

2015/16 Knowledge Sharing Program with Cambodia:

Knowledge Sharing on Cambodia's Social Overhead, Human Capital, and Housing Development: Korea's Experience and Policy Recommendation



2015/16 Knowledge Sharing Program with Cambodia

2015/16 Knowledge Sharing Program with Cambodia

Project Title	Knowledge Sharing on Cambodia's Social Overhead, Human Capital, and Housing Development: Korea's Experience and Policy Recommendation
Prepared by	Korea Development Institute (KDI)
Supported by	Ministry of Strategy and Finance (MOSF), Republic of Korea
Prepared for	Royal Government of Cambodia (RGC)
In Cooperation with	Ministry of Economy and Finance (MEF)
Program Directors	Siwook Lee, Executive Director, Center for International Development (CID), KDI Ildong Koh, Senior Research Fellow, CID, KDI
Program Officers	Min Je Joo, Research Associate, Division of Policy Consultation & Evaluation, CID, KDI Eunsong Kim, Research Associate, Division of Policy Consultation & Evaluation, CID, KDI
Senior Advisor	Kyung-Wook Hur, Former Ambassador of Organization for Economic Cooperation and Development (OECD)
Project Manager	Euiyoung Shon, Professor, University of Seoul
Authors	Chapter 1. Euiyoung Shon, Professor, University of Seoul Chapter 2. Jae-young Son, Professor, Konkuk University Sophak Chea, National Economist, Ministry of Economy and Finance Phal Dana, Officer, Ministry of Land Management Urban Planning and Construction Chapter 3. Se-Yeoung Chun, Professor, Chungnam National University Chapter 4. Jai-Joon Hur, Research Fellow, Korea Labor Institute

Government Publications Registration Number 11-1051000-000688-01

ISBN 979-11-5932-120-7 94320

979-11-5932-117-7 (set)

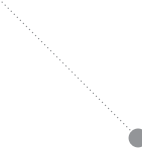
Copyright © 2016 by Ministry of Strategy and Finance, Republic of Korea



2015/16 Knowledge Sharing Program with Cambodia:

Knowledge Sharing on Cambodia's Social
Overhead, Human Capital, and Housing
Development: Korea's Experience and
Policy Recommendation





Preface

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

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

In 2015, policy consultation and capacity building workshop were carried out with 26 partner countries covering over 100 research agendas. As a new partner, Nicaragua and Viesegrad Group were selected in consideration of the country's policy demand, growth potential, and strategic economic partnership.

The 2015/16 Knowledge Sharing Program with Cambodia was carried out with the aim of exchanging socio-economic development experience of two countries for improving Vietnam's policy making capacity and achieving her socio-economic development. Under the MOU signed between the Ministry of Strategy and Finance of Korea and the Ministry of Economy and Finance the joint research and seminars were conducted in order to support the establishment of "Knowledge Sharing on Cambodia's Social Overhead, Human Capital, and Housing Development: Korea's Experience and Policy Recommendation."

I would like to take this opportunity to express my sincere gratitude to Senior Advisor H.E. Dr. Kyung-Wook Hur, Project Manager Prof. Euiyoung Shon, as well as the project consultants including Pro. Jae-Young Son, Pro. Se-Yeoung Chun, and Dr. Jai-Joon Hur for their immense efforts in successfully completing the 2015/16 KSP with Cambodia. I am also grateful to Executive Director Dr. Siwook Lee,

Program Director Dr. Ildong Koh, and Program Officers Ms. Min Je Joo and Ms. Eunsong Kim, and all members of the Center for International Development, KDI for their hard work and dedication to this program. Lastly, I extend my warmest thanks to the Cambodian counterparts, the Vietnam Institute for Development Strategies and Ministry of Science and Technology and other related agencies, program coordinators, and participants for showing active cooperation and great support.

In your hands is the publication of the results of the 2015/16 KSP with Cambodia. I believe that KSP will serve as a valuable opportunity to further elevate mutual economic cooperation of Vietnam and Korea to a new level. I sincerely hope the final research results on the selected areas could be fully utilized to support Cambodia and achieving economic development goals in the near future.

Joon-Kyung Kim
President
Korea Development Institute



CContents

2015/16 KSP with Cambodia	016
Executive Summary	019

Chapter 1

Infrastructure Financing Improvement in Cambodia

Summary	030
1. Introduction	032
1.1. KSP Program in Cambodia	032
1.2. Surveys and Workshop	033
1.3. Purpose of the Work	033
2. Infrastructure Financing in Cambodia	034
2.1. Current Situation of Infrastructure	034
2.2. Infrastructure Planning System and Plans	038
2.3. Infrastructure Financing in Cambodia	043
3. Infrastructure Financing in Korea	052
3.1. Infrastructures with Economic Development	052
3.2. Infrastructure Planning System	053
3.3. Infrastructure Financing	056
4. Recommendations	079
4.1. Centralized Project Management by Finance Ministry	079
4.2. Mobilization of Domestic Financing Sources	080
4.3. Public Corporation in the Road Sector	081
4.4. PPP under Proper Framework	082
4.5. Land Value Capture	083
References	084

Chapter 2

Housing Policy for Low Income and Vulnerable People in Phnom Penh

Summary	086
1. Introduction	088
2. General Trends and Status of Phnom Penh Housing Market	090
2.1. Cambodian Economy and Demography	090
2.2. Phnom Penh Population, Households, Income, and Migration	092
2.3. Housing Stock, Supply, Conditions, and Prices and Rents	096
2.4. Housing Condition of Low-Income Households in Phnom Penh	098
3. Cambodia's Housing Policies and Housing Problems in Phnom Penh	100
3.1. Social Land Concession	100
3.2. Circular No. 3 on Squatter Settlement Resolution	101
3.3. The National Policy on Housing	102
3.4. Bottlenecks in Housing Supply	105
3.5. Land Sharing Approach: Cambodian Experience	108
4. Korean Housing Market and Policies	110
4.1. Overview	110
4.2. Long-term Trends in Housing Conditions	111
4.3. Korean Housing Policies	116
4.4. Lessons from Successes and Failures of Korean Housing Policies	127
5. Policy Recommendations	136
5.1. Prioritizing Policy Goals	136
5.2. Land Development and Supply	137
5.3. Raising Low-Cost Funds	144
5.4. Improving Housing Welfare for the Poor and Vulnerable People	145
References	149

Contents

Chapter 3

A New Method of Cambodian Teacher Education Policy

Summary	152
1. Introduction	155
1.1. Rationale of the Study	155
1.2. Purposes and Contents of the Study	156
1.3. Methodology	156
2. Current Conditions of Cambodian Education	158
2.1. Historical Background	158
2.2. Current Conditions of Education	159
3. Diagnosis of Teacher Education Policy in Cambodian Education	172
3.1. Poor Attracting Future Teaching Force	172
3.2. Weak Teacher Training System	175
3.3. Low Motivation for Teachers	179
4. Contextualizing Korean Experiences into Cambodian Teacher Education Policy	182
4.1. Current Responding Teacher Education Policies in Cambodia	182
4.2. Korean Experiences of Teacher Education Policy	187
5. Quick Five Policy Attention for Cambodian Teacher Education	195
5.1. Key Attention to the Population's Demand for Education	195
5.2. Key Attention to Rural, Elementary and Girls/Women's Education	196
5.3. Key Attention to Historical Heritage of Teacher Respect	196
5.4. Key Attention to the Joy of Teaching and Learning	196
5.5. Key Attention to Autonomy of Education Authorities	196
References	198
Appendix	200

Chapter 4

Developing Skills and Industry for Higher Labor Productivity in Cambodia

Summary	218
1. Introduction	220
2. Basic Tool of Productivity Analysis and Capability of Policy Implementation	221
2.1. Definitions of Productivity and Channels of Productivity Growth	221
2.2. Capability of Policy Implementation	225
3. Current Status of Two Industrial Sectors and the Labor Market	226
3.1. Overall Industrial Structure and Productivity	226
3.2. Agro-Processing Industry	231
3.3. Garment Industry	235
3.4. Skills Demand and Labor Supply	242
4. Policy Items and Recommendations for Enhancing Productivity	245
4.1. Factors Influencing Productivity	245
4.2. Credit Rationing for Efficient Allocation of Scarce Capital	246
4.3. Investment on Social Overhead Capital to Boost Firms' Activity and to Enhance Productivity	247
4.4. Supply and Development Supply of Skills	250
4.5. Leveling the Playground of Labor Relation	254
4.6. Encouraging Entrepreneurship While Interacting with Firms' Associations	256
4.7. One Example of Implementing Proposed Recommendations	256
5. Conclusion	258
References	260
Appdinex	262

Contents | List of Tables

Chapter 1

<Table 1-1> Road Network in Cambodia	035
<Table 1-2> Electricity PPP Projects in Cambodia	037
<Table 1-3> Investment Target in the NSDP 2016-2018	042
<Table 1-4> GDP, Tax Revenue and Expenditure in Cambodia	044
<Table 1-5> External Public Debt Stock in Cambodia	044
<Table 1-6> Vehicle-Related Tax Revenues in Cambodia	046
<Table 1-7> Financing Sources for Public Investment in 2016-2018	049
<Table 1-8> Financing Sources for Transport Infrastructure Investment in 2016-2018	049
<Table 1-9> Financing Sources for Electricity Infrastructure Investment in 2016-2018	050
<Table 1-10> Infrastructure Development in Korea	053
<Table 1-11> Financing Sources by Transport Infrastructure Type in Korea	058
<Table 1-12> Financing Sources for Public Infrastructure Investment in Korea	059
<Table 1-13> Tax Revenue Changes in Korea	061
<Table 1-14> Transport Infrastructure Investment by Investment Entity in Korea	062
<Table 1-15> Transport Infrastructure Investment by Central Government in the 1970s and 1980s ...	063
<Table 1-16> Length and Pavement Rate Changes from the 1970s to 1990s in Korea	063
<Table 1-17> Central Government's Transport Infrastructure Investment	064
<Table 1-18> Revenue and Expenditure of Transport Special Account	065
<Table 1-19> Financing Sources of Gyeongin Expressway	067
<Table 1-20> Financing Sources of Gyeongbu Expressway	068
<Table 1-21> Financing Sources of Expressways Opened in the Early 1970s	069
<Table 1-22> Foreign Capital for Electricity Power Plants Opened in the 1960s through	070
<Table 1-23> Financial Status Analysis of KEC	071
<Table 1-24> Financial Status Analysis of KR	072
<Table 1-25> Operating Profit and Interest of KORAIL	073
<Table 1-26> Financial Status Analysis of KEPCO	073
<Table 1-27> Public and Private Sector Investment in Infrastructure	075
<Table 1-28> MRG Subsidy for BTO Projects	075
<Table 1-29> Total Amount of MRG Subsidy for BTO Projects in Operation	076
<Table 1-30> MRG Rate and Period Changes	077
<Table 1-31> Land Value Capture in Four Cities Development in the Early 1990s	078
<Table 1-32> Captured Land Value in Gyeonggi Province's Projects in the 2000s	079

Chapter 2

<Table 2-1> Cambodian Economic Growth	090
<Table 2-2> Cambodian Population and Households Trends	092
<Table 2-3> Cambodian Urbanization Trends	093
<Table 2-4> Cambodian Monthly Disposable Income Trends	094
<Table 2-5> Primacy Rate Trends of Asian Countries	095
<Table 2-6> Cambodian Housing Conditions Trends	096
<Table 2-7> Cambodian Tenure Status Trends	097
<Table 2-8> Pilot Land Sharing Settlements in Phnom Penh	109
<Table 2-9> Korean Demographic Trends	111
<Table 2-10> Korean Housing Stock Trends	112
<Table 2-11> Korean Housing Quality Trends	113
<Table 2-12> Korean Housing Tenure Trends	114
<Table 2-13> Informal Housing Trends in Seoul	117
<Table 2-14> Korean Government Policies for Relocated Households	120
<Table 2-15> Housing Starts Before and After the Two Million House Construction Drive	124
<Table 2-16> Revenue Sources of the NHF	131
<Table 2-17> Public Rental Housing in Selected Countries	134
<Table 2-18> Land Readjustment Projects in Seoul	139
<Table 2-19> Large-Scale Urban Development in Phnom Penh by the Private Sector	141
<Table 2-20> Vietnamese Social Housing Policy	143
<Table 2-21> Housing Policy Instruments for Low-Income Households	145

Chapter 3

<Table 3-1> Pupil-Teacher Ratio and Youth Literacy Rate in ASEAN	155
<Table 3-2> Sample Size of The Survey (original plan and actual sample size)	157
<Table 3-3> Gross Enrollment Ratio from Academic Year 2010-2011 to 2014-2015	159
<Table 3-4> Dropout Rate in Cambodia from Academic Year 2010-2011 to 2014-2015	160
<Table 3-5> Adult Literacy (15 years and above) by Geographical Domain and Sex in %	164
<Table 3-6> Average Nominal Income in Other Professions in Cambodia, Thailand and Vietnam ...	172
<Table 3-7> A Minimum Monthly Salary of a New Teacher by Teaching Level (2013)	173
<Table 3-8> Training Formulation at TTCs	176



Contents | List of Tables

<Table 3-9> Comparative Analysis of TRAP's Responses to Teacher Issues in Cambodia	186
--	-----

Chapter 4

<Table 4-1> Productivity by Sector	228
<Table 4-2> Evolution of Relative Productivity Level	228
<Table 4-3> Growth Rate of Economy, Productivity and Employment	230
<Table 4-4> Factors Influencing Productivity	246

Contents | List of Figures

Chapter 1

[Figure 1-1] Preliminary Feasibility Study Procedure	055
[Figure 1-2] Possibility to Charge Users and Financing Sources	057
[Figure 1-3] New Cities and Transport Infrastructure Development in Gyeonggi Province	078

Chapter 2

[Figure 2-1] Focus and Scope of 2015 Cambodia KSP Study on Housing	089
[Figure 2-2] Cambodian Poverty Trends by Region, 2007-2012	091
[Figure 2-3] Cambodian Age Structure of Population	092
[Figure 2-4] Average Daily Wage of Urban Unskilled Labor, 2011-2013	106
[Figure 2-5] Income Activities of Household Members	106
[Figure 2-6] Korean House Price Trends	115
[Figure 2-7] Typical Informal Settlement Area ("Moon Village") in Busan, circa 1970	118
[Figure 2-8] Typical Informal Housing Unit in Seoul, circa 1970	118
[Figure 2-9] Collapsed Citizen's Apartment (Wawoo Apt.), Seoul, 1970	120
[Figure 2-10] Division of Development Gains in a Korean Public Development Scheme	123
[Figure 2-11] Stages of Land and Housing Development and Public Intervention	128
[Figure 2-12] Major Achievements of LH	129
[Figure 2-13] Beong Kak Area in Phnom Penh	142
[Figure 2-14] Beong Tumpan Area in Phnom Penh	143

Chapter 3

[Figure 3-1] Completion Rate by Level of Education 2006-2015	161
[Figure 3-2] Completion Rate in Urban and Rural in 2009-2010	161
[Figure 3-3] Completion Rate in Rural and Urban in 2014-2015	161
[Figure 3-4] Parent: Do you expect your child will go to university?	162
[Figure 3-5] Student: Would you like to go to university?	162
[Figure 3-6] Student: Do you think you can pass the matriculation test?	162
[Figure 3-7] Parent: Can your child pass the matriculation test?	162
[Figure 3-8] Parent: How do you evaluate your child's learning level?	163
[Figure 3-9] Student: How would you evaluate yourself regarding your learning level?	163
[Figure 3-10] Student: Do you go to private schools/tutoring during out of school hours?	163

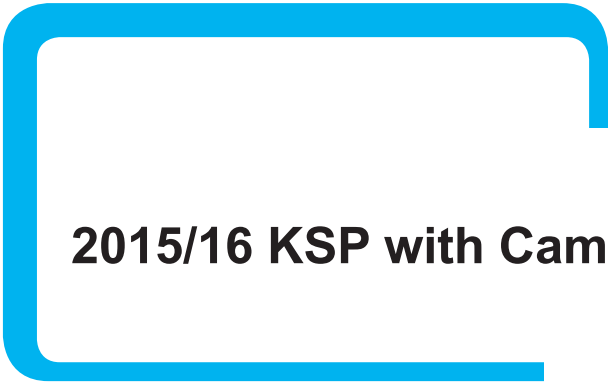
Contents | List of Figures

[Figure 3-11] Percentage of National Budget in Education	164
[Figure 3-12] Share of GDP in Education	164
[Figure 3-13] Parent: Did you teach your child how to read and write Khmer before they went to primary school?	165
[Figure 3-14] Student: Did your mother teach you how to read and write Khmer before you went to primary school?	165
[Figure 3-15] Student: When did you start to read and write Khmer well enough for your standard?	165
[Figure 3-16] Student: Have you experienced difficulties in comprehending words when studying Science and Maths?	166
[Figure 3-17] Student: Do you feel some time constraints when learning because of your shortage of pre-knowledge or pre-study?	166
[Figure 3-18] Student: How well do you speak English?	166
[Figure 3-19] Pupil-Teacher Ratio from 2000 to 2013	167
[Figure 3-20] Qualifications held by Primary School Teachers (1999-2013)	168
[Figure 3-21] Qualifications held by Secondary Teachers (1999-2013)	168
[Figure 3-22] Teacher: Would you work in rural schools if there were some other incentives such as salary, housing, transportation and others?	170
[Figure 3-23] Teacher: Do you agree with more incentives for teachers in rural areas?	171
[Figure 3-24] Teacher: To what extent is your salary from this school sufficient for your monthly living costs?	174
[Figure 3-25] Teacher: If you earn any other income, how significant is it in comparison with your school salary?	174
[Figure 3-26] Teacher: How do you think about opening private TTCs/colleges?	178
[Figure 3-27] Parent: Do you know if your child has ever participated in laboratory experiments in science class?	179
[Figure 3-28] Student: How many times have you participated in laboratory experiments in science class?	179
[Figure 3-29] Parent: Do you think your child can do very well in school?	180
[Figure 3-30] Student: Does your teacher teach well?	180
[Figure 3-31] Student: Do you agree that private tutors teach better than schoolteachers?	180
[Figure 3-32] Parent: Do you agree that private tutors teach better than schoolteachers?	180
[Figure 3-33] Parent: Does your child like the schoolteacher?	181

[Figure 3-34] Teacher: The respect of teachers by parents, students and society	181
[Figure 3-35] Drastic Growth of Korean Education over 100 years	188
[Figure 3-36] Heavy Burdens of Korean Teachers	188

Chapter 4

[Figure 4-1] Industrial Development Process for the Clothes and Textile Industry and Chemical Industry	224
[Figure 4-2] Speed of Structural Change in Selected OECD Countries Measured by Modified Lilien-Indicator Based on Employment Per Industry	224
[Figure 4-3] Share of Value Added by Sector, as of 2014	227
[Figure 4-4] Employment Share by Sector, as of 2014	227
[Figure 4-5] Growth Rate of Labor Productivity by Sector	230
[Figure 4-6] KIRIROM Food Production Company's Logo and Packing	234
[Figure 4-7] Growth of Cambodia's Garment Sector	236
[Figure 4-8] Share of Cambodia's Garment Export Volume by Destination Country, as of 2014	237
[Figure 4-9] Share of FDI in Garment Sector by Country (in terms of fixed assets), as of 2014	237
[Figure 4-10] Evolution of Minimum Wages	241



2015/16 KSP with Cambodia

Min Je Joo (Program Officer, Korea Development Institute)

Eunsong Kim (Program Officer, Korea Development Institute)

The Knowledge Sharing Program (KSP) with Cambodia was first launched in 2006 under the main theme of Strategic Framework for Fiscal Resource Mobilization and Life Insurance; in 2009, the KSP was conducted on the main theme of Microfinance and Public-Private Partnership Development. In 2010, Cambodia was selected as the Strategic Development Partner Country (SDPC) for three years upon the agreement between Ministry of Strategy and Finance of Republic of Korea and the Ministry of Economy and Finance (MEF) of the Kingdom of Cambodia. During these years, KSP was conducted on the topics of Policy Agenda for Cambodia in Growth, Finance, Industry and Trade in 2010; Policy Agenda for Cambodia in SME, Industry and Trade in 2011; and Policy Agenda for Cambodia in Developing industrial Skills, Industrial Complex, and Agro-processing Industry in 2012. In 2013, turning back to the Development Partner Country, KDI and MEF confirmed to conduct the main theme of Policy Agenda for Industrial Development in Cambodia and 2014, the research on Structural Reform to Ensure Cambodia's Competitiveness.

In its eighth year, KDI and MEF confirmed a total four topics for the 2015/16 KSP with Cambodia out of the eleven written demand surveys that were submitted via Korean Embassy in Cambodia. The description below gives a brief overview of the 2015/16 KSP with Cambodia, including its topics, team of researchers and project progress.

