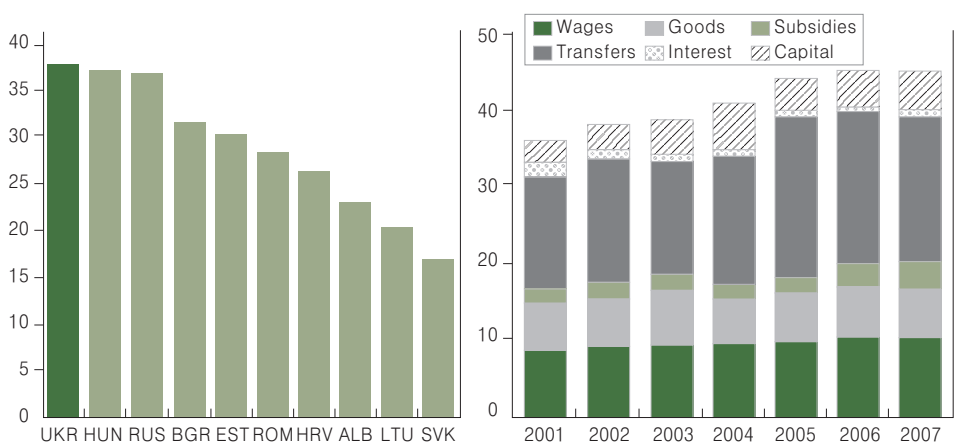
Figure 3-6 | Public Capital Investment in Infrastructure

(Unit: % of GDP)



Source: Ukraine - Creating Fiscal Space for Growth: A Public Finance View, World Bank Report No. 36671-UA, Sep. 2006

Figure 3-7 | Government Revenue and Expenditure in % of GDP



Source: IMF Country Report for Ukraine, No. 08/228, July 2008

One concern is that Ukraine's public spending is already large. Ukraine's public sector spending is around twice as high as in comparable middle income countries in Asia and Latin America. However, in contrast to its large and rising public consumption and transfer spending, public capital spending is low and badly prioritized and managed. (World Bank 2007) As

shown in Figures 3-5 and 3-6, among the public capital investment, capital transfers to enterprises account for a relatively large share relative to capital expenditures in infrastructure and equipment. Subtracting transfers to SOEs, capital spending is barely above 2% of GDP in 2005, which is less than 1/2 in new EU state countries and around 1/5 of East Asian countries. Furthermore, as shown in Figure 3-6, Ukraine's public capital investment significantly decreased in 2005 and fell short of OECD and EU member averages.

Also, as shown in Figure 3-7, the tax burden is already high in Ukraine, which indicates that infrastructure investment financing through tax is not desirable. Ukraine has the highest tax burden among neighboring countries, while expenditure composition has recently deteriorated. Overall the increasingly tight fiscal space indicates that a plausible alternative in infrastructure financing in Ukraine is to encourage private participation.

3. Korea's Infrastructure Investment and PPI System

3.1. Korea's Economic Growth and Infrastructure Investment

Korea's remarkable economic growth since 1960s has been crucially supported by its large infrastructure investment. It was in the 1960s that the Korean government first began expanding its investment in social overhead capital (SOC). With the government's successive 5 year economic development plans, infrastructure investment was aimed at supporting Korea's export-oriented growth policy of the 1960s and the heavy and chemical investment drive of the 1970s.

In the first half of the 1960s, with the first 5 year economic development plan, the government had focused on expanding railways and hydro-electric power systems. In the second half of the 1960s, the government invested heavily in roads, power plants, industrial complex and harbor systems. In the 1970s, the government unveiled a more systematic SOC investment plan with the launching of the first comprehensive national land development plan. In the first half of the 1970s, with its third 5 year economic development plan, the government further expanded SOCs in roads, harbors, and industrial complex in order to enhance industrial competitiveness. The focus of the SOC investment in the second half of the 1970s was laid on the social infrastructure such as housing, education and tourism under the fourth 5 year economic development plan.

In the 1980s, the priority of the government economic policy was set at stabilizing inflation through prudent fiscal policies. Consequently, SOC investment had been relatively

deemphasized throughout the 1980s, which led to congestions and rising costs of distribution and transportation. Hence, in the early 1990s, with the steep increase in the number of automobiles and populations, chronic excess demand for SOC services arose, which further raised distribution and transportation costs. The ratio of national distribution cost to gross domestic product was rapidly growing in the 90s, and reached 16.5% in 1995 following 14.3% in 1992 and 15.7% in 1994. The ratio was much higher than those of developed countries such as the United States (10.5%) and Japan (8.8%), indicating the urgency of the SOC investment.

In Korea, along with the economic growth, the infrastructure investment to GDP ratio had increased steadily from 1.14% in 1962 to 7.29% in 1994. The mode of infrastructure financing in Korea has also evolved toward private investment. In the 1960s and 70s, SOC projects were mainly financed with foreign currency borrowings, and in the 1980s, fiscal budget accounted for an increasing share. However, faced with the limited availability of fiscal resources, the government began searching for alternative sources. The government introduced the Private Capital Inducement Act in 1994 in order to encourage private investments in SOC. Also in 1994, special accounts for public transportation facilities were established to finance SOC investment through special purpose transportation tax. These efforts were based upon the rationale that the expansion of social overhead capital was essential to resolve the structural problems of high cost and low efficiency that Korea was facing in the 90s and to improve the economy's long-run growth potential.

With the outbreak of the 1997 Asian financial crisis, the government faced increasingly tighter fiscal constraints for infrastructure investment due to its spending needs for financial restructuring and strengthening of the social safety net. With the structural slowdown in growth momentum, it was also difficult to expect high tax revenue growth as in pre-crisis period. Furthermore, fiscal reform was carried out to maximize resource allocation efficiency and maintain fiscal soundness in the aftermath of the crisis. Consequently, the social overhead capital spending became a target of budget reduction. However, while consolidating the fiscal budget, the government maintained the share of SOC investment in fiscal budget regardless of the skepticisms on whether the expansion of the large-scale investment in social overhead capital was truly urgent.

As shown in Table 3-8, while the average annual growth rate of government fiscal budget was around 14.7% during the 1992-97 period, the average growth rate of the SOC investment was as high as 23.4%. Accordingly, the share of SOC investment in total central budget increased to 14.2% in 1997. The pre-crisis upward trend in SOC share stopped momentarily in 1998. With Korea's rapid economic recovery in 1999, the SOC investment share in budget once increased to 15.2% in 1999. Since then, the ratio has been maintained at 14% level as shown in Figure 3-8.

Table 3-8 | Government Fiscal Budget and SOC Investment in the 1990s

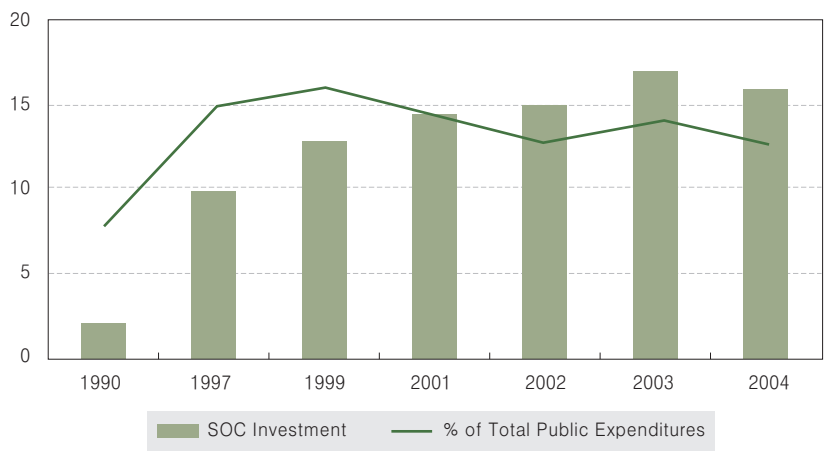
(Unit: billion KRW, %)

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Budget (A)	35,921	40,746	47,626	54,824	62,963	71,401	80,763	88,485	94,919
(growth rate)		(13.4)	(16.9)	(15.1)	(14.8)	(13.4)	(13.1)	(9.5)	(7.3)
SOC investment (B)	3,441	4,579	5,395	6,627	8,148	10,130	11,500	13,409	14,077
(growth rate)		(33.1)	(17.8)	(22.8)	(23.0)	(24.3)	(13.5)	(16.6)	(4.9)
B/A	9.6	11.2	11.3	12.1	12.9	14.2	14.2	15.2	14.8

Source: Ministry of Strategy and Finance

Figure 3-8 | Trends in SOC Investment

(Unit: Tril.KRW, %)



Source: Ministry of Strategy and Finance

In the 2000s, tax revenue growth slowed down and social and welfare expenditures increased substantially. For instance, the average annual growth rate in social and welfare expenditures was 10.1% during '03~'08 period. Consequently, while Korea's public investment in SOC had been large until 2004, social welfare, healthcare, education related expenditures increased fast leaving less fiscal resources for infrastructure investment. This trend is expected to continue in the future. According to the government's medium term public expenditure plan, as shown in Table 3-9, the planned expenditure on transportation and water is modest. If we look at the expected long-term government expenditures in Figure 3-9, the share of economic expenditure is expected to fall from 20% in 2005 to 12% level in 2020. In order to effectively cope with the changing needs of public expenditures, Korea has developed its system of public-private partnership (PPP) for infrastructure investment, which we review in the next section.

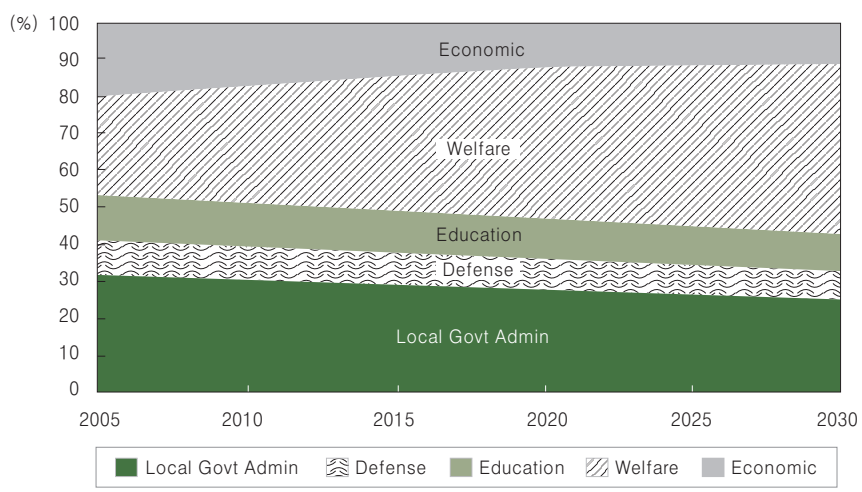
Table 3-9 | 2005-2009 Public Expenditure Plan

(Unit: trillion won, %)

Classification	2005	2006	2007	2008	2009	Annual average
1. Social welfare and health	49.6	54.7	59.6	64.1	70.5	9.2
2. Education	27.6	29.1	31.1	33.8	36.3	7.1
3. Transportation and water resource	18.3	17.8	17.8	18.2	19.2	1.3
4. Agriculture, maritime, and fishery	14.1	14.4	14.7	15.2	15.8	2.8
5. Industry and small & medium companies	11.9	12.4	12.6	13.0	13.4	3.0
6. Environmental protection	3.6	3.8	4.0	4.4	4.9	7.7
7. Culture and tourism	2.6	2.9	3.0	3.2	3.3	6.0
8. National defense expense (general accounting)	21.1	22.9	24.9	27.3	30.0	9.1
9. Public order safety	9.4	10.2	10.6	11.1	11.7	5.7
10. Unification · diplomacy	2.0	2.7	3.0	2.9	2.7	8.0
11. R&D	7.8	9.0	9.6	10.3	11.1	9.2
12. Balanced national development (special balance accounting)	5.5	5.9	6.7	7.1	7.8	9.1

Source: Ministry of Planning and Budget, 2005~2009 National Financial Operation Plan, 2005. 10

Figure 3-9 | Forecast of Long-term Government Expenditures by Sector



Source: Kim, Jungwook (2008)

3.2. Korea's PPI System

As described above, public-private partnership (PPP) in infrastructure investment can provide a new option for public service delivery under fiscal constraints. PPP reduces debt burden and releases fiscal resources for other priorities of the government. It can also advance delivery and economic benefits of SOC and introduce private sector efficiency in creativity and innovation. Also note that PPP can reallocate risks from general taxpayers to private investors who look for high risk and high return opportunities. Furthermore, PPP provides stable and long term investment opportunities for the private sector and helps contribute to the development of financial markets. To help resolve fiscal constraints and maximize efficiency of infrastructure provision, Korea has developed its institutional framework for private participations in infrastructure (PPI). This section reviews the legal framework and main elements of Korea's PPI system.

3.2.1. Legal Framework

Korea's PPI system was first introduced with the enactment of "The Private Capital Inducement Promotion Act" in August 1994. The Private Capital Inducement Promotion Act was significantly revised in December 1998 introducing the risk sharing and minimum revenue guarantee schemes, and renamed as "The Act on Private Participation in Infrastructure (PPI)." The PPI Act was once again amended in January 2005, and in this amendment, facility types were expanded, investor profile was diversified to include infrastructure fund, and the BTL Scheme was also introduced.

The hierarchy of the legal and administrative framework of Korea's PPI system consists of the PPI Act, PPI Act Enforcement Decrees, Annual PPI Plan, and the PPP Guidelines. According to the Article 1 of the PPI Act, the purpose of the PPI Act is to contribute to the development of the national economy by encouraging the creativity and efficiency in provision and operation of the infrastructure facilities, through promoting the private sector's investment in such facilities. The PPI Act and the Enforcement Decrees define eligibility for infrastructure types, concession methods, procurement process, conflict resolution, and termination mechanism, and the roles of the public and private parties.

The Ministry of Strategy and Finance (MOSF) and the Public Private Infrastructure Investment Management Center (PIMAC) issue an annual plan that provides detailed and practical guidelines for implementing PPI projects. The annual PPI plan announces the yearly focus of PPI policy, details in PPI project implementation procedure, financing and re-financing guideline, risk allocation and minimum revenue guarantee, and the payment of government subsidies. The PIMAC has also developed PPI Guidelines to deliver transparency and objectivity in PPI project implementation. For instance, detailed guidelines are suggested for

value for money (VfM) test, preparation of request for proposal (RFP), and tender evaluation. The PPI guidelines also suggest standard output specification by facility (school, military housing, integrated school facility) and standard PPI concession agreements. Guidelines for build-transfer-lease (BTL) project management are also included in PPI Guidelines.

3.2.2. PPI Facility Types

As shown in Table 3-10, according to the current PPI Act, 47 types of infrastructure facilities in 15 categories are eligible for PPI.

Table 3-10 | Detailed Facility Types by Sector for PPI Projects

Sector	Facility Type
Road (3)	Road, Ancillary Facilities, Non-road Parking Facilities
Rail (3)	Railway, Railway Facilities, Urban Railway
Port (3)	Port, Fishing Port Facilities, New Port Construction Facilities
Communications (5)	Telecommunication Facilities, Information Communication System, Information Super-highway, Map Information System, Ubiquitous City Infrastructure
Water Resources (3)	Multi-purpose Dam, River-affiliated Ancillary Structures, Waterworks
Energy (3)	Electric Source Facilities, Gas Supply Facilities, Collective Energy Facilities
Environmental (5)	Waste Treatment Facilities and Public Livestock Wastewater Treatment Facilities, Waste Disposal Facilities, Wastewater Treatment Facilities, Recycling Facilities, Sewage and Sewage Treatment Facilities
Logistics (2)	Distribution Complex, Cargo and Passenger Terminals
Airport (1)	Airport
Culture and Tourism (10)	Tourist Site or Complex, Youth Training Facilities, Public Sports Facilities, Libraries, Museums and Art Galleries, International Conference Facilities, Culture Centers, Science Centers, Urban Parks, Professional Training Facilities
Military Housing (1)	Military Housing
Education (1)	Schools
Forestry (2)	Natural Recreational Resorts, Arboretums
Public Housing (1)	Public Rental Housing
Welfare (4)	Child-care Facilities, Senior Homes, Medical Facilities, Facilities for the Disabled

Source: Ministry of Strategy and Finance (2008)

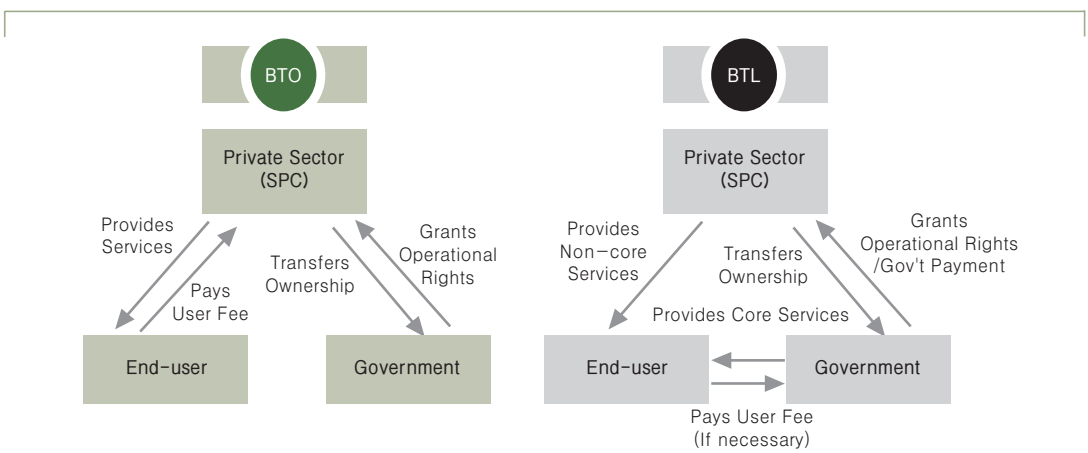
3.2.3. Project Initiation and Implementation Schemes

Under the current PPI framework, there are two types of projects. A solicited project is that the competent authority identifies a project for private investment and announces a request for proposal (RFP). For unsolicited projects, a private company (project proponent) submits a project proposal, and then the competent authority examines and designates it as a PPI project.

As Figure 3-10 shows, PPI is implemented in two types of project schemes: a user fee type of Build-Transfer-Operate (BTO) and a service contract type of Build-Transfer-Lease (BTL). In the BTO scheme, a private sector participant builds infrastructure, transfers the ownership rights to the government, and recoups investments by operating the facilities for a specified period of time. A private sector takes risk in operation of facilities in a BTO project. BTO projects are signed in the road, railroad, port, environment, logistics, and other areas. The concessionaire collects user fee to recover its investment. The internal rate of return of the project is determined through negotiations between the concessionaire and the government or by competition between private participants. BTO carries out solicited and unsolicited projects.

In the BTL scheme, a private sector participant builds the infrastructure, and receives facility lease fees from the government agency concerned for the agreed period of time to recoup the investment. BTL projects are signed in schools, welfare/medical facilities, cultural facilities, and other areas. The government pays concessionaire for service delivery. There is no demand risk for private sector and only solicited projects are carried out under the BTL scheme. In addition, there exist other implementation schemes such as build-operate-transfer (BOT), and build-own-operate (BOO).

Figure 3-10 | Structure of BTO & BTL



Source: Ministry of Strategy and Finance and PIMAC, Koran PPI System (2008)

Table 3-11 | Differences between BTO and BTL Schemes

	BTO	BTL
Investment Recovery	Concessionaire collects user fee to recover project costs and an agreed internal rate of return (IRR)	Government pays the unitary charge covering the construction costs inclusive of profit and operating costs
Facility Types	Roads, seaports, railways, and environmental facilities, etc.	Schools, military accommodations, welfare facilities, and cultural facilities, etc.
Project Risks	High risk and high return High demand risk	Low risk and low return Low or no demand risk

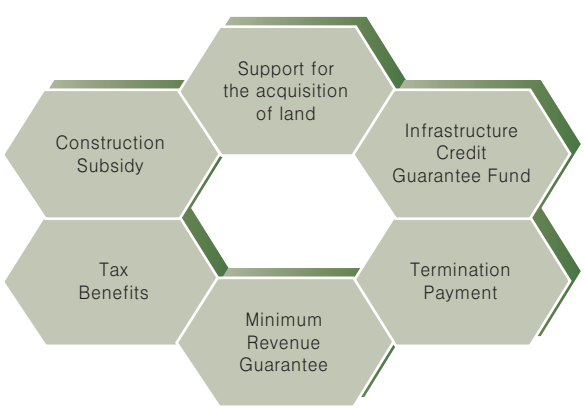
Source: Ministry of Strategy and Finance and PIMAC, Koran PPI System (2008)

3.2.4. Government Support Schemes

As shown in Figure 3-11, there are six types of governmental support schemes for PPI projects: the support for the acquisition of land, construction subsidy, tax benefits, minimum revenue guarantee, termination payment, and infrastructure credit guarantee fund.

The government supports the acquisition of land by granting land expropriation rights to the concessionaire. National or public property in designated areas may be sold to the concessionaire with these rights and concessionaires are allowed to use national or public

Figure 3-11 | Government Support Schemes for PPI Projects



Source: Ministry of Strategy and Finance (2008)

property without charge or at lower price. The government may also grant construction subsidies to the concessionaire if it is inevitable to maintain the user fee at a reasonable level. The construction subsidy is less than 30~50% of total investment. For instance, for roads, the construction subsidy is less than 30% of total investment. For railways the subsidy is less than 50%, and for ports, it is less than 30%. The freight terminals there is no construction subsidy provided.

There are various tax benefits for PPI projects. For instance, the government exempts acquisition and registration taxes on real estate for BOT projects and levies no value-added tax (VAT) on construction services of revertible infrastructure facilities. Also, 5% of the amount invested is recognized as investment reserve and thus deemed as expenses when imposing corporate taxes. The government also imposes only 15% separate taxes on interest income from infrastructure bonds with 15 years of maturity or longer, and likewise, separate taxes are applied to the dividend income from infrastructure fund investment: 5% to the invested amount below KRW 300 million and 14% above KRW 300 million.

Another important governmental support scheme is the minimum revenue guarantee (MRG). Under the MRG scheme, a certain fraction of projected annual revenues may be guaranteed when the actual operating revenue falls considerably short of the projected revenue prescribed in the contract. To reduce moral hazard on the part of concessionaires, the MRG is nullified for projects which earn less than 50% of projected revenue. Before 2005 amendment, the revenue guarantee period was 15 years. However, the MRG led to inflated demand forecasting and resulted in an increase of MRG payment. Hence, with the 2005 amendment, the guarantee period was reduced to 10 years and it is now only applicable to the solicited projects.

Table 3-12 | The Minimum Revenue Guarantee Scheme

	May 2003 ~ December 2005	Starting January 2006	
		Solicited Projects	Unsolicited Projects
Period	15 years	10 years	Abolished
Guarantee	First 5 years : 90% Next 5 years : 80% Last 5 years : 70%	First 5 years : 75% Last 5 years : 65%	
Condition	Revenue 〉 50% Forecasted Revenue		

Source: Ministry of Strategy and Finance (2008)

The concession termination payment and buyout options can be applied under unavoidable circumstances such as natural disaster or political turmoil and other specific events prescribed in the concession agreements. The government compensates upon request by the contactor in exchange for operation rights of the facility as stipulated in the PPI Act.

In addition the infrastructure credit guarantee fund was established to guarantee the credit worthiness of concessionaires obtaining loans from financial institutions for PPI projects. Korea Credit Guarantee Fund operates various guarantee programs including guarantees for facility loans (during construction), working capital loans (during operation), bridge loans, refinancing, and guarantees for infrastructure bonds. Guarantee fees are currently 0.3~1.3% and the limit of the fund is KRW 100 billion per concessionaire. In developing countries, the provision of credit guarantee by the government turned out to be useful to attract foreign capital. Detailed legal and regulatory framework for Korea's infrastructure credit guarantee fund is provided in appendix A.

Finally, in order to provide hedging opportunities against the foreign exchange risk, if a foreign exchange loss or profit occurs to the foreign currency borrowing due to fluctuations in the exchange rates, the government absorbs a part of the loss or shares profits with the concessionaire.

3.2.5. The PPI Performance in Korea

With the introduction of PPI framework, private participation has increased steadily, complementing the public investment in infrastructure. As shown in Table 3-13 the PPI investment has increased from KRW 0.5 trillion in 1998 to KRW 3.0 trillion in 2007, increasing

Table 3-13 | PPI Investment Trend (Trillion KRW)

	1998	2000	2002	2004	2006	2007
Public Investment in Infrastructure (A)	12.7	15.2	16.0	17.4	18.4	18.4
PPI Investment (B)	0.5	1.0	1.2	1.7	3.0	3.0
B/A(%)	3.9	6.6	7.5	9.8	16.3	16.3
B/(A+B)(%)	3.8	6.2	7.0	8.9	14.0	14.0

Source: Ministry of Strategy and Finance (2008)

Table 3-14 | PPI Performance by Project Type and Status (as of June 2008)

Project Type / Status	BTO / BOT / BOO		BTL	TOTAL
	National Projects	Local Projects		
Under Operation	22	67	68	157
Under Construction	34	16	129	179
Preparing to Construct	7	8	34	49
Subtotal	63	91	231	385
Total	154		231	385

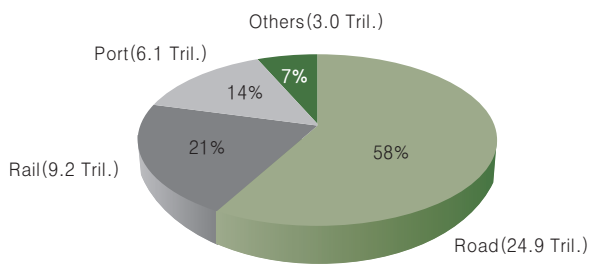
Source: Ministry of Strategy and Finance (2008)

the share of PPI to public investment to 16.3% in 2007 from only 3.9 % in 1998. The share of PPI investment in total public and private infrastructure investment is now 14%.

If we look at the PPI performance by project type and status in Table 3-14, as of June 2008, total 385 projects have been undertaken, among which, 157 projects are already under operation, 179 under construction and 49 under preparation for construction. By project type, 231 BTL projects have been undertaken and 154 BTO/BOT/BOO projects have been undertaken.

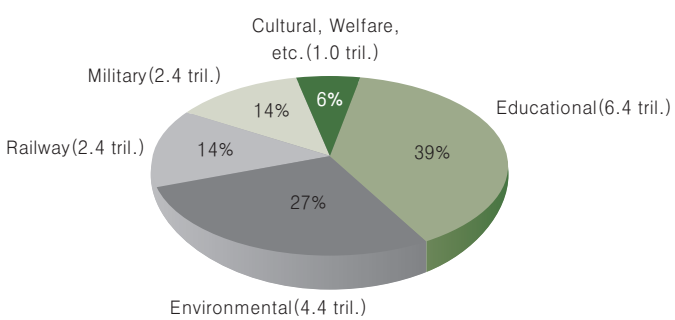
As Figures 3-12 and 3-13 show, total project costs of signed BTO projects as of June 2008 amount to KRW 43.2 trillion. Among the nationally BTO projects, the share of roads is 58%, and the share of railways is 21%. Total project costs of BTL projects which announced RFP as

Figure 3-12 | BTO Projects by Facility Types (Contracts Signed, Nationally Managed Projects)



Source: Ministry of Strategy and Finance (2008)

Figure 3-13 | BTL Projects by Facility Types : RFP Announced



Source: Ministry of Strategy and Finance (2008)

of June 2008 amount to KRW 16.6 trillion. Among the BTL projects, the share of educational projects is largest (39%), and the environmental projects account for the second largest share 27%.

For the BTO projects, the concessionaire and the government estimate the internal rate of return. The internal rate of return is determined by negotiations between the concessionaire and the government or by competition between private participants. The rate of return in general depends upon market interest rate, types of infrastructure facilities, and proposal competition of private sector. As for the market interest rate, from 1998 to early 2000s the rate of return was high as market interest rates were relatively high around 12%~15%. By the types of infrastructure facilities, railways and subways have higher interest rates compared with that of roads. The ports have the same level of interest rates as roads. Also as shown in Table 3-15, approximately 32% of projects have interest rates in the range of 8.0~8.9% and 24% of projects have interest rates less than 6%.

If we look at the operating period of the PPI projects, as shown in Table 3-16, it varies from 11 years to 50 years. Approximately 59% of projects have operating periods of 30 to 39 years. By facility types, for BTO types, 83% of road projects have operating period of 30 years and 83% of railway projects have also 30 years, while 56% of port projects have operating period of 50 years. For BTL types, school and cultural facilities have operating period of 20 years.

Table 3-15 | Rate of Return on PPI Projects

Rate of Return	Less than 6%	6.0~ 6.9%	7.0~ 7.9%	8.0~ 8.9%	9.0~9.9%	More than 10%
Number of Projects	15	11	6	20	10	1
Percentage	23.8	17.5	9.5	31.7	15.9	1.6

Source: Ministry of Strategy and Finance (2008)

Table 3-16 | Operating Period of PPI Projects

Operating Period	11~19 years	20~29 years	30~39 years	40~49 years	50 years
Number of Projects	5	10	37	2	9
Percentage	7.9	15.9	58.7	3.2	14.3

Source: Ministry of Strategy and Finance (2008)

4. Policy Recommendations for Ukraine

Ukraine is currently under a severe economic crisis. The crisis came with an unprecedented scale due to its global nature, which makes it more difficult to come up with effective resolution measures. Given the urgency of crisis recovery, for the time being, the immediate policy priorities may not be given to infrastructure development. In this regard, the policy recommendations presented in this section may not be implemented in the short-run. However, as Korea experienced from the 1997-98 crisis, the tasks of making public sector more efficient and expanding infrastructure on a continuing basis are an essential stepping stone for revitalizing the Ukrainian economy once the crisis is over. The policy suggestions in this section are organized around two themes: more efficient mobilization of existing public resources and the introduction of the best practice PPP framework for infrastructure development.

4.1. Efficient Mobilization of Public Resources

4.1.1. Upgrade Budget and Fiscal Framework with a Longer-term Perspective

In order to establish well-prioritized plan for infrastructure development, it is crucial to improve budget and fiscal framework with a longer-term perspective. Specifically, it needs to strengthen the existing medium-term fiscal framework to make it fully functional. A fully functional medium-term expenditure framework (MTEF) helps implement the government's structural reform agenda and prioritize public investment while recognizing fiscal constraints. Current medium-term budget projections in Ukraine do not include sufficient provisions for the capital budgets that include future operation and maintenance costs of new investments. (IMF 2008b) Note that infrastructure development plan is inherently longer than short-term. Hence, without MTEF, it is almost impossible to make a plan and pursue the policy goal on a consistent basis.

Korea introduced the medium-term expenditure framework and its top-down budgeting system in 2004. As summarized in Table 3-17, before MTEF, budgeting was bottom-up and only on a next single year basis. As a result, medium- to long-term planning was almost impossible. However, after MTEF, budgeting is more forward-looking and the government focuses more on the strategic alignment of fiscal resources with more systematic policy directions.

Table 3-17 | Introduction of MTEF for Budgeting in Korea (2004)

Before MTEF (Bottom-up Budgeting)	After MTEF (Top-down Budgeting)
• Budgeting on next single budget year • Limited medium- to long-term planning function • MOSF focused on the microscopic spending control	• Budgeting over next 5 year including the current year • Spending ceilings for sectors and programs • MOSF focuses on the strategic alignment of budget requests with overall policy directions

Source: Kim, Jay-Hyung (2008), Institutional Arrangements for Enhancing Public Investment Efficiency in Korea, paper presented at the World Bank and KDI conference, November.

It is also required to closely monitor quasi-fiscal deficits arising from the SOEs in key infrastructure industries and gradually expand fiscal coverage to the whole public sector. State owned enterprises such as energy, railroads, and telecom companies in Ukraine tend to suffer from weak financial performances due to wide-spread under-pricing, the lack of an adequate incentive scheme for managers, and weak commercial orientation (IMF 2008b).

While Ukraine has a history of low budget deficit, a closer examination suggests that incomplete fiscal coverage may hide an underlying fiscal weakness. (IMF 2008b) Lack of comprehensive fiscal coverage may lead to an underestimation of fiscal risks. Thus, a full picture of the fiscal space would help improve the composition of spending while controlling its size.

4.1.2. Upgrade and Institutionalize Public Investment Management Processes

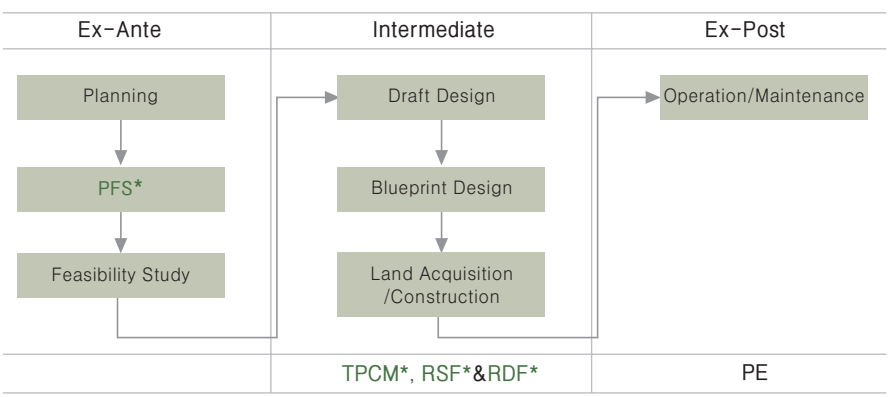
Also, the public investment management process should be upgraded and institutionalized. In this regard, introduction of an effective preliminary feasibility study (PFS) scheme must be instrumental. In Korea the 'Comprehensive Plan to Enhance Efficiency of Public Investment' was formulated in July 1999. The PFS was invented as a resolution despite resistance from the line ministries. It is owned by the Ministry of Strategy and Finance (MOSF) and conducted by the Public and Private Infrastructure Investment Management Center (PIMAC). Currently, all new large-scale projects with total costs over 50 billion KRW (approximately 40 million USD) are subject to the PFS, and local government as well as PPI projects are also subject to the PFS if central government subsidy exceeds 30 billion KRW.

Another important element in upgrading public investment management process is tightening of public expenditure monitoring. In case of Korea, Total Project Cost Management System (TPCM) was first introduced in 1994. TPCM is a devise that budget ministry use to monitor expenditure on public investment and checks increase in project cost throughout the

project cycle from planning to construction completed. To examine the relevancy of cost increase under TPCM, Reassessment Study of Feasibility (RSF) and Reassessment of Demand Forecast (RDF) were introduced in 1999 and in 2006, respectively. RDF is to verify the adequacy of demand forecast with latest information available, reflecting changes in project environment.

As for the coverage, the following projects are subject to TPCM; projects whose construction period exceeds two years, projects implemented by the central government or its agents, or by local governments or private institutions that include central government funding. Civil engineering works whose total project cost exceeds 50 billion KRW (approximately USD 40 million), or architectural projects whose total project cost exceeds 20 billion KRW (USD 20 million) are also subject to the TPCM.

Figure 3-14 | Korea's Public Investment Implementation Process



Notes: 1) * denotes that evaluation works are owned by budget ministry (MOSF)
2) TPCM (Total Project Cost Management), PFS (Preliminary Feasibility Study), RSF (Re-assessment Study of Feasibility), RDF (Re-assessment of Demand Forecast), PE (Performance Evaluation)
Source: PIMAC (2008)

Finally, Ex-post Performance Evaluation (PE) by line ministries is another important element in the public investment management process in Korea. Construction projects with total project cost of KRW 50 billion (USD 40 million) or more are subject to PE and the spending agencies evaluate the performance of the project within three years of construction completion. PE analysis collates cost and time overrun, compares forecasted demand with actual demand, and estimates project impacts. Furthermore, it also evaluates the degree of acceptance by local residents and makes suggestions for improvements.

4.2. Establishment of a Sound and Functional PPP Framework

The Ukrainian government has announced a plan for infrastructure improvements for the 2012 EURO championship with total investments of almost UAH 125 billion (24% of 2006 Ukrainian GDP), mainly focusing on construction and rehabilitation of roads, highways and railways. The government plans to finance 82% (UAH 103 billion) of required investments from private investors, and thus attracting investors for PPP will be the key priority. However, the overall PPP market almost does not exist despite several attempts. It is in fact a common problem in Eastern Europe and the main reason is the absence of solid legal and institutional framework for PPP and typically incomplete PPP contracts due to lack of transparency and technical uncertainty.

4.2.1. Introduce a Solid Legal, Regulatory and Governance Framework

It is necessary to introduce a solid legal, regulatory, and governance framework corresponding to international standards. Specifically, clear and consistent implementation procedures regulated by relevant act and practical implementation guidelines must be laid out. The current draft law on PPP (approved by the Cabinet in the Fall of 2008) should be reviewed to strike the balance between the needs of private investors and the potential fiscal risk, and adopted by the parliament as soon as possible. The law should specify rights and obligations of all related stakeholders. In addition, it needs to specify the principles of tendering, contracting, risk sharing and conflict resolution schemes.

Along with the legal framework, it is also required to establish a clear governance structure, and the relevant authority must play a central role in this governance structure. For instance, in Korea, the Ministry of Strategy and Finance (MOSF) is a regulatory authority and its roles are clearly mandated. The MOSF develops national PPI policies, guidelines, and fiscal rules. It establishes long-term (e.g. 5 year) PPP investment plan and estimates future financial commitments by the government. Moreover, the MOSF develops fiscal guidelines and strategies to manage PPI investment within a sustainable level. It coordinates sectoral PPI plans and reviews and approves nationally managed PPI projects.

However, in addition to clarifying the role of a relevant government authority, it is also important to set up an independent PPP center staffed with relevant experts in order to accumulate the necessary competence and capacity over time. According to OECD (2008), there are several reasons why an independent and dedicated PPP unit is desirable. First, due to the off-budget nature of PPPs, government departments may not fully appreciate the budgetary implications of public-private partnerships. In particular, a government department may reason fallaciously that, because a private partner is responsible for the initial capital outlay, government spending is reduced, thereby, allowing the department to spend more on other

categories of expenditure. Because a PPP unit acts as a regulatory body within the government, but at arm's length from the departments that want to implement PPPs, the unit can prevent procedures based on such a fallacy from taking hold, by monitoring and judging the affordability of projects.

Second, even if departments do fully appreciate the budgetary implications of PPPs, there may still be principal-agent and "free rider" problems. There problems may arise between an individual department that is only responsible for its own budget and the ministry of finance that is responsible for the overall budget. Since the central government as a whole will have to honor PPP payments, a department may commit to an agreement while it knows that its own budget allocation from the central budget will not be sufficient to make the payments. A dedicated PPP unit could prevent such "free rider" problems by requiring departments to demonstrate that future payments will fall within their budgetary allocation. Once the government in satisfied by the department's proof, the PPP unit can issue an approval. Such approval will then constitute a precondition for final conclusion of the PPP agreement.

Table 3-18 | The Role of PIMAC as Stipulated by the PPP Act

Roles	Functions
Researcher	• Formulation of the Annual PPP Plan • Theoretical and policy studies on PPP system
Advisor and Government Agency in Project Management	• Development of PPP projects • Review and execution of feasibility studies of PPP projects • Support for and execution of VfM test • Support for formulation of RFP' s • Assistance in tendering and negotiation
PPP Market Promoter	• Consultation for foreign investors and support for inducing foreign capital to Korean PPP market • Development and promotion of education programs on PPP system • International cooperation • Database management

Source: Kim, Jungwook (2008)

Third, a dedicated PPP unit may be established to create a knowledge centre that can provide individual departments with technical assistance when they set up PPPs. When entering into complex transactions like PPPs, it is important for the government to ensure that it has the necessary skills to negotiate on equal terms with the private sector, particularly since the private sector might be more familiar with complex financial deals. Given the complexity of PPP contracts, highly technical expertise is required in reviewing terms and conditions for contracts, project evaluation, and negotiation. An independent PPP unit could also be a solution to resolve

the salary gap between public and private sectors. The PPP unit needs resources to bring in consultants on an ad hoc basis. The use of consultants might also be an efficient way to handle some of the responsibilities for managing peaks in the demand for the services of the PPP units.