Policy Agenda for Industrial Development in Cambodia		
Korean Project Manager		Cambodian Project Supervisor
Dr. Kyung-Wook HUR (Professor of KDI School of Public Policy and Management, Former Ambassador of OECD)		Mr. Seilava ROS (Under Secretary of State of MEF)
Topics	Korean Experts	Cambodian Experts
① Infrastructure Financing Improvement in Cambodia	Euiyoung SHON (University of Seoul)	Vanne KHUT (MEF)
② Housing Policy for the Low Income and Vulnerable People in Phnom Penh	Jae-young SON (Konkuk University)	Sophak CHEA (MEF) Dana PHAL (MOLIT)
③ A New Method of Cambodian Teacher Education Policy	Se-Yeoung CHUN (Chungnam National University)	Malar UNG (MoEYS)
④ Building the Right Work Force for a Specified Industrial Development	Jai-Joon HUR (Korea Labor Institute)	Veara KIM (RUPP) Chamnan SIENG (MEF)
Korean Program Director / Program Officer		Cambodian Program Officer
Dr. Ildong KOH (KDI) / Ms. Min Je JOO (KDI) Ms. Eunsong KIM (KDI)		Mrs. Dalin CHUNN (MEF)

As the first stage of the 2015/16 KSP, the High-level Demand Survey and Pilot Study were carried out from September 7th to 12th, 2015. The Korean delegation headed by Dr. Kyung-Wook Hur, the Project Manager for 2015/16 KSP with Cambodia, met high-ranking Cambodian government officials to find out policy demand for each research topic. In addition, the delegation collected research information and data, interviewed local consultant candidates, and took advice from experts in Ministry of Commerce, field offices of Kookmin Bank, ADB, and IMF on the current situation of Cambodia.

The Additional Pilot Study was conducted from November 8th to 14th and December 13th to 17th in Phnom Penh. The Korean experts visited relevant ministries, institutions, and rural area in Cambodia. They also met with Cambodian local consultants to specifically discuss and check research progress.

As a next step, twelve Cambodian delegates, headed by H.E. Ros Seilava visited Seoul from January 18th to 23rd to participate in Interim Reporting and Policy Practitioners' Workshop. At the Interim Reporting Workshop held on January 20th,

at the Plaza Ballroom, all the Korean researchers and Cambodian local consultants presented their interim research findings and discussed and received feedback on the findings from each other. Furthermore, Policy Practitioners' Workshop provided policy practitioners with first-hand experiences by visiting relevant organizations including Korea Institute for Curriculum and Evaluation (KICE), Korea Educational Development Institute (KEDI), Korea Polytechnics, Kyeong-gi Technical Highschool, Korea Employment Information Service, Korea Land & Housing Corporation, Seoul City Outer Ring Road, Ministry of Education, Korea Housing Finance Corporation, Korea Housing and Urban Guarantee Corporation, Korea Education and Research Information Service, HRD Korea, SL Corporation and attending lectures by experts in relevant fields.

At the Senior Policy Dialogue and Final Reporting Workshop, the final stage of the 2015/16 KSP with Cambodia, the Korean research team headed by Dr. Hur Kyung-Wook shared their final research findings and policy recommendations with high-level policymakers, policy practitioners, and other stakeholders of Cambodia. The workshop was conducted at Salon I of Raffles Hotel Le Royal, Phnom Penh, on May 6, 2016, with approximately 80 government officials and experts. In addition, surveys and interviews to receive feedback on 2015/16 KSP were conducted.

Executive Summary

Euiyoung Shon (University of Seoul)

Even though 18 years had passed since the civil war was completely ended, Cambodia has still been facing severe lack of physical and human capital. The economy has grown high since the early 2000s, however, the continuous high economic growth could be only possible in the future when the physical and human capital is largely improved. Therefore, as the 2015/16 KSP program, the Cambodian government asked four topics, i.e. infrastructure financing improvement, housing policy for the low income and vulnerable people in Phnom Penh, a new way of teacher education policy, and developing skills and industry for higher labor productivity.

1. Infrastructure Financing Improvement in Cambodia

Most infrastructures in Cambodia have been still devastated. Apart from a small proportion of national roads, most provincial and rural roads are unpaved. So the condition in most roads is very poor. Even though the rehabilitation work has been continued for railways, its progress has been slower than it had been scheduled. The situation might be almost the same for river and sea ports and airports, although they might be relatively somewhat better than roads and railways. On the other hand, the electricity infrastructure has been largely improved with the introduction of public-private partnerships (PPP) projects since the early 2000s. However, the electricity capacity is still lacked and its service level is not in good condition, compared with neighboring countries.

Before the infrastructure financing sources are discussed, it is necessary to discuss the infrastructure planning system. The mid- and long-term infrastructure plans have been prepared by line ministries, mostly conducted by foreign consultants with the aid from donor countries. The plans are often based upon too much optimistic future. Line ministries mostly accept the over-ambitious project plans without any evaluation, prioritization or consideration of financing sources. The investment decision for some large scale projects by the government is mostly dependent upon the economic feasibility study (FS). Since the economic FS is conducted by a foreign consultant and it is supervised by line ministries, the FS result might be biased for favoring investment without proper consideration of financing sources. The planning and budget ministries do not have enough human resources to review the master plan and each project's FS result. Even though the budget ministry has allocated more budget into transport infrastructure investment, the investment needs submitted by line ministries could not have been filled up at all.

The most important transport infrastructure financing source in most countries is the vehicle related tax revenues. There are three tax revenue sources in Cambodia, i.e. imported vehicle tax, gasoline tax and diesel tax. The imported vehicle tax revenue has rapidly increased these days, with the continuous increase in imported vehicles and the conspicuous tax rate increase in 2007. Even though the gasoline and diesel tax revenues have also increased these days, there is still a room to increase these tax rates, particularly considering their adverse impacts on air pollution. The other major infrastructure financing source is foreign loans/grants. Cambodia has been too much dependent on foreign loans/grants from development partners in public infrastructure investment. Its dependency is 78% and only 22% is financed from domestic sources. Recently the PPP has become a somewhat important financing source in infrastructure investment in most countries since the 1990s. Since the early 2000s, Cambodia has procured many electricity PPP projects and it has been trying to procure the first expressway PPP project.

Public corporation has played an important role in infrastructure financing sources in other countries. However, apart from the electricity and water resource sectors, there is no public corporation in the road sector in Cambodia. The land value capture might be considered as another financing source in some large metropolitan areas, where some new housing area development might be necessary to improve housing problems. However, this has not been used yet in Cambodia.

During the last 50 years, Korea has developed a lot of infrastructures to meet the passenger and freight demand. The infrastructure development policies with respect to the infrastructure planning system and infrastructure financing sources have been continuously changed according to the situation at that time. Some policies were newly introduced and then they were revised sooner or later.

When the first 5 year economic development plan was established and started in 1962, the government recognized that it had been necessary to invest into more infrastructures to support the planned economic development. That was why the first and second new expressways had been built in the late 1960s. With the continuous rapid economic development in the 1970s and 1980s, more investment into infrastructures had been continued. Some new expressways have been built and existing roads have been rehabilitated. Large investments have been made into seaports to export and import raw materials and products. And a lot of new electric power plants have been continuously built. The continuous high economic growths have brought the rapid vehicle ownership increase since the mid-1980s. With the introduction of the ear-marked tax system levied on gasoline and diesel in 1994, the government have made large investment into transport infrastructures in the 1990s and until the mid-2000s. Since then, infrastructure investment, particularly roads investment, has decreased.

Since the new PPP law was enacted in 1994, some decrees and guidelines were continuously developed. The law itself has been changed as well. The minimum revenue guarantee mechanism was introduced and then abolished. The unsolicited projects were encouraged at first and then they have been strictly reviewed now. Social infrastructures have been also included in the PPP projects. As far as the infrastructure planning system is concerned, the budget ministry has taken the responsibility for the economic feasibility study and value for money test for public and PPP projects.

2. Housing Policy for Low Income and Vulnerable People in Phnom Penh

Since around 2000 the Cambodian economy has been growing fast at around 7% per year, driven mostly by the strong growth of urban based industries such as garment manufacturing, construction, and tourism. A large number of people migrate from rural to urban areas, especially to Phnom Penh to take advantage of the nation's economic growth. Prices of land and housing in Phnom Penh are rising fast, and the low income and vulnerable people have difficulties in improving their living conditions.

Population of Cambodia is 15.2 million in 2014, of which 3.4 million (22.5%) lives in urban areas. Population grows at healthy rates between 1.5 and 2%, with urban population increasing faster. The average household size in Cambodia is 4.7 persons for nation and 4.9 persons for urban areas. The population of Phnom Penh is 1.68 million, 10.9% of the national population and 53.3% of urban population. The number of Phnom Penh in-migrants has been very stable around 15 thousand per year. In 2013 and 2014, the contribution of migration in the Phnom Penh population

growth are about half of natural births. Considering a large income difference among regions, it is surprising that massive rural-to-urban and nation-to-Phnom Penh migration is not taking place. One can conjecture that full scale rural-to-urban and nation-to-primate city migration trends have not yet begun in Cambodia. If the rural-urban income gap persists, the momentum will build up and a tide of migrants may burst into the city in the future. If so, the Phnom Penh housing market will experience a great shock, which the city is not prepared to cope with.

Although housing conditions in Phnom Penh are far better than Nation in almost all aspects, they have more or less stagnated in the past 10 years. Tenure statistics show that majority of households reside in their own house. However, the land tenure situation in Phnom Penh is complicated and in a confused state. Sometimes, there is no clear distinction between legal and illegal occupancy and/or ownership. Even an informal settlement resident may have some sort of recognizable occupancy right, but such a right may not protect him/her from being evicted.

Population of Phnom Penh has doubled over the last twenty years with a large number of migrants flowing into the city, and in the process, enormous number of informal settlements sprang up. Residents of such settlements are rural migrants leaving the countryside out of indebtedness or for the chance of economic opportunities, refugees returning from camps. The reasons for coming to Phnom Penh are mostly economic. The residents of informal settlements often suffer from poor access to infrastructure and public services, and sometimes have to pay much more than formal clients of such services.

The Cambodian government has tried to solve the housing problems, and the informal settlement problem in particular, by various measures, such as Social Land Concession (2003), Circular 3 (2010), and National Policies on Housing (2014) which address the housing issues in urban areas. However, much of the detail is yet to be filled with trials and errors through time. The Cambodian government must cope with many obstacles in improving housing conditions of the poor. Some of them can only improve with the economic development and the rise of income and wealth.

Drawing lessons from the Korean experience, we recommend the following measures for the Cambodian government. First of all, it should be recognized that the most important elements of any successful housing policy are land and money. Without inexpensive land and low-cost fund readily available, little can be done to improve housing conditions. The government must be creative in finding funding sources for housing. At this stage of policy development, the government should concentrate on establishing legal and administrative framework, and find out workable mechanism (i.e. “flagship programs”) for housing supply, which can be replicated time and again.

Secondly, it would be best if the government, Phnom Penh City, or a special purpose public entity becomes an efficient and honest land developer. Even when they do not, they should take the initiative in the development process. The government or the Phnom Penh City, together with the developers, should set the goals and directions of the development, and follow through the development process closely. Building up such capacity is vital in implementing government land and housing policies. At the least, part of the gains accruing in the development process should be controlled by the government to improve the housing conditions of the citizens.

Thirdly, NGOs and MFIs are valuable financial sources for the poor in improving their housing conditions. However, in building up a sizable housing stock, a more dedicated financial institution is necessary. Korea's NHF and its funding sources may be a good model. Establishment of such a dedicated housing finance institution requires a large initial capital, which may be burdensome to the government. Other options such as the interest payment subsidy and the housing loan guarantee or insurance may be considered.

Fourthly, although the public rental housing program is too costly to implement in a large scale, Cambodia should start a modest scale program as promised in Circular 3 and the NPH. The program should be within the boundary of available resources, target the truly needy, and supplement other urban and housing programs. As for a demand side approach, Thailand's Baan Mankong ("Secure housing") program deserves a serious consideration. Although successful housing program in one country cannot be easily transplanted to another, it is worth a study and small scale pilot programs. Many international and domestic NGOs working to improve the living conditions of the poor in Phnom Penh may be of great help in such an experience.

3. A New Method of Cambodian Teacher Education Policy

The Cambodian education is summarized that it meets the big challenge of low performance indicated by those salient indicators as low enrolment in secondary education and high dropout. Lack of good and many teachers must be the reason for those poor performance. Therefore Cambodian education should tackle to retain the good teaching force. However the low attracting power as well as inefficient training and motivation system are also interrelated each other to prevent her from going up.

Therefore the four dimensions of teacher policy, namely, attracting, training, motivating and retaining should be comprehensively and systematically inter-

designed for the most effective system of education. Responding the teacher issues, the 2015 Teacher Policy Action Plan (TPAP), elaborated from the 2013 Teacher Policy, was adopted by the MoEYS in order to comprehensively address the issue of teacher quality improvement by linking a range of strategies to the powerful incentive of significant increase in income and social status. However, there are still many discrepancies and short sights to accomplish the visions and targets of present tasks of Cambodian education.,

Korean experience has been contextualized in this sense how to provide the quickest policy options. Korea was the same with Cambodia in every sense of teacher shortage of the beginning, but became very different. So natural is to ask how it was possible to overcome, while it is quite true that there is no scientific investigation and answer which can be relevant and benchmarked easily enough for Cambodian problems. In fact all kinds of analysis and proposals have been made in this area of teacher policy. In fact Cambodian TPAP must be evaluated as one of the best policy proposals in that sense. However, one different fact is not there: that is, the unique way that Korea has gone through. What Cambodia must learn from Korea needs to be taken by two levels of learning: first look and deep learning.

First looking on Korean education in the field of teacher education, the critical factor of Korean teacher policy lies in the personnel status of teachers as public officials, of which the government must control the numbers, remuneration, discipline, and promotion. In addition, the purpose-oriented closed training system of prospective teachers has consolidated unique culture of teaching profession in Korea. With the acknowledgement of these characteristics, one can find some implications from Korean experience by two factors: one in controls on quantitative expansion of teachers and the other in the institutionalization by law. The deep learning must start with the first question how different Cambodia is from Korea before asking whether Cambodia can apply any Korean model. By the way the investigated facts in this study shows almost the same conditions of Cambodian education today as the Korean education yesterday: the high demand for education and the limited financial resources, though one difference between their letters Hangul and Khmer. Therefore one hypothesis can be setup for Cambodian development of education: that is, making the best use of education demand for overcoming financial limitation and finding a supplementary tool of teaching and learning for Khmer literacy. Now it is time to look into the deep story of Korean education and teacher policy. There are five learnings and the five quick policy options.

Deep five learnings: First, it was the birth story of the education sector as the one of the most prosperous industries in the poor economic stage. Second story is about maximum utilization of financial resources for education sector. The third is that teacher policy has been well tuned with these two stories of prioritizing education

money into teacher policy and further emphasis on the elementary in rural schools. Fourth is the secrets of teacher retain and the last is PPP (public-private-partnership).

Now the five lessons for Cambodia are suggested as following:

Firstly, the demand for education is high among Cambodian parents and students. This is very common in all Asian countries. This demand must be utilized to employ PPP as the quick policy model. Private education capital can be encouraged as the partner to take part in providing educational opportunities including private schools and private teacher training centers. Foreign education capital also can be invited as well.

Secondly, the rural, elementary and girl/women education should be more emphasized. Education as the self-creating sector can start its growth only when the critical mass or the essential birth is made. Equal distribution of educational opportunity is the mandatory task to make it true. All the least valuable resource of Cambodian education must be prioritized to put into this urgent sector of rural elementary schools. Boy and girl must be treated equally. Here particularly mothers' literacy is the key factor to support students' success in schools. Therefore adult literacy class in the rural area also must be the key area of attention. Sending teacher first to rural elementary schools and letting them teach girls and mothers will be the fundamental base for Cambodian education.

Thirdly, the historical heritage of teacher respect should be continued. Data also shows there is general respect in the society for school teachers. This means teachers can retain once they are fully recognized as the teacher in the school and society even though there is some hardship of working conditions within the national conditions. Therefore teacher policy must be balanced between economic and educational aspect together.

Fourthly, the essential factor for success in teacher policy is to some extent how both teachers and students enjoy their teaching and learning. Even under the poor exterior conditions of education such as crowded classroom and lower teacher salary, they can stay together in schools once they believe in teaching and learning. However, the present teaching-learning process mediated through Khmer and English supplementary contents/textbooks seem to have some fundamental barriers though not fully investigated yet. Therefore various and urgent actions need to be taken for developing and providing teachers and students with better effective materials: ICT based digital contents and solutions must be one of such a disruptive way of approach.

Fifthly, in order to keep the above four attentions, one last and the most

important attention must be paid to the full autonomy of education authorities specifically in local government level. Every level of education authority should be given the full autonomy of teacher personal administration, school and teacher financing and all other educational governance matters. Then they can utilize their full power for the best use of even the limited capacity of resources.

4. Developing Skills and Industry for Higher Labor Productivity in Cambodia

To discern and understand value chain and potential of so-called strategic industries, and to understand factors influencing the productivity of those industries helps the RGC to implement structural and stabilization policy and relevant manpower policy that responds to the needs of firms and industry. Then can the policy decision makers of the RGC create policy framework, establish strategy and introduce measures for improving productivity.

For this purpose, the study first tried to identify the competitiveness and value chain of both agro-processing and garment industry, their perspective of productivity and the characteristics of skills needed by Cambodian firms. Second, based on the diagnoses, the study proposed ways of improving value chain, calling attention to control its evolution appropriately and ways of enhancing productivity of the nation by addressing factors which are deemed influencing most productivity of Cambodian economy. Third, the study aimed not only identifying strategy and action programs for improving productivity but also showing an example of how to implement them.

In Cambodia, services productivity is far higher than other sector productivity. This explains why qualified persons prefer getting a job in services with priority. However, the gap between productivity of industry and that of services is continuously narrowing down from 9.7 times level to 4.4 times level. The productivity of industry sector to which garment sector belongs is continuously surpassing that of services sector productivity from 2012.

The degree of vertical integration is very weak in both agro-processing sector and garment sector. Not only weak infrastructure but also high cost of logistics, electricity and processing hinders structural change. Skills demand of work attitude is hardly met by labor market participants. Meanwhile, the union behavior and rapid growth of minimum wage which exceeds far higher than productivity growth rate is increasing risk of garment industry.

There are a considerable number of policy items that the RGC have to pay attention to achieve higher productivity in the economy. They include, allocating scarce resources (especially capital) efficiently, expanding SOC such as transportation facilities, supply of electricity at cheaper price, IT infrastructure, supplying skills

needed, and encouraging entrepreneurship. To address these challenges, the RGC could refer to Korea's experience on allocation of credit borrowed from the international capital market, financing of domestic capital from advantaged firms and consumers, and how to discover entrepreneurs to accomplish moving from low-productivity trap to high-productivity path. To address the challenge of lack of 'work attitude' in the labor market, it seems necessary to raise enrollment rate, lower drop-out rate in the primary education and upgrade it qualitatively.

Above all, key or secret of productivity growth lies in boosting entrepreneurship, help them break through, and then request them proactive roles for sustainability and prosperity. That's what the history of not only Korean but other industrialized countries' industrial development tells us. Skill upgrading sometimes results from the process and sometimes has to lead the growth of industry and productivity growth.

The continuous and sharp increase in minimum wages exceeding productivity growth and rent-seeking behavior of too many representative unions hinders investment in garment industry calls for attention of the RGC to achieve smooth structural change and productivity increase. The current situation of Cambodian garment industry, the second important engine of Cambodian economy, should be carefully controlled to guarantee smooth transition, together with developing a medium- and long-term plan to enhance productivity. It is of particular importance in Cambodia because exchange rate adjustment mechanism is almost absent in Cambodia.

It is difficult to get out of the current low-productivity state. The government policy for development of a specific industry requires synthesized package of all actions, and many elements are required such as entrepreneurship, market, capital, SOC, skill, etc. Only a bold but very much scrutinized approach can make it possible to initiate the transition process by concentrating resources on a strategic area and by combining resource allocation rule with entrepreneurship.

It should be also borne in mind that improving and enhancing public institutional capacity and promoting good governance are equivalently key factors to raise productivity of Cambodian workers and Cambodian firms' competitiveness.

2015/16 Knowledge Sharing Program with Cambodia:
Knowledge Sharing on Cambodia's Social Overhead,
Human Capital, and Housing Development:
Korea's Experience and Policy Recommendation

Chapter 1

Infrastructure Financing Improvement in Cambodia

1. Introduction
2. Infrastructure Financing in Cambodia
3. Infrastructure Financing in Korea
4. Recommendations

Infrastructure Financing Improvement in Cambodia

Euiyoung Shon (University of Seoul)

Summary

Most infrastructures in Cambodia have been still devastated. Apart from a small proportion of national roads, most provincial and rural roads are unpaved. So the condition in most roads is very poor. Even though the rehabilitation work has been continued for railways, its progress has been slower than it had been scheduled. The situation might be almost the same for river and sea ports and airports, although they might be relatively somewhat better than roads and railways. On the other hand, the electricity infrastructure has been somewhat largely improved with the introduction of public-private partnerships (PPP) projects since the early 2000s. However, the electricity capacity is still lacked and its service is not in good condition, compared with neighboring countries.