Fourth, a PPP unit could also keep an eye on departments through its regulatory approval mechanism to ensure that PPP deals fulfill the legal and technical requirements involved in the creation of public-private partnerships. The provision of regulatory approval and the provision of technical assistance constitute the main functions of most PPP units, including those in Australia, South Africa and the United Kingdom. Finally, the PPP unit can help separate policy from practice, i.e. the PPP unit is responsible for PPP policy, advice and oversight, but the spending ministries are responsible for promoting actual projects. There will thus be less danger of the PPP unit becoming a promoter of PPPs. The main task of the PPP unit is not to advocate PPP projects, but to ensure that transaction costs are as low as possible and that value for money is the main criterion. If a PPP unit is also responsible for the projects, there would be a conflict of interest, since the unit might end up in a situation where it is responsible for both overseeing and executing a project.

In Korea, the Public and Private Infrastructure Investment Management Center (PIMAC), a branch of the Korea Development Institute (KDI), is a statutory professional organization established by the amendment of 'The PPI Act' in January 2005. As described in Table 3-18, the main role of PIMAC are three-folds: First, as a research center, it formulates the annual PPI plan and conducts theoretical and policy research on PPIs. Second, as an advisor and government agency in project management, it reviews and executes feasibility studies and value-for-money tests, and supports and assists in RFP formulation and tendering. Third, as a PPP market promoter, it provides consulting services for foreign investors, and develops and promotes educational programs and international cooperation.

4.2.2. Install an Effective and Continuously-improving PPP Management System

Once a legal and governance framework is introduced, it is important to make it functional and continuously self-improving. The first key element in an effective PPP management system is a mechanism to guarantee rational selection of PPP projects. The system must be able to screen out and select PPP projects which can reduce government spending or implement creativity and efficiency of private sector in operating facilities. The second element is a scheme for verification of feasibility of PPP projects. The system must be able to continuously improve its VfM test and verification of feasibility. The third element is the execution of post evaluation. The PPP system must have a scheme to obtain feedback by conducting post performance evaluation and service satisfaction survey for users. Lastly, transparency is required for effective management of PPP programs. For transparency, it is crucial to install a scheme to

avoid preferential treatment and disclose relevant information.

In Korea, PIMAC has introduced various measures to promote transparency in PPP management. A key element in this regard is to standardize guidelines on the procedure, evaluation, and selection process for PPPs. For instance, PIMAC has standardized a large set of procedural documents and guidelines including 'Standard Method of Project Evaluation,' 'Guidelines for Feasibility and VFM Test,' 'Guidelines for Formulation of RFPs,' 'Standard Output Specification by Sector,' and 'Standard Concession Agreement,' among others. Furthermore, it is also critical to open up information on the current state of PPP projects. For instance, in Korea, relevant and timely information can be found at the PIMAC website (www.pimac.org), which compiles reports on VFM tests, records of completed projects and their performance, concession agreements, and guarantees made by both parties, among others.

4.2.3. Expand PPP Project Facility Types and Investment Methods

While Ukraine may need to start with transportation facilities such as roads, railways, and seaports, it can gradually expand to a wider spectrum of basic social infrastructure such as education, culture and welfare facilities. Note that these facilities may require different types of PPP contract as described in the Korean case. For instance, in addition to the BTO scheme, BTL contract types can be utilized to lease facilities from the concessionaire. Under the BTL scheme, the government guarantees the return on investment by paying the lease fees that reflects an appropriate level of rate of return. High quality services can be maintained by linking the lease payment with operating performance of the facility.

4.2.4. Diversify Investor Profiles and Provide Adequate Incentives

In order to maximize private participation, it is important to diversify investor profiles by creating a market friendly PPP environment. More specifically, it is crucial to encourage investment participation of financial institutions, foreign investors, and facility operating companies, in addition to construction companies. To encourage participation of financial institutions, the government may offer various incentives for PPP investment of financial institutions. For instance, in Korea, the 15% limit on banks' investment in special purpose companies (SPCs) was eliminated, and financial holding companies are allowed to invest in SPCs as equity investors.

Utilizing capital market instruments and creating infrastructure investment fund with relevant incentive schemes can serve as another solution. Korea introduced infrastructure facilities funds in 2007 in order to encourage private investors' participation in capital markets. Infrastructure fund is an indirect collective investment scheme to finance PPP projects and distribute the profits to the fund investors. The company collects funding, injects it into PPP

projects via investment or loans, and distributes the profits to the fund investors. In Korea, the government provides the infrastructure fund with various tax benefits and mitigation of regulatory requirements including, the exclusion of investment cap (10% for the same company), allowing debt financing (up to 30% of equity capital), tax reductions on dividend income for private investors, and lowering minimum capital requirement for fund establishment (KRW 10 billion). As of December 2007, there were one public offered infrastructure fund and nine privately placed infrastructure funds.[3] For detailed law and decrees on the infrastructure funds are attached in the appendix B.

Given the current economic situation and availability of domestic savings, Ukraine needs to attract foreign investors for PPP investment. To attract foreign capital, Ukrainian government needs to consider provision of various incentives and benefits for foreign investors. For instance, Korea currently provides various incentives and supports for foreign direct investments. As summarized in Table 3-19, there are four types of incentives - tax reductions, cash grants, location support, and others. As for the tax reductions, the government provides corporate and income tax reductions for 7 years, and acquisition, registration and property tax reductions for 5 to 15 years. It also provides exemption of tariffs for imported capital goods for 3 years. The government also provides cash grants up to 15% of the amount invested for investments of more than USD 10 million in high-tech industries. Location support includes exemption of rents for 50 years or more for investors in designated foreign investment zones, and support for the construction of infrastructure facilities. Other support includes subsidies for employment and training as well as support for improvement of business and living environments.

Table 3-19 | Incentives to Foreign Direct Investment

Tax Reductions	Cash Grants
• Corporate Tax, Income Tax: 7 years • Acquisition Tax, Registration Tax, Property Tax: 5-15 years • Tariffs: 3 years	• Up to 15% of the amount invested (for investments of more than USD 10 million in high-tech industries)
Location Support	**Others**
• Exemption of rent for 50 years or more for investors in foreign investment zones • Support for construction of infrastructure	• Subsidies for employment and training • Support for improvement of business and living environment

Source: Ministry of Strategy and Finance (2008)

3. The publicly listed fund is Macquarie Korea Infra Fund (KRW 1.8 Trillion). The private funds include Balhae Fund (1.2), Korea Infra II Fund (1.5), Korea Railway I Fund (1.0), and Korea BTL Fund (1.0), among others.

4.2.5. Promote Efficiency by Encouraging Competition

The efficiency of PPP projects can be raised by encouraging competition. For instance, competition is a valuable tool in determining the level of government subsidy for a PPP project, or for the construction of substantial changes in projects during operational life. Without due competition, effective risk transfer cannot occur and improvements in value for money cannot be realized.

Ukraine may introduce various competition policy measures in establishing its PPP system. To promote competition for proposals, the government may partially reimburse proposal preparation costs for the unsuccessful proponent. For instance, in Korea, if there is only one unsuccessful bidder 25% of the basic design cost is reimbursed. If there are two or more unsuccessful bidders, 30% is reimbursed for the 2nd contender and 20% is reimbursed for the 3rd contender. For solicited projects, the government covers costs of the feasibility study, and preliminary and final design. Likewise, simplifying required documents for PPP proposals could be another measure that can be considered to encourage competition.

4.2.6. Limit Fiscal Risks from PPP

At its early stage of PPP development, it is inevitable to use various governmental support schemes such as the minimum revenue guarantee as well as credit guarantee for infrastructure financing. Korean experiences indicate that those support schemes have been quite effective tools especially during the crisis period. However, at the same time, it is also critical to have an explicit scheme to limit fiscal risks that arise from the PPP. This is especially important for Ukraine, as the current draft law on PPP has been criticized as it practically undertakes full economic risk on the cost of the private partner.

In Korea, the five-year national fiscal management plan (2007-2011) of the government sets an explicit limit to the size of PPP program. Following the UK practice, Korea adopted a 2% limit rule, according to which, the total annual government payment on PPP projects should be less than 2% of the total government expenditure. This allows flexible fiscal management without imposing heavy burden on government expenditure. According to the current forecast, the PPI related government expenditures are expected to remain less than 1.7% of total annual government expenditures from now to 2020.

Along with the limit rule on the size of fiscal burden caused by PPP, the government needs to avoid excessive minimum revenue guarantee by introducing measures to reduce moral hazard incentives on the part of concessionaires. As described above, in 2006, Korea eliminated minimum revenue guarantee for unsolicited projects proposed by the private sector and reduced minimum guarantee level for solicited projects. It shortened the guarantee period from 15 years

to 10 years and reduced maximum guarantee from 90% to 75% of forecasted revenue. In addition, 50% of forecasted revenue must be generated as a condition for guarantee payments.

5. Summary and Conclusion

With the outbreak of global financial crisis in 2008, Ukraine is currently facing economic hardship and challenges of an unprecedented scale. While significant tightening of monetary and fiscal policies are necessary to improve external imbalances and restore access to international finance, a sharp decline in economic activities and falling domestic demand require more active macroeconomic stabilization policies. Fiscal resources have become scarcer with rising fiscal burden from financial and corporate restructuring. Indeed, the present financial crisis has made it more difficult for Ukraine to pursue aggressive policies to reform the infrastructure sector and expand new investments in infrastructure.

Yet, infrastructure investment is urgently required in Ukraine. Vast infrastructure networks are in serious disrepair and in need of modernization. Infrastructure reform and new investments are necessary in order to sustain stagnant productivity growth and lay a firm foundation for post-crisis economic recovery. In this regard, like many crisis-ridden countries such as U.S. and China, the Ukrainian government needs to seriously consider infrastructure investments as a policy tool to achieve both short-term demand stabilization and long-term enhancement of the growth capacity.

In order for the expansion of infrastructure investments to yield desired policy outcome, two preconditions must be met. First, fiscal reform must be accompanied for more efficient mobilization of scarce public resources. Second, a solid and operational PPP framework must be established to induce more private investments in infrastructure. After reviewing the current state of infrastructure development in Ukraine as well as Korea's infrastructure development policies, this chapter presented key policy recommendations for Ukraine. The policy suggestions are organized around two themes: more efficient mobilization of existing public resources and the introduction of the best practice PPP framework for infrastructure investments.

As for the policy measures to raise efficiency in public resource mobilization, first, it is crucial to improve the budget and fiscal framework with a longer-term perspective. Ukraine needs to strengthen its existing medium-term fiscal framework to make it fully operational in order to establish a well-prioritized plan for infrastructure development. It is also required to closely monitor quasi-fiscal deficits arising from the SOEs in key infrastructure industries.

Second, the public investment management process should be upgraded and institutionalized. In this regard, the government needs to introduce an effective scheme for a preliminary feasibility study and tighten public expenditure monitoring by improving cost management and ex-post performance evaluation of public projects.

As for the measures to attract more active private participation in infrastructure investments, first, it is necessary to introduce a solid legal, regulatory, and governance framework corresponding to international best practices. The current draft law on PPP should be reviewed to strike the balance between the needs of private investors and the potential fiscal risk. The law should specify rights and obligations of all related stakeholders and the principles of tendering, contracting, risk sharing and conflict resolution. In addition to clarifying the role of a relevant government authority, it is also important to set up an independent PPP center staffed with relevant experts in order to accumulate the necessary competence and capacity over time.

Once a legal and governance framework is introduced, it is important to make it functional and continuously self-improving. While Ukraine may need to start with transportation facilities such as roads, railways, and seaports, it can gradually expand to a wider spectrum of basic social infrastructure such as education, culture and welfare facilities. In order to maximize private participation, it is also crucial to diversify investor profiles by creating a market friendly environment. To encourage participation of financial institutions and foreign investors, the government needs to offer various incentives for PPP investments including tax reductions, cash grants, location support, and others. Creating collective investment tools such as infrastructure funds should also be instrumental to mobilizing savings in the capital market.

At its early stage of PPP development, it is inevitable to provide various governmental support schemes such as minimum revenue guarantees as well as credit guarantees for infrastructure financing. However, it is also critical to have an explicit scheme to limit fiscal risks that may arise from the governmental support for PPP. This is especially important for Ukraine, as the current draft law on PPP has been criticized, as it practically undertakes full economic risk on the cost of the private partner. Along with the limit rule on the size of fiscal burden caused by PPP, the government needs to avoid excessive minimum revenue guarantee by introducing measures to reduce moral hazard incentives.

A1.1. Act on Private Participation in Infrastructure (Chapter 2, Section 4)

Article 30(Establishment and Management of Infrastructure Credit Guarantee Fund)

(1) The Infrastructure Credit Guarantee Fund (hereinafter referred to as the "Fund") may be established in order to guarantee the credit of a Concessionaire who intends to obtain a loan from a financial institution for a PPI Projects.

(2) The Fund shall be managed and operated by the Credit Guarantee Fund (hereinafter referred to as the "Management Institution") established pursuant to the Credit Guarantee Fund Act.

Article 31(Fund Raising)

(1) The Fund shall be financed in the following ways: 1. Investment from the Government and local governments; 2. Investment from entities other than those in subparagraph 1; 3. Revenue from guaranty fees; 4. Revenue from the Fund operation; and 5. Loans from financial institutions or other funds.

(2) The method, time, and any other matters concerning the investment under paragraph (1) above shall be determined by the Presidential Decree.

(3) The method of loan, ceiling on loan amount, and any other matters concerning the loans from financial institutions or other funds shall be determined by the Presidential Decree.

Article 32(Use of Fund)

The Fund shall be used for the following purposes:
1. Fulfillment of guaranteed loan obligations;
2. Repayment of principal and interest on loans under Article 31 (1) 5;
3. Expenses for the foundation, operation and management of the Fund;
4. Research and development for the promotion of the Fund and the development of the private investment system; and
5. Other purposes as determined by the Presidential Decree.

Article 33(Accounting and Settlement of Fund)

(1) The fiscal year of the Fund shall be the same as that of the Government.

(2) The Management Institution shall administer the accounts of the Fund separately from other accounts.

(3) The Management Institution shall prepare a plan for the operation of the Fund for each fiscal year including the Fund's gross revenue and expenses, and submit it to the Minister of Planning and Budget who shall approve it no later than the date of commencement of the fiscal year concerned. The same shall apply to the modification of the plan. <Amended by Act No. 5982. May 24, 1999>

(4) The Management Institution shall prepare the statement of account, balance sheet, and income statement of the Fund, and submit them to the Minister of Planning and Budget within two months after the lapse of each fiscal year, and the balance sheet shall be publicly announced without delay. <Amended by Act No. 5982, May 24, 1999>

(5) If any profit accrues from the settlement of the Fund, the total amount thereof shall be reserved.

(6) If any loss is incurred as a result of the settlement of the Fund, it shall be covered by the reserved amount as referred to in paragraph (5) above, and if such reserved amount is insufficient, the Government shall offset the uncovered loss in accordance with what the budget permits.

Article 34(Limit on and Eligibility for Guarantee)

(1) The Management Institution may, at the Fund's expenses, guarantee the pecuniary obligation borne by the Concessionaires as a result of procuring loans, benefits, etc., for the PPI Projects from domestic financial institutions or foreign financial institutions (referring to institutions which are established in accordance with foreign laws and regulations, and carry on a financial business in such foreign countries; hereinafter the same shall apply) and guarantee a SOC Bond issued in accordance with Article 58. In this case, the Management Institution shall investigate fairly and sincerely the management conditions, business prospects, credit conditions, etc., of the Concessionaires. <Amended by Act No. 6776, Dec. 11, 2002>

(2) In operating the Fund, the Management Institution shall give priority in providing the credit guarantee to the small and medium-sized businesses with weak security capacities.

(3) The limit of the total amount which is allowed to be guaranteed by the Management Institution at the Fund's expenses shall be determined by the Presidential Decree within the scope of twenty times the total amount of the capital investment as prescribed in Article 31 (1) 1 and 2 and the reserve as prescribed in Article 33 (5).

(4) The ceiling which is allowed for guarantee by the Management Institution at the Fund's expenses for the same corporation, shall be determined by the Presidential Decree.

Article 35(Establishment of Guarantee Relation)

(1) In providing guarantee pursuant to Article 34, the Management Institution shall execute a contract with a domestic or foreign financial institution to guarantee at the Fund's expenses the credit of a Concessionaire who intends to receive loan for the PPI Projects. <Amended by Act No. 6776, Dec. 11, 2002>

(2) The guarantee relation between the Management Institution and the domestic or foreign financial institution shall be deemed to be established if the Management Institution examines the application of the Concessionaire who intends to receive the loan for the PPI Projects and notifies the domestic or foreign financial institution with which the Management Institution has made the contract as prescribed in paragraph (1) above: provided that the effect of such guarantee relation shall be deemed as effective upon the actual provision of the loan by the domestic or foreign financial institution to the PPI Projects. <Amended by Act No. 6776, Dec. 11, 2002>

(3) Notwithstanding the provisions of paragraph (2) above, no guarantee relation shall be deemed to be established in the event that the domestic or foreign financial institution fails to make the actual provision of the loan to the Concessionaire who has applied for the loan, or fails to notify the loan applicant of the approval of the loan provision, within sixty days after the notification as referred to in paragraph (2) above. <Amended by Act No. 6776, Dec. 11, 2002>

Article 36(Guarantee Fee)

(1) The Management Institution shall collect a fee for the guarantee from the Concessionaire who receives the guarantee, taking into consideration the project scale, financial condition, degree of credit of its business and other comparable matters, pursuant to the conditions as prescribed by the Presidential Decree.

(2) If the Concessionaire fails to pay the guarantee fee within the payment period given, the Management Institution shall collect the payment for delay at the rate of ten percent per

annum on the unpaid guarantee fee.

Article 37(Duty to Notify)

The domestic or foreign financial institution shall, upon receiving notification as pre-scribed in Article 35 (2), notify the Management Institution without delay in the event of the following: <Amended by Act No. 6776, Dec. 11, 2002>

1. Where a principal obligation has been established;
2. Where all or part of the principal obligation has been discharged;
3. Where the obligor fails to perform the obligation;
4. Where any cause which accelerates the obligor's obligation takes place;
5. Where the guarantee relation has yet to be established for the reason under Article 35 (3); and
6. Where any other cause that may have an effect on the guaranteed obligation takes.

Article 38(Payment of Guaranteed Obligation)

(1) The financial institution, foreign financial institution or a holder of a SOC Bond issued under Article 58 may claim to the Management Institution the payment of the guaranteed obligation, if the cause as prescribed by the Presidential Decree takes place such as the Concessionaire's default in performing obligation for a considerable amount of time. <Amended by Act No. 6776, Dec. 11, 2002>

(2) The Management Institution shall, upon the request for the payment of the guaranteed obligation under paragraph (1) above, reimburse at the Fund's expenses the principal obligation and such other subordinate obligations as prescribed by the Presidential Decree.

Article 39(Damages)

If the Management Institution has paid the guaranteed obligation at the Fund's expenses, it shall collect damages from the Concessionaire, within the limit of 25 percent per annum on the actual amount of the guaranteed obligation paid from the Fund, pursuant to the conditions as prescribed by the Presidential Decree.

Article 40(Right to be Indemnified)

(1) If the Management Institution has paid the guaranteed obligation at the Fund's expenses, it shall take any necessary measures for the exercise of the right to be indemnified.

(2) If the Concessionaire for whom the guaranteed obligation is paid at the Fund's expenses falls under any of the following subparagraphs, the Management Institution may postpone the exercise of the right to be indemnified against the Concessionaire concerned:

1. Where it is deemed that nothing will be left among the Concessionaire's property if the Concessionaire makes up for the indemnity obligation as a result of the exercise of the said right to be indemnified; and
2. Where it is deemed that postponing the exercise of the right to be indemnified is likely to increase the Concessionaire's ability to perform the financial obligation.

A1.2. Enforcement Decree (Chapter 2, Section 4)

Article 27(Operation Standard of Management Institution)

The Credit Guarantee Fund (hereinafter referred to as the "Management Institution") under Article 30 (2) of the Act shall establish a standard for its work process to promote efficiency in the management of the Fund, and submit it to the Minister of Planning and Budget. <Amended by Presidential Decree No. 16326, May 24, 1999>

Article 28(Management of Fund)

The term "other purposes as determined by the Presidential Decree" in subparagraph 5 of Article 32 of the Act means one of the following purposes:

1. Deposit in financial institutions;
2. Purchase of bonds under subparagraphs 1 through 3 of Article 2 (1) of the Securities and Exchange Act, or bonds guaranteed by the State or any financial institutions;
3. Underwriting or purchase of stocks(including investment certificates), debentures, or other securities as deemed by the Minister of Planning and Budget to be necessary; and
4. Other purposes which the Minister of Planning and Budget deems necessary for the implementation of PPI Projects.

Article 29(Limit on Guarantee)

(1) The ceiling on credit guarantee under the provisions of Article 34 (3) of the Act shall be the amount equivalent to twenty times the sum of the reserves under Article 33 (5) of the Act and the capital investment under subparagraphs 1 and 2 of Article 31 (1) of the Act.

(2) The ceiling of credit guarantee which the Management Institution may provide to the same Concessionaire on the Fund's account pursuant to the provisions of Article 34 (4) of the Act shall be 100 billion won. However, that if it is deemed inevitable, the head of the Management Institution may provide a credit guarantee in the ceiling of 200 billion

won. <Amended by Presidential Decree No. 17093, Dec. 30, 2000; Presidential Decree No. 17928, Feb. 24, 2003>

Article 30(Guarantee Fee)

(1) The guarantee fee under Article 36 (1) of the Act shall be determined by the Management Institution within the scope of 15/1000 per annum on the amount guaranteed.

(2) Notwithstanding paragraph (1) above, if the Concessionaire fails to perform the guaranteed obligation within the time given, the Management Institution may collect guarantee fee from the Concessionaire within the scope of 20/1000 per annum on the portion of the guaranteed obligation unperformed.

Article 31(Claim for Performance of Guaranteed Obligation)

The term "if the cause as prescribed by the Presidential Decree takes place" in Article 38 (1) of the Act means any of the following subparagraphs: <Amended, Mar. 8, 2005>

1. If six months have passed since the Concessionaire, whose pecuniary obligation had been guaranteed under Article 34 (1) of the Act, failed to perform his obligation within the time given (including cases where such guaranteed obligation has been accelerated); or
2. If the Concessionaire, whose Infrastructure Bond was guaranteed under Article 34 (1) of the Act, has failed to repay the principal or interest on the bond within the time given. [This Article Wholly Amended by Presidential Decree No. 17928, Feb. 24, 2003]

Article 32(Scope of Subordinate Debt)

The term "such other subordinate obligations as prescribed by the Presidential Decree" in Article 38 (2) of the Act means the total sum of the amounts in the following subparagraphs:

1. The amount of interest, which is calculated by the interest rate applied during the period contracted for the principal obligation, from the due date of the principal obligation until the date the Management Institution performs the guaranteed obligation; and
2. Cost determined by the Management Institution among the expenses that the financial institution disbursed to recover the debts.

Article 33(Damages)

The amount of damages pursuant to Article 39 of the Act shall be calculated by multiplying (a) the rate determined by the Management Institution and (b) the amount discharged by the Management Institution, which rate shall be determined in consideration of the loan interest rate.

A2.1. Act on Private Participation in Infrastructure (Chapter 2, Section 5)

Article 41(Purpose of Infrastructure Facilities Fund Establishment)

(1) An Infrastructure Facilities Fund (hereinafter referred to as an "Infrastructure Fund") may be established for the purpose of investing its assets in an Infrastructure Facilities Project and distributing the profit accruing there from to the shareholders.

(2) An Infrastructure Fund shall be deemed to be an investment company pursuant to the Act on Business of Operating Indirect Investment Assets.

(3) An Infrastructure Fund shall be the repurchase-prohibited investment company pursuant to Article 45 (1) of the Act on Business of Operating Indirect Investment Assets.

(4) Except as otherwise provided by this Act, the Act on Business of Operating Indirect Investment Assets shall be applicable to an Infrastructure Fund.

(5) Any entity that is not an Infrastructure Fund under this Act shall not use the title of an Infrastructure Fund or of the title similar thereto.
[This Article Wholly Amended by Act No. 7386, Jan. 27, 2005]

Article 41-2(Equity Capital of Infrastructure Fund)

(1) The equity capital of an Infrastructure Fund shall be larger than the amount as prescribed in the Presidential Decree, which amount shall not exceed ten billion won as of the time of application for registration.

(2) The minimum net assets of an Infrastructure Fund shall be larger than the amount as prescribed by the Presidential Decree, which amount shall not exceed five billion won.
[This Article Newly Inserted by Act No. 7386, Jan. 27, 2005]

Article 41-3(Acceptance and Payment for Stocks by Promoters in Case of Establishment by Promoters)

When the promoters of an Infrastructure Fund have accepted the total number of stocks issued at the time of establishment of an Infrastructure Fund, they shall immediately pay in cash

the total amount of the said acceptance value on each stock. [This Article Newly Inserted by Act No. 7386, Jan. 27, 2005]

Article 41-4(Subscription, etc., for Acceptance of Stocks in Case of Establishment through Stock Subscription)

(1) Where the promoters of an Infrastructure Fund do not accept all the stocks issued at the time of establishment of an Infrastructure Fund and intend to attract subscription for the stocks, the promoters shall provide the potential subscribers with the information memorandum for investment. Matters concerning the items to be included in the information memorandum for investment and the method of distribution of the said information memorandum, etc., shall be prescribed by the Presidential Decree.

(2) When the promoters of an Infrastructure Fund have prepared the information memorandum for investment as referred to in paragraph (1) above, they shall submit the memorandum to the Financial Supervisory Commission before providing it to the potential subscribers. The same shall also apply when the important matters as prescribed in the Presidential Decree are altered.

(3) The promoters of an Infrastructure Fund shall provide the form of stock subscription offer to the potential subscribers intending to subscribe for the stocks pursuant to the conditions as prescribed in the Presidential Decree, and the legal entity intending to subscribe for the stocks shall state the kind and number of the stocks he intends to subscribe for, together with his address, on two copies of the subscription offer, and sign his name with seal affixed or write his signature thereon.

(4) Even in the event that the promoters of an Infrastructure Fund do not accept all the stocks issued at the time of establishment of the Infrastructure Fund and intend to attract subscription for the stocks, the promoters shall accept the stocks correspon- ding to the total face value that is larger than the amount calculated at the ratio as prescribed in the Presidential Decree, which amount shall not exceed 10/100 of the equity capital to be appropriated by an Infrastructure Fund in accordance with Article 41-2 (1). [This Article Newly Inserted by Act No. 7386, Jan. 27, 2005]

Article 41-5(Loan Financing and Issuance of Bonds)

(1) An Infrastructure Fund may borrow money or issue the bonds for the purpose of raising the fund or procuring the temporary investment fund within the scope not exceeding the amount calculated at the ratio as prescribed in the Presidential Decree, which ratio shall not exceed 30/100 of the equity capital of an Infrastructure Fund: provided that when an

Infrastructure Fund borrows money or issues the bonds for the purpose of raising the fund, it shall obtain an approval of the general stockholders' meeting.

(2) The limit of borrowing or issuing the bonds as referred to in paragraph (1) above shall not apply to an Infrastructure Fund that is also the indirect investment fund as referred to in Article 175 (1) of the Act on Business of Operating Indirect Investment and Assets. [This Article Newly Inserted by Act No. 7386, Jan. 27, 2005]

Article 41-6(Consultation, etc., on Registration of Infrastructure Fund)

(1) The Financial Supervisory Commission shall in advance consult with the Minister of Planning and Budget on the registration of an Infrastructure Fund.

(2) An Infrastructure Fund shall submit pursuant to the provisions of the Presidential Decree a quarterly business report on its assets to the Minister of Planning and Budget and the Financial Supervisory Commission. [This Article Newly Inserted by Act No. 7386, Jan. 27, 2005]

Article 41-7(Conditions on Issuing New Stocks)

Where an Infrastructure Fund issues new stocks after its establishment, the issuing value of new stocks shall be computed pursuant to the methods as prescribed by the Presidential Decree on the basis of net assets of the properties owned by the Infrastructure Fund. [This Article Newly Inserted by Act No. 7386, Jan. 27, 2005]

Article 41-8(Stock Listing)

(1) When an Infrastructure Fund becomes to satisfy the listing requirements provided in the securities listing regulations of the Korea Stock Exchange or the securities listing regulations of the KOSDAQ market as prescribed in Article 88 of the Securities and Exchange Act, the Infrastructure Fund shall immediately take the procedures for having its stocks listed in the securities market or the KOSDAQ market.

(2) When an Infrastructure Fund fails to progress the procedures for listing to the securities market or the KOSDAQ market as referred to in paragraph (1) above without any justifiable reasons, the Minister of Planning and Budget may order such Infrastructure Fund to take procedures for listing within the fixed period of time. [This Article Newly Inserted by Act No. 7386, Jan 27, 2005]

Article 41-9(Supervision and Inspection on Infrastructure Fund, etc.)

(1) The Minister of Planning and Budget and the Financial Supervisory Commission may demand an Infrastructure Fund and the asset management company, the asset custody company and the general affairs management company of the said Infrastructure Fund to submit the data or file a report on the business and assets of the Infrastructure Fund and each of the aforesaid companies which are related to the business of the Infrastructure Fund.

(2) When the Financial Supervisory Commission deems it necessary concerning the financial supervision, it may have its subordinate staff members or the Governor of the Financial Supervisory Service as referred to in Article 24 of the Act on the Establishment, etc., of Financial Supervisory Organizations inspect the businesses of the Infrastructure Fund, and the business of the asset management company, the asset custody company and the general affairs management company of the said Infrastructure Fund. [This Article Newly Inserted by Act No. 7386, Jan. 27, 2005]

Article 42(Prohibition of Other Business)

An Infrastructure Fund shall not carry on any other business than the investment business as prescribed in Article 43.

[This Article Wholly Amended by Act No. 7386, Jan. 27, 2005]

Article 43(Scope of Use of Fund)

(1) An Infrastructure Fund may perform the following businesses:

1. Acquisition of stocks and bonds issued by corporations with the purpose of implementing Infrastructure Facilities Projects;
2. Acquisition of loan against corporations with the purpose of implementing Infrastructure Facilities Projects;
3. Acquisition of stocks or shares of the corporation (excluding the Infrastructure Fund) with the purpose of investing by the method provided in subparagraph 1 or 2 above in the corporation with the purpose of implementing Infrastructure Facilities Projects; and
4. Other investments the Financial Supervisory Commission approves as necessary for achieving the purpose under subparagraphs 1 through 3 above.

(2) When it is necessary for carrying on the business under each subparagraph of paragraph (1) above, the Infrastructure Fund may offer its assets as security or make guarantees.

(3) An Infrastructure Fund may operate the surplus fund as follows:

1. Deposit in a financial institution; and
2. Purchase of national and public bonds.
[This Article Wholly Amended by Act No. 7386, Jan. 27, 2005]

Article 44(Relation with Other Laws)

(1) Articles 37 (5), 41 (2) 2, 45 (2) through (4), 46, 53 (2), 87, 88, 89 (2) through (4), 94, 96 (2) and 177 of the Act on Business of Operating Indirect Investment and Assets shall not apply to the Infrastructure Funds.

(2) When an Infrastructure Fund comes to be a holding company as referred to in subparagraph 1-2 of Article 2 of the Monopoly Regulation and Fair Trade Act, the provisions of Article 8-2 (1) 2 of the same Act shall not be applicable. [This Article Wholly Amended by Act No. 7386, Jan. 27, 2005]

A2.2. Enforcement Decree (Chapter 2, Section 4)

Article 34(Equity Capital of Infrastructure Fund)

(1) The term "the amount as prescribed in the Presidential Decree" in Article 41-2 (1) of the Act shall be 10 billion won.

(2) The term "the amount as prescribed by the Presidential Decree" in Article 41-2 (2) of the Act shall be 5 billion won.

Article 34-2(Information Memorandum for Investment and Form of Stock Subscription Offer)

(1) With respect to the items to be provided in the information memorandum for investment under Article 14-4 (1) of the Act and the method of distribution of the said information memorandum, Article 56 of the Act on Business of Operation Indirect Investment and Assets shall apply mutatis mutandis.

(2) The term "the important matters as prescribed in the Presidential Decree" shall mean the matters contained in the information memorandum for investment other than what is amended pursuant to the amendment of the laws or instruction from the Financial Supervisory Commission and what falls under simple modification to the expression.

(3) The promoters of the Infrastructure Facilities Fund under Article 41 (1) of the Act shall, in accordance with Article 41-4 (3) of the Act, provide the potential subscribers with a

form of stock subscription offer which states the following items:

1. Purpose of business of the Infrastructure Fund, fund name and location of office;
2. Class and number of the stocks to be issued by the Infrastructure Fund;
3. Number and price of the stocks to be issued at the time of establishment of the fund;
4. The minimum amount of net assets which the Infrastructure Fund should maintain;
5. Method of public notice by the Infrastructure Fund;
6. Duration of existence or reason of dissolution stated in the articles of incorporation, if any;
7. Provision requiring approval of the board of directors as to the stock transfer, if any;
8. Name and address of the asset management company;
9. Method of allocation of the issuing stocks and due date of the stock price payment;
10. Financial institution which accepts the stock price payment and the place of payment; and
11. Name and address of the director candidates and the auditor candidates.

(4) The term "the ratio as prescribed in the Presidential Decree" under Article 41-4 (4) of the Act shall mean 10/100 of the equity capital of the Infrastructure Fund. [Entirely Amended, Mar. 8, 2005]

Article 34-3 (Loan Financing and Issuance of Bonds)

The term "the ratio as prescribed in the Presidential Decree" in the main paragraph of 41-5 (1) shall mean 30/100 of the equity capital of the Infrastructure Fund. [Entirely Amended, Mar. 8, 2005]

Article 34-4 (Report on Infrastructure Fund Assets)

(1) With respect to preparation and submission of the business report on the assets of the Infrastructure Fund pursuant to Article 41-6 (2) of the Act, Article 105 (1) of the Enforcement Decree of the Act on Business of Operation Indirect Investment and Assets shall apply mutatis mutandis. In this case, "the Ministry of Planning and Budget" shall be deemed to be "the Asset Operation Association".

(2) In the event that the Infrastructure Fund has submitted a business report on the assets of the Infrastructure Fund to the Financial Supervisory Commission pursuant to Article 124 of the Act on Business of Operation Indirect Investment and Assets, it shall be deemed that the business report under Article 41-6 of the Act has been submitted to the Financial Supervisory Commission. [Entirely amended, Mar. 8, 2005]

Article 34-5(Conditions on Issuing New Stocks)

The term "the methods as prescribed by the Presidential Decree" under Article 41-7 of the Act shall mean the method of calculating the base price of indirect investment securities as provided in Article 96 of the Act on Business of Operation Indirect Investment and Assets. Provided that (a) where the stocks of the Infrastructure Fund have been listed at Korea Stock Exchange or KOSDAQ market, calculation of the issuing value of new stock using the said method may be conducted taking into consideration the transaction price at Korea Stock Exchange or KOSDAQ market and (b) where the stocks of the Infrastructure Fund are not listed at Korea Stock Exchange or KOSDAQ market, calculation of the issuing value of new stock using the said method may be conducted taking into consideration fair value of the stock. [Entirely amended, Mar. 8, 2005]

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Mid-term Economic Development Strategies for Ukraine

Chapter 04

WTO Membership and Export Promotion in Ukraine

Chapter 04

WTO Membership and Export Promotion in Ukraine

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1. Motivation

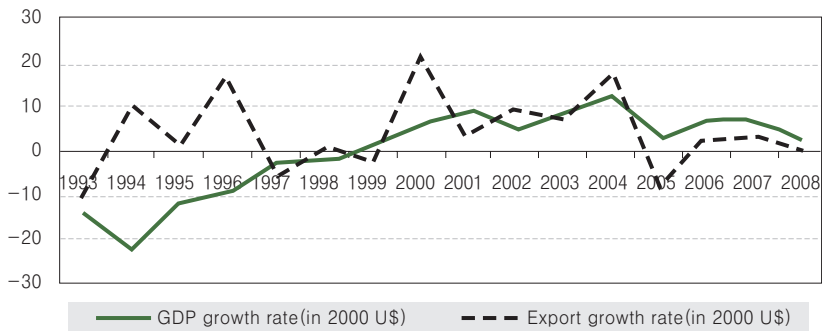
1.1. Recent Trend of Economic Growth and Export of Ukraine

After severe transition recession in the 1990s, Ukraine's economy experienced an impressive economic recovery: on average, annual GDP growth rate during 2000~2007 recorded around 7.5% (See Figure 4-1). However, this economic growth seems to have been mainly driven by domestic consumption rather than by net exports: if we look at Figure 4-2 where Ukraine's real GDP was decomposed into domestic consumption, investment and net exports, only in two years (2002 and 2004) were net exports' contributions to the real GDP positive.

For the purpose of comparison, Figure 4-3 shows the real GDP composition of the Korean economy. Similarly, in the case of Korea, the net exports' contribution to real GDP were not always positive. However, it seems that the Korean economy took full advantage of globalization especially after 2003, while Ukraine's economy has failed to do so.[1]

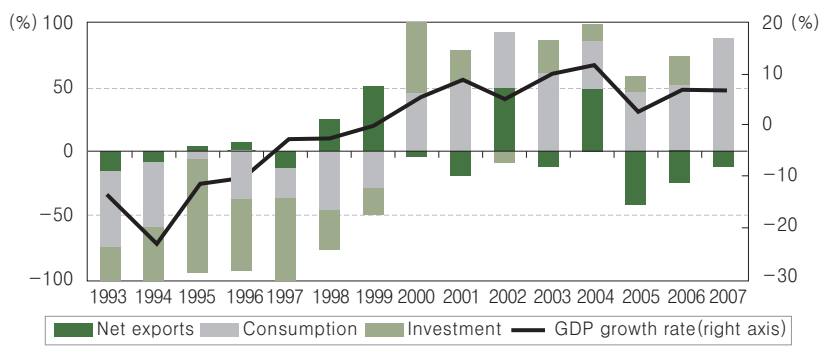
1. The time period of 2003~2007 could be considered as an important time period in terms of globalization. According to World Development Indicator of the World Bank, the merchandise trade as a share of GDP in the world economy exceeds 40% in 2003 and only within three years it reached 50% in 2006.

Figure 4-1 | Growth Rates of Real GDP and Export



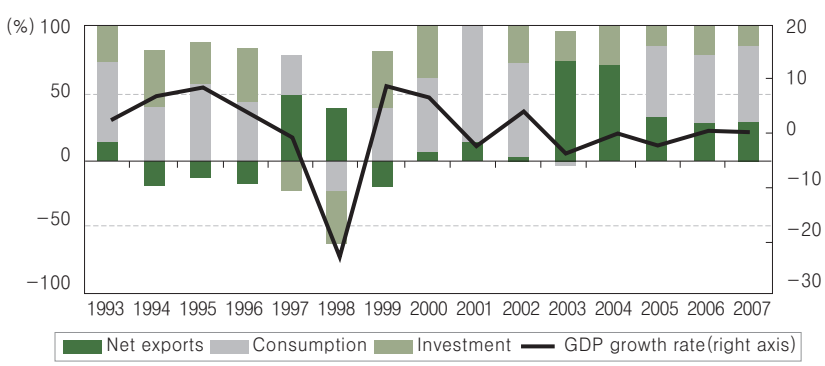
Source: World Development Indicator (the World Bank) and IMF Country Report No. 09/17

Figure 4-2 | Ukraine's Real GDP Growth Rate and its Decomposition



Source: World Development Indicator (the World Bank)

Figure 4-3 | Korea's Real GDP Growth Rate and its Decomposition



Source: World Development Indicator (the World Bank)

Although the average export growth rate recorded 7.4% during 2000~2007, it seems to be volatile if we look at Figure 4-1. This relatively high average growth rate of export was mainly due to an exceptional increase of exports in 2000 and 2004, which could be explained by sharp devaluation of the Hryvnia and the dramatic increase in steel prices in the world market, respectively (OECD 2007). Moreover, the recent financial crisis in Ukraine together with the global economic downturn since mid-2008 has led to a sharp decline in the world demand for Ukrainian exports and thus affecting the price of Ukrainian exports.[2]

Under these circumstances, it seems to be essential to enhance export performance of Ukraine, not only to recover from the recent economic crisis but also to achieve sustainable growth in the long run.[3] Thus the major motivation of this chapter is to find various policy measures that could be implemented by Ukraine's government in order to promote export activity in Ukraine.