Before the infrastructure financing sources are discussed, it is necessary to discuss the infrastructure planning system. The mid- and long-term infrastructure plans have been prepared by line ministries, mostly conducted by foreign consultants with the aid from donor countries. The plans are often based upon too much optimistic future. Line ministries mostly accept the over-ambitious project plans without any evaluation, prioritization or consideration of financing sources. The investment decision for some large scale projects by the government is mostly dependent upon the economic feasibility study (FS). Since the economic FS is conducted by a foreign consultant and it is supervised by line ministries, the FS result might be biased for investment without proper consideration of financing sources. The planning and

budget ministries do not have enough human resources to review the master plan and each project's FS result. Even though the budget ministry has allocated more budget into transport infrastructure investment, the investment needs submitted by line ministries could not have been filled up at all.

The most important transport infrastructure financing source in most countries is the vehicle related tax revenues. There are three tax revenue sources in Cambodia, i.e. imported vehicle tax, gasoline tax and diesel tax. The imported vehicle tax revenue has rapidly increased these days, with the continuous increase in imported vehicles and the conspicuous tax rate increase in 2007. Even though the gasoline and diesel tax revenues have also increased these days, there is still a room to increase these tax rates, particularly considering their adverse impacts on air pollution. The other major infrastructure financing source is foreign loans/grants. Cambodia has been too much dependent on foreign loans/grants from development partners in public infrastructure investment. Its dependency is 78% and only 22% is financed from domestic sources. Recently the PPP has become a somewhat important financing source in infrastructure investment in most countries since the 1990s. Since the early 2000s, Cambodia has procured many electricity PPP projects and it has been trying to procure the first expressway PPP project.

Public corporation has played an important role in infrastructure financing sources in other countries. However, apart from the electricity and water resource sectors, there is no public corporation in the road sector in Cambodia. The land value capture might be considered as another financing source in some large metropolitan areas, where some new housing area development might be necessary to improve housing problems. However, this has not been used yet in Cambodia.

During the last 50 years, Korea has developed a lot of infrastructures to meet the passenger and freight demand. The infrastructure development policies with respect to the infrastructure planning system and infrastructure financing sources have been continuously changed according to the situation at that time. Some policies were newly introduced and then they were revised sooner or later.

When the first 5 year economic development plan was established and started in 1962, the government recognized that it had been necessary to invest into more infrastructures to support the planned economic development. That was why the first and second new expressways had been built in the late 1960s. With the continuous rapid economic development in the 1970s and 1980s, more investment into infrastructures had been continued. Some new expressways have been built and existing roads have been rehabilitated. Large investments have been made into seaports to export and import materials and products. And a lot of new electric power plants have been continuously built. The continuous high economic growths

have brought the rapid vehicle ownership increase since the mid-1980s. With the introduction of the ear-marked tax system levied on gasoline and diesel in 1994, the government have made large investment into transport infrastructures in the 1990s and until the mid-2000s. Since then, infrastructure investment, particularly roads investment, has decreased.

Since the new PPP law was enacted in 1994, some decrees and guidelines were continuously developed. The law itself has been changed as well. The minimum revenue guarantee mechanism was introduced and then abolished. The unsolicited projects were encouraged at first and then they have been strictly reviewed now. Social infrastructures have been also included in the PPP projects. As far as the infrastructure planning system is concerned, the budget ministry has taken the responsibility for the economic feasibility study and value for money test for public and PPP projects.

From the analysis of infrastructure financing in Cambodia and Korea, five recommendations are derived for Cambodia. Firstly, the infrastructure planning system by the Ministry of Economy and Finance (MEF) could be strengthened. The economic feasibility and value for money test for public and PPP projects might be managed by the MEF. Secondly, more domestic financing sources should be mobilized. In particular, the gasoline and diesel tax rates could be increased and its revenues should be ear-marked for transport infrastructure investment. Thirdly, a new expressway public corporation could be set up to construct and operate several new expressways or to prepare a new expressway PPP project. Fourthly, the current electricity PPP projects are evaluated and new PPP legal, regulatory and institutional framework should be established. Finally, the land value development could be captured for new housing development projects in Phnom Penh area.

1. Introduction

1.1. KSP Program in Cambodia

The 2015/2016 KSP program in Cambodia has four topics. The first of which is infrastructure financing. Cambodia would like to invest heavily in its infrastructure to facilitate economic development. However, like any other developing country, it does not have sufficient domestic and external financing sources and it has been facing some fiscal restraint from high national debt. Accordingly, it hopes to tackle the financing problem in infrastructure investment with the assistance of Korean experts.

1.2. Surveys and Workshop

In order to understand the background of the topic and the current situation, and to collect the related data, two visits to Cambodia were made. The first visit was from September 7 to 13, 2015. Several meetings were held with high-ranking officials in the Ministry of Economy and Finance (MEF), Ministry of Public Works and Transport (MPWT). The work scope was clearly defined from the meeting.

The second visit was made from November 9 to 13, 2015. This was to discuss some detailed matters with senior officials and to collect more data from related ministries. A local consultant was chosen to support the work, particularly regarding data collection, and the contract was drawn up.

The workshop was held from January 18 to 23, 2016 in Seoul. Some Cambodian officials and Korean experts were invited along with Cambodian local consultants presented the interim results of the work. The workshop was useful in generating feedback from Cambodia, and what would need to be done for the rest of the schedule was clarified.

1.3. Purpose of the Work

The purpose of the work is to analyze infrastructure financing in Cambodia. Infrastructure is a broad term but could be defined to include not only the economic infrastructure, but also the social infrastructure. It is, however, defined here as economic infrastructure. In particular, in this work, it is confined to transport and electricity infrastructure.

First of all, the current situation and problem in infrastructure financing in Cambodia will be analyzed. The infrastructure plans already established in mid- and long-term plans will be discussed. In most cases, it is quite common that the infrastructure plans are somewhat overambitious: even the available limited financing sources are distributed among too many investment projects.

Following this, some Korean experiences on infrastructure investment and financing sources, which are particularly related to the Cambodian situation, will be explained and some implications will be derived for Cambodia. Finally, some recommendations for Cambodia will be suggested.

2. Infrastructure Financing in Cambodia

2.1. Current Situation of Infrastructure

2.1.1. Transport Infrastructure

2.1.1.1. Overview

Even though 18 years have passed since the Civil War was finally ended with the last Khmer Rouge guerilla surrenders in 1998, most infrastructures in Cambodia remain devastated. Aside from a small proportion of national roads, most provincial and rural roads are unpaved. Consequently, the condition for most roads is very poor. Even though rehabilitation work has continued for railways, its progress has been slower than had been scheduled. The situation is almost identical for rivers and seaports and airports, although they could be considered relatively better than roads and railways.

The condition of electricity infrastructure has been largely improved with the introduction of Public-Private Partnerships (PPP) projects since the early 2000s. However, the electricity capacity is still lacking and its service is not in good condition compared with neighboring countries.

2.1.1.2. Roads

As shown in Table 2.1, the total road network length of Cambodia is 55,242 km. However, the 1-digit NR represents only 4% with 2,243 km, even though a considerable amount of traffic volume would be handled. The 2-digit NR is 16% with 8,864 km. In contrast, the provincial and rural roads are at 8% and 72%, respectively. Part of 1-digit and 2-digit NRs with 2,129 km are designated as the Asian or ASEAN highways, however, the majority of them are two laned.

In the case of 1-digit NRs, most of them are more than 9.0m wide. However, for 2-digit NRs and provincial roads, only 52% and 15% of them, respectively, are more than 6.5m wide. The pavement ratio is so low that only 38% and 10% of 2-digit NRs and provincial roads are paved. The 1-digit and 2-digit NRs are administered by the Ministry of Public Works and Transport (MPWT) and rural roads by the Ministry of Rural Development (MRD), although it is not yet decided who will administer provincial roads.

〈Table 1-1〉 Road Network in Cambodia

	Length (km)	Proportion (%)	Pavement (%)	Administered by
1-digit NRs	2,243	4.06	100	MPWT
2-digit NRs	8,864	16.05	38.0	MPWT
Provincial roads (3-4 digit)	4,407	7.98	10.2	Not decided yet
Rural roads	39,728	71.92	n.a.	MRD
Total	55,242	100.0	-	-

Source: Infrastructure and Regional Integration Technical Working Group (IRITWG), Overview of the Transport Infrastructure Sector in the Kingdom of Cambodia (5th edition) (2015).

2.1.1.3. Railways

The northern railway line of 386 km with 1-m gauge linking Phnom Penh and Poi Pet, including 6km missing link, was built in 1929-1942. The southern line of 264 km with 1-m gauge linking Phnom Penh and Sihanouk Ville port was built in 1960-1969. As most of railways were devastated during the civil war, the railway services are in accordingly poor shape.

The passenger train service ceased to operate for the southern line in 2004 and also ceased at the northern line in mid-2008. The freight train service for the northern line ceased in the following year, 2009, although the operation of the southern line is still continued. Consequently, the cargo volume by railway decreased significantly after it reached 557,000 tons in 2002.

Rehabilitation work has recently begun in the late 2000s. Although the northern line rehabilitation work was delayed, it is expected to recommence soon. Following this, it will be possible to operate slow-speed freight trains. Conversely, the southern line rehabilitation work was completed in May 2014, along with the completion of rehabilitating the container and rail terminal at Sihanouk Ville in the end of 2014. Therefore, the container train service restarted in 2014, with three services a week. However, the train operation could not achieve maximum average speed of 50 km/h, which was specified in the rehabilitation plan.

Aside from the rehabilitation of railways, the railway was privatized to increase its operational efficiency in 2009. The 30-year concession to operate and maintain railways was given to Toll Holdings, an Australian company. Unfortunately, Toll abandoned its operating rights to the concession in December 2014 since its operating performance had been so bad.

2.1.1.4. Seaports, Inland Waterways, River-Ports and Airports

Sihanouk Ville port is the only deep seaport in Cambodia that handles international containers. It was built in 1960 and autonomously operated by the Port Autonomous of Sihanoukville (PAS). Its cargo throughput was around three million tons in 2014, including petrol, oil and lubricants. It can accommodate 10,000 DWT cargo ships and 20,000 DWT container ships. A Special Economic Zone (SEZ) was established by the PAS. There are seven other seaports in Cambodia, including Koh Kong, Sre Ambel, and Oknha Mong.

The Phnom Penh port is the traditional river port, accessible by vessels from the South China sea through the Mekong and Bassac river in Vietnam. There are three river ports in Phnom Penh. There are, however, several restrictions for running Ports 1 and 2 because of low water level. Consequently, Port 3 was built in 2013 for USD 28 million, 25 km down from Port 2. Under the inland waterways agreement between Cambodia and Vietnam, the regulated waterways on the Tonle Sap, Mekong, Bassac and Vam Nao rivers, and selected canals can be used by both Cambodian and Vietnamese vessels. The distance between Phnom Penh and the closest port in Vietnam is 330 km via the Mekong river. Current restrictions allow 4.5 m during the dry season and 5.5 m during the rainy season or a maximum capacity of 2,500 tons or 125 TEUs. Navigable inland waterways in Cambodia total around 1,750km. The Mekong River accounts for 30%, the Tonle Sap River 15%, the Bassac River 5%, and other tributaries 50%.

There are three international airports in Cambodia: Phnom Penh, Siem Riep and Sihanouk. The Societe Concessionaire de l'Aeroport (SCA) has been operating all three airports under the BOT (Build-Operate-Transfer) concession agreement. All other airports except one military airport are managed by the State Secretariat of Civil Aviation (SSCA).

2.1.2. Electricity Infrastructure

Like many other developing countries, Cambodia introduced PPP to build new electricity infrastructure projects since the 2000s. From the viewpoint of electricity capacity expansion, the electricity PPP projects can be considered a success, although, on the other hand, they have created a significant fiscal burden by contingent liabilities.

As shown in <Table 1-2>, the first electricity PPP project was the Kirium first-phase hydropower plant. The contract was signed in June, 2000 with a Chinese company and was opened in 2003. The concession period is 30 years. Another five hydropower plants were opened under the BOT contracts and two more coal-power plants

were opened under the BOO contracts. There are also electricity transmission and distribution projects.

〈Table 1-2〉 Electricity PPP Projects in Cambodia

Project	Concessionaire	Cost (\$ mil.)	Type	Capacity	Signed	Opened	Period (years)
Kirium 1st phase hydropower	China	26	BOT	12MW	2000. 6	2003	30
Kamchay hydropower	China	280	BOT	193MW	2006. 2	2012	40
Stung Atay Hydropower	China	253.3	BOT	120MW	2007. 2	2013	30
Stung Tatay hydropower	China	540	BOT	246MW	2007. 2	2015	37
Phnom Penh-Battambang distribution	China	113.4	BOT	230KV	2007. 2	2013	25
Kirium 3rd phase hydropower	China	47.1	BOT	18MW	2008. 2	2012	30
Preah Sihanouk coal-power	Malaysia	195.4	BOO	100MW	2008. 9	2013	30
Russey Chrum Krom hydropower	China	497.8	BOT	338MW	2009. 9	2014	30
Phnom Penh-Kampong Chamtra transmission	Cambodia	107.6	BOT	230KV	2010. 1	2013	25
Preah Sihanouk coal-power	Cambodia	362	BOO	270MW	2011. 4	2015	30
Preah Sihanouk II coal-power	Cambodia	n.a	BOO	135MW	2011. 6	2017	30
Lower Sesan 2nd phase hydropower	Cambodia	781.6	BOT	400MW	2012. 11	2018	40

Source: Ministry of Mines and Energy, Internal data (2015).

With the construction of many new electricity power PPP projects, the electricity service level has been somewhat improved in Cambodia. However, some issues are continuously raised. There is still a notable discrepancy in the service level between regions. Many users have complained about the high electricity rate compared with neighboring countries. From the government viewpoint, there have been some worries regarding the contingent liabilities caused by PPP contracts.

2.2. Infrastructure Planning System and Plans

2.2.1. Infrastructure Planning System

As mentioned above, most infrastructures in Cambodia are in poor condition; accordingly, more investment into infrastructure should be made. It is therefore necessary to identify which infrastructure sector and, in particular, which infrastructure project, should receive investment. It is quite common in most countries that line ministries such as the Ministry of Transport request a significant number of investment projects without regarding available financing sources of the Ministry of Finance. Since too many investment projects are requested within limited financing sources and there is no prioritization between requested investment projects, it is common for the budget ministry to allocate its limited financing sources rather evenly into the most-requested projects. Ultimately, therefore the completion of most urgent projects is delayed because of this lack in financing sources, while less urgent projects are invested too early.

Accordingly, the infrastructure planning system, i.e. how investment projects are prepared and prioritized by line ministries - then how available financing sources are allocated by the budget ministry between requested investment projects - is to be analyzed before more financing sources would be mobilized. Firstly, the investment needs for infrastructure in Cambodia are usually identified and suggested in the mid- and long-term master plans of line ministries such as MPWT, MIME and MRD. Therefore, the planning procedure of long-term master plans of the MPWT and MIME is reviewed. The MRD takes responsibility for rural roads' investment plans. However, since the investment needs for rural roads are not extensive, they are not reviewed here.

As with many other countries, various types of long-term master plans are set up by the MPWT and MIME. Since the long-term transport and electricity infrastructure plans are closely related with the long-term socio-economic plans, those plans set by the MEF or the Ministry of Planning (MOP) are reviewed first. The Cambodian government set up the five-year Socio-Economic Development Plan (SEDP) I and II since 1994. Subsequently, the National Strategic Development Plan (NSDP) replaced the SEDP. Three NSDPs are set up, 2006-2010, 2009-2013 and 2014-2018. Aside from the NSDP, the Rectangular Strategy (RS) I, II and III were set up. Even though these mid- and long-term socio-economic plans cannot be analyzed in detail, they are of considerable use in demonstrating what the future of Cambodia might be and what policies would be pursued.

The mid- and long-term infrastructure plans could be set up to achieve the goals, objectives or principles of these socio-economic plans. Various transport infrastructure

master plans such as roads, expressways, railways, seaports and airports are set up separately by the MPWT. Equally, the electric power master plan is set up by the MIME. As with other developing countries, the long-term master plans in Cambodia are set up by foreign consultants, depending on donor countries. Sometimes the master plan for target year is set up by different foreign consultants. The problem is that the master plan often stands for the self-interest of donor countries. Another problem is that the master plan is usually set up based upon an overly optimistic future. In particular, available financing sources are not properly considered, and, ultimately, too many projects are listed in the master plan. Furthermore, the MPWT and MIME mostly accept the over-ambitious project plans without any evaluation, prioritization or consideration of financing sources.

The project list in the master plan is usually the starting point when the project investment is reviewed. The investment decision for a project by the government is, however, a quite different matter. In most cases, an economic Feasibility Study (FS) is conducted for a certain large scale project. Therefore, the economic FS is one of the most important procedures for determining a project's investment decision. Since the economic FS is conducted by a foreign consultant and it is supervised by the MPWT and MIME, the FS result might be biased for investment without proper consideration of financing sources. Then the MPWT and MIME not only submit a long list of projects without consideration of financing sources, but also without prioritization.

Since too many infrastructure investment plans are submitted without prioritization, there is nothing much for the MOP and MEF to coordinate investment projects. The MOP and MEF do not have enough human resources to review the master plan and each project's FS result. The MEF has undoubtedly recognized the importance of infrastructure investment and more of the budget has now been allocated into infrastructure investment. In spite of the budget increase in infrastructure investment by the MEF, the investment needs submitted to the MPWT and MIME could not have been filled at all. On the other hand, the further mobilization of financing sources has been quite limited.

Therefore, two approaches could be made to resolve these problems. One is that the MPWT and MIME submit the investment needs with prioritization of projects under currently available financing sources. Although the economic feasibility study is conducted under the supervision of the MPWT and MIME, it should be monitored by the MEF or MOP. The other is that the MEF should mobilize more financing sources to fill the gap between available financing sources and investment needs. This will be further discussed later.

2.2.2. Infrastructure Plans

Transport infrastructure plans in Cambodia are well described in the “Overview of the Transport Infrastructure Sector in the Kingdom of Cambodia (5th version)”, prepared by the Infrastructure and Regional Integration Technical Working Group (IRITWG) with the aid of the JICA in 2015.

The road master plan was prepared by the JICA in 2006 and updated in 2009. Based on the master plan, the MPWT is to rehabilitate 3,500km in next five years. In the case of 1-digit NRs, it is to rehabilitate DBST into asphalt pavement, expand two lanes into four lanes in large cities, etc. In the case of 2-digit NRs, it is to improve the pavement ratio from 50% to 90%. Since the provincial road is not the responsibility of the MPWT, there is no explicit objective. The MRD might have a plan for rural roads.

As for the expressway, two master plans are prepared. One has been prepared by China and the other by the JICA. The master plan by China suggested 11 expressway networks of 2,230 km by 2040 at a cost of USD 26 billion. By 2020, it suggested 850 km with USD 9 billion. One of them is the 205km expressway from Phnom Penh to Sihanoukville. The JICA, in contrast, suggested eight expressway networks of 2,200 km in 2013. Even though the suggestions of these two plans are rather different, there is no coordination between them by the MPWT. Instead, since a new expressway from Phnom Penh to Preah Sihanoukville is one of several suggestions by China and one Chinese company proposes a unsolicited PPP project of this expressway, the MPWT is currently working to review this project.

The KOICA conducted the railway master plan in 2013. Several new railway lines, including high speed railways, were suggested. By 2020, the rehabilitation of the northern line and a new line of 249 km from Phnom Penh to Vietnam was put forward. However, since the new line construction costs a great deal of money and time, it cannot be considered at the moment. Consequently, the objective of the MPWT in next five years is to complete the rehabilitation work of the northern line and to build a missing link of 6km to connect Thailand. It is also to build new railway freight terminals in Phnom Penh and Preah Sihanoukville to facilitate the utilization of the southern line, which was newly reopened after completing the rehabilitation work.

As far as the seaport plan is concerned, it is concentrated upon the Sihanoukville port expansion. Port Autonomous of Sihanoukville (PAS) has been developing the multipurpose terminal with two main terminals with USD 71.7 million. One is the dry bulk cargo terminal with loading capacity of 40,000 DWT, and the other is the oil exploration terminal. It has also been developing the Special Economic Zone (SEZ) of

70 ha next to the port terminal. On the other hand, since the construction of Phnom Penh river port 3 in 2013, there is no large scale river port plan. As regards airports, a new airport in Siem Reap will be built with 10 million-passenger capacity a year to handle the rapid increase in tourism.

The electric power master plan is the same as the transport infrastructure master plan. Since the first master plan was prepared by the World Bank in 2007 and revised in 2009, those plans in the master plan have been procured by PPP projects. As already shown in Table 2.2, many PPP projects had been contracted and opened, or under construction. Since 2013, the EDC has been revising the master plan and is expected to finish it soon. Subsequently, more electricity PPP projects would be procured.