1.2. Ukraine's WTO Accession

Ukraine became the 152nd member of the WTO on May 16th 2008. There is no doubt that WTO membership of Ukraine will provide 'a stable and predictable trade environment that will boost its growth and prosperity' (WTO Director-General Mr. Lamy). In addition, it will prevent slowing down the process of economic reforms that are required for making Ukraine fit for international competition in the globalized world economy.

However it is also true that the policy space for export promotion available to Ukraine has been substantially narrowed down with WTO membership. Specifically, Ukraine has to follow the commitment schedule in 'Accession Package.' This includes 'Market Access for Goods', 'Market Access for Services' and 'Working Party Report.' [4]

In other words, due to WTO membership, active and selective export promotion policies are no more available for the Ukrainian government, which have been widely used in Newly

2. The recent Country Report for Ukraine by IMF (2009) estimated the export growth rate in 2008 and 2009 to be 0.3% and 0.8%, respectively. In addition, the Report estimated the real GDP growth to be 2.1% in 2008 and -3.0% in 2009.
3. It is perhaps noteworthy to point out that in the face of the 1997 financial crisis, the net export was the major driving force for economic recovery in Korea (See Figure 4-3). We can see that the shrink of the domestic consumption and investment were mitigated substantially by net exports.
4. For example, Market Access to Goods requires average tariff binding rate of 10.66% for agricultural products and 4.95% for industrial goods. Market Access for Services specified various commitments in all eleven core service sectors. The Working Party Report also requires Ukraine to adopt TRIMs (trade-related investment measures) and TRIPS (trade-related aspects of intellectual property rights) and eliminate all export and import-substitution subsidies and export duties, to name just a few.

Industrializing Countries (NICs), including Korea and even in the developed countries at their early stages of development. Therefore, it is inevitable to identify WTO-consistent export promotion policies in the first place.

The rest of this chapter proceeds as follows: Sector 1-2 presents brief analyses on Ukraine's export structure in order to identify the characteristics and problems with Ukraine's export. In Section 1-3, the Korean experience related with export promotion will be discussed, paying particular attention to the policy measures implemented by the Korean government. In Section 1-4, the lessons from the Korean experience that are relevant to the Ukrainian economy will be discussed. Furthermore at the end of that section, the short-term and medium-term policy agendas will be suggested for Ukraine, taking into account both the circumstances that the Ukrainian economy is facing and the applicable policy lessons from the Korean experiences.

2. Characteristics of Ukraine's Export Structure

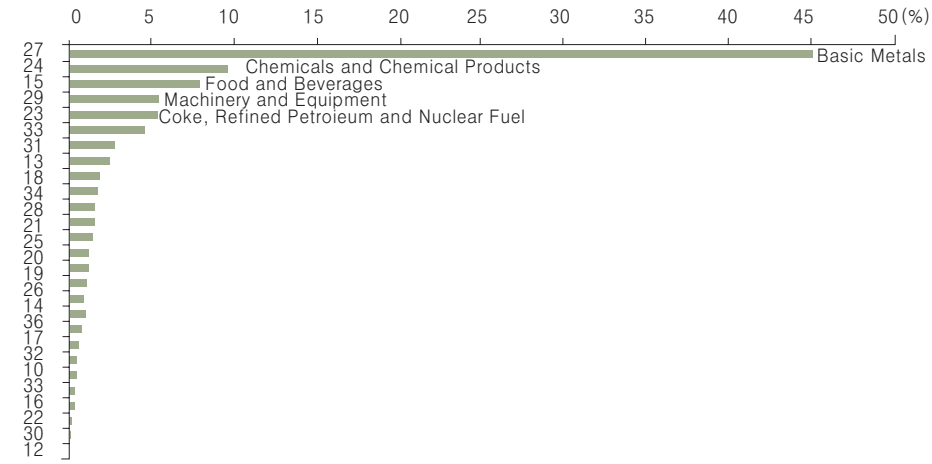
In this section, we will implement various quantitative analyses on the Ukraine's export. By doing these analyses, we hope to identify important characteristics of Ukraine's export structure, which could be helpful in suggesting relevant policy measures to promote export activity in Ukraine.

2.1. High Degree of Industrial Concentration

The most distinguishable characteristic of Ukraine's export is perhaps its high degree of concentration on "basic metal (or especially steel) industry." Figure 4-4 shows Ukraine's industrial export share in 2006 at ISIC (International Standard Industrial Classification) 2-digit level. As the figure shows, the export share of basic metal industry is more than 45% out of total exports of Ukraine, followed by "chemical and chemical products" with the share of less than 10%.

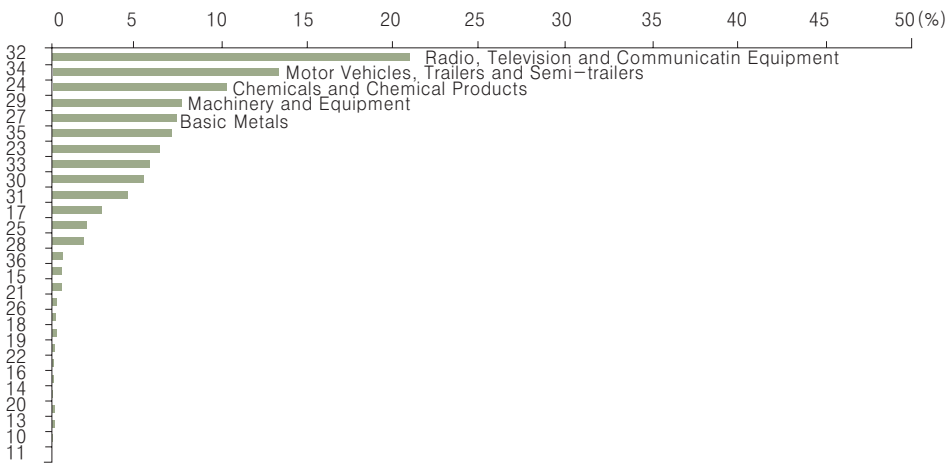
For the purpose of comparison once again, Figure 4-5 shows the same information for the Korean exports. In the case for Korea, so-called ICT (information and communication technology) industry represented by "radio, television and communication equipment" takes the highest share of exports with around 21%. "Motor vehicles, trailers and semi-trailers" takes the next highest share with around 13% and so on. [5]

Figure 4-4 | Ukraine's Industrial Export Share in 2006 (ISIC 2 digit level)



Source: UN Comtrade Database

Figure 4-5 | Korea's Industrial Export Share in 2006 (ISIC 2 digit level)



Source: UN Comtrade Database

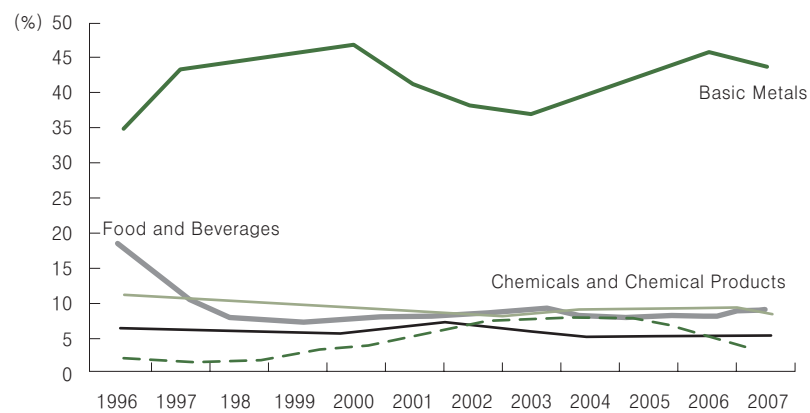
5. Although the objective of this study is to derive policy implications from the Korean experience for the Ukrainian economy, it is perhaps not appropriate to compare the export concentration between Ukraine and Korea directly since their development stages are different. However, the degree of export concentration of Ukraine is relatively high even when the comparison is made with other Eastern European countries who recently became new EU members (World Bank 2004). For example the export diversification indices of Poland and Ukraine in 2002 were 0.186 and 0.257, respectively, meaning Ukraine's export structure was less diversified. Moreover, the changes of this index during 1996~2002 were -0.011 and +0.009 for Poland and Ukraine. This means during this period the degree of export concentration had been getting severe in Ukraine.

This high degree of export concentration on basic metal industry has been frequently pointed out by many previous researches (for example, the World Bank 2004). This high concentration on basic metal industry considered to be unsustainable because "high material and energy intensity of metallurgical products and low labor productivity will threaten the sector's competitiveness in the future" (World Bank 2004).

As many researchers pointed out, this high degree of concentration on basic metal industry is undesirable because it will make export performance of Ukraine vulnerable to the external conditions (such as the world demand and price of steel products). In fact, the recent analysis on Ukraine's economy reported that due to weak external demand and low international commodity prices, Ukrainian export of steel industry has fallen by 40% during November-December of 2008, on year-over-year basis.[6]

But a more important fact to recognize is that this high concentration on steel export is becoming even more severe in the recent years. Figure 4-6 shows the time trend of major five industries' export share of Ukraine. During the period of 2000~2003, the share of steel industry has fallen from 46.4% to 37.0% after which, however, it has increased again up to 45.2% in 2006. All these analyses imply that policy measures should be implemented in order to diversify the industrial or product structure of the Ukrainian export.

Figure 4-6 | Trends of Ukraine's Industrial Export Share (Top 5 Industries)



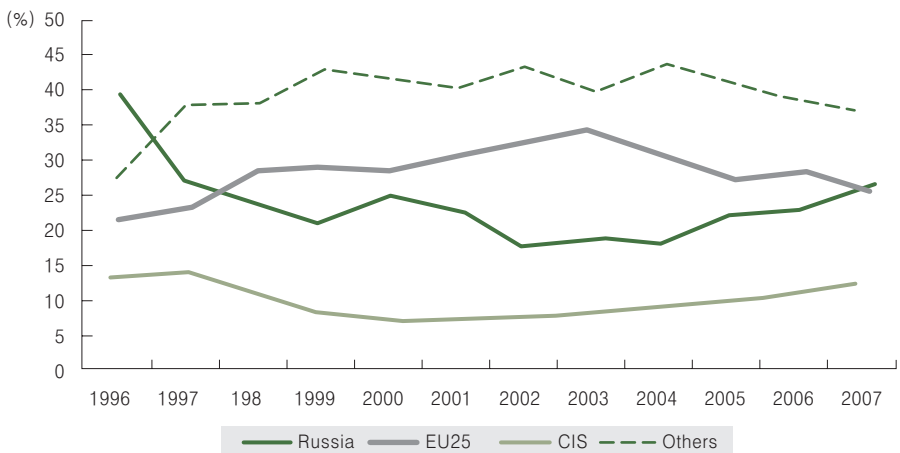
Source: UN Comtrade Database

6. See http://www.usubc.org/reports/UkrReport0309.pdf for more details.

2.2. High Degree of Export Market Concentration

Although it is less severe than industrial or product concentration of export structure, the level of export market concentration of Ukraine also seems to be high. Figure 4-7 shows the trends of the share of Ukraine's export market during 1996~2007. The export share of the Russian market which is the biggest export partner of Ukraine was very high in 1996, recording 41.3% out of total export of Ukraine.

Figure 4-7 | Trend of Ukraine's Export Market (%)



Source: UN Comtrade Database

Table 4-1 | Share of Ukraine's Export to China and US

(Unit: %)

	1997	1999	2001	2003	2005	2007
Export to China	7.9	6.5	3.0	4.4	1.7	0.9
Export to US	2.1	3.8	3.5	3.1	2.8	2.1

Source: UN Comtrade Database

This share has been decreased substantially and continuously until the early 2000s, down to 18.9% in 2004. However in the recent years specifically after 2004, the dependency on the Russian market of the Ukrainian export has increased again and in 2007 the share was 26.8%. Although the absolute value of the market share is relatively low, the export share of other CIS market shows a very similar trend: during 1997~2001 the share of the export to CIS countries has decreased from 13.4% to 6.2% after which this share has been continuously increased

recording 11.9% in 2007.

On the other hand, the export share of the 25 European Union countries appears to have exactly the opposite trend. In 1996, the export share to these countries was around 20% and it has been increased until 2003 when the share reached 34.3%. However in the recent years, this share has been falling, recording 25.9% in 2007.

Table 4-1 shows another interesting point about Ukraine's export partners. The share of export to China has been shrinking dramatically in the recent years: the share of export to China was 7.9% in 1997 but in 2007 it was only 0.9%.[7] The recent expansion of world trade over the last couple of decades could not be explained without mentioning the trade expansion of China. Considering that the Chinese economy is at the center of recent globalization, Ukraine's weakened trade relation with China appears to be disappointing. Put differently, it seems that the Ukraine's economy has failed to take benefit from the growth of the Chinese economy[8].

The above implies that Ukraine also has to diversify its export partners in order to obtain more benefits from the globalization, and more importantly Ukraine should tightening trade relations with rapidly growing economies such as China, which will be necessary to promote the export performance of Ukraine.

2.3. Few Leading Export Products in the World Export Market

Figure 4-8 shows a structural perspective chart of Ukraine's exports which was developed by International Trade Center (ITC).[9] The horizontal axis of this chart specifies Ukraine's world market share for the corresponding product group in 2006 and the vertical axis shows the average growth of world exports over 2001~2006. The circled areas on the chart, corresponds to Ukraine's export value of the industry. Thus this chart shows to what extent the leading export products are positioned in growing or declining markets.

As we can see from the chart, the relatively well performing industry of Ukraine with

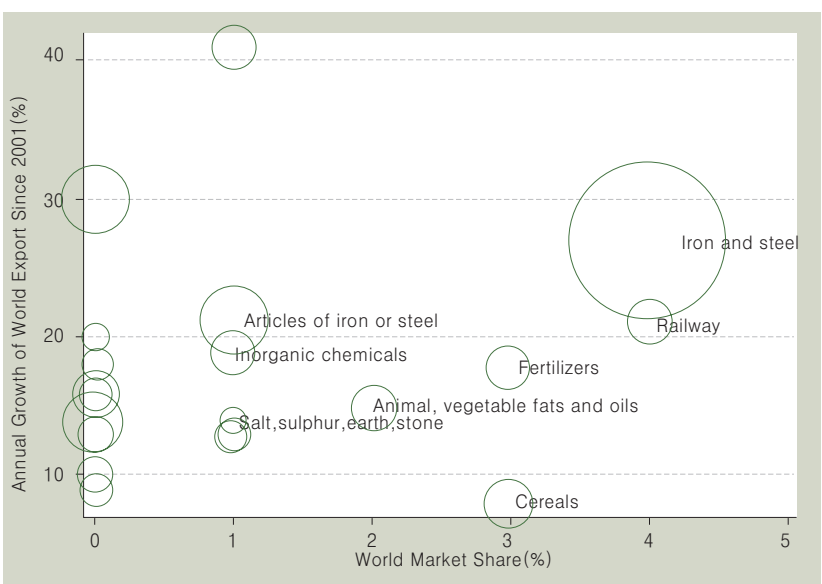
7. Not only the export share to China but also the actual export value to China from Ukraine has decreased substantially in the recent years according to the UN Comtrade Database. In 1997, the export from Ukraine to China was 1,100 million US dollars and in 2007, it is only 423 million US dollars. Within 10 years the export value has been reduced almost by 70%.
8. In the case of Korea, the trade relation with China has been dramatically tightened during the same period of time. The share of Chinese market out of total Korea's export rose from 0.9% in 1990 to 22.7% in 2007 which makes China the largest export market of Korea.
9. International Trade Center is the joint agency of the WTO and the UN whose goal is to help developing and transition countries achieve sustainable development through exports. See www.intracen.org for more information.

growing world demand seems to be railways (HS code 86) and iron and steel (HS code 72). These industries' annual growth rates of world export since 2001 were 20.8% and 27.1% per annum, respectively and these industries' world market shares are relatively higher than other industries.

However, even these best performing industries of Ukraine have relatively low world market share in absolute terms. The world market share of railway industry is the highest with 4.1% and that of iron and steel industry is 4.0%.[10] In fact, if we look at the Table A4-1 in the appendix, the industries with market share of higher than 1% are only 8 industries (railway, iron and steel, fertilizers, cereals, animal and vegetable fats and oils, salt, inorganic chemicals, articles of iron and steel). In sum, there are few leading export products of Ukraine in the world export market.

In the case of Korea, in contrast, there exist several leading export products. The ships and boats industry (HS code 89) takes the world market share of 23.8%, followed by knitted and crocheted fabric industry (HS code 60) with the world market share of 13.4%. In Table A4-2,

Figure 4-8 | Ukraine's Structural Export Perspectives

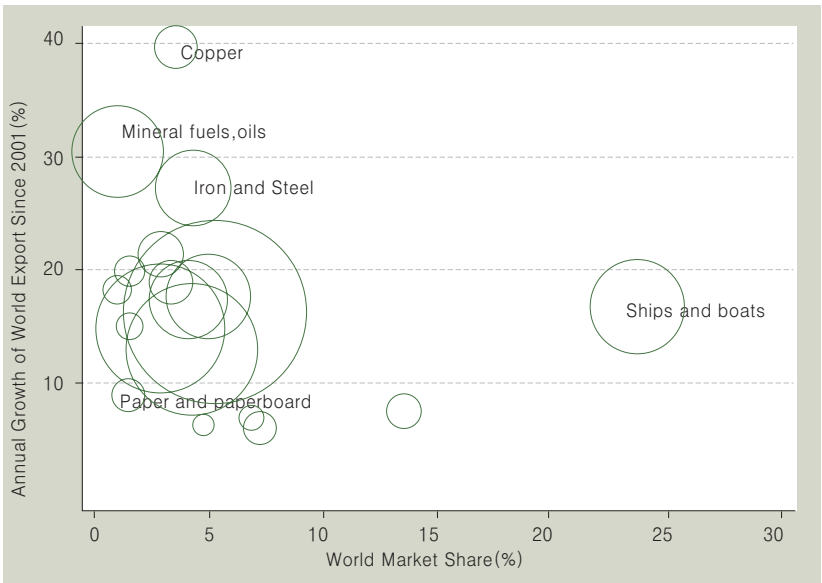


Source: International Trade Center

Note: The areas of the circles correspond to the country's export value of the industries.

10. See Table A4-1 in the appendix for more detailed figures for this chart. This table shows the related figures for the top twenty industries in terms of world market share in 2006.

Figure 4-9 | Korea's Structural Export Perspectives



Source: International Trade Center

Note: The areas of the circles correspond to the country's export value of the industries.

we can see that five industries have the world market share of higher than 5% and nineteen industries with the world market share of higher than 1%.

This analysis implies that it is important for the Ukrainian government to identify industries with greater export potential for which intensive policy support should be provided. In other words, industries that could play significant role as "engines for future growth" should be properly developed with a long-term perspective.

2.4. Low Level of Technology

The last but certainly not the least important characteristic of the Ukraine's export structure is that the level of technology in manufacturing exports of Ukraine is relatively very low. This was correctly pointed out by OECD (2007) in its economic survey on Ukraine.