2.2.3. Medium-Term Government's Investment Plan

Since 1996, the Ministry of Planning (MOP) has prepared the annual three-year public investment program as a medium-term government investment plan, called the Public Investment Programme (PIP). In preparing the PIP since 2006, the PIP corresponds to the envisaged sectoral allocation in the NSDP. In 2015, the MOP prepared the PIP 2016-2018 from the basis of the NSDP 2014-2018, with consultations from the MEF and related ministries and agencies. Transport and electricity infrastructure investment plans along with other public investment plans for next three years are shown in the PIP 2016-2018.

The MOP set some guidelines for related ministries/agencies when preparing the primary data sources for the PIP 2016-2018: (1) the total allocation of projects in a sector will be in the limits of sectoral allocation in the NSDP 2014-2018; (2) ongoing projects will be given priority; (3) the remaining balance will only be allocated to new projects with prioritization. In spite of the guidelines set by the MOP, public investment needs for the transport sector are much greater than that in the NSDP.

As shown in <Table 1-3>, according to the NSDP 2014-2018, the total investment target in 2016-2018 was USD 17,426 million, where the public investment was USD 5,570 million. The transport and electricity sector targets in 2016-2018 were USD 668 and 223 million respectively. However, the PIP 2016-2018 showed that the transport sector increased to USD 1,814 million, almost 2.7 times that of the NSDP target, while the electricity sector was almost the same. On the other hand, the education, health and other sectors in the PIP were largely reduced, compared with the NSDP target. This was quite different from the guidelines of the MOP. It implied that the transport infrastructure investment had been more emphasized than education and health to achieve Cambodia's economic growth for next three years.

〈Table 1-3〉 Investment Target in the NSDP 2016-2018

(Unit: USD million)					
	2015	2016	2017	2018	Total 2016-2018
Public	1,511	1,700	1,883	1,987	5,570
Private	3,241	3,593	3,942	4,321	11,856
Total investment	4,752	5,293	5,825	6,308	17,426

Source: Ministry of Planning, "Public Investment Programme 3-year-rolling 2016-2018", Royal Government of Cambodia (2015).

If the transport infrastructure investment of USD 1,814 million is reviewed, 1,235 million is allocated for 20 on-going projects and 579 million for 62 new projects. Out of 20 on-going projects, 15 concern the rehabilitation of 1-2 digit NRs and the remainder for port improvement, restoration of waterways and drainage, etc. In case of 62 new projects, 40 of them are for rehabilitation of 1-2 digit NRs and others are other types of roads, ports, railways, waterways, etc. Therefore, it could be summarized that the rehabilitation of 1-2 digit NRs is the one of the first priorities of its national agenda in Cambodia for the next three years and more.

The importance of road investment becomes more evident when considering that the rural road rehabilitation by the Ministry of Rural Development (MRD) is not included here. Furthermore, the Phnom Penh-Sihanoukville expressway might be newly built by a PPP project. Since the expressway would be constructed by the Build-Operate-Transfer (BOT) type, it is thought the BOT project could be wholly invested by the private sector. However, this might be wrong given that the long-distance road PPP project cannot be built without some public contribution to the construction cost, unlike electricity PPP projects. An additional problem is present when financing sources for all new projects are not secured at all. This will be further discussed in the next section.

When the investment amount and number of projects in transport infrastructure for the next three years are reviewed, it appears that too many projects would be pursued. In particular, despite the ongoing 1-2 digit NR projects only being 15, the new 1-2 digit NR projects reach 40. Aside from the financing issue, it could be argued that many road projects have been pursued to improve the accessibility of the whole country, rather than to increase the productivity of some specific areas. It might mean that the equity is more considered than the efficiency in transport infrastructure investment.

The electricity infrastructure investment plan is quite different from the transport

plan. The investment amount of USD 213 million in the PIP 2016-2018 is quite small and it is wholly allocated for seven ongoing projects. There are no new projects for the next three years. Even the seven ongoing projects are for four transmission line projects, two rural electrification projects and one feasibility study project and there is no power generation project at all. This is because all new power generation projects are built under the PPP contract, mostly the BOT contract. As far as the electricity power BOT projects in Cambodia are concerned, their construction costs have been wholly financed by the private sector. This is why there is no public investment plan for ongoing and new projects for the electricity infrastructure. However, without some public contribution to the construction costs, the BOT project might cause another problem in the future. The electricity rate should be expensive because of the lack of public contribution. Furthermore, it might cause contingent liabilities (CLs) so that it becomes a fiscal burden on the government in the future. This will be further discussed in the next section.

2.3. Infrastructure Financing in Cambodia

2.3.1. Current Infrastructure Financing

With the high economic growth rates since the 2000s, the GDP in Cambodia has considerably increased. The GDP in 2000 was merely USD 3,649 million, however, it almost doubled to USD 7,275 million in 2006 and since then more than doubled to USD 16,796 million in 2014. The government tax revenue increase has been much higher than the GDP increase. As a result, the tax revenue proportion of GDP has increased significantly in recent years. It was 10.1% in 2000 and has remained around 10% until the early 2000s. However, it has largely increased in the late 2000s, reaching 18.1% in 2014. Although the tax revenue has largely increased, there is still a problem in the tax revenue collection system, which causes some tax evasion.

To strengthen the tax collection system, since 2014, the government has adopted a medium-term Revenue Mobilization Strategy that aims to increase tax revenue collection to reach its existing potential without creating new tax bases or increasing current tax rates. However, despite this, it would focus on strengthening existing policies and laws through the strict and firm implementation of administrative and political measures - especially to promote the culture of tax payment, to reduce smuggling and tax avoidances, and to improve good governance in both customs and excise, taxation and non-taxation.

〈Table 1-4〉 GDP, Tax Revenue and Expenditure in Cambodia

(Unit: USD million)								
	2000	2002	2004	2006	2008	2010	2012	2014
Nominal GDP	3,649	4,280	5,339	7,275	10,337	11,634	14,054	16,796
Tax revenue (% of GDP)	369 (10.1)	456 (10.6)	552 (10.4)	826 (11.4)	1,370 (13.3)	1,490 (13.2)	2,141 (15.2)	3,027 (18.1)
Budget expenditure (% of GDP)	529 (14.5)	769 (18.0)	757 (14.2)	1,022 (14.1)	1,644 (15.9)	2,400 (21.3)	3,028 (21.6)	3,590 (21.5)
Overall deficit (% of GDP)	-157.2 (-4.3)	-309 (-7.2)	-205 (-3.8)	-238 (-3.3)	-295 (-2.9)	-979 (-8.7)	-913 (-6.5)	-610 (-3.7)

Source: Ministry of Economy and Finance, "Macroeconomic Framework as of March 2016", Internal data (2016).

Aside from 2002, the government budget expenditure has been around 14-16% of GDP until 2008. However, it has significantly increased to 20.5% in 2009. Since then, and up to the present time, it has been around 21%. There has always been a gap between government tax revenue and budget expenditure. The budget deficit has been around 3-4% of GDP until 2008, except for 2002. It has increased to 6-8% since 2009 until 2012. The deficit has to be filled by official development assistance, both bilaterally and multi-laterally. As a result, the external debt stock has continuously increased and it reached USD 5,648 million or 31.2% of GDP at the end of 2015, of which 3,957 million is from bilateral partners and 1,691 from multilateral partners.

〈Table 1-5〉 External Public Debt Stock in Cambodia

(Unit: USD million)								
	2008	2009	2010	2011	2012	2013	2014	2015
Debt stock	2,608 (25.2)	2,876 (27.6)	3,152 (27.1)	3,646 (28.1)	4,274 (30.4)	4,871 (32.0)	5,279 (31.4)	5,648 (31.2)
Bilateral	1,220	1,376	1,623	2,063	2,643	3,132	3,579	3,597
Multilateral	1,388	1,500	1,529	1,583	1,631	1,739	1,700	1,691

Note: Figures in parenthesis show the rate of GDP.

Source: Department of Cooperation and Debt Management, Internal data (2016).

In early 2012, the Cambodian Government adopted the Debt Management Strategy 2011-2018 and has updated it in 2015 to Debt Management Strategy 2015-2018. The strategy has been developed with the aim of ensuring efficiency, effectiveness, transparency and accountability in managing public debt as a means of

further maintaining debt sustainability in the long run and to lower the debt risk.

As far as the financing sources for public investment projects are concerned, the reliance on external debt has been much bigger. This is because it has been much easier for the Cambodian government to borrow money for public investment projects from multilateral and bilateral banks. In 2015, public investment is estimated to be around USD 1,511 million, where external and domestic financing sources are 1,176 million (78%) and 335 million (22%) respectively. Cambodia has been overly dependent upon external financing sources for public investment.

2.3.1.1. Transport Infrastructure Financing

There are five financing sources related with transport infrastructure investment. They are vehicle-related tax revenues, foreign and domestic loans/grants, public corporations self-financing through user charges, PPP, and others. Each will be analyzed in detail.

Firstly, in general, the most important financing source is the vehicle-related tax revenues. There are three tax revenue sources in Cambodia: imported vehicle tax, gasoline tax and diesel tax. The effective tax rate for imported private cars in Cambodia was around 30-35% until 2006, however, it conspicuously increased to around 115-121% in 2007. The gasoline tax per liter is 992 Riel or USD 0.25, while the diesel tax per liter is 461 Riel or USD 0.12.

As shown in <Table 1-6>, the vehicle-related tax revenues have been increasing rapidly, as the number of imported vehicles and their tax rate have increased noticeably, particularly since 2007. The imported vehicle tax revenue in 2014 is USD 464.2 million, which is almost 13 times that in 2006. The gasoline and diesel tax revenues in 2014 are USD 144.4 and 132.4 million respectively, which are almost eight times those of 2006. Accordingly, the total vehicle-related tax revenue in 2014 is USD 741 million, which is 4.4% of GDP. This is around 24% of the government tax revenue in 2014.

When the proportions of vehicle-related tax revenues of GDP (4.4%) and government tax revenue (24%) in Cambodia are compared with other countries, it cannot be argued that the vehicle-related tax revenues are insignificant. However, it could be argued that the gasoline and diesel tax rates are rather low, compared with the imported vehicle tax rate. It is quite common that the gasoline and diesel tax revenues are much larger than the imported vehicle tax revenue. When the air pollution effect from gasoline and diesel is considered, it might be argued that the gasoline and diesel tax rates are increased to mobilize transport infrastructure financing sources.

〈Table 1-6〉 Vehicle-Related Tax Revenues in Cambodia

	2000	2002	2004	2006	2008	2010	2012	2014
Number of imported vehicles	97,936	95,512	141,682	223,737	361,201	283,966	384,681	518,799
Imported vehicle tax revenue	12.0	12.2	22.2	35.6	250.9	184.8	313.2	464.2
Gasoline tax revenue	16.7	9.1	10.5	17.2	95.1	120.3	131.3	144.4
Diesel tax revenue	20.6	15.2	16.2	17.4	60.6	100.6	117.3	132.4
Total vehicle related tax revenue	49.3 (1.4)	36.5 (0.9)	48.9 (0.9)	70.2 (1.0)	406.6 (3.9)	405.7 (3.5)	561.8 (4.0)	741.0 (4.4)

Note: Figures in parenthesis show the rate of GDP.

Source: Ministry of Economy and Finance, Internal data (2016).

Secondly, foreign loans/grants are perhaps the most important financing sources in developing countries, and this also holds true in Cambodia. As mentioned above, Cambodia has been overly dependent on foreign loans/grants from development partners in transport infrastructure investment, just as it is with public investment. According to the NSDP 2014-2018, the total budget prorated for infrastructure in 2016-2018 is USD 1,169 million, of which 78% is from the development partners' fund, and 22% from the state budget.

Thirdly, public corporations' profit through user charges is another important financing source in transport infrastructure investment in most countries. However, it is not used at all in the road sector. This is because there are almost no toll roads in Cambodia. Instead, the expressway BOT project is being procured.

Fourthly, the PPP has become a somewhat important financing source in transport infrastructure investment in most countries since the 1990s. Cambodia has recently contracted with private sectors for the operation of the southern railway and all three international airports. However, there has, as yet, been no investment in transport infrastructures by private sectors.

Fifthly, as a further financing source, the land value capture might be considered in some countries. However, this has not yet been used in Cambodia.

2.3.1.2. Electricity Infrastructure Financing

Electricity infrastructure has been wholly invested by the government until the 1990s; however, most of them have been invested by private sectors through PPP procurement since the early 2000s. As already mentioned, 12 electricity PPP

projects have been contracted and some are already in operation. Although there is no public corporation in transport infrastructure construction and operation, the Electricity Du Cambodge (EDC) as a public corporation has played a significant role in implementing electricity PPP projects. Therefore, it is necessary to analyze the PPP procedures and the performances of electricity PPP projects.

Since the 1990s, PPP has been recommended in many countries as a supplementary means of filling the gap between infrastructure investments needs and public financing sources. It is argued that there is considerable private capital available which could be induced into infrastructure projects. Over the last 25 years, a great deal of progress has been made in PPP projects. Not only academics but also many research institutes or organizations such as the World Bank, World Economic Forum, OECD, etc. have published articles and reports on various aspects of PPP projects. There have been many successful PPP projects, however, there have also been some instances of failure.

Although their arguments are rather different, the majority of the articles and reports argue that the legal and institutional framework should be established first and then step-by-step procedures such as PPP project selection, preparation and implementation should be taken for every project. The various risks for every project could be shared appropriately between the public and private sectors. If project risks are not properly taken by public and private sectors, the project might not be completed in time, or it might cause serious problems after it is completed. One of the most typical problems is contingent liabilities which could not be properly estimated when the project was procured. This has been a particularly serious concern in some PPP projects in developing countries.

The PPP legal and institutional framework in Cambodia is currently weak. Even though the law on concessions, one specifically regarding PPP, was enacted in October 2007, there are no general PPP laws, decrees and regulations which specify the various PPP types in detail. Concession projects have been managed by the Government Contracting Authority (GCA) in the MEF but the GCA has also experienced a lack of human resources.

In order to understand the PPP procedures in Cambodia, it would be better to analyze some electricity PPP projects. Electricity PPP projects have been selected from the electricity master plan, which is established by the foreign consultant. Like the transport master plan, the financing sources are not properly considered and the plan might be overambitious. In this case, the private, not the public, sector conducts the PPP feasibility study for a specific project. The government committee, including EDC reviews the study result, however, it is quite difficult to reject the PPP project. It is quite common because most committee members as well as the private sector

would like to procure the project. Even though the MEF could play some role in reviewing it in detail, the role is quite limited because of the asymmetric information problem.

After a PPP project is selected, the private sector then prepares the project. Even though the project preparation would be reviewed by the government, it might be thought that most of project risks would be favored for the private sector. Since most of the project feasibility study and preparation procedure is done by a specific private sector, it is difficult to expect that the project is implemented by competitive bidding.

As far as the electricity PPP project in Cambodia is concerned, it is initiated by the private sector and the role of the public sector is quite limited. Accordingly, the future risks such as contingent liabilities (CLs) are not analyzed properly. The IMF (2015) argued that the fiscal risks from CLs need continuous monitoring. The MEF also recently expressed concerns regarding the CLs.

Twelve years have passed since the first electricity PPP project was opened in 2003. During the last four years from 2012, a lot of PPP projects were actually opened. Since the EDC has to pay large amounts to the private sector every year, it has to rely on debt. This is why liabilities of EDC have not increased significantly until 2010; however, more recently, it has sharply increased, from Riel 233 billion in 2000, to 375 in 2005, to 936 in 2010, and to 2,168 in 2013. The EDC has virtually no domestic public debt and has issued 4 million USD bonds.

2.3.2. Future Infrastructure Financing

According to the PIP 2016-2018 of MOP (2015), the financing for public investment projects of USD 5,571 million are heavily reliant on external sources. As shown in <Table 1-7>, USD 4,337 million or 78% of investment needs come from external financing sources, while the remaining 22% or USD 1,234 million would come from domestic ones. In order to achieve this objective of external financing sources, the report mentioned that the Cambodian government will work hard to obtain more grants and loans from new countries/agents as well as traditional ones. In contrast, it did not mention anything about how to mobilize domestic financing sources.

〈Table 1-7〉 Financing Sources for Public Investment in 2016-2018

(Unit: USD million)				
	2016	2017	2018	Total
Domestic finance	376	417	440	1,234 (22%)
External finance	1,324	1,466	1,548	4,337 (78%)
Total	1,700	1,883	1,988	5,571

Source: Ministry of Planning, "Public Investment Programme 3-year-rolling 2016-2018", Royal Government of Cambodia (2015).

2.3.2.1. Future Transport Infrastructure Financing

Future transport financing sources also follow the principle of the PIP 2016-2018. As shown in <Table 1-8>, the transport investment needs for next three years are USD 1,814 million. Twenty-nine ongoing projects need USD 1,235 million or 68% of the total, while 62 new projects need USD 579 million or 32% of the total. In the case of ongoing projects, 78% are financed from external sources, while 22% from domestic ones. This might also be the same for new projects, if it is not explicitly shown in the PIP 2016-2018.

〈Table 1-8〉 Financing Sources for Transport Infrastructure Investment in 2016-2018

(Unit: USD million)				
	2016	2017	2018	Total
Ongoing projects	633	354	248	1,235
Domestic finance	198	43	28	269 (22%)
External finance	435	311	220	966 (78%)
New projects	82	200	298	579
Total	715	554	545	1,814

Source: Ministry of Planning, "Public Investment Programme 3-year-rolling 2016-2018", Royal Government of Cambodia (2015).

As mentioned in the previous section, the rural road rehabilitation investment by the MRD is not included here. As for MRD financing sources, external financing sources consist of around 91%. Furthermore, the financing sources for the Phnom Penh-Sihanoukville expressway are not considered in the PIP since this expressway may be built by a BOT project.

2.3.2.2. Electricity Infrastructure Financing

As mentioned in the previous section, the public investment needs for electricity

infrastructure are small. The investment needs for ongoing projects for the next three years are USD 213 million, and for new projects merely USD 10 million. This is because most electricity projects would be procured by the BOT and it is considered they are to be wholly financed by private sectors.

〈Table 1-9〉 Financing Sources for Electricity Infrastructure Investment in 2016-2018

(Unit: USD million)				
	2016	2017	2018	Total
Ongoing projects	141	72	-	213
Domestic finance	46	18	-	63 (30%)
External finance	95	54	-	150 (70%)
New projects	3	4	3	10
Total	144	76	3	223

Source: Ministry of Planning, "Public Investment Programme 3-year-rolling 2016-2018", Royal Government of Cambodia (2015).

2.3.3. Issues in Infrastructure Financing

Considering the abovementioned infrastructure financing sources in Cambodia, four issues could be raised.

2.3.3.1. Inadequate Infrastructure Planning System

Too many investment plans have been pursued, not only without prioritization, but also without considering available financing sources. Line ministries such as MPWT, MIME and MRD, with the aid of foreign consultants, have established master plans from their own viewpoints and have submitted most of the plans to the planning and finance ministries such as MOP and MEF. In the meantime, the economic and PPP feasibility study could be conducted for some projects by a foreign consultant, who would be willing to produce a positive result in their own interest.

If the MOP and MEF could have played a coordinating role between too many projects, the problem could be rather mitigated. However, it is very difficult to perform this role because of the lack of capability and asymmetric information. They might merely summarize many submitted plans. Anyway, it would be difficult to pursue them because of lack of financing sources. Therefore, if the external financing sources could be mobilized for certain projects, the project might be first procured with the rest of the investment cost from domestic financing sources. If not, the project might be delayed.

2.3.3.2. Overly Dependent on External Financing Sources

Cambodia has been overly dependent upon external financing sources. In the case of public investment projects, 78% of investment costs are financed by external financing sources. The remaining 22% are financed by domestic sources. This is the general rule for all the public investment projects. However, it is quite common in most countries to collect vehicle-related tax revenues for transport infrastructure investments. In some cases, the tax revenues are often ear-marked for transport infrastructure investment.

2.3.3.3. No Public Corporation in the Road Sector

In spite of criticism regarding their inefficiency, public corporations have been playing an important role in infrastructure investment in many countries such as Japan and Korea. Cambodia does not have large private companies which could have the capability of investing significant amounts of money into infrastructure. If large-scale infrastructure projects are procured by the PPP in Cambodia, most of the private sector would be foreign companies. In spite of the existence of the EDC, this has actually happened in the first eight electricity PPP projects until 2009, of which seven concessionaires are Chinese companies and one is a Malaysian company.

Since there is no public corporation in the road sector, if a toll road PPP project is procured, the government without sufficient expertise and relevant information should deal directly with prospective private sectors. Then the government would be easily captured by private sectors. Without a public corporation, this problem would probably continue for a considerable length of time.

2.3.3.4. Many PPP Projects under Weak Framework

In order to procure PPP projects, the legal and institutional framework should first be established. Following this, some appropriate PPP projects are selected, based upon an economic and PPP feasibility study. If a project is economically feasible and financially viable, some specific preparation for each project should be made, such as an initial contribution to the construction cost, risk sharing, etc. Subsequently, the project implementation would be followed, such as bidding, negotiation, contract agreement, project approval, etc.

In Cambodia, in spite of the weak legal and institutional framework, some electricity PPP projects have been procured. However, after some PPP projects have become operational, contingent liabilities have been materialized, and this concern might become serious in the future. Recently, the MPWT has been trying to introduce the PPP for a new expressway of 200 km from Phnom Penh to Sihanoukville. The

transport PPP project is thought to be more risky and create more CLs than the electricity PPP project.

2.3.3.5. No Land Value Capture

Because of greater job opportunities, more people have migrated into large metropolitan areas such as Phnom Penh, and this can be expected to continue. Some land development projects for housing areas would have already progressed and this would be further facilitated in the near future. In most land development projects, the land value would be significantly increased. Therefore, some proportion of land value increase would be captured by the government and it could be used as an important financing source for newly needed transport infrastructure investment.

3. Infrastructure Financing in Korea

3.1. Infrastructures with Economic Development

When the Korean Civil War ended in 1953, all infrastructures in most sectors were devastated. Moreover, in the case of roads, only 2.4% were/remained paved in 1953. Accordingly, the Korean government focused its efforts on rehabilitating roads in the 1950s and until the mid-1960s. When the first five-year economic development plan was established and implemented in 1962, the government recognized that it would be necessary to invest into further infrastructures to support the planned economic development. This is the reason behind the first and second new expressways being built in the late 1960s.

With the continuous rapid economic development in the 1970s and 1980s, investment into infrastructure continued. More new expressways were built in the 1970s. Some rehabilitation of existing roads also continued. Large investments had also been made into seaports to export and import materials and products, and numerous new electric power plants have been built.

The continuous high economic growth brought a rapid increase in vehicle ownership increase since the mid-1980s. The number of vehicles was a mere 528,000 in 1980, however, it reached 3,395,000 in 1990. This, however, caused serious congestion across all types of roads. Since the investment in roads has rather stagnated since the 1980s, the government has made extensive investment into roads in the 1990s and until the mid-2000s. A great deal of investment was made in building new expressways, expanding existing ones, and rehabilitating national, local and metropolitan roads. The earmarked tax system levied on gasoline and diesel in 1994 has contributed greatly towards finding a new financing source.

Aside from roads, in order to mitigate the urban congestion, a considerable number of new urban metros have been built since the 1980s. A new high-speed railway was built in what had been a particularly congested regional corridor since the late 1990s. As far as seaports and airports are concerned, they have been continuously invested in to cope with the significant increase in international freight and passenger demand.

Large investment into all types of infrastructures have continued until the mid-2000s. However, some criticisms have been raised that too much investment into infrastructure might bring about some inefficiencies in the Korean economy.

Consequently, infrastructure investment has been reduced since the mid-2000s, particularly road investment. However, investment into other sectors has continued. <Table 1-10> shows the infrastructure development in Korea.

<Table 1-10> Infrastructure Development in Korea

	1970	1980	1990	2000	2010	2012
Per capita GDP (USD)	279	1,674	6,153	11,347	20,540	22,590
Annual GDP growth (%)	-	9.0	9.7	6.5	4.2	2.8
Population (thou.)	31,435	37,407	43,390	47,733	50,516	50,948
No. of vehicle (thou.)	127	528	3,395	12,059	17,941	18,870
Road length (km) (Paved road, %)	40,245 (10)	46,952 (33)	56,715 (72)	88,774 (76)	105,565 (79.8)	105,703 (83.4)
Freeway length (km)	551	1,225	1,551	2,131	3,859	4,044
Railway length (km)	3,193	3,135	3,091	3,123	3,378	3,559
Airport passengers (mil.)	1	4	21	42	60	69
Port handling capacity (thou. ton)	-	86,187	224,323	430,437	928,524	1,017,190
Electric power (GWh)	9,167	37,238	107,669	266,399	474,660	509,574

Source: Ministry of Land, Infrastructure and Transport, Korea Development Bank, etc., Annual Statistics (2012).

3.2. Infrastructure Planning System

3.2.1. Centralized Planning by Line Ministries

With the introduction of five-year economic development plans in 1962, the central government took the initiative of setting up national goals, objectives and strategies. These five-year plans were put in place until the mid-1990s. The most

important national goal has been to accomplish the export-oriented economic development so that the central government has intuitively selected target infrastructure sectors and projects, particularly in the 1960s and 1970s. New industrial complexes have been developed in large cities and coastal areas. The purpose of transport infrastructure has been to support economic development. Accordingly, the central government has expanded ports and built new expressways rather than rehabilitating national and local roads. It had made less investment in railways and airports. It also built sufficient power plants to supply electricity for manufacturing industrial complexes.

Most available financing sources had been used for intuitively selected projects. Although some external financing sources had been inevitable, domestic financing sources had been largely mobilized in spite of strong objections. Gasoline, diesel and car excise taxes were heavily increased and large long-term government bonds had been issued. A large proportion of the central government budget had been spent and a rather high toll level had been charged. Significant investment into all types of infrastructure continued until the late 1990s.

Since the 1970s, long- and mid-term infrastructure master plans have been created. The road master plan, expressway master plan, electric power master plan, etc. have been operationalized by related ministries such as Ministry of Construction and Transport (MOST). However, they have been very ambitious independent plans and there had been no prioritization in each plan. Fiscal limits in financing sources had not been properly considered. Although the feasibility study for some large projects has been conducted by line ministries, almost all study results have shown they are economically feasible. Some biases are quite common, such as an overestimation of demand and underestimation of cost.

With the economy having grown so rapidly, the demand for transport infrastructure has increased to such an extent so the oversupply of infrastructure might not be a significant problem. However, when economic growth has slowed down, the oversupply of infrastructure might cause a serious problem. Since the mid-1990s, some criticisms from academics have been raised regarding the oversupply of infrastructure. In particular, the economic crisis in 1997 seriously hit the Korean economy. Accordingly, it was necessary to take some measures to improve the efficiency in infrastructure investment.

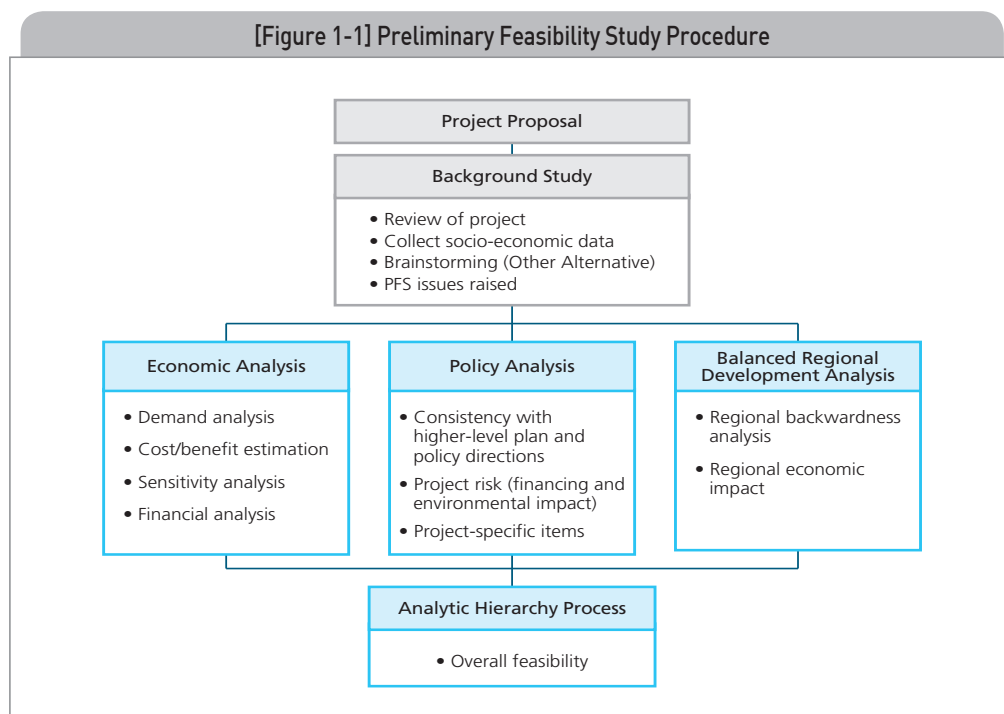
3.2.2. Centralized Project Management by Finance Ministry

Since the feasibility study has been conducted by line ministries such as the MOST, the study result has reflected the interest of the line ministry, which is willing to invest more, if possible. However, the financing gap could not have been filled by

huge investment needs. There have been criticisms of excessive investments in roads, airports and seaports since the overestimation of demand and underestimation of cost have been quite common.

Accordingly, the Preliminary Feasibility Study (PFS) system was introduced in 1999. [Figure 1-1] shows the PFS procedure. It would be conducted by the Korea Development Institute (KDI) under the MOSF. To support the PFS, the national and regional databases have been established and the detailed cost and benefit estimation methodologies have been developed. It has been compulsory to use these databases and methodologies for the PFS of large transport infrastructures. The PFS means all projects are checked and evaluated objectively and transparently. This has resulted in the total amount of investment into infrastructures having somewhat decreased and the investment efficiency has been improved.

Since the PPP system was introduced in 1994, a considerable number of PPP projects have been procured from the late 1990s to the mid-2000s. It had caused some serious contingent liabilities when some projects were operated. In particular, unsolicited projects would have caused more problems. As a consequence, the PPP Feasibility Study (PPFS) system for unsolicited projects was introduced in 2005. Therefore, it could be said that all infrastructures, whether they are procured publicly or privately, are properly managed and organized.



Source: KDI (2008), "Manual on Preliminary Feasibility Study an Road and Railway Projects, 5th Version"

3.3. Infrastructure Financing

3.3.1. Financing Sources of Infrastructure Investment by Sector and Type

3.3.1.1. User Charges and Financing Sources

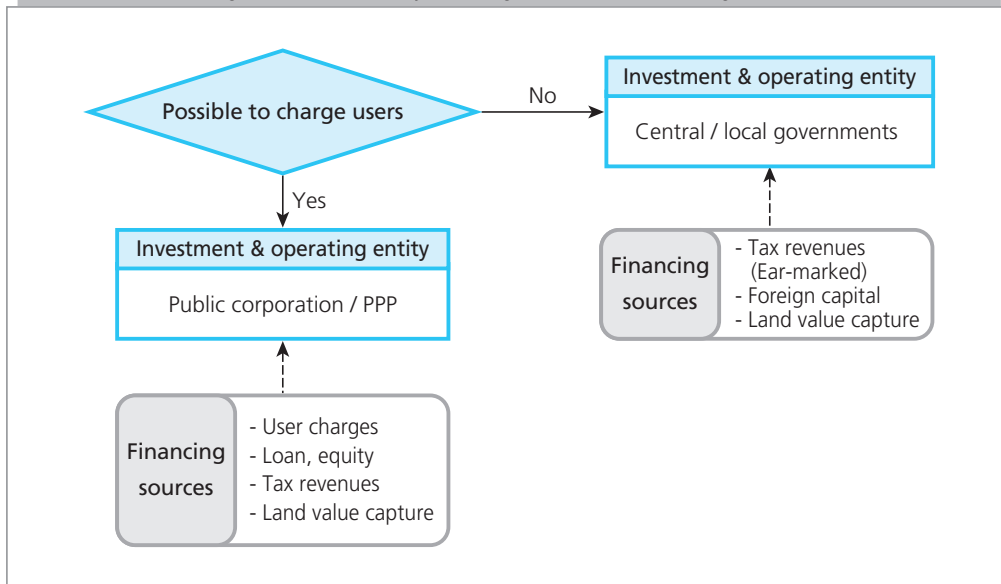
Infrastructure has traditionally been invested in by the government or public corporations. However, since the 1980s, in developed countries the private sector has been involved in the construction and operation of infrastructure. This has been achieved through the privatization of existing infrastructure and public-private partnerships (PPP) of new infrastructure projects. In this case, the most critical condition is how much of the investment and operating costs can be covered by user charges. This is particularly true for the investment cost. If the investment cost cannot be charged to users at all, the infrastructure should be invested in wholly by the public sector. Even if some proportion of the investment cost could be covered by user charges, much infrastructure has been constructed by the public sector in the past. However, from the mid-1990s, in Korea, the private sector, with some contribution from the public sector, has been involved in the construction of new infrastructure projects.

As a result, the possibility of charging users for infrastructure ultimately determines who pays the investment cost and the investment entity. If users cannot be charged, the infrastructure is only invested into by the public sector. This is the case for un-tolled national roads and local roads in most countries. If the user charge can partly cover the investment cost, the infrastructure can be invested in by either the public sector or by the private sector with some contribution to investment cost from the public sector. [Figure 1-2] shows the possibility to charge users, the infrastructure investment entity and financing sources.

The investment entity is primarily dependent upon who finances the investment cost. If the public sector finances the majority of the investment cost, the investment entity is the public sector in most cases. The public sector here means the central government, local government or state-owned enterprises (SOEs). If the investment cost is financed through the PPP, the investment entity is the private sector.

As far as financing sources are concerned, the central and local government is heavily reliant on tax revenues. The use of most tax revenues is not specified, i.e. it is a general tax. However, the usage of tax revenue is earmarked in a few cases. In contrast, SOEs largely rely on the central and/or local government tax revenues. Furthermore, they can borrow money, and charge their users to cover the investment cost. The private sector can finance from the equity, loan, and user charges.

[Figure 1-2] Possibility to Charge Users and Financing Sources



Source: KDI (2015), "Korean Experiences in Providing Infrastructure to Promote Economic Development".

According to the infrastructure characteristics, the responsibility for the investment cost payment is wholly taken by the central government in a few cases. However, in many cases, the investment cost payment is shared between the central government and local government or between the central government, local government, and a public corporation. The investment cost payment for PPP projects is shared between central and/or local governments and the private sector.

The infrastructure investment cost payment also decides the operating entity. If the infrastructure is wholly invested by the public sector, it is mostly operated by the public sector. If it is invested through the PPP, it is mostly operated by the private sector.

Since the opportunity to charge users is quite different between infrastructures, the investment cost payment and financing sources of each infrastructure is also different. At one extreme, all the investment and operating costs can be covered through user charges. Here, the private sector itself invests and operates through the market mechanism. At the other extreme, users cannot be charged at all, which is the case for un-tolled roads: the central and/or local governments invest and operate them. Even if users can be charged on other transport infrastructure types such as expressways and railways, the user charge revenue could cover only some portion of the investment cost.

3.3.1.2. Transport Infrastructure

Even in the transport sector, the investment entity is quite different between infrastructure types, as shown in <Table 1-11>. As mentioned, if users cannot be charged at all, the infrastructure investment cost is wholly financed through tax revenues. If the main function of infrastructure type is primarily focused on national or inter-city matters, the investment entity becomes the central government, and it is financed through national tax revenues. National roads are a typical example. Most airports and seaports might be included here since their user-charge revenues are rather insignificant compared to their investment costs.

On the other hand, if the main function of infrastructure type is primarily focused on local or urban matters and users cannot be charged at all, the investment entity becomes the local government, and it is financed through local tax revenues. However, since the amount of local tax revenue is not large enough to cover its investment costs, some central government's tax revenues are distributed to local governments. In a few cases, some local governments borrow money. Local, metropolitan and city-district roads and urban railways are typical examples.

<Table 1-11> Financing Sources by Transport Infrastructure Type in Korea

Investment entity	Infrastructure type	Financing sources
Central government	National road. Most airport and seaport	National tax revenue
Local government	Local, metropolitan and city-district road. Urban railway	Distributed central gov. tax revenue. Local gov. tax revenue. Loan
Public corporations	Expressway. High speed, inter-city and suburban railway	Subsidized central gov. tax revenue. User fee. Loan
Private sector	PPP road, railway, airport and seaport	Subsidized central and/or local gov. tax revenue. Equity. User fee. Loan

Source: KDI (2013), Financing sources for transportation infrastructure investment.

If the investment cost could be partly covered by user charges, the infrastructure is invested by public corporations in Korea. Depending on the extent of user charges, the subsidy level from the central government tax revenue is determined. In many cases, public corporations borrow money. Expressways and high speed, inter-city and suburban railways are included in this category.

In 1994, a new PPP law was enacted in Korea. Since that time, many PPP transport infrastructure projects have been implemented. In most cases, some subsidies from the central and/or local government have been given to cover some construction

costs. Equity and loans, as well as user charges, are required for PPP projects. Inter-city and urban expressways, tunnels, inter-city and urban light railways, and some airport and seaport facilities are included here.

In the above, the general rule on the investment entity and financing sources by transport infrastructure type was discussed. Based on this general rule, the actual investment cost payment of each infrastructure type by investment entity is shown in <Table 1-12>. Most of the investment cost payment ratios by investment entity are fixed and not changed at all; however, some ratios have recently changed.

〈Table 1-12〉 Financing Sources for Public Infrastructure Investment in Korea

Type		Central gov.	Local gov.	Public corp.
Road	Expressway	50%	-	50%
	National road	100%	-	-
	Local road	50%	50%	-
	Metropolitan road	-	100%	-
	Other roads	50-70%	30-50%	-
Railway	High-speed railway	50-60%	-	40-50%
	Inter-city railway	100%	-	-
	Suburban railway	75%	25%	-
	Urban railway	60% (40%)	40% (60%)	-
	Light railway	25%	25%	50%
Airport	Incheon airport	50%	-	50%
	Other airports	100%	-	-

Source: KDI (2013), Financing sources for transportation infrastructure investment.

As expected, national roads are wholly financed by the central government. Equally, metropolitan roads are wholly financed by local government. Unlike other countries, inter-city railways and all airports except Incheon Airport are wholly financed by the central government. This is because their user charge rates have been quite low in Korea, while the central government's tax revenues have been largely sufficient to cover their investment costs. The central government tax revenues will be explained further in the next chapter.

While the central government's tax revenue has been largely sufficient, the local government's tax revenue has always been insufficient. Consequently, the central government's tax revenues are distributed to the local government in various ways. Accordingly, as far as local roads are concerned, their investment cost is roughly shared equally between central and local governments.

Unlike roads, the central government subsidy ratio for railways has decreased. In the past, there was only one class of national railways. However, in the late 1990s, national railways were classified into inter-city and suburban railways. Moreover, the subsidy ratio from the central government was decreased to 75% of the investment cost for suburban railways. Unlike local roads, the investment cost of urban railways is so expensive that some subsidies have to be given to local government. The subsidy ratio from the central government has continuously increased and is now 60%, although it is lower, at 40%, for Seoul metros.

In the case of expressways, it has been possible to charge users and to cover some of the investment costs since the first expressway was opened in the late 1960s. Accordingly, it was decided to subsidize 50% of investment cost from central government, with the rest being from user-charge revenues. On the other hand, it was mentioned that railways and airports had to be wholly subsidized from the central government. However, when a high-level service was newly introduced, it proved possible to increase its user charge for its service. This meant that some investment costs could be paid from user-charge revenues. It was decided that around 50% of the investment cost would be subsidized from the central government when a high-speed railway and the Incheon Airport were opened in the early 2000s.

Unlike investment cost payment for the public sector's transport infrastructures, the PPP transport infrastructure in Korea has been quite different for every project. The subsidization ratio on investment costs from the central and/or local government depends on many variables such as subsidy on operating revenue, demand, user charge rate, rate of return, etc. The ratio ranges between 10%-50% of its investment cost. In general, railway ratios are much higher than those of roads.

3.3.1.3. Electricity Infrastructure

In 1961, KEPCO (Korea Electric Power Corporation) was set up by merging three electric power-related public sector corporations: generation, transmission and distribution. This vertically integrated system was thought to be more efficient and was maintained until 2001. During this period, the share of government in KEPCO was increased from 62% in 1976 to 100% in 1981.

In the 1960s and 1970s, foreign capital was important in building many power plants. Since the 1980s, central government subsidy has taken the most important role in investing in new power plants. However, the central government subsidy has not been enough for its investment needs and KEPCO relied heavily on domestic loans. Until the mid-2000s, the user-charge rate had been almost enough to cover its investment costs. However, since then, the user-charge rate has been strictly

regulated and could only cover some of its investment costs. As a result, KEPCO's debt has been increasing recently.

3.3.2. Tax Revenues

The central government in Korea has taken the leading responsibility in financing infrastructures. This had been particularly evident from the 1960s to the 1990s. Until now, the responsibility of the central government in financing infrastructures in Korea is much greater than that of other developed countries. One reason for this might be that, even if the central government has been trying to decentralize many responsibilities to local governments in terms of the national governance system during the last 20 years or so, Korea remains one of the most centralized countries.

If we review national and local tax revenues, we can understand why the central government has taken on much greater responsibility than local government. As shown in <Table 1-13>, national and local tax revenues in 1980 were KRW 5.8 trillion and KRW 0.77 trillion respectively, where the difference was KRW 5.03 trillion. During the last 31 years, both tax revenues rapidly increased, as high economic growth was continuously achieved. In 2011, national and local tax revenues were KRW 192.3 trillion and KRW 52.3 trillion respectively, where the difference between them became much greater at KRW 140 trillion. As the central government has more tax revenues, it can have more potential to finance more infrastructures or distribute more tax revenues to local governments.