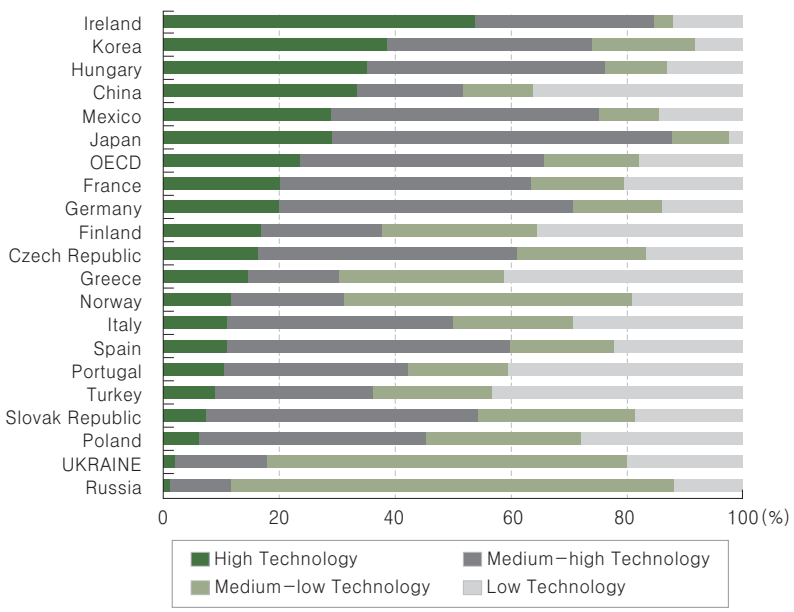
Figure 4-10 was directly taken from OECD (2007). [11] If manufacturing exports are divided

11. In the OECD survey this chart is Figure 3.6 on page 115.

into four categories according to its level of technology,[12] the share of high-technology export of Ukraine is merely 2.0%. Although this share is higher than that of Russia (0.8% of high-technology exports), it is much lower than that of other Central and Eastern European economies such as Poland, Slovak Republic etc.

If traditional international trade theories are correct, this means that the comparative advantage of Ukraine lies in the industries with low or medium-low technologies. The problem

Figure 4-10 | Share of Technology Level in Manufacturing Exports in 2004



Source: OECD Economic Surveys on Ukraine (2007)

12. OECD's classification on manufacturing industries according to its R&D intensity level is as follows (ISIC Rev. 3 codes are in parentheses):
    - High-technology industries: Aircraft and spacecraft (353) Pharmaceuticals (2423) Office, accounting and computing machinery (30) Radio, TV and communications equipment (32) Medical, precision and optical instruments (33)
    - Medium-high-technology industries: Electrical machinery and apparatus, n.e.c. (31) Motor vehicles, trailers and semi-trailers (34) Chemicals excluding pharmaceuticals (24 excl. 2423) Railroad equipment and transport equipment, n.e.c. (352 + 359) Machinery and equipment, n.e.c. (29)
    - Medium-low-technology industries: Building and repairing of ships and boats (351) Rubber and plastics products (25) Coke, refined petroleum products and nuclear fuel (23) Other non-metallic mineral products (26) Basic metals and fabricated metal products (27-28)
    - Low-technology industries, Manufacturing, n.e.c.; Recycling (36-37) Wood, pulp, paper, paper products, printing and publishing (20-22) Food products, beverages and tobacco (15-16) Textiles, textile products, leather and footwear (17-19)

is that these industries usually generate low value-added to the economy compared to industries with higher level of technologies and that sustainable long-run growth cannot be achieved with these low technology industries. Therefore, another urgent policy goal should be to enhance the level of technology through various R&D activities in Ukraine.

3. Korea's Experiences on Export Promotion

In this section, we will briefly discuss the Korean experiences related with trade promotion, paying particular attention to the various policy measures implemented by the Korean government. Since Korea's trade promotion policies took different stances along with different domestic and international economic and political environment in different periods of time, the best way to proceed is to explain these in chronological order.

But before we go any further, it would be helpful to have a look at the development process of the Korean economy. Table 4-2 summarizes some of the main development indicators of the Korean economy since 1960. In 2000 US dollar, the real GDP per capita of Korea was only around 1,110 dollars in 1960 and has grown to 14,540 dollar in 2007: almost a thirteen-fold increase in real term.

Exports of goods and services in 1960 was only 0.2 billion US dollars in 2000 price and its share out of total GDP was mere 3.2%. In 2007, exports of goods and services recorded 432.8 billion US dollars, which means that Korea's export has increased at the rate of around 17.8% per annum in real term for the last half century. This is why the economic development and trade expansion of Korea is often referred to as a compressed growth and transformation through export-oriented economic development.

Not only was the quantitative expansion of export remarkable but also the qualitative improvement of the Korean export was remarkable especially after the 1990s. The share of high-technology exports out of total exports was 17.8% and it reached 32% in 2007.[13]

It is well known that throughout this extraordinary economic growth process of Korea, active industrial policies including export promotion measures were accompanied, especially in the early phase of economic development as we will discuss in the rest of this section. It is also widely known that there has been a debate about the role of government's active intervention in

13. These figures have some discrepancies with those in Figure 4-10 because OECD and the World Bank use different definitions regarding high-technology industries in their dataset.

the economic development of Korea. For example the World Bank (1993) assessed that:

> *"East Asian economic development (including Korea) had little to do with government and the appropriate role of government in market friendly strategies is to ensure adequate investment in people, provision of a competitive climate for enterprises, and beyond these goals, governments are likely to do more harm than good." (Mah, 2007)*

Table 4-2 | Main Development Indicators of the Korean Economy

	1960	1970	1980	1990	2000	2007
Real GDP (in 2000 US Billion$)	27.8	61.1	122.8	283.6	511.7	705.6
Real GDP per capita (in 2000 US$)	1,109.9	1,912.4	3,221.4	6,614.6	10,884.5	14,540.3
Exports of goods and services (in 2000 US Billion$)	0.2	2.7	17.6	49.2	208.9	432.8
Exports of goods and services (in nominal, % of GDP)	3.2	13.6	32.1	28.0	40.8	45.6
Imports of goods and services (in 2000 US Billion$)	1.1	6.1	24.2	68.7	192.7	356.3
Imports of goods and services (in nominal, % of GDP)	12.6	23.8	40.0	29.0	37.7	44.8
High-technology exports (% of manufactured exports)	-	-	-	17.8	34.8	32.0
Life expectancy at birth (years)	54.2	61.2	65.8	71.3	75.9	78.5

Source: World Development Indicator (the World Bank)

There exist, of course, different views on this issue. For example Wald (1994) pointed out that the World Bank study gave insufficient attention to the role of the government in fomenting Asia's economic success and downplayed the role of industrial policy and other forms of selective intervention (Mah, 2007).

The point is that in academic as well as in policy circles, there is no unanimous agreement on the effectiveness of active intervention policy by the government. In this regard, we have to be very careful in deriving meaningful policy lessons from other countries' development experiences. This is more so since each country faces different economic and political circumstances which implies that there is no "one-size-fits-all" policies in economic development.

With this backdrop kept in mind, the rest of this section will briefly review the major policy measures for export promotion in Korea in its respective development stages.[14,15] After

reviewing these policy measures, the implicated lessons that are relevant in the context of Ukraine will be discussed in the next section.

3.1. From Import Substitution to Export Promotion: 1960s

After the Korean War which ended in 1953, Korea's industrial policy stance could be described as import substitution strategy in order to rehabilitate the economy and to produce needed consumption goods. But this import substitution policy had its limitations due to two major reasons. First, the domestic consumption market was too small to support sustainable growth of import substitution industries (demand side reason).

Second, because of the lack of required capital and other indispensible intermediate goods that were needed in the production process, foreign exchange earnings were desperately required (supply side reason).

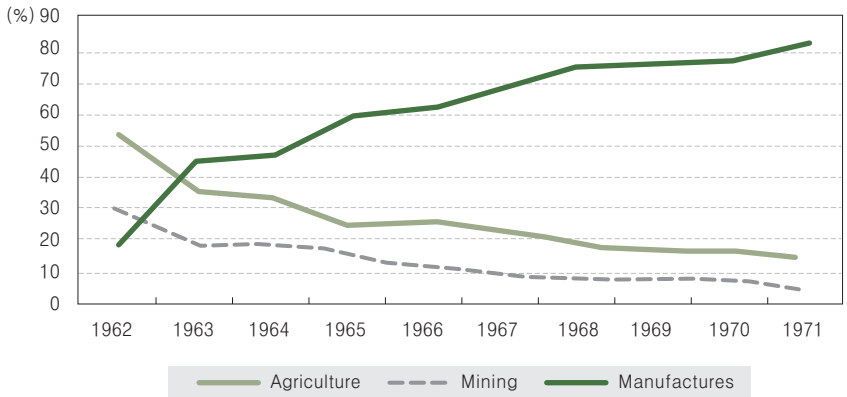
For these reasons, the Korean government shifted its import substitution strategy to an export promotion regime in 1960s, especially when the First Five Year Development Plan for 1962~1966 started in 1962. In this early stage of export promotion, Korea was relatively well endowed with labor due to the lack of natural resources, capital and relevant skills. Naturally, export promotion was mainly concentrated in light industries such as textiles and clothing where Korea had comparative advantage over others.

This export promotion strategy not only increased the volume of exports but also changed the structure of export goods. In Figure 4-11, we can see that the share of export of agricultural and mining products was over 80% out of total merchandise exports while that of manufacturing was no more than 20%. But ever since the export promotion strategy was implemented, the share of export by agriculture and mining had decreased monotonically and that of manufacturing had increased substantially: over 60% in 1966 and over 80% in 1971.

Then what kind of government policies were implemented for export promotion during this period? Government policies in the 1960s could be characterized by two distinguished features: strategic administrative and institutional support is the one and industry-neutral and incentive-based export promotion is the other.

14. The chronological review of this section on Korea's industrial policies for export promotion heavily draws upon Ahn and Kim (1997). See this reference for more detailed description on industrial policy measures during 1950~1995.
15. Smith (2003) recognized 21 major types of export promotion-oriented industrial policy interventions in Korea during its development process, which is in the box of the appendix to this chapter.

Figure 4-11 | Merchandise Export Share of Korea



Source: World Development Indicator (the World Bank)

Strategic Administrative and Institutional Support

The policy measures that were related with strategic administrative and institutional support are as follows. As mentioned before, the Korean government established The First and the Second Five Year Development Plan for 1962~1996 and 1967~1971. Successfully achieving the goals of the plans was, of course, the most important factor. However, drafting such plans provided other positive impacts. The drafting itself was a consensus building process among public officials from different ministries and firms from different business areas. Through intensive and extensive discussion process for drafting, major problems of the economy and national priorities and required policy measures were identified.

Having established outward-oriented Development Plans, the Korean government held the Monthly National Export Promotion Meeting in order to review the progresses of export and to prepare necessary policy measures. According to Rhee, Ross-Larson and Pursell (1984),

> *"Chaired by the President, the monthly trade promotion meetings are select gatherings of the ministers and top bureaucrats responsible for trade and the economy; the chief executives of export associations, research organizations, and educational institutions; and the heads of a few firms, mainly the general trading companies and other large firms. The prominence of those attending shows that the monthly meetings are far more than perfunctory meetings to improve coordination between the private and public sectors" (Smith 2003)*

Another important administrative support by the government worked through the channel of "Export Targeting System." The export target that was set by each exporting firm was used as a basis to obtain, for example, the long-term investment loans from the regulated financial sectors. Thus in order to maintain or expand their export business, firms had incentives to set higher targets. In sum, the strong leadership and its commitment by the government in order to promote export was a very important driving force to achieve the Plans' goals.

On top of these administrative support directly controlled by the government, other types of institutional support were also provided in this period. For example the Korea Export-Import Bank was established in 1969 in order to specialize and expedite the financial support for the exporting firms.

Another institutional support related with export promotion was the establishment of KOTRA (Korea Trade-Investment Promotion Agency) in 1962. This national trade promotion organization has provided various services to exporting firms, especially to the small and medium-sized enterprises with limited information about international market, by conducting overseas market surveys and business matchmaking.[16]

Industry-neutral and Incentive-based Export Promotion Scheme

Throughout the 1960s, a variety of measures to promote exports including incentives with taxation and financial support were implemented. But the important feature of these measures was that they were industry-neutral and incentive-based in a sense that beneficial treatments were provided for exporters no matter which industries they belonged to or no matter what the size of the firm was.

For example, exporting firms could have unrestricted and tariff-free access to the imported intermediate goods and raw materials needed in production. This means that the exporters could have no disadvantage, at least in terms of production costs related with input factors compared to other competitors in the world market.

Another example was the automatic access to the bank loans with preferential interest rates (8~13% for exporters vs. 16~17% for others) if they were used to invest in working capital for export production. This automatic and timely access to export loans were possible through the central bank's automatic rediscount of the export loans that commercial banks made to exporters (Ahn and Kim 1997).

16. The role of KOTRA and more general national export promotion agencies will be discussed in more detail in the next section.

Other types of incentive system included income tax reductions, reduced rates for transport for exporters and export credit guarantees, all based on exporting firms' export performances.

3.2. Industry-Specific Industrialization: 1970s

The period of 1970s could be characterized as a period with most extensive government intervention in Korea's economic development. Although the First and the Second Development Plans were successfully implemented in 1960s, the Korean economy had experienced chronic current account deficit and had been losing its competitive edge in labor-intensive light industries vis-á-vis Southeast Asian countries due to the wage increase which undermined the price competitiveness.

In order to overcome these problems, the government announced the Heavy and Chemical Industry (HCI) Development Plan for 1973~1981. In this HCI Development Plan, considering the possibilities of forward and backward linkages, contribution to economic growth and foreign exchange earnings, the following strategic industries were chosen: shipbuilding, automobiles, machinery, steel products, electronics, non-ferrous metals, petroleum and chemical industries.

Due to the characteristics of these HCIs which required large-scaled investment at the early stages of development, the government had to concentrate most of its financial support on these industries at the expense of others. That is, industry-neutral policies pursued in the 1960s were essentially replaced in favor of these selected industries.

In order to provide long-term subsidized loans for the capital formation of these HCIs, the government established the National Investment Fund through compulsory mobilization of private deposits from commercial banking institutions. Other financial support in order to promote these HCIs included central bank credit at preferential interest rates, foreign loans, tax incentives such as investment tax credits corporate tax deductions, accelerated depreciation allowances and tax holidays to name just a few.

In addition to the direct financial support by the government, industrial complexes were constructed to locate these targeted industries and selective protection measures for these then-infant industries were implemented by raising domestic and external entry barriers.

At least partly due to these HCI drive, the profile of Korea's export structure had dramatically shifted toward heavy and chemical industries during 1970s and 1980s away from the light industries such as textile and clothes. This could be seen from Table 4-3 which was directly taken from Kruger (1997). As described in the previous subsection, Korea started its export promotion with light industries due to abundant labor force and thus in 1970 the major

Table 4-3 | Structure of Korean Exports (1961~1990)

Export	%	Export	%
1961		1970	
1. Iron ore	13.0	1. Textiles, clothes	40.8
2. Tungsten	12.6	2. Plywood	11.0
3. Raw silk	6.7	3. Wig	10.8
4. Anthracite	5.8	4. Iron ore	5.9
5. Squid	5.5	5. Electronics	3.5
6. Other fish	4.5	6. Confectionary	2.3
7. Graphite	4.2	7. Footwear	2.1
8. Plywood	3.3	8. Tobacco/copper products	1.6
9. Grain	3.3	9. Steel products	1.5
10. Animal fur	3.0	10. Metal products	1.5
Total	62.0	Total	81.1
1975		1980	
1. Textiles, clothes	36.2	1. Textiles, clothes	28.8
2. Electronics	8.9	2. Electronics	11.4
3. Steel products	4.6	3. Steel products	9.0
4. Plywood	4.1	4. Footwear	5.2
5. Footwear	3.8	5. Ships	3.5
6. Deep-sea fish	3.6	6. Synthetic resin products	3.3
7. Ships	2.7	7. Metal products	2.3
8. Metal products	2.4	8. Plywood	2.0
9. Petroleum products	1.9	9. Deep-sea fish	2.0
10. Synthetic resin products	1.7	10. Electric machinery	1.9
Total	69.9	Total	69.3
1985		1990	
1. Textiles, clothes	23.4	1. Electronics	27.5
2. Ships	16.6	2. Textiles, clothes	22.6
3. Electronics	14.1	3. Footwear	6.6
4. Steel products	8.1	4. Steel products	6.5
5. Footwear	5.2	5. Ships	4.3
6. Petroleum products	3.0	6. Chemical products	3.6
7. Synthetic resin products	2.4	7. Automobiles	3.0
8. Electric machinery	2.0	8. General machinery	2.7
9. Automobiles	1.9	9. Fishing products	2.3
10. Metal products	1.7	10. Plastic products	2.0
Total	78.4	Total	81.1

Source: Kruger (1997)

export of Korea was textiles, clothes, plywood, wig and iron ore, etc.

Just a few years later after the HCI Development Plan was set up, for example in 1975, the six targeted industries of the Plan such as electronics, steel products, ships, metal products, petroleum products and synthetic resin products belonged to the top 10 export sectors of Korea.

Although the export share of textiles and clothes had taken the highest level throughout the 1970s and 1980s, its share substantially decreased. At the same time, the share of electronics export share had been increasing at remarkable pace, from 3.5% in 1970 to 11.4% in 1980 and up to 27.5% in 1990.

All these figures may give us the implication of the success of HCI drive implemented by the government. In fact, the HCI drive was successful, at least in the long run, in bringing about a structural improvement in the country's exports and manufacturing output as originally envisioned. But in general many researchers and commentators assess that HCI drive had severely distorted resource allocations at the expense of other non-HCIs during the 1970s. Due to the HCI's long gestation period, huge idle capacities and uncertain rate of returns, distortions caused by government policy became increasingly visible (Ahn and Kim 1997).

Moreover, because the government effectively took on the major risks of investment in the HCIs, excessive investments were made and these investments were largely funded by excessive foreign borrowing with government guarantee. In any case, the HCI drive was formally abandoned by the government in 1979 when the second oil crisis occurred due to their heavy reliance on energy input.

3.3. Voluntary Trade Liberalization for Industry Rationalization: 1980s

As explained in the last sub-section, HCI drive by the government had generated excessive and redundant investment in some of these sectors. As a consequence, some HCI firms faced severe financial turbulences and thus had to be reconstructed or rationalized. In addition, other industries with weak competitiveness needed to be reconstructed as well.[17]

17. In order to facilitate this industry rationalization, two laws were enacted: the Law for Regulation of Tax Reductions and Exemptions (LRTRE) and the Industrial Development Law (IDL). LRTRE in acted in 1981 was a legal base for government support for restructuring of financially insolvent firms. This law was revised in 1985 to make it possible for the government to increase its rationalization assistance required for restructuring. On the other hand, IDL was enacted in 1986 in order to replace industry-specific promotional laws and to prescribe a legal procedure for restructuring the declining or other faltering industries with weak competitiveness. See Kim 2004 for more details.

For this industry rationalization, the Fifth Five Year Socio-Economic Development Plan (1982~1986) was drafted with a different approach: the policy measures were shifted toward reliance upon the market system with less government intervention and with more private initiatives. Based on this principle, the new Plan contained the following: First, the industry specific support system was replaced by a more functional support emphasizing technological innovation through R&D and human capital investment. Second, internal and external competition was encouraged by establishing the Fair Trade Commission and by removing import restrictions. Third, the government provided only temporary support to those industries which were essential to the national economy but did not have an adequate supportive infrastructure.

Under these circumstances, the Korean government removed or reduced majority the of export promotion measures (such as preferential lending toward exporters) that had been implemented in the 1960s and the 1970s. On top of that, in order to enhance the international competitiveness of domestic industries, gradual but massive-scaled import liberalization had been made. For example, in the early 1980s, a five year Import Liberalization Schedule was announced which gradually reduced tariff rates as well as other nontariff barriers.[18] [19]

Despite this import liberalization, there was substantial improvement of the balance of payment position of Korea after the mid-1980s, thanks to the favorable external factors. By the Plaza Accord in 1985, the US dollar had been depreciated and the Japanese Yen appreciated. After this Accord, the crude oil price was adjusted downward by the OPEC.

With this favorable business and export conditions, many of the troubled HCI firms could increase exports of their products rapidly after the mid-1980s and HCIs became Korea's leading export sector. [20]

18. Following this schedule, the average tariff rate of 23.7% in 1983 was reduced to 18.1% in 1988. Furthermore the import liberalization ratio of manufactured goods, measured by the ratio of automatic approval items to total tradable items, rose from 37% in 1965 to 95.4% in 1988 and to 99% in 1994.
19. As described in the text, this effort of import liberalization was made in order to enhance the international competitiveness of domestic firms. However there existed another reason, which was to resolve bilateral trade frictions especially with the US. Throughout the 1970s, the US economy suffered a long stagflation and chronic trade deficits which made US demand reciprocal market opening.
20. With the improvement of balance of payment, the Korean government implemented the Article XI of the GATT in 1989, which accelerated the pace of liberalization further. Article XI is entitled "General Elimination of Quantitative Restrictions" which prohibits the use of quotas, import or export licenses, or similar measures related to import or export of goods.