<Table 1-13> Tax Revenue Changes in Korea

(Unit: KRW billion, %)								
	1980	1985	1990	1995	2000	2005	2010	2011
National tax	5,808	11,876	26,847	56,775	92,935	127,466	177,718	192,323
	88.3	87.8	80.8	78.8	81.9	78.0	78.3	78.6
Local tax	768	1,655	6,367	15,316	20,601	35,977	49,160	52,300
	11.7	12.2	19.2	21.2	18.1	22.0	21.7	21.4
Total	6,575	13,531	33,215	72,091	113,535	163,443	226,878	244,623
	(17.0)	(16.1)	(17.8)	(18.1)	(18.8)	(18.9)	(19.3)	(19.8)

Note: The figures in the brackets imply the tax percentage of GDP.

Source: National Tax Service (each year), National tax statistics book.

As explained in the previous section, central government had been the main financing and investing entity across all types of infrastructures. In the 1960s and 1970s, if foreign capital was excluded, the central government was almost the only financing source for investing in transport and electricity infrastructures. This would

not have been possible if national tax revenues had not rapidly increased.

The dominant role of the central government in financing infrastructure has gradually changed since the 1980s. In transport infrastructure, the role of the central government has weakened from the 1980s, as shown in <Table 1-14>. The ratio of investment by the central government to the total invested amount in Korea was 61.8% in 1980; however, it has continued to decrease and stood at around 40% by the 2010s. Instead, local governments, public corporations, and the private sector have become more important in financing transport infrastructure.

<Table 1-14> Transport Infrastructure Investment by Investment Entity in Korea

(Unit: KRW billion, %)								
	1980	1985	1990	1995	2000	2005	2010	2011
Central government	333 (61.8)	700 (54.1)	1,237 (36.9)	5,116 (54.3)	12,171 (57.5)	12,691 (53.5)	11,983 (42.2)	10,906 (43.7)
Local government	132 (24.5)	506 (39.1)	1,810 (54.0)	2,767 (29.4)	5,285 (25.0)	5,385 (22.7)	11,450 (40.4)	10,184 (40.8)
Public corporation	75 (13.7)	87 (6.8)	304 (9.1)	1,411 (15.0)	2,869 (13.5)	2,011 (8.5)	3,383 (11.9)	2,516 (10.1)
Private sector	-	-	-	132 (1.4)	852 (4.0)	3,628 (15.3)	1,554 (5.5)	1,328 (5.3)
Total	538 (100.0)	1,293 (100.0)	3,350 (100.0)	9,426 (100.0)	21,176 (100.0)	23,714 (100.0)	28,370 (100.0)	24,934 (100.0)

Source: KDI (2013), Financing sources for transportation infrastructure investment.

3.3.2.1. Earmarked Tax Revenue and Special Account

The continuous improvement in income produced a rapid rise in vehicle ownership since the mid-1980s. The number of vehicles stood at a mere 530,000 in 1980, increasing to 1.11 million and 3.39 million in 1985 and 1990, respectively. This steep rise in vehicle ownership continued in the 1990s, although it tapered off a little in the 2000s. Despite this, the number of vehicles in 2011 was over 18 million.

The high rise of vehicle ownership meant more demand on roads. Although a great deal of investment in roads had been made from the late 1960s to the mid-1980s, this has not continued from this period. As shown in <Table 1-15>, the ratio of road investment by the central government to GDP in 1970 and 1975 was 1.07% and 0.41%, respectively. However, the ratio was reduced in the 1980s, ranging from 0.39% to 0.51%.

〈Table 1-15〉 Transport Infrastructure Investment by Central Government in the 1970s and 1980s

(Unit: KRW billion)					
	1970	1975	1980	1985	1990
Road	30 (1.07)	43 (0.41)	154 (0.39)	433 (0.51)	745 (0.39)
Rail	43	38	27	47	69
Airport	3	4	37	65	31
Seaport	-	24	95	133	251
Etc.	-	3	20	22	141
Total	76	112	333	700	1,237

Note: The ratio of road investment by the central government to GDP are 1.07, 0.41, 0.39, 0.51, and 0.39.

Source: KDI (2013), Financing sources for transportation infrastructure investment.

As a result, the road supply had not increased much in the 1980s, as shown in <Table 1-16>. The length of expressway was primarily expanded in the late 1960s and 1970s. The first expressway was opened in 1968, and its length reached 551 km in 1970. However, following several new expressways in the 1970s, its length expanded again to 1,225 km in 1980, a 674 km net increase for 10 years. However, the lack of investment in spite of the high rise in vehicle ownership in the 1980s has led to only a 326 km net increase in expressways for 10 years. For other types of road, the lack of investment in the 1980s was almost identical. This difference of road demand and supply caused serious traffic congestion on all types of road from the mid-1980s.

〈Table 1-16〉 Length and Pavement Rate Changes from the 1970s to 1990s in Korea

(Unit: km, %)					
Classification	1970	1975	1980	1985	1990
Expressway	551	1,142	1,225	1,415	1,551
	(100)	(100)	(100)	(100)	(100)
National road	8,122	8,232	8,232	12,241	12,161
	(28.3)	(45.5)	(55.3)	(77.1)	(89.1)
Local road	10,880	10,777	11,021	10,166	10,672
	(2.2)	(7.3)	(11.0)	(37.2)	(63.6)
Metropolitan road	5,476	6,767	7,939	10,018	12,298
	(34.2)	(53.2)	(62.3)	(72.4)	(83.0)
City district Road	15,216	17,967	18,535	18,422	20,033
	(4.3)	(7.5)	(12.3)	(34.9)	(55.7)
Total	40,244	44,885	46,951	52,264	56,715
	(14.2)	(24.0)	(34.1)	(54.2)	(71.5)

Note: The number in brackets is a pavement rate.

Source: National Statistical Office, Statistics Korea, Korea Statistical Information Service, <http://kosis.kr/>.

The heavy traffic congestion on all type of roads in the early 1990s made it necessary for the central government to invest more in roads, but railways, airports and seaports were also congested. However, the problem was how to finance these huge transport infrastructure investment needs. All possible financing sources had been reviewed and it was concluded that the fuel price had to be increased, since it was considered somewhat low. However, car users were reluctant to accept the fuel price increase.

Therefore, it was necessary to make car users confident that the fuel tax revenues would be used only for investment in transportation infrastructure. Infrastructure investment would decrease car users' congestion and directly benefit them, although economists criticized that the earmarked tax would cause an inefficiency of government budget allocation. Following an impassioned debate, the earmarked transportation tax was introduced in 1994 with a hike in gasoline and diesel tax. However, the tax was supposed to be abolished automatically after ten years in 2003. In spite of the time limit of the earmarked tax system, it was extended for a further three years in 2003 and another three further extensions were made so that the earmarked tax was still in effect until 2015.

With the introduction of the earmarked tax system, central government investment into transport infrastructure has largely increased. As shown in <Table 1-17>, it was only KRW 0.33 trillion and KRW 1.24 trillion in 1980 and 1990, respectively before the introduction of the earmarked tax system. However, it was more than quadrupled within five years, i.e. KRW 5.16 trillion in 1995 and then more than doubled again within another five years, i.e. KRW 12.17 trillion in 2000. After the earmarked tax system had been introduced for about 10 years, it was criticized that too much investment was being made in transport infrastructures. So some proportion of earmarked tax revenues was transferred to other purposes. As a result, the central government's transport infrastructure investment in the 2000s has not increased by any great extent. For example in 2005 it was KRW 12.69 trillion. It then actually decreased in 2010 to KRW 11.98 trillion, and continued to decrease thereafter.

<Table 1-17> Central Government's Transport Infrastructure Investment

(Unit: KRW billion)							
General tax			Earmarked tax				
1980	1985	1990	1995	2000	2005	2010	2011
333	700	1,237	5,116	12,171	12,691	11,983	10,906

Source: KDI (2013), Financing sources for transportation infrastructure investment.

The transport tax revenue was input into the transport infrastructure special account with other financing sources, such as special excise tax on private cars, import duty on vehicles, some airport and seaport user charges, and some allocated general tax revenue. The transport infrastructure special account has been wholly used by the MOLIT. <Table 1-18> shows inputs and allocations of the special account. As far as inputs are concerned, the transport or transport/energy/environment tax consists of around 70%-80%. As far as allocations are concerned, it has been allocated for road, inter-urban and urban railway, airport and seaport investment. In the 1990s, road investment consisted of around 60%, while inter-urban railway investment consisted of around 7%. In the 2000s, road investment was reduced to around 50%, while inter-urban railway investment rose substantially to 17%-27%.

<Table 1-18> Revenue and Expenditure of Transport Special Account

(Unit: KRW billion, %)					
	1995	2000	2005	2010	2011
Earmarked transport tax	3,372 (68.3)	8,404 (69.7)	10,288 (81.1)	11,176 (80.4)	9,237 (73.3)
Other taxes & user charges	1,019 (31.7)	665 (30.3)	762 (18.9)	1,168 (19.6)	1,208 (26.7)
Revenue total	4,934	12,052	12,685	13,906	12,610
Road account	2,985	7,585	6,716	6,388	5,456
Rail account	328	832	2,108	2,649	2,927
Metropolitan transport acc.	-	193	482	Transfer to local government's special account	
Transport system acc.	851	2,024	1,248	1,292	1,114
Airport account	306	691	401	161	113
Seaport account	646	845	1,736	1,492	1,296
Expenditure total	5,116	12,171	12,691	11,983	10,906

Source: KDI (2013), Financing sources for transportation infrastructure investment

In most cases, the MOLIT uses the special account by subsidizing related public corporations and local governments. It pays 50% of new expressway investment by subsidizing the Korea Expressway Corporation. It pays 50%-60% of new high speed railway, 100% of new inter-urban railway and 75% of new suburban railway by subsidizing the Korea Railway Network Authority, and pays 40%-60% of new urban railway by subsidizing related local governments. The investment cost payment by infrastructure type has been explained in detail in <Table 1-19>. The infrastructures which are directly invested in by the MOLIT, are national roads and all airports except for Incheon Airport.

3.3.3. Foreign Capital

Since the Korean economy in the 1960s was less developed, the government did not have sufficient domestic financing sources to meet infrastructure investment needs. Like most developing countries, the only alternative for the Korean government was to depend on foreign aid and loans. Foreign capital was of critical significance in the 1960s and remained so into the 1970s. In the early 1960s, foreign aid was much greater than foreign public and commercial loans, with the latter being less than 20% of the former. However, since the mid-1960s, a number of commercial loans with unfavorable terms were incurred. The government had, however, taken some measures to select loans with good terms in 1967. The public loans were mostly used for infrastructure investment.

After the Korean economy had continuously developed at high growth rates for around 20 years in the 1960s and 1970s, the government now had domestic financing sources such as tax revenues, user charges, long-term bonds, etc. Since the early 1980s, the role of foreign capital in infrastructure investment has been significantly reduced. This might be the same across all types of infrastructure.

However, there might be one big difference between Korea and other developing countries. Even if foreign capital was not available for a certain infrastructure project, the Korean government had taken the risk and shown the courage to place a great deal of domestic capital into developing some infrastructure projects in spite of many criticisms, both within Korea and abroad. One typical example was a mega expressway project in the late 1960s - 428 km of a new four-lane Gyeongbu expressway construction project.

3.3.3.1. Transport Infrastructure

The first Five-Year Plan between 1962 and 1966 accomplished much higher economic growth rates than expected, of 8.5% per annum. The ratio of the export amount to GDP was a mere 1.73% in 1961, however, it reached 6.58% in 1966. As the export volume sharply increased, road traffic volume between Seoul as an industrial city and Incheon as a neighboring export port, increased rapidly. This high traffic volume increase was also present on roads between Seoul and Busan. Busan Port was the largest and could be easily accessed by all other export and import countries. Many industrial sites had also been developed around Busan. Furthermore, the high economic growth was also expected in the following second Five-Year Plan period between 1967 and 1971.

To cope with the high road traffic volume increase, most studies conducted by foreign and local transportation consultants suggested that a toll expressway with

a high design criteria would be more appropriate rather than a toll road for Korea. Accordingly, the first Gyeongin expressway construction project was implemented between Seoul and Incheon. The Gyeongin expressway was relatively short at 23.5 km and its construction cost was not high. It was relatively easy to obtain a loan from the ADB (Asian Development Bank). The ADB merely asked to set up the Korea Expressway Corporation (KEC) to construct and manage expressways in Korea.

As shown in <Table 1-19>, financing sources for the Gyeongin expressway were rather simple. The government financed KRW 1.47 billion through a car-related tax and bond issuance. The ADB lent KRW 0.63 billion. One noteworthy aspect was the private capital of KRW 1.28 billion. Three private construction companies set up a new company, Gyeongin Expressway Co. Ltd., and invested. They would obtain an operating right upon completion in return for their investment. However, the KEC was set up in February 1969 and it compensated Gyeongin Expressway Co. Ltd. for its investment cost in March 1970. Therefore, the financing source of private capital actually proved to be a public corporation.

<Table 1-19> Financing Sources of Gyeongin Expressway

Overview	Financing sources (KRW billion)
Construction began in Mar. 1967	Car related tax and issued bond: 1.47
Construction ended in Dec. 1968	Private capital: 1.28
Four lane 23.5km	Asian Development Bank loan: 0.63
Actual cost: KRW 3.38 billion	Actual cost: 3.38

Source: Korea Expressway Corporation (1999), Korea Expressway Corporation 30 Year History.

As soon as the construction work for the Gyeongin expressway began in March 1967, the government considered that another expressway between Seoul and Busan was necessary to solve road traffic congestion and to boost the export-oriented economy. In particular, former president Park Junghee was eager to begin construction work after his visit to German expressways in 1964. However, the government experienced a number of difficulties, not only in financing, but also through considerable opposition.

First of all, the appropriate feasibility study and planning work needed to be completed within a year, and the government asked the IBRD (International Bank for Reconstruction and Development) to conduct it. This was a means of obtaining a loan from the IBRD, when the study result was favorable. However, the study concluded that its construction was not feasible and it suggested other expressways instead. In the end, the IBRD rejected the request for a loan. Furthermore, a great deal of

criticism from local experts was voiced against the Gyeongbu expressway. It was also quite uncertain how much it would cost. The cost estimation ranged from KRW 18 billion to KRW 65 billion. However, in spite of these many risks and difficulties, the government decided to construct it.

The next obstacle was establishing how to finance it without foreign capital. There was no option but to find all available domestic financing sources. Considering the central government budget in 1967 was around KRW 180 billion, its construction costs of KRW 43 billion was a huge amount, almost one-fourth of the entire budget. Above all, the government raised car-related taxes such as gasoline, diesel and private car excise taxes. For example, gasoline tax was doubled from 100% of its manufacturer's price to 200%. As shown in <Table 1-20>, the government could finance KRW 19.9 billion from car-related tax increases, 60% of its total cost. It also financed KRW 8.4 billion by issuing long-term bonds, 25% of the total cost. In addition, a small proportion of the Japanese reparation claims fund was invested purposefully to garner some support from the general public.

<Table 1-20> Financing Sources of Gyeongbu Expressway

Overview	Financing sources (KRW billion)
Construction began in Feb. 1968	Car-related tax: 19.9 Issued bond: 8.4
Construction ended in Jul. 1970	Toll revenue & budget: 2.1
Four lane 428km	Japan reparation claims fund: 2.7
Actual cost: KRW 43.0 billion	Planned cost: 33.1

Note: It shows the planned financing sources and is different from the actual ones.

Source: Ministry of Land, Infrastructure and Transportation (2012), 2011 White Paper on Road.

As higher than expected economic growth rates continued in the 1970s and 1980s, the demand for the Gyeongbu expressway increased and exceeded its estimation. As a result, its construction has played a significant role in Korea's development even today. It was argued that it would have been impossible to achieve continuous economic growth without it. On the other hand, it was also argued that it was too risky to invest most domestic financing sources into one mega project even in a less developed country. If high economic growth had not been achieved, the huge investment would have caused a serious financial catastrophe.

Even though the IBRD feasibility study opposed the construction of the Gyeongbu expressway, it suggested instead the construction of other expressways. The Korean government also accepted the necessity for these suggested expressways and obtained foreign loans to construct them, as shown in <Table 1-21>. They were

actually all built in the early 1970s. The foreign capital financing consisted of around 20%-72% of total construction costs and was primarily borrowed from the ADB and IBRD.

To summarize, foreign capital had played an important role in financing expressway investment in the 1960s and 1970s. This was almost the same for national and local road rehabilitation investment during the same time period. In the 1980s, the dependency on foreign capital in financing transport infrastructure investment was drastically reduced and almost negligible thereafter. Instead, its role was replaced by domestic capital such as central and local government tax revenues, user charges, public corporations, etc.

〈Table 1-21〉 Financing Sources of Expressways Opened in the Early 1970s

Route	Opening year (length in km)	Total cost (KRW billion)	Domestic capital (KRW billion)	Foreign capital (USD million)
Yeongdong expressway	1971 (234km)	23.0 (100%)	18.4 (80.0%)	11.5 (20.0%)
Namhaean expressway	1973 (189km)	22.3 (100%)	12.5 (56.3%)	25.1 (43.7%)
Honam expressway	1973 (248km)	22.9 (100%)	16.0 (70.0%)	17.9 (30.0%)
Donghae expressway	1975 (60km)	7.4 (100%)	2.1 (28.0%)	13.4 (72.0%)
Total		(100%)	49.0 (64.8%)	67.9 (35.2%)

Note: Figures in parenthesis show the proportion of total cost.

Source: Ministry of Land, Infrastructure and Transportation (2012), 2011 White Paper on Road.

3.3.3.2. Electricity Sector

Like the transport infrastructure investment, the important financing source for electricity infrastructure investment in the 1960s and 1970s was foreign capital. As shown in 3.13, the first thermal power plant in Korea was built in Gamcheon with US aid of USD 20 million in 1962. Six more power plants, including two nuclear ones in Kori, were built with US, UK, and IBRD loans in the 1970s. Transmission and distribution networks were built with the IBRD loan in 1986. From the 1980s, the dependency on foreign capital in financing electricity infrastructure investment has been significantly reduced and almost negligible thereafter. Instead, most financing sources have been procured from domestic capital, in particular by user charges and public corporation loans.

〈Table 1-22〉 Foreign Capital for Electricity Power Plants Opened in the 1960s through

Date	Sources	Amount (USD mil.)	Purpose
1962.4.4	US aid	20.0	Gamcheon thermal power plant
1970.10.23	US and UK	150.0	Kori nuclear power plant
1976.6.4	US	58.5	Youngwon and Gunsan thermal power plant
1977.1.18	UK	16.0	Kori nuclear power plant 2
1979.5.28	US	78.9	Samcheonpo thermal power plant
1979.12.12	IBRD	115.0	Gojung power plant
1986.3.31	IBRD	230.0	Transmission and distribution network

Source: KDI (2012), Modularization of Korea's Development Experience: National Power Grid Project for Stable Power Supply.

3.3.4. Public Corporations

The central government could not perform all the detailed aspects, which included planning, designing, constructing and operating infrastructures. Therefore, from the 1960s, it set up new public corporations as the government agent or in lieu of the government for each infrastructure. KEPCO was first set up in 1961, and KEC (Korea Expressway Corporation) followed in 1969. On the other hand, inter-urban railways received investment and were operated directly by the government, the KNR (Korea National Railway). This was subsequently split into two public corporations in 2004, one of which is the KR (Korea Railway Network Authority) for railway infrastructure investment and the other, the KORAIL (Korea Railway Corporation), for railway operation.

Public corporations can charge users for their services and user charges can cover a proportion of the investment cost. As mentioned in the previous section, if user charges are large enough to cover all the investment cost, there is no need for government subsidies. However, if user charges insufficient to cover all the investment costs, the government should subsidize it to some extent. This is the case for transport and electricity infrastructure. Since the subsidy level from the government was not large enough in most cases, most public corporations were heavily reliant on long-term loans. Even if the operating profit is extensive, the size of interest paid from large debts is substantial in most cases, decreasing net profits or eliminating them entirely. In the end, it is not possible to pay the principal of debt from the net profit. Furthermore, since further investment was largely from loans in the 1990s and afterwards, the debt size has grown increasingly large.

3.3.4.1. Transport Infrastructure

Three public corporations, the KEC, KR and KORAIL, are analyzed here for the transport sector. As already explained in the previous section, expressway investment has largely expanded again since the early 1990s with the introduction of the earmarked tax system in 1994. The investment cost in 1990 was merely KRW 346 billion so that the total debt was quite small as KRW 564 billion. It means that, even though the operating revenue was as small as 349 billion, the net cash flow from operating activities could cover small investment costs during that time period.