3.4. Multilateral Trade Liberalization: 1990s[21]

Along with political and economic stability of Korea, the trade policy scheme in 1990s could be characterized by multilateral trade liberalization. In this period, the Korean government repealed section B of the Article XVIII and tariff rate had been decreased to 7.9% following the Second Import Liberalization Schedule.[22] With this trend of economic liberalization, Korea joined APEC (1989), WTO (1995) and OECD (1996).

By participating in these multilateral economic organizations, Korea became an active member of the globalized world economy. Especially with the birth of WTO, the Korean government abolished the direct subsidized support system for export activities and implemented the indirect functional support system with continuing effort for industrial restructuring process.

In this period, one of the important changes in policy stance was to emphasize technological development through R&D activities. One of the reasons was that through economic development the average wage rate in Korea had been increased substantially which implies that labor intensive and low value-added industries of Korea could not maintain its international competitiveness. Naturally the efforts by enterprises had been made in order to transform the Korean economy toward more capital and technology intensive industries by enhancing R&D activity. Thus the government's industrial policy also emphasized the creation of the necessary infrastructure for the knowledge-based economy and the promotion of the knowledge creation activities.

Table 4-4 | R&D Activities in Korea

	1996	1998	2000	2002	2004	2006
R&D Expenditure (% of GDP)	2.4	2.3	2.4	2.5	2.8	3.2
Researchers in R&D (per million people)	2,190	2,005	2,317	3,002	3,276	4,162

Source: World Development Indicator (the World Bank)

21. One may not be able to describe Korea's economic development in the 1990s without mentioning the financial turmoil that Korea experienced in 1997. However, it goes beyond the scope of this chapter to discuss the causes and the consequences of that financial crisis. Thus we do not review this in this section. However, since the Ukrainian economy is experiencing similar financial crisis since late 2008 and is still experiencing difficulties in resolving the crisis at this point of time, it will be meaningful to briefly describe what kind of reform measures were implemented by the Korean government at that time. This will be done in the next section.
22. Article XVIII (Government Assistance to Economic Development) of the GATT allows developing countries to use tariffs to reduce imports when their balance of payments problems result in a low foreign currency reserve.

These efforts are reflected in Table 4-4 which shows the R&D activities in Korea. The R&D expenditure as a percentage of GDP in 1996 was 2.4% and this has increased gradually but continuously up to 3.2% in 2006. The number of researchers in R&D activities had almost doubled within this ten-year period.[23]

In sum, in response to the inevitable trend of globalization during the 1990s, the direct industrial policies for export promotion had vanished in Korea and the indirect functional support to R&D had started to be implemented during this period.

3.5. Free Trade Agreement: 2000s

The policy stance toward export promotion with indirect functional approach that was formulated in the 1990s, has been continued to be implemented in the 2000s. The only change that has been newly made in the 2000s might be the active participation in free trade agreements. Before 2000, the Korean economy which heavily relied on exports was not favorable to free trade agreements due to its nature of discrimination. In fact, it was only in 2004 when the free trade agreement took in effect, for the first time with Chile.

This policy stance has changed dramatically in the 2000s in response to the rapid proliferation of regionalism throughout the world. While remaining as a strong supporter of the multilateral trading system sponsored by the WTO, the Korean government aims to pursue free trade agreements that are complementary to and go beyond WTO liberalization.

Table 4-5 | Korea's Current FTA Negotiations

FTA with Completed Negotiation (6 cases)	FTA in Negotiation (7 cases)	FTA in Preparation (7 cases)
Chile (2004. 4)	ASEAN (Investment)	China
Singapore (2006. 3)	Canada	Australia
EFTA (2006. 3)	India	New Zealand
ASEAN in Goods (2007. 6)	EU	MERCOSUR
ASEAN in Services (2007. 11)	Mexico	Peru
US (2007. 4)	Japan	Turkey
	GCC	Russia

Source: the Ministry of Foreign Affairs and Trade

23. The R&D figures are available only after 1996 in WDI. In Ahn and Kim (1997), the R&D expenditure as a share of GNP instead of GDP was measured as 0.77% in 1980, 1.77% in 1986 and 2.0% in 1991.

In this regard, the policy stance towards FTAs of the Korean government could be summarized as follows. First, the Korean government aims to pursue FTAs with large advanced economies or economic blocs and promising emerging markets. Second, Korea aims to pursue FTAs that are high-level in terms of degree of liberalization and comprehensive in terms of coverage and scope.

Third, the Korean government adopts a multi-track approach when negotiating FTAs, meaning that the negotiations can be carried out simultaneously with more than one country when necessary. Lastly, in order to achieve national consensus as part of the negotiation process, Korea aims to pursue a wide range of outreach efforts with the public and private sectors.

These efforts of the Korean government are shown in Table 4-5 which shows Korea's current FTA negotiations according to their stages: there are six cases of FTAs in effect (meaning negotiation are completed), seven cases in negotiation and seven cases in preparation. It is presumably too early to evaluate the success or the failure of Korea's FTA policies.[24] However it is expected that FTA's will expand Korea's 'internal market', increase competition which will enhance efficient resource allocation and level up institutional and legal framework.

4. Export Promotion under WTO

4.1 Lessons from the Korean Experience

As previously mentioned, there is no one-size-fits-all policy treatment for economic development and export promotion and not all policies that were implemented by the Korean government were successful. More importantly, the economic situation that Ukraine is and will be facing will be completely different from that of Korea. Nonetheless, the following lessons could be drawn from the Korean experiences for export promotion in the context of the current status of the Ukraine's economy.

First, the government's commitments on economic growth through export promotion would be of great importance. Without government's commitment, consistent and continuous implementation of economic reform and trade promotion policies, would be impossible. By the same token, a well-prepared long-term plan for export promotion is important as well. The

24. In fact, there exist many debates in academic circle on whether FTAs would be welfare-improving or not. See Krishna 2005 and the World Bank 2005 for more discussion.

Korean experience tells us not only that successful implementation of such plan is important but also that preparing for the plan provides additional benefit. It could help build up consensus among economic agents in identifying economic problems, national priorities and corresponding policy measures.

Second, excessive direct intervention by the government toward industry-specific industrialization or export promotion would be too risky. As mentioned in the previous section, the ambitious HCI drive of the Korean government in the 1970s resulted in increased reliance on policy instruments of selective interventions. This policy move turned out to produce many financially insolvent firms in addition to serious resource misallocations. Thus it would be better to have functional or industry-neutral policy measures in terms of efficiency.

However, this does not mean that identifying and supporting the industries that could play leading role as engines of future economic growth are not important. Given that government intervention is not too much excessive, identifying and supporting such industries would bring about fruitful result in the long term.[25] For example in Korea, the heavy and chemical industries were promoted in the 1970s when the Korean economy still had a comparative advantage in the light industries such as textiles and clothes. Other knowledge-based industries requiring various R&D activities were promoted and supported in the 1990s when the heavy and chemical industries became leading sector for economic growth and export expansion.

Therefore, the third lesson that we can take from the Korean experience is that it is important to be one step ahead of the current level of economic development and comparative advantage (Mah 2007).[26] Taking one step ahead of the current economic situation is, of course, not an easy task. More than anything else, this requires advanced investment in necessary infrastructure, R&D and human capital. However, it is the only way to generate dynamics rather than static comparative advantage in the long run.

Last, but not least, it is important for the Ukrainian government to turn the current financial crisis into an opportunity to enhance economic efficiency. From the Korean experiences, we can learn that the outbreak of the economic crisis will spread out the actual facts and problems with the economy over the economic agents. Thus more substantial structural reforms could be

25. This was also pointed out by Hausman and Klinger (2006) who argued that as long as the long-run economic growth is concerned, growth is not driven by traditional comparative advantage but by a country's diversification of their investments into new activities.
26. This point could be also found in the case of the development process of China. There are many recent studies which document that the composition of China's exports is much more sophisticated than can be expected by her level of development, or that it is rapidly changing from labor intensive low-tech products to capital or skill intensive high-tech products. See Lall and Albaladejo (2004), Rodrik (2006) and Schott (2006) among others.

implemented successfully during the crisis period since those policies could be more politically supported than during the peaceful period.

4.2 General Export Promotion Policy Scheme

Having discussed the policy lessons from the Korean experiences, what kind of export promotion policies will be available and desirable for Ukraine? Table 4-4 shows the general export promotion policy scheme. Basically there could be three types of export promotion policies. The first one is the direct intervention on export activities. This includes export subsidies, preferential tax schemes or financial support for exporters, which are the policies that were used in 1960s and 1970s in Korea.

However, this direct intervention is no longer available or desirable in the case of Ukraine with WTO membership. Rather, export promotion policies should be implemented focusing on pursing institutional development for export promotion and enhancing international trade relation.[27]

At the industry level, institutional development includes the policies related with industry-specific R&D, human capital investment and export finance including export insurance policies. Policies such as establishing free trade zone and industrial complex could be considered at the regional level. At the national level, appropriate legal enforcement would be important to level the playing field for enterprises including foreign investors. Implementing sufficient investment in SOCs and infrastructure and setting up national agency to assist exporters by providing various services should be considered by the central government as well.

In order to enhance export performance, it is also important to manage the international trade relations with existing and potential trading partner countries. Together with multilateral trade relation following WTO rules, bilateral and regional trade relations could promote export.

With the increase of trade volume, it is also important to appropriately deal with international trade disputes with its trading partners.

27. Direct interventions are prohibited by WTO's agreement on "Subsidies and Countervailing Measures (SCM)", according which these are categorized as prohibited subsidies. But with this SCM, the R&D support could be categorized as actionable subsidies in which the complaining country has the burden to show that the subsidy has an adverse effect on its interests. See Box A2 for more details on SCM.

Table 4-6 | Export Promotion Policy Scheme

Export Promotion Policies		
Direct Intervention on Export Flows	**Institutional Development for Export Promotion**	**International Trade Relation**
• Direct Export Promotion Policies (e.g., export subsidy, preferential tax scheme or financial support for exporters)	• Industry level (e.g., industry-specific R&D and human capital policies, export insurance) • Regional level (e.g., Free Trade Zone, Industry Complex) • National level (e.g., legal enforcement, investment on SOC, national agency to assist exporters)	• Bilateral and regional FTA policies • Multilateral trade agreement (WTO) policies • Policies to deal with international trade disputes

4.3 Policy Recommendations for Ukraine's Export Promotion

Based on the policy lessons from the Korean experiences and the general export promotion policy schemes in the previous sub-sections, we will provide some policy recommendations for the export promotion of Ukraine. In doing so, they will be divided into short-term policy agenda that should be implemented within 2~3 years and other medium or long-term policy agenda which need some more time to be implemented.

(1) Short Term Policy Agendas

Making full efforts to successfully recover from the current financial crisis

As is well-known, due to the international liquidity crisis since mid-2008, Ukraine is experiencing severe financial crisis,[28] for which Ukraine is to be injected the secured loans from the IMF (16.5 billion US dollars) and the World Bank (0.5 billion US dollars). Needless to say in this current situation, successfully recovering from the current financial crisis including full implementation of IMF program is the most important task for the Ukrainian government since

28. The consequence of the financial crisis was substantial. The Hryvna depreciated by around 60% with respect to US dollars in 2008. The stock index declined by more than 74% in 2008 which is one of the largest declines in the world. Furthermore Ukraine's industrial production declined by 25% year-over-year basis in the last quarter of 2008.

only in that case will foreign creditors recover their confidence in the Ukrainian economy. Moreover, it should be noted that the stable and liquid financial market is not only important for macroeconomic stability but also for export financing.

Establishing and implementing substantial structural reform throughout the economy

On top of the current IMF program for macroeconomic stabilization, extensive and substantial structural reform throughout the economy is required. As previously explained, after the outbreak of financial crisis in 1997, the Korean government proposed an extensive reform package in four major areas: corporate sector, financial sector, labor market and social safety net and public sector.

In the corporate sector, reforms in order to enhance transparency, fairness and flexibility of the domestic firms were implemented. Examples are revising generally accepted accounting practices (GAAP) in line with international standards, enhancing rights of minority shareholders and institutional investors and promoting M&A transactions by foreigners. In the financial sector, institutional reform were made in which the independence of the central bank was enhanced and the Financial Supervisory Commission was established.

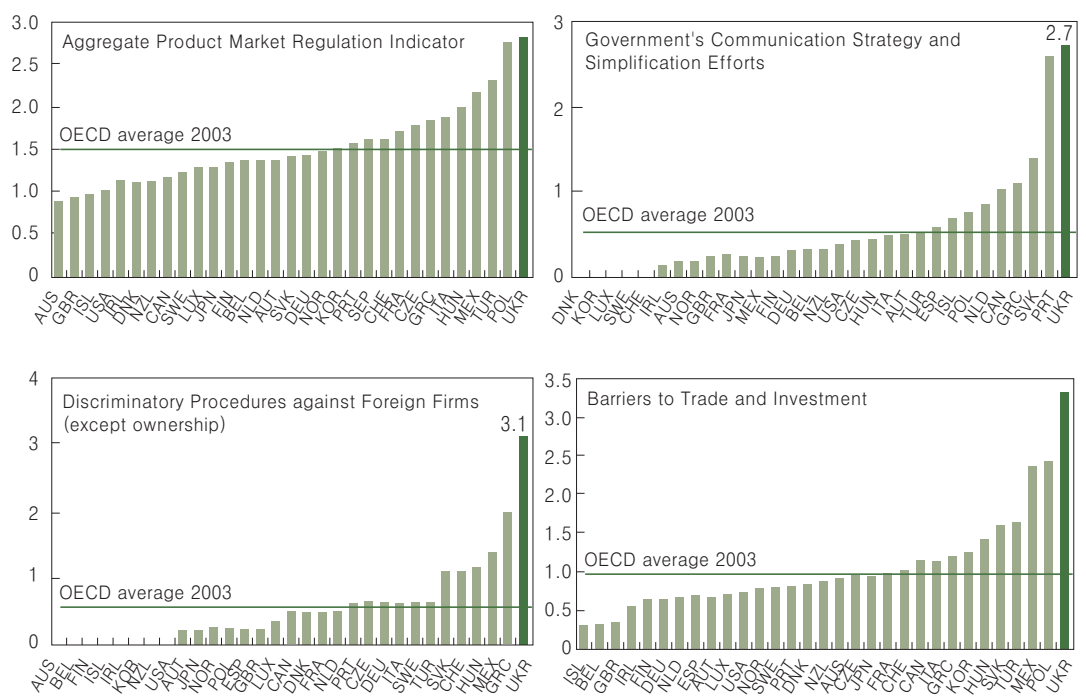
Table 4-7 | Korea's Reform Package in Four Major Areas after 1997 Financial Crisis

Major Areas	Reform Package
Corporate Sector	• Transparency: Combined Financial Statements required for business groups / Revised Generally Accepted Accounting Practices (GAAP) in line with international standards / Introduced independent audit committee and outside directors • Fairness: Enhanced rights of minority shareholders and institutional investors • Flexibility: Promoted M&A transaction by foreigners / Amended bankruptcy-related laws
Financial Sector	• Institutional Reform: Promoted the independence of the central bank and established Financial Supervisory Commission • Restructuring financial system: 5 commercial banks closed, 5 banks merged into 2 / Injected capital through public funds and foreign investors / Non-performing loans cleaned up by KAMCO (Korea Asset Management Corporation)
Labor Market and Social Safety Net	• Labor market flexibility: Flexible procedure for the redundancy layoffs / Organized Tripartite Committee among government, business and labor organizations • Social safety net: introduced incentives for job sharing, rehiring laid-off workers / subsidies for retraining and arrangement for job search / enhanced unemployment benefits
Public Sector	• Government competitiveness: Open high-level public position toward private experts / Performance-based payment system / Reduced the number of civil servants / Reduced irrelevant government regulation • Public enterprise: Privatized inefficient public enterprises

In order to reduce the rigidity of the labor market, flexible procedure for the redundancy layoffs was enacted. At the same time, by subsidizing retraining of unemployed workers and rearrangement for job search and introducing incentives for job sharing, the social safety net was strengthened. In the public sector, in order to enhance government competitiveness, the performance-based payment system was introduced and the number of civil servants and irrelevant government regulation was reduced. Additionally inefficient public enterprises were privatized.

At a glance, these reform measures may not be directly related with 'export promotion'. However it has to be emphasized that the best way to promote export is to enhance the efficiency and the productivity of enterprises which cannot be achieved without enhancing the economy-wide efficiency. In other words, export performance is all about international competitiveness which goes hand in hand with the efficiency of the whole economy. In this sense, establishing and implementing extensive structural reform plan over the whole economy would be helpful in promoting export in the long run. Furthermore as mentioned earlier, this has to be done as early as possible during this crisis period.

Figure 4-12 | OECD's Assessment on Ukraine's Regulatory Structure



Source: OECD Economic Survey on Ukraine (2007)

According to the OECD's assessment on the Ukrainian economy (OECD 2007), the most urgent area that needs substantial reform plan seems to be the regulatory structure. Figure 4-12 shows the evidences directly taken form OECD (2007). The indicators that are shown in the figure are all related with the business environment for domestic and foreign firms regarding the regulatory structure: aggregate product market regulation indicator, indicator of government's communication strategy and simplification efforts, indictor of discriminatory procedures against foreign firms and barriers to trade and investment.

In all these indicators, Ukraine seems to be far behind of OECD countries. Most notably, the regulatory barriers to trade and investment are exceptionally high. Apparently, without lowering these barriers through structural reform, export promotion will not be possible in Ukraine no matter what kind of policies are implemented.

Establishing national agencies who can assist exporters in various ways

Given the fact that virtually all direct interventions on export promotion by the government are prohibited, the most effective way to promote export activity is through providing intangible and non-financial services to the exporters through national export assistance agencies. Similarly for the case of Korea, these types of export promotion have been actively pursued and Table 4-5 shows some of the export assistance agencies' roles in export promotion.

Perhaps KOTRA (Korea Trade-Investment Promotion Agency) is the most famous export promotion agency domestically and internationally with four regional headquarters worldwide and 95 Korea business centers in seventy countries. The major role of KOTRA is overseas marketing for SMEs including international expo participation, information sharing on economic and political situations and consumers' preferences and major competitors in the export market and training exporting firms to accumulate trade-related human capital, to name a few.[29]

According to the empirical study by Keesing and Singer (1991), however, the export promotion agencies in developing countries had not been effective because they lacked strong

29. One thing to note is that KOTRA is kind of a public enterprise in a sense that their main revenue comes in the form of government subsidy: for example in 2008, 76% of their total revenue was funded by the government. In Ukraine, similar types of services are provided by the Ukrainian Chamber of Commerce and Industry (UCCI). However UCCI is a non-governmental, non-profit, self-governing organization incorporating on a voluntary basis legal entities. In Korea the same kind of organization exists: the Korea Chamber of Commerce (KCC) which is also operating by the fund from the members. However considering that the services provided by these organizations are public goods in nature, those services could be under-produced due to market failure. In this regard, the government's subsidy to this type of public service agents could be justified and more effective in an economic sense. This point was also empirically supported by Lederman, Olarrega and Payton (2007). See the main text above.

leadership, had inadequate fundings, were too bureaucratic and not client oriented, with heavy government involvement. With more recent data set Lederman, Olarrega and Payton (2007) directly studied the impact of export promotion agencies on national export and found statistically significant relationships.[30] In this empirical work they also argued the following.