This situation changed significantly as investment generally expanded since the early 1990s. The investment cost in 1995 was KRW 3,390 billion, therefore, the total debt increased considerably to 3,553 billion. This is because the net cash flow from operating activities could not cover the high investment cost in spite of an increased government subsidy. This government subsidy covered around 50% of investment cost, as explained in section 2.2 so that the remaining 50% should be covered by the net cash flow from operating activities. Subsequently, investment cost financing could not help but rely on loans and this caused the net loan increase in 1995.

A similar situation continued in the 2000s, even though the operating revenue increased with the opening of new expressways. As the operating revenue increased from KRW 349 billion in 1990 to KRW 1,936 billion in 2000 and to 6,942 billion in 2013, the operating profit also increased from KRW 266 billion to 549 billion and 933 billion, respectively. However, as the debt increased to finance the sharply increased investment cost since the early 1990s, the operating profit was primarily used to pay interest on highly increased debt. As a result, the net profit has not increased significantly and the net cash flow from operating activities could not cover much of the investment cost. Instead, more loans were taken out. In the end however, the total debt was merely KRW 0.5 trillion in 1990, although, it has since increased to 11.6 trillion in 2000, to 23.9 trillion in 2010, and to 26.0 trillion in 2013.

〈Table 1-23〉 Financial Status Analysis of KEC

(Unit: KRW billion)							
	1990	1995	2000	2008	2010	2012	2013
Operating revenue	349	1,088	1,936	3,321	3,377	6,930	6,942
Operating profit	266	868	549	833	954	1,230	933
Net profit	11	37	25	70	17	83	80
Total debt	564	3,553	11,598	21,152	23,948	25,348	25,963

Source: Korea Expressway Corporation (each year), Finance statement.

The KR was separated from the KNR and set up in 2004. With its separation, a part of debt in the KNR was inherited by the KR and the total debt in 2004 was KRW 6.3 trillion, as shown in <Table 1-24>. Since the main revenue source of KR is the rail track charge from the KORAIL and it is mostly used for rail maintenance, its operating profit is not particularly significant. It was only 312 billion in 2013. Particularly after the operating profit was used to pay off interests on loans, the net profit was negative, at -96 billion in 2013. On the other hand, a great deal of investment has been made since it was set up, while government subsidy has not covered all the investment cost. During the last five years, more than 4 trillion has been invested in inter-city railways per annum. Consequently, the total debt has been increasing by KRW 1 trillion to KRW 3 trillion every year over the last nine years. Therefore, the total debt increased from KRW 6.3 trillion in 2004 to KRW 18.2 trillion in 2013.

<Table 1-24> Financial Status Analysis of KR

	2006	2008	2010	2012	2013
Operating revenue	513	607	590	781	810
Operating profit	27	33	47	312	322
Net profit	(249)	(327)	(393)	(93)	(96)
Total debt	8,296	11,871	16,774	17,341	18,198

Source: Korea Rail Network Authority (each year), Finance statement.

This has been more acute in the case of KORAIL. It operates trains and pays rail track charges to the KR. Since the user-charge level has been quite low, the operating revenue of KORAIL could not have covered the operating cost in most cases, as shown in <Table 1-16>. Here, the government subsidy for operating un-profitable public services and for some proportion of rail track charges is included in the operating revenue. The operating profit primarily shows a negative figure. Although the net profit was in credit in the late 2000s, this was because of unexpected non-operating profit from the Yongsan area redevelopment project. However, this redevelopment project soon failed and showed remarkable losses in 2012 and 2013.

〈Table 1-25〉 Operating Profit and Interest of KORAIL

(Unit: KRW billion)					
	2007	2008	2010	2012	2013
Operating revenue	3,570	3,631	4,545	4,815	5,101
Operating cost	4,211	4,369	4,992	5,021	5,133
Operating profit	(641)	(738)	(447)	(206)	(32)
Net profit	133	514	572	(2,820)	(4,331)
Total debt	5,949	6,796	12,624	14,321	17,583

Source: Korea Railway Corporation (each year), Finance statement.

3.3.4.2. Electricity Infrastructure

In the case of the KEPCO, user-charge revenue was used until the mid-2000s, since a significant amount had not been invested into power plants. However, due to the serious lack of electricity, the investment suddenly increased, although without being reflected in a rise in the user charge. Consequently, the investment cost relied heavily on loans. While the investment amount was KRW 7.4 trillion in 2006, it increased to KRW 14.5 trillion in 2013. In contrast, most of the investment cost had to be financed by loans. As a result, the net loan increased KRW 5 trillion to KRW 8 trillion yearly and the total debt was KRW 104.1 trillion in 2013.

〈Table 1-26〉 Financial Status Analysis of KEPCO

(Unit: KRW billion)							
	2004	2006	2008	2010	2011	2012	2013
Operating revenue	23,956	27,409	31,560	39,426	43,456	49,421	54,037
Operating profit	4,467	3,395	(2,798)	1,580	(1,020)	(818)	1,519
Net profit	2,882	2,225	(2,914)	(20)	(3,293)	(3,078)	174
Total debt	33,051	34,200	46,924	58,122	82,664	95,089	104,076

Source: KEPCO (each year), Financial statement.

3.3.5. Public-Private Partnerships

Even though the government has invested quite extensively in transport infrastructure through the introduction of the earmarked tax system in 1994, there has always been a gap between investment needs and actual investment. To fill the gap, it is necessary to induce private capital more actively. However, in the past, some private sector players participated in road PPP projects in Seoul and failed miserably.

The private sector would therefore not participate in any more PPP projects at that time.

Consequently, the new PPP law, 'Act on Promotion of Private Capital Investment in Social Overhead Capital, was enacted in 1994. Here, social overhead capital primarily means transport infrastructure. However, government regulation was quite strict due to fears of controversy over preference for the private sector. Risks were not clearly defined between the government and private sectors.

In the meantime, the economic crisis in East Asia hit the Korean economy seriously in late 1997. This caused PPP projects almost not to be implemented. The 1994 law was extensively revised in December 1998. The government took more risks, in particular, the Minimum Revenue Guarantee (MRG) mechanism was introduced. This means the government guarantees 90% of estimated revenue for the whole concession period of 30 years. Since the government subsidizes the difference between the actual revenue and 90% of the estimated revenue, the private sector could obtain 90% of estimated revenue as a minimum. Until the late 1990s, it was quite common to overestimate demand for most publicly financed transport infrastructure projects. The private sector must have recognized that the overestimation in demand might have been the same for PPP projects as with publicly financed projects. The government also acknowledged that PPP projects could not be implemented without the MRG mechanism.

The revised law in 1998 made a distinction between solicited and unsolicited projects. The buyout right system was also clarified, and the Korean infrastructure credit guarantee fund was introduced. In contrast, a much stricter PPP project selection system was introduced so that a detailed and complicated feasibility study on solicited projects became mandatory and was conducted by the public and PIMAC (Public and private Infrastructure Management Center) of the KDI under the MOSF.

When it has been possible for the private sector to estimate the minimum future revenue for the whole concession period with the introduction of the MRG mechanism, numerous BTO projects have been signed since 1999. As shown in <Table 1-27>, the private sector investment during 1995 and 1997 was KRW 0.3 trillion, however, it increased to KRW 1.6 trillion in 2015, and reached KRW 2.7 trillion in 2007. The proportion of private sector investment of total investment was around 15% in 2007.

〈Table 1-27〉 Public and Private Sector Investment in Infrastructure

(Unit: KRW billion)							
Classification	1995-97	1999	2001	2003	2005	2007	2009
Total investment (A)	25.6	12.2	15.2	17.6	18.3	18.4	25.5
Public sector	25.3	11.7	14.2	16.0	15.8	15.8	22.0
Private sector (B)	0.3	0.5	1.0	1.6	2.5	2.7	3.5
Proportion (B/A)	1.2	4.1	6.6	9.1	13.7	14.7	13.7

Source: Ministry of Land, Infrastructure and Transportation (2012), 2011 White Paper on Road.

From the viewpoint of inducing private sector investment, the PPP system must have succeeded. More transport infrastructures were opened earlier than expected. The social benefit in the transport sector might well have been maximized. However, the most critical success factor, i.e. MRG mechanism, has brought about a serious fiscal burden to the government. When road PPP projects were opened, their actual traffic volume was generally around 50% of the estimated volume. This means that the difference between actual revenue and 90% of estimated revenue should be subsidized by the government. In the case of the Incheon Airport Expressway, the first PPP project opened in November 2000, and KRW 100.9 billion was paid by the MRG subsidy in 2004. It was the same for other BTO expressway projects. Accordingly, the total MRG subsidy payment in 2004 was KRW 157.8 billion, as shown in Table 3.19. As more PPP projects have been contracted and opened, the MRG subsidy has been continually increasing and has become a significant burden to the local government as well as the central government. The MRG subsidy payment in 2013 reached KRW 623.0 billion.

〈Table 1-28〉 MRG Subsidy for BTO Projects

(Unit: KRW billion)					
	2001	2004	2007	2010	2013
MRG subsidy payment	65.3	157.8	285.7	373.7	623.0

Source: KDI and ADB (2011), PPP Infrastructure Projects: Case Studies from the Republic of Korea.

<Table 1-29> shows the total MRG subsidy amount for BTO projects in operation. In 2001, the amount was KRW 65.3 billion for two projects. However, it increased to KRW 157.8 billion for six projects, and to KRW 186.2 billion for seven projects, and is estimated to reach KRW 376.2 billion for eight projects. This has been worsening as more PPP contracted projects have opened. As a result, the PPP system has itself been seriously criticized, primarily due to the MRG mechanism. Even though the private sector has insisted on the existence of the MRG mechanism, there is no way for the

government to be able to prolong it as it currently is.

〈Table 1-29〉 Total Amount of MRG Subsidy for BTO Projects in Operation

	2001	2002	2003	2004	2005	2006	2007	2008	Total
No. of projects	2	2	3	6	5	7	8	8	-
Amount	65.3	73.7	142.0	157.8	123.3	186.2	285.7	376.2	1,390.3

(Unit: KRW billion)

Source: KDI and ADB (2011), PPP Infrastructure Projects: Case Studies from the Republic of Korea.

Above all, the government tried to change MRG conditions in the already contracted PPP projects. It was possible for the government when the PPP project company wanted to refinance its project after the construction work was completed. Since the project company primarily consisted of several construction companies, it wanted to sell its shares in most cases. Because the minimum equity requirement of 25% during its construction could be reduced to 10% during its operation, the project company wanted to convert a proportion of its equity into subordinated debt upon the completion of construction.

In this case, a competent authority could share the refinancing gain equally with the project company. Then, the government's refinancing gain could be used to lower the user fee or to lower the MRG rate or MRG period. Many PPP projects were refinanced with the completion of construction and their MRG rates and periods were adjusted. When they were first contracted, most MRG rates and periods were 90% and 30 years, respectively. However, according to the government's refinancing gain, the MRG rate and period were adjusted. In case of the Incheon Airport Expressway, the MRG rate was reduced to 80% and the period was also reduced to 20 years. The MRG conditions for other expressways were also reduced, lessening the burden of the central government. This was the same for the Seoul city government as it refinanced one tunnel.

Furthermore, the government revised the PPP decree and reduced the MRG rate and period, as shown in Table 3.21. The MRG period has been shortened from 30 years to 15 years in 2003 and to 10 years in 2006. The MRG rate has been continuously reduced from 90% to 80%, 70% and 65%. Even this reduced MRG period and rate are subject to the condition that actual revenue should be over 50% of estimated revenue. Finally, the MRG mechanism was abolished in 2006. Instead, a new risk-sharing mechanism was introduced to replace the MRG in October 2009. However, the private sector has argued that this is not sufficient for them to participate in PPP projects.

〈Table 1-30〉 MRG Rate and Period Changes

	1999.1-2003.4	2003.5-2005.12			2006.1-2009.7		2009.8-
MRG period (years)	1-30	1-5	5-10	10-15	1-5	5-10	Abolished
Solicited Project	90	90	80	70	75	65	
Unsolicited Project	80	80	70	60	Abolished		
Condition	-	No MRG if actual revenue is less than 50% of estimated one.					

Source: KDI and ADB (2011), PPP Infrastructure Projects: Case Studies from the Republic of Korea.

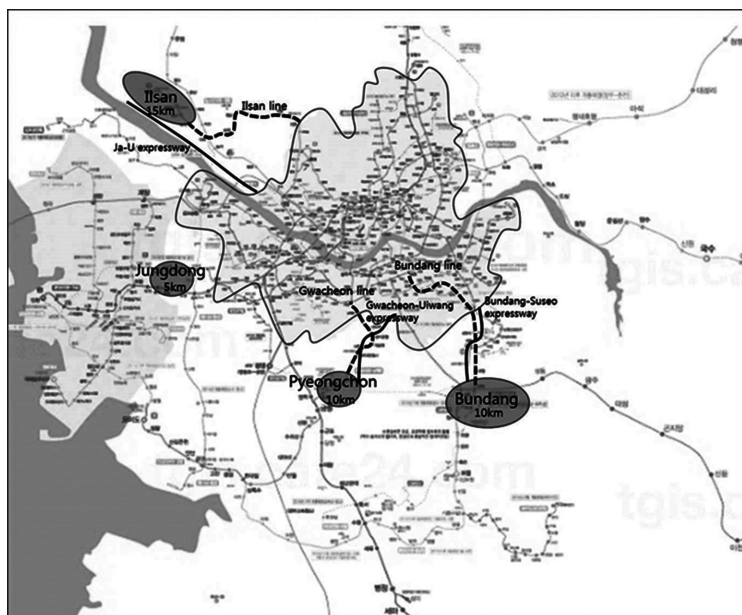
With the need to expand PPP projects beyond transport infrastructure, the PPP Act was revised again in January 2005. Social infrastructure such as educational, cultural, welfare, environmental, and defense facilities were included into PPP projects. The BTL (Build-Transfer-Lease) was newly introduced, primarily for social infrastructure projects. However, transport PPP projects have largely decreased nowadays with the MRG mechanism reduction and abolishment.

3.3.6. Land Value Capture

With rapid economic development, increasing numbers of people have moved to metropolitan cities in the 1970s and 1980s. This caused serious problems in housing and transport in Seoul. In order to solve the serious housing problem, particularly within Seoul, the government planned to develop four new cities in Gyeonggi province in the early 1990s. Figure 3.3 shows where the new cities in Gyeonggi province were developed. The land use for the four new cities was diverted from agriculture or forestry to housing or commerce. Consequently, the land price would be sharply increased and some land value increase could be captured by the developer. The developer in this case was the Korea Land and Housing Corporation (LH).

LH paid most of the investment costs of new transport infrastructures that would connect those new cities and Seoul. To connect Seoul and Bundang, Ilsan, and Pyeongchon, suburban railways, as well as urban expressways were newly built, as shown in [Figure 1-3]. LH paid almost KRW 3.0 trillion for the land value capture for the development of the four new cities, as shown in <Table 1-31>. In particular, it paid 1.3 trillion as the land value capture for the Bundang city development. After construction companies bought some developed land, they built houses or buildings and sold them to consumers. Consequently, the land value capture was actually paid by consumers. However, since the housing or building prices had increased substantially, the users also reaped some benefits.

[Figure 1-3] New Cities and Transport Infrastructure Development in Gyeonggi Province



Source: KRIHS (1992), Long-term road and railway network development plan in Gyeonggi province.

〈Table 1-31〉 Land Value Capture in Four Cities Development in the Early 1990s

	Planned area (million m ²)	Planned population (thousand person)	Value capture (KRW billion)
Bundang	19.7	390	1,310
Ilsan	15.7	276	927
Pyeongchon	5.2	170	415
Jungdong	5.4	170	330
Total	46.0	1,006	2,982

Source: KRIHS (1992), Long-term road and railway network development plan in Gyeonggi province.

Equally, some similar new cities or housing complexes were continuously developed in the 1990s and 2000s and land value capture has been used for building new transport infrastructures. In particular, a new law was enacted in 1997 on transport infrastructure development for large metropolitan areas. According to the law, if a newly planned area is considered to be over 1 million m² or its population is over 20 thousand people, some appropriate land value must be captured to build transport infrastructure. As a result, when 38 land development projects were implemented in Gyeonggi province from January 2001 to December 2008, a

significant amount of land value was captured, as shown in <Table 1-32>. This shows that the average project cost was around 2,826 billion and the average land value capture per project around 608 billion.

〈Table 1-32〉 Captured Land Value in Gyeonggi Province's Projects in the 2000s

(Unit: KRW billion)

	Avg. land development project cost	Avg. transportation infra. Investment cost		
		Land value capture	Other financing sources	Total
Southern Gyeonggi province	2,984	634	527	1,161
Northern Gyeonggi Province	2,477	550	995	1,545
Gyeonggi province	2,826	608	673	1,281

Source: Gyeonggi province (2009), Study on Metropolitan Transport Improvement Measures.

4. Recommendations

From the analysis of infrastructure financing in Cambodia and Korea, some suggestions could be derived for Cambodia. Roughly speaking, the current situation in infrastructure development in Cambodia could be considered to be similar to that in the 1970s in Korea. The infrastructure is generally insufficient in all sectors, i.e. roads, railways, seaports, river ports, airports, and electricity. Many infrastructures should be developed in all sectors. Infrastructure needs are estimated on independent medium- and long-term master plans of each sector and the feasibility study results for each project under the supervision of line ministries. There is no clear manifestation of prioritization between projects in each sector. Therefore, all projects are simply added up without evaluation and submitted to the finance ministry.

Consequently, there is no objective check and evaluation on submitted projects by the finance ministry. If financing sources are available of a particular projects, the project will actually be procured. In this case, 78% of financing sources are dependent on external ones. If external finance is not available, the project would not be procured and postponed.

4.1. Centralized Project Management by Finance Ministry

The most important issue on government budget allocation not only in Cambodia but also in most developed countries, is how to quantify costs, benefits and other

aspects of prospective projects and prioritize them within the limited available financing sources. This is the same for infrastructure projects. It might be relatively easy to quantify transport and electricity infrastructure projects, compared with other social and health sector projects. When the quantification could be done through the feasibility study, the next issue is how objectively and consistently the feasibility study is conducted. In Cambodia, the feasibility study has been performed but it is not objective and consistent. This is because the line ministry is in charge of it and it requests that the consultant presents their result favorably. This was the same in Korea. This is why the finance ministry has to take responsibility to conduct the feasibility study of prospective large projects. Therefore, it is necessary for the finance ministry to establish the planning and management system to conduct the feasibility study for checking and evaluating large projects. This should be the same for PPP projects, not only for solicited projects but also for unsolicited ones. However, it is not easy to immediately introduce this system in Cambodia.

Therefore, an alternative could be done before the above system is implemented. As mentioned in the previous section, too many new projects will be pursued in the PIP 2016-2018 in Cambodia. Therefore, perhaps these new projects would be reduced to maybe half or one-third under the currently available financing sources. What might be the criteria to reduce projects? The national goals and objectives are described in the NSDP and RS. To accomplish those goals and objectives, the projects in some corridors could be prioritized. For example, the Phnom Penh and Sihanoukville might be one preferred corridor. Aside from the projects in specific corridors, other projects might be postponed. This prioritization could be done by the MPWT, MIME and MRD within available financing sources and the result could be submitted to the MOP and MEF.

Since the currently available financing sources are quite limited in Cambodia, the next issue is how to expand the financing sources? It is difficult to further expand the external financing sources since they are already 78% of the total. Therefore, it is necessary to mobilize domestic financing sources, and this will be discussed in the following section.

4.2. Mobilization of Domestic Financing Sources

Any tax rate increase always causes considerable objection from many people so that it is not favored from the political viewpoint. However, there is no other way to invest in more infrastructures without tax revenue increase. This is why the earmarked tax system is suggested to mitigate the objection. If the new transport infrastructure is invested in, the benefits of the infrastructure would primarily be enjoyed by users of that infrastructure. In the case of roads, the largest beneficiaries would be vehicle users. Therefore, tax revenues collected from vehicle users could be

earmarked for the investment in roads.

In Cambodia, the various vehicle-related tax rates need to be increased. The first probable tax rates to be considered are gasoline and diesel. The more gasoline and diesel are used, the more the air is polluted. In order to reduce car use, the tax rate of gasoline diesel should be increased. The tax revenue could be solely used for roads investment and public transport facilities improvement.

Aside from the fuel tax increase, the tax rate for imported cars could be increased. In particular, the tax rate might be differentiated according to the car price. The rate could be increased more for expensive cars. This could reduce some objections from low- and middle-income people.

By the vehicle-related tax rate increases, the proportion of domestic financing sources in transport infrastructure investment projects could then be increased from current 22% to 30% or 40%.

4.3. Public Corporation in the Road Sector

Cambodia is interested in building several expressways in the near future. The first expressway would be the Phnom Penh and Sihanoukville and it might be procured by the PPP, particularly the BOT. It might cause some problems if the first expressway is procured by the PPP.

Firstly, lacking experience in constructing and operating expressways, the Cambodian government would be captured by the private sector. This would be continued in the future. Accordingly, the public corporation would be newly set up and it could construct and operate the first expressway or could at least participate the first expressway PPP project.