First, export promotion agencies should have a large share of the executive board in the hands of the private sector, but they should also have a large share of public sector funding. This implies that full privatization of export promotion agencies do not seem to work. Second, a single and strong agency should be preferred. Third, export promotion agency should focus on non-traditional exports or have some broad sector-specific orientation, rather than attempt to promote overall exports. Fourth, they should focus on large firms that are not yet exporters, rather than on small firms and established exporters. Lastly, agency offices abroad have a positive effect on exports in the full sample but a negative impact in the sub-sample of developing countries, suggesting that agencies in developing countries are better off focusing on on-shore activities and have probably something to learn from the experience of developed countries' agencies with offices abroad. (Lederman, Olarrega and Payton (2007), page 24). These empirical findings would be helpful in designing effective export promotion agencies in Ukraine.

Another export assistance agency in Korea is Korea Export Insurance Corporation (KEIC) established in 1992, whose main roles are to exclusively provide insurance on various risks related with export activities. This type of export promotion is also WTO-consistent because WTO does not prohibit export insurances complying with the OECD Arrangement on Export Credits. Thus, this is expected to continue to be an important export promotion measure in Korea (Mah 2007).

Of course this type of institutional development of establishing national export promotion agency could not be completed in a short-term period in Ukraine. However, the preparation for establishing those agencies should be started as soon as possible by studying existing agencies in other countries including Korea and gathering the needs from the incumbent and the potential exporters in Ukraine.

30. They estimated that for every 1 US dollar in the export promotion agency's budget, there is an additional 100 dollars of exports in East Europe and Asia, 70 dollars in Latin American countries, 38 dollars in Sub-Saharan Africa and 5 dollars in OECD.

Table 4-8 | Korea's Export Assistance Agencies

Export Assistance Agencies	Functions
KOTRA (Korea Trade-Investment Promotion Agency)	• Overseas marketing for SMEs including support for international expo participation • Information sharing on economic and political situations and consumers' preferences and major competitors in export markets • Advertising and providing domestic information to foreign investors to enhance inward FDI through 'Invest KOREA' • Training programs for exporting firms to accumulate trade-related human capital
KITA (Korea International Trade Association)	• Overseas marketing for SMEs • Training programs for trade exports in the World Trade Academy • Building cyber trade infrastructure • Hosting international special expo • Dispatching legal experts to prevent potential trade dispute
KEIC (Korea Export Insurance Corporation)	• Provide insurance on: ① Price change risk of raw materials for exports ② Export dispute risk in export market ③ Foreign exchange risk ④ Overseas natural resource development risk

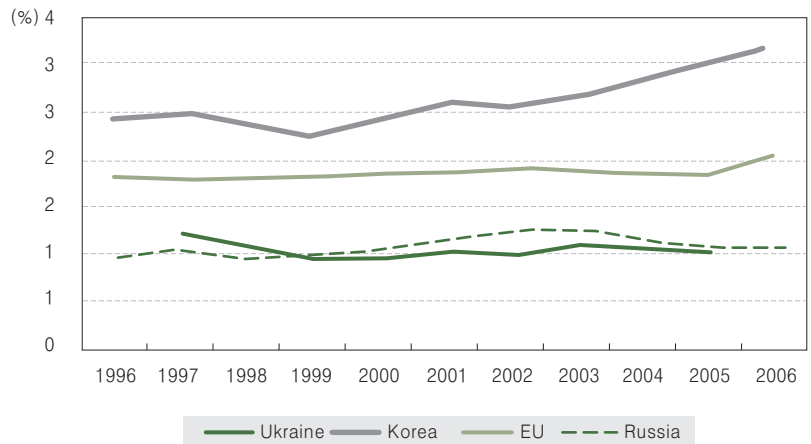
(2) Medium or Long-Term Policy Agendas

Establishing efficient system to support R&D activities

As emphasized several times in the previous sections, R&D activity is a precondition for competing in international markets and adapting to changes in demand and product development. Moreover, R&D policy could be designed with conformity with WTO rules and agreements.[31] If we look at the R&D activity in Ukraine compared to other countries, we can see that the increase of R&D expenditure would be necessary. The R&D-GDP ratio of Ukraine is stagnant throughout the period around only 1% level: in 1997 it was 1.2% and in 2005 it reduced to 1.0%.

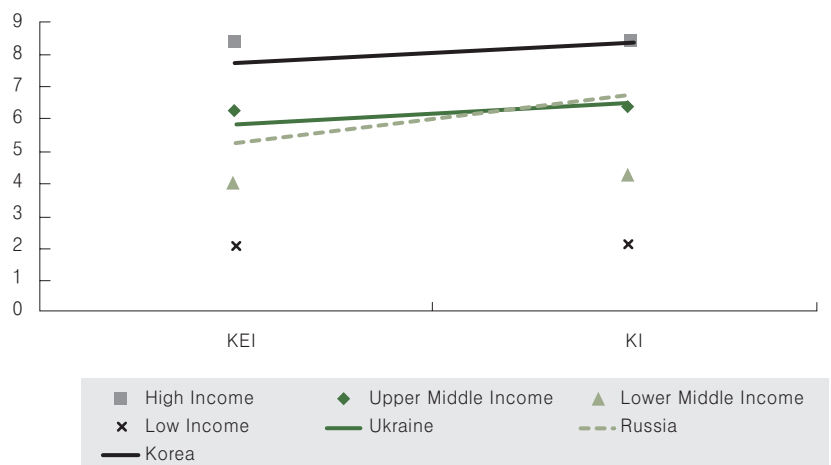
31. Note that before 2000, R&D subsidy was considered as non-actionable subsidy which means it was in principle permitted under WTO rules. But after 2000, non-actionable subsidies were not extended. Thus whether a particular R&D subsidy belongs to prohibited subsidies or to actionable subsidies (see Box A2 for more detail) will depend on the design and characteristics of that subsidy. Although in most cases WTO has not raised issues related with R&D subsidy, it would be important to appropriately design R&D subsidy by investigating other member country's policy in order to prevent future potential trade conflict.

Figure 4-13 | R&D / GDP Ratio



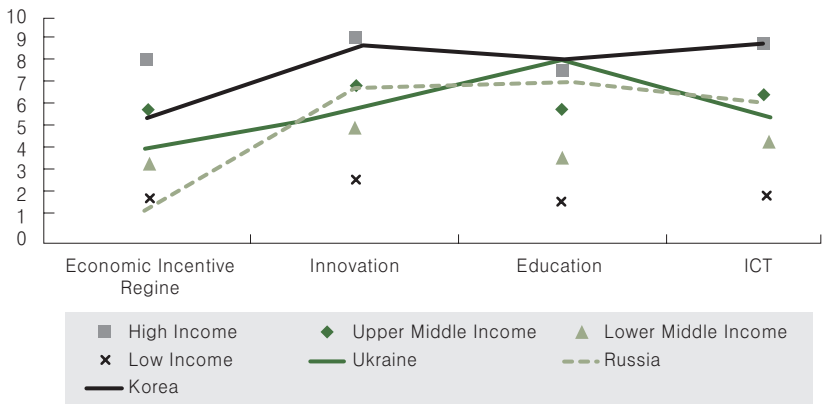
Source: World Development Indicator (the World Bank)

Figure 4-14 | Knowledge Economy Index and Knowledge Index



Expanding R&D expenditure is one thing and how to allocate R&D expenditure is another. Due to the constraint of R&D expenditure, it would be more effective if one can identify and intensively support industries which could create dynamic comparative advantage in the medium-term.[32]

Figure 4-15 | Component Indices of KEI



In this regard, Ukraine seems to be relatively well-positioned to develop IT industries in the near future. Figure 4-14 shows the Knowledge Economy Index (KEI) and Knowledge Index (KI) developed by the World Bank for Ukraine, Russia, Korea and other groups of countries.[33] Although with KEI Ukraine's performance is between upper middle income countries and lower middle income countries, with KI Ukraine is in a similar position as the upper middle income countries.

If we decompose the KEI into four different categories as in Figure 4-15, we can see that the level of education is even better than the average of the high income countries. Again, the most problematic category is the economic regulatory system with appropriate incentive scheme. This shows us that as far as the level of human capital is concerned, Ukraine is not in a bad position compared to other countries and this fact must be utilized in a way or the other to attract inward FDI in Ukraine, with substantial reforms in economic incentive system.

32. For example in Korea the following ten industries were identified as engines of growth for the next generation: digital TV broadcasting technology industry, next generation display industry, intellectual robot industry, next generation automobile industry, next generation semi-conductor industry, next generation mobile telecommunication industry, intellectual home networking industry, digital contents and software industry, next generation power storage industry, bio-medical industry. The Korean government will allocate over 10% of total public R&D expenditure on these industries.
33. The Knowledge Economy Index is the weighted average of four indices in Figure 4-15: economic incentive regime, innovation, education and information and communication technology while the Knowledge Index consists of only three latter indices without economic incentive regime.

Enhancing the efficiency of international trade relation

On top of the WTO accession, it is known that Ukraine has already made free trade agreements with 15 countries (mostly CIS countries) and is on the way of FTA negotiation with the EU. The FTA with EU is a positive step since it is likely to be a 'trade-creating' FTA. In this regard, more efforts should be made to promptly enter FTA with the EU.

Another action that the government can take is to establish trade-related ministries in the government which specializes in external trade relations. In the case of Korea, there are two ministers in Ministry of Foreign Affairs and Trade, one in charge mainly of political affairs and the other (Minister for Trade) in international trade relations (established in 1998). Since international trade negotiation needs many experts specializing in international economics and politics, it would be desirable to establish a trade-related ministry. In addition, an organization for trade-related dispute resolution should be set up since this process also needs advanced knowledge on legal and economic issues.[34]

5. Summary and Conclusion

Enhancing export performance will be essential for the Ukrainian economy, not only to recover from the recent economic crisis but also to achieve sustainable long-run growth. While Ukraine's entry into WTO (on May 2008) is expected to provide a stable and predictable trade environment for Ukraine, it is also true that the domestic policy space for export promotion available to Ukraine has been substantially narrowed down with WTO membership.

In this chapter we analyzed some of the characteristics and the problems of Ukraine's export structure. They are the high degrees of concentration in terms of export products and export markets, few leading export products in the world export markets and low levels of technology embodied in the export products.

After these analyses, we briefly reviewed the Korean experience on export promotion from which some of the policy lessons were driven. First, government's strong commitment about economic growth through export promotion and appropriate development plan would be important. Second, functional approach rather than excessive direct intervention should be taken in order to enhance the effectiveness of export promotion policies. Third, armed with long term

34. In Korea, these types of tasks are dealt by the Korea Trade Commission which was established in 1987.

view, it would be desirable to take one step ahead of the current level of economic development and comparative advantage. Lastly, the crisis period should be utilized as a period for extensive and intensive structural reform for economic efficiency in the long run.

Given these circumstances, we suggest the following policy agendas.

First, the Ukrainian government should make full effort to successfully recover from the current financial crisis in the first place because the stable and liquid financial market is a prerequisite not only for macroeconomic stability but also for export financing. Thus all of the policy measures agreed upon by the IMF rescue program should be promptly implemented without delay including flexible exchange rate.

Second, it will be essential to establish substantial structural reform throughout the economy. The Korean experience tells us that the economic crisis could be turned into an opportunity, if appropriate structural reforms were implemented. Just after the 1997 financial crisis, the Korean government implemented extensive structural reform package in four major areas (corporate sector, financial sector, labor market and social security net, and public sector). In doing so, the "Big bang" approach rather than piecemeal reform approach should be taken.

Third, national agencies that can assist exporters should be established in the most efficient way. Entering export market involves various risks for the exporting firms. In order to promote export activity, it would be essential to reduce such risks. The WTO-consistent way to do this is to establish national agencies such as KOTRA and KEIC. These agencies provide either extensive information on economic and political environments in the potential exports market or financial insurance on trade-related risks.

Fourth, efficient system to support R&D activities should be devised and implemented. It is now well known that R&D activity is a precondition for competing in the international markets and adapting to changes in demand and product development. Moreover, supporting R&D activities may be the only and the most important domestic policy that could be implemented by the government. In supporting R&D activities, it is also important to identify industries which can create dynamic comparative advantage in the future. In this regard, Ukraine seems to be relatively well positioned to develop the IT industry in the near future due to its high level of human capital (measured by education).

Fifth, on top of WTO accession, FTA formation may enhance trade performance of Ukraine. However the important fact is that Ukraine should choose FTA partners with which trade could be 'created' rather than 'diverted'. In this regard, it would be most beneficial that Ukraine promptly enters into FTA with the EU.

The lessons from Korea's export promotion and several policy agendas suggested in this chapter are neither exhaustive nor complete. But it is hoped that the Korean experience and the analyses discussed in this chapter could be helpful in designing the export promotion policies for Ukraine.

Appendix 1

Table A4-1 | Structural Export Perspectives of Ukraine

HS code - Industry	Export value in 2006 (thousand U$)	Growth of exports in value during 2001~2006 (%, p.a.)	Growth of world exports in value during 2001~2006 (%, p.a.)	Share of world export in 2006 (%)
86-Railway	1,066,959	7.5	20.8	4.12
72-Iron and steel	13,051,226	25.0	27.1	3.98
31-Fertilizers	998,652	25.6	17.9	3.47
10-Cereals	1,354,247		7.9	2.74
15-Animal,vegetable fats and oils	971,401	29.8	15.4	2.19
25-Salt, sulphur, earth, stone	405,915	26.6	13.9	1.38
28-Inorganic chemicals	1,086,643	25.0	18.7	1.33
73-Articles of iron or steel	2,361,608	43.3	21.0	1.14
26-Ores, slag and ash	912,326	20.0	40.5	0.95
22-Beverages	417,174	48.4	13.4	0.61
44-Wood	602,850	20.1	12.6	0.55
48-Paper and paperboard	515,987	19.3	9.1	0.35
62-Articles of apparel, not knit or crochet	553,595	7.1	10.0	0.35
76-Aluminium	405,389	6.1	19.8	0.29
29-Organic chemicals	629,510	26.9	16.3	0.21
39-Plastics	564,661	37.4	17.5	0.15
27-Mineral fuels, oils	2,553,533	11.6	30.1	0.15
84-Machinery	2,051,504	12.5	14.3	0.13
85-Electrical, electronic equipment	1,278,980	28.0	16.1	0.08
87-Vehicles	587,196	35.7	12.8	0.06

Source: International Trade Center

Table A4-2 | Structural Export Perspectives of Korea

HS code - Industry	Export value in 2006 (thousand U$)	Growth of exports in value during 2001~2006 (%, p.a.)	Growth of world exports in value during 2001~2006 (%, p.a.)	Share of world export in 2006 (%)
89-Ships and boats	21,492,885	19.1	16.4	23.76
60-Knitted or crocheted fabric	2,899,078	1.8	7.7	13.44
54-Manmade filaments	2,731,473	-	6.2	7.23
59-Impregnated, coated or laminated textile fabric	1,186,791	-	6.9	6.94
85-Electrical, electronic equipment	85,576,801	18.1	16.1	5.26
90-Optical and medical apparatus	18,535,495	80.1	17.4	4.99
55-Manmade staple fibres	1,348,434	2.4	6.4	4.69
87-Vehicles	42,605,290	25.3	12.8	4.29
29-Organic chemicals	12,730,401	29.1	16.3	4.28
72-Iron and steel	13,985,417	28.9	27.1	4.26
39-Plastics	15,391,310	20.4	17.5	4.01
40-Rubber	3,965,503	17.2	18.4	3.37
74-Copper	4,016,601	42.2	39.6	2.98
73-Articles of iron or steel	5,875,965	24.6	21.0	2.83
84-Machinery	42,313,369	11.1	14.3	2.70
48-Paper and paperboard	2,253,990	7.4	9.1	1.53
76-Aluminium	1,991,692	21.2	19.8	1.45
38-Other chemicals	1,528,363	21.5	15.0	1.43
27-Mineral fuels, oils	20,920,395	33.7	30.1	1.19
71-Pearls, precious stones, metals, coins, etc	1,919,408	3.0	18.2	0.81

Source: International Trade Center

Box A1. Major Types of Export Promotion Policies in Korea during its Economic Development (Source: Smith 2003)

1. Currency undervaluation: The effective exchange rate (EER) for exporters was kept higher than that for importers. As early as 1964, South Korea's EER for exports was 281 and its EER for imports was 247-not trade neutrality but a pro-export bias.

2. referential access to imported intermediate inputs needed for producing exports, with strict controls to prevent abuse. Since 1975, rebates are only received after documenting the completion of the exports.

3. Targeted infant industry protection as a first stage before launching an export drive. South Korea has had high dispersion of effective rates of protection even with a relatively low average.

4. Tariff exemptions on inputs of capital goods needed in exporting activities. (This is a price incentive, while preferential access (#2) is based on quantity restriction.)

5. Tax breaks for domestic suppliers of inputs to exporting firms, which constitutes a domestic content incentive.

6. Domestic indirect tax exemptions for successful exporters.

7. Lower direct tax on income earned from exports.

8. Accelerated depreciation for exporters.

9. Import entitlement certificates (exemptions from import restrictions) linked directly to export levels. Korea has long maintained an extensive list of items generally prohibited for import, including both luxury goods and import substitution targets. Profitable exemptions from this prohibition have often been available for firms exporting specified goods having low profit margins.

10. Direct export subsidies for selected industries.

11. Monopoly rights granted to the firm first to achieve exports in targeted industries.

12. Subsidized interest rates for exporters.

13. Preferential credit access for exporters in selected industries, including automatic access to bank

loans for the working capital needed for all export activities. Medium- and long-term loans for investment are rationed and often available only to firms meeting government export targets and pursuing other requested activities.

14. Reduced public utility taxes and rail rates for exporters.

15. A system of export credit insurance and guarantees, as well as tax incentives for overseas marketing and post-shipment export loans by the Korean Export-Import Bank.

16. The creation of free trade zones, industrial parks, and export-oriented infrastructure.

17. The creation of public enterprises to lead the way in establishing a new industry. As Alice Amsden documents, public enterprises produced the first Korean output of ships and refined petroleum products and petrochemicals. Howard Pack and Larry Westphal found that "the share of public enterprises in Korea's nonagricultural output is comparatively high, being similar to India's."

18. Activities of the Korean Traders Association and the Korea Trade Promotion Corporation to promote Korean exports on behalf of Korean firms worldwide.

19. General orchestration of sector-wide efforts to upgrade the average technological level, through use of a new generation of machinery.

20. Government coordination of foreign technology licensing agreements, using national bargaining power to secure the best possible terms for the private sector in utilizing proprietary foreign technology.

21. The setting of export targets for firms (since the early 1960s.) Firms set their own targets, which may be adjusted by the government.

Box A2. Subsidies and Countervailing Measures(Source: WTO)

This is one of the WTO agreements that does two things: it disciplines the use of subsidies and regulates the actions countries can take to counter the effects of subsidies. It says a country can use the WTO's dispute settlement procedure to seek the withdrawal of the subsidy or the removal of its adverse effects. Or the country can launch its own investigation and ultimately charge extra duty on subsidized imports that are found to be hurting domestic producers.

The agreement defines two categories of subsidies: prohibited and actionable.

It originally contained a third category: non-actionable subsidies. This category existed for five years, ending on 31 December 1999, and was not extended. The agreement applies to agricultural goods as well as industrial products, except when the subsidies are exempt under the Agriculture Agreement's "peace clause", due to expire at the end of 2003

- **Prohibited subsidies**: subsidies that require recipients to meet certain export targets, or to use domestic goods instead of imported goods. They are prohibited because they are specifically designed to distort international trade, and are therefore likely to hurt other countries' trade. They can be challenged in the WTO dispute settlement procedure where they are handled under an accelerated timetable. If the dispute settlement procedure confirms that the subsidy is prohibited, it must be withdrawn immediately. Otherwise, the complaining country can take counter measures. If domestic producers are hurt by imports of subsidized products, countervailing duty can be imposed.

- **Actionable subsidies**: in this category the complaining country has to show that the subsidy has an adverse effect on its interests. Otherwise the subsidy is permitted. The agreement defines three types of damage they can cause. One country's subsidies can hurt a domestic industry in an importing country. They can hurt rival exporters from another country when the two compete in third markets. And domestic subsidies in one country can hurt exporters trying to compete in the subsidizing country's domestic market. If the Dispute Settlement Body rules that the subsidy does have an adverse effect, the subsidy must be withdrawn or its adverse effect must be removed. Again, if domestic producers are hurt by imports of subsidized products, countervailing duty can be imposed.

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