Secondly, there are some ways for the expressway public corporation to mobilize financing sources. The user charge is the first financing source, although its role largely depends on the tariff rate. Mid- and long-term bonds and loans are another financing source, which could be easily mobilized.

Thirdly, the private sector's financing cost for the PPP project is not cheaper than the public corporation's financing cost, although it is heavily dependent on the PPP contract itself. In case of the private sector, it is necessary to add rather high premium risk rate on risk-free interest rate. On the other hand, the public corporation's risk premium rate is lower than that of the private sector.

Fourthly, even if the expressway is built by the BOT, it is necessary for the

Cambodian government to contribute some proportion of the construction costs, unlike the electricity PPP projects. This will be discussed later.

Therefore, if the abovementioned domestic financing sources through increased tax rates are mobilized and some contribution to the construction cost for the private sector would be necessary, it would be better for the new public corporation to construct and operate the expressway, or at least participate in the PPP project.

4.4. PPP under Proper Framework

The electricity PPP projects have been contracted since the early 2000s and the first was opened in 2003. Another nine projects have been opened during the last three years. All the electricity PPP projects have been contracted under the service availability payment, where the payment to private sectors have not been related to the demand changes. The risk of the service availability PPP project is not large, which is much easier to induce private sector investment. On the other hand, as more projects are opened, the amount of payment by the government would be increased so rapidly that the fiscal burden would be cumulatively increased. In particular, if some contingent liabilities were to be materialized, the fiscal burden would be rapidly increased.

Since the electricity PPP projects have been introduced in Cambodia for only 15 years, the legal and institutional framework is still weak. Furthermore, the independence and transparency in procuring PPP projects does not seem to be improved. There have not been any in-depth studies regarding the performance of PPP projects. One study has been conducted by the IMF in 2015, although its conclusion is inconclusive. Therefore, it is necessary to strengthen the legal framework and establish a new PPP-dedicated unit under the MEF. It is also necessary to conduct the study to review the performances of electricity PPP projects.

Cambodia would like to implement the expressway PPP project. However, the characteristics of the expressway are quite different from that of electricity. Above all, the capacity of the expressway cannot be stored and used for other areas, unlike the electricity. This means that the demand forecast in the expressway project is very important. This remains the case, even if the service availability payment PPP is applied in the expressway. The project size of the expressway is much larger than that of electricity. To summarize, the risk of the expressway is much bigger than the electricity.

Therefore, it is suggested that the Phnom Penh-Sihanoukville expressway PPP project should be divided into several sections and be procured step by step. The first section could be procured by a new public corporation, and the remaining two could

be procured by private sectors. In Colombia, the north-south expressway had been procured by the user payment PPP at first in the early 2000s. Since there has been almost no progress, the Colombian government had divided it into three sections and the service availability payment PPP have been applied for each section instead .

4.5. Land Value Capture

With high economic development in recent years, increasing numbers of people have moved to Phnom. This had caused serious problems in housing and transport. The economic growth in Phnom Penh would also be higher than other areas in the future and the housing and transport problem in Phnom Penh will become more serious.

Although some housing development projects are already in progress, they might not be enough to cope with the problems. Accordingly, the government might consider new large-scale housing development projects in the near future. In this case, the government can acquire large areas at a low price, develop them and resell private contractors with a large margin at hand. This large margin, mostly increased land value, should be captured and used for new infrastructure investment.

The appropriate land value capture in Phnom Penh could be not be estimated. However, considering its rate is around 20-30% of the land development project cost in Gyeonggi province outside Seoul, the rate might be similar or perhaps a little lower.

References

- Gyeonggi Province (2009), "Study on Metropolitan Transport Improvement Measures", Korea (In Korean)
- Infrastructure and Regional Integration Technical Working Group (2015), "Overview of the Transport Infrastructure Sector in the Kingdom of Cambodia (5th edition)", Kingdom of Cambodia
- Korea Development Institute (2013), "Financing Sources for Transport Infrastructure Investment", Korea (In Korean)
- Korea Development Institute (2015), "Korean Experiences in Providing Infrastructure to Promote Economic Development", Korea (Unpublished)
- Korea Development Institute and Asia Development Bank (2011), "PPP Infrastructure Projects: Case Studies from the Republic of Korea", Korea
- Korea Electricity Power Corporation (each year), "Finance Statement", Korea (In Korean)
- Korea Expressway Corporation (each year), "Finance Statement", Korea (In Korean)
- Korea Expressway Corporation (1999), "Korea Expressway Corporation 30 Year History", Korea (In Korean)
- Korea Railway Network Authority (each year), "Finance Statement", Korea (In Korean)
- Korea Railway Corporation (each year), "Finance Statement", Korea (In Korean)
- Korea Research Institute for Human Settlement (1992), "Long-term Road and Railway Network Development Plan in Gyeonggi Province", Korea (In Korean)
- Ministry of Land, Infrastructure and Transport (2012), "2011 White Paper on Road", Korea (In Korean)
- Ministry of Strategy and Finance and Korea Development Institute (2015), "2014/2015 Knowledge Sharing Program with Cambodia: Structural Reform to Ensure Cambodia's Competitiveness", Korea
- Ministry of Planning (2015), "Public Investment Programme 3-year-rolling 2016-2018", Royal Government of Cambodia
- World Bank (2014), "PPP Reference Guide Version 2.0", World Bank

2015/16 Knowledge Sharing Program with Cambodia:
Knowledge Sharing on Cambodia's Social Overhead,
Human Capital, and Housing Development:
Korea's Experience and Policy Recommendation

Chapter 2

Housing Policy for Low Income and Vulnerable People in Phnom Penh

1. Introduction
2. General Trends and Status of Phnom Penh Housing Market
3. Cambodia Housing Policies and Housing Problems in Phnom Penh
4. Korean Housing Market and Policies
5. Policy Recommendations

Housing Policy for Low Income and Vulnerable People in Phnom Penh*

Jae-young Son (Konkuk University)

Sophak Chea (Ministry of Economy and Finance)

Phal Dana (Ministry of Land Management Urban Planning and Construction)

Summary

Since around 2000 the Cambodian economy has been growing fast at around 7% per year, driven mostly by the strong growth of urban based industries such as garment manufacturing, construction, and tourism. A large number of people migrate from rural to urban areas, especially to Phnom Penh to take advantage of the nation's economic growth. Prices of land and housing in Phnom Penh are rising fast, and the low income and vulnerable people have difficulties in improving their living conditions. This study was conducted to help the Cambodian government formulate effective policy responses.

Population of Cambodia is 15.2 million in 2014, of which 3.4 million (22.5%) lives in urban areas. Population grows at healthy rates between 1.5 and 2%, with urban population increasing faster. The average household size in Cambodia is 4.7 persons for nation and 4.9 persons for urban areas. The population of Phnom Penh is 1.68 million, 10.9% of the national population and 53.3% of urban population. The number of Phnom Penh in-migrants has been very stable around 15 thousand per year. In 2013 and 2014, the contribution of migration in the Phnom Penh population growth are about half of natural births. Considering a large income difference

* The authors are indebted to Mr. By Sosatha and Mr. Jung Hoon Han for kindly acquainting us with the Phnom Penh housing market and guiding us through informal settlements in two separate occasions. The authors also thank Mr. Kif Nguyen, National Director, Habitat for Humanity, for showing us the project sites.

among regions, it is surprising that massive rural-to-urban and nation-to-Phnom Penh migration is not taking place. One can conjecture that full scale rural-to-urban and nation-to-primate city migration trends have not yet begun in Cambodia. If the rural-urban income gap persists, the momentum will build up and a tide of migrants may burst into the city in the future. If so, the Phnom Penh housing market will experience a great shock, which the city is not prepared to cope with.

Although housing conditions in Phnom Penh are far better than Nation in almost all aspects, they have more or less stagnated in the past 10 years. Tenure statistics show that majority of households reside in their own house. However, the land tenure situation in Phnom Penh is complicated and in a confused state. Sometimes, there is no clear distinction between legal and illegal occupancy and/or ownership. Even an informal settlement resident may have some sort of recognizable occupancy right, but such a right may not protect him/her from being evicted.

Population of Phnom Penh has doubled over the last twenty years with a large number of migrants flowing into the city, and in the process, enormous number of informal settlements sprang up. Residents of such settlements are rural migrants leaving the countryside out of indebtedness or for the chance of economic opportunities, refugees returning from camps. The reasons for coming to Phnom Penh are mostly economic. The residents of informal settlements often suffer from poor access to infrastructure and public services, and sometimes have to pay much more than formal clients of such services.

The Cambodian government has tried to solve the housing problems, and the informal settlement problem in particular, by various measures, such as Social Land Concession (2003), Circular 3 (2010), and National Policies on Housing (2014) which address the housing issues in urban areas. However, much of the detail is yet to be filled with trials and errors through time. The Cambodian government must cope with many obstacles in improving housing conditions of the poor. Some of them can only improve with the economic development and the rise of income and wealth.

Drawing lessons from the Korean experience, we recommend the following measures for the Cambodian government. First of all, it should be recognized that the most important elements of any successful housing policy are land and money. Without inexpensive land and low-cost fund readily available, little can be done to improve housing conditions. The government must be creative in finding funding sources for housing. At this stage of policy development, the government should concentrate on establishing legal and administrative framework, and find out workable mechanism (i.e. “flagship programs”) for housing supply, which can be replicated time and again.

Secondly, it would be best if the government, Phnom Penh City, or a special purpose public entity becomes an efficient and honest land developer. Even when they do not, they should take the initiative in the development process. The government or the Phnom Penh City, together with the developers, should set the goals and directions of the development, and follow through the development process closely. Building up such capacity is vital in implementing government land and housing policies. At the least, part of the gains accruing in the development process should be controlled by the government to improve the housing conditions of the citizens.

Thirdly, NGOs and MFIs are valuable financial sources for the poor in improving their housing conditions. However, in building up a sizable housing stock, a more dedicated financial institution is necessary. Korea's NHF and its funding sources may be a good model. Establishment of such a dedicated housing finance institution requires a large initial capital, which may be burdensome to the government. Other options such as the interest payment subsidy and the housing loan guarantee or insurance may be considered.

Fourthly, although the public rental housing program is too costly to implement in a large scale, Cambodia should start a modest scale program as promised in Circular 3 and the NPH. The program should be within the boundary of available resources, target the truly needy, and supplement other urban and housing programs. As for a demand side approach, Thailand's Baan Mankong ("Secure housing") program deserves a serious consideration. Although successful housing program in one country cannot be easily transplanted to another, it is worth a study and small scale pilot programs. Many international and domestic NGOs working to improve the living conditions of the poor in Phnom Penh may be of great help in such an experience.

1. Introduction

From around 2000, the Cambodian economy has been growing rapidly, at around 7% per year, primarily driven by the strong growth of urban-based industries such as garment manufacturing, construction, and tourism. A significant number of people are migrating from rural to urban areas, especially to Phnom Penh, to take advantage of the nation's economic growth. Such inter-regional movement of people, however, puts pressure on the city's already strained housing, infrastructure and social services. Prices of land and housing in Phnom Penh are rising fast, and low income and vulnerable citizens have difficulty in improving their living conditions.

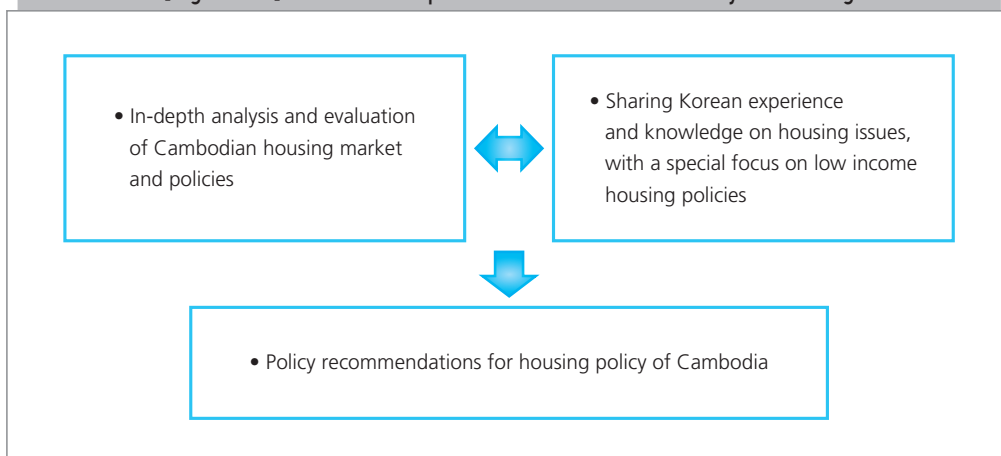
The Cambodian government asked the KSP team to:

- ① formulate a housing policy for the urban poor, and design programs and financing options targeting low income and vulnerable households.
- ② design a monitoring, evaluation, and corrective framework.
- ③ Moreover, the team was asked to hold a technical and desk review on the Korean housing policy and management to draw lessons which may be helpful in formulating the Cambodian housing policy.

Accordingly, the KSP team studied the situation for the Cambodian housing market and policies, identified the current and potential problems of the housing market, and evaluated whether the housing policy can cope with the challenge. The team also reviewed the Korean housing market and policies with an emphasis on the issues which are relevant to the Cambodian situation. Finally, the team has recommended policies to better meet the current and future challenges of the Cambodian housing problems.

The housing policy for the poor and vulnerable is a part of an overall housing policy which should serve all strata of people and all types of housing options. The KSP team thus had to review the broader context of overall housing policy, and, when necessary, made policy recommendations on that issue.

[Figure 2-1] Focus and Scope of 2015 Cambodia KSP Study on Housing



Source: Authors own.

2. General Trends and Status of Phnom Penh Housing Market

2.1. Cambodian Economy and Demography

The Cambodian economy has grown rapidly in the 2000s with relatively stable prices <Table 2-1>. Even during the Global Financial Crisis, the economy has rebounded fast and maintained an impressive 7% growth. Continuous growth is expected in the future, backed by stable political environments. Per capita GDP has also rapidly increased, but is still low at \$1,090 in 2014. Per capita income evaluated by PPP exchange rate is higher than this figure. At one extreme, the per capita income in PPP exchange rate posted on a financial data website (www.

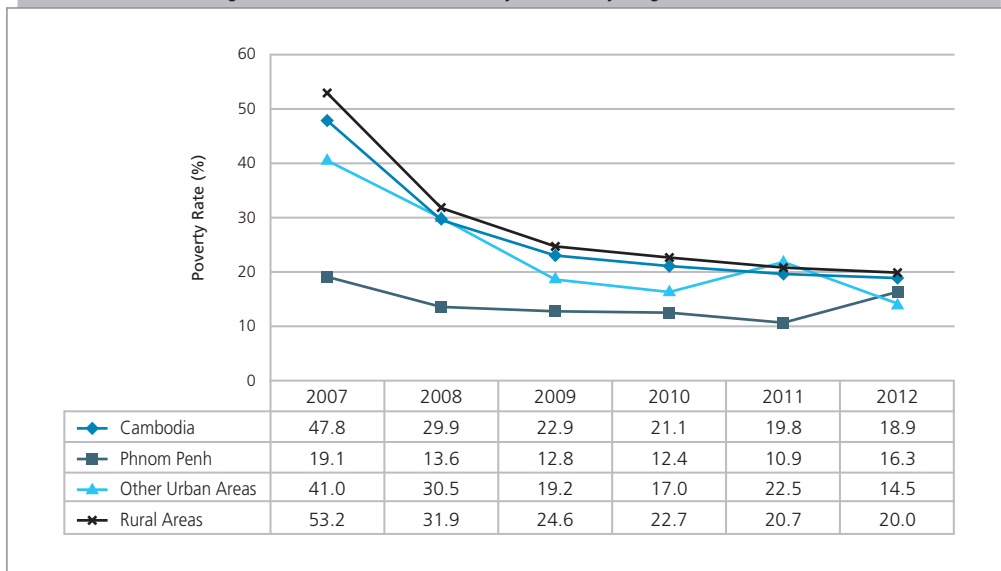
<Table 2-1> Cambodian Economic Growth

	GDP (Current US\$ bil.)	Real growth rate(%)	Per capita GDP (Current US\$)	Inflation rate (GDP deflator %)
1995	3.44	6.44	321.8	11.52
1996	3.51	5.41	318.1	3.51
1997	3.44	5.62	303.7	4.39
1998	3.12	5.01	268	10.01
1999	3.52	11.91	294.9	1.98
2000	3.66	8.77	299.6	-3.2
2001	3.98	8.04	319.7	2.64
2002	4.28	6.69	337.8	0.72
2003	4.66	8.51	361.1	1.8
2004	5.34	10.34	407.1	4.82
2005	6.29	13.25	472.4	6.08
2006	7.27	10.77	537.8	4.63
2007	8.64	10.21	629.3	6.52
2008	10.35	6.69	742.9	12.25
2009	10.40	0.09	735.4	2.5
2010	11.24	5.96	782.7	3.12
2011	12.83	7.07	879.2	3.36
2012	14.05	7.31	947.6	1.44
2013	15.23	7.36	1,009.90	0.78
2014	16.71	7.03	1,090.10	2.78

Source: WORLD BANK, World Development Indicators (2015).

tradingeconomics.com) is \$3,093 as of March, 2016. The actual living standard in Cambodia appears to be higher than the level which is implied by the per capita income of \$1,090. However, differences in income among regions and among income strata are wide. One cannot deny that a large number of people are still living in dire poverty [Figure 2-2].

[Figure 2-2] Cambodian Poverty Trends by Region, 2007 – 2012



Source: Ministry of Planning, National Strategic Development Plan 2014-2018 (2012).

The population of Cambodia is 15.2 million as of 2014, of which 3.4 million (22.5%) live in urban areas <Table 2-2>. Population growth is at a healthy rate of between 1.5 and 2%, with the urban population increasing faster¹⁾. The total number of households is 3.26 million in 2014, of which 21.3% are urban. The growth rates of households is slightly higher than that of population, reflecting that the household size is gradually getting smaller. Currently, the household size in Cambodia is 4.7 persons nationally and 4.9 persons for urban areas.

The age structure of the Nation shows a healthy bell shape except for the 35-39 age group, which may reflect low fertility during the period of the Khmer Rouge rule. The large proportion of the 20-29 age group will be conducive to economic growth. However, it also indicates a burgeoning demand for housing in the near future.

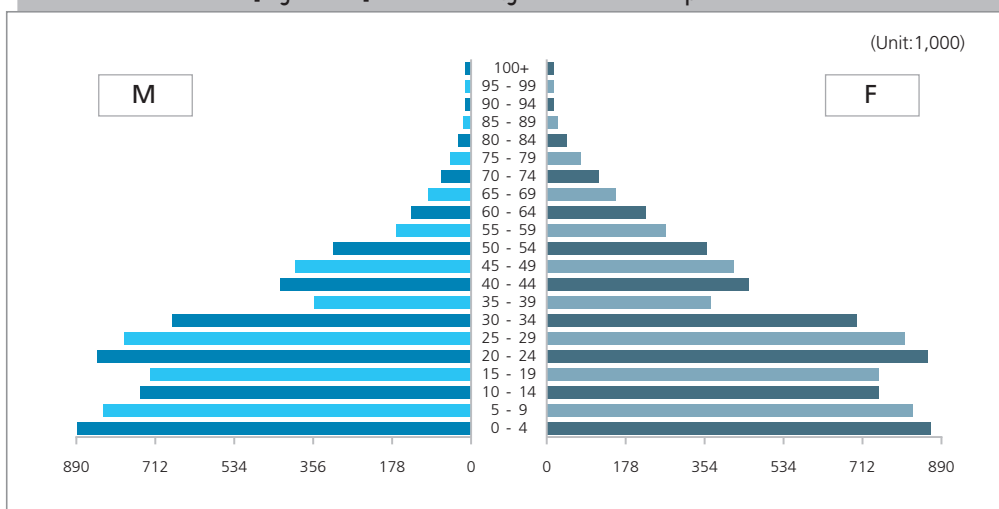
1) A sudden jump in the population growth rates both for Nation between 2013 and 2014 and for urban areas between 2011 and 2012 should be viewed with caution. Inconsistency in data collection is suspected.

〈Table 2-2〉 Cambodian Population and Households Trends

	Population				Households			
	Nation (1,000)	Annual growth (%)	Urban (1,000)	Annual growth (%)	Nation (1,000)	Persons per hh.	Urban (1,000)	Persons per hh.
Census 1998	11,438	-	1,796	-	2,162	5.3	315	5.7
CSES 2004	12,657	1.5	2,388	4.2	2,570	4.9	457	5.2
Census 2008	13,396	1.4	2,614	2.3	2,818	4.8	507	5.2
CSES 2009	13,729	2.5	2,644	1.1	2,876	4.8	530	5
CSES 2010	13,958	1.7	2,704	2.3	2,917	4.8	550	4.9
CSES 2011	14,155	1.4	2,807	3.8	3,044	4.7	585	4.8
CSES 2012	14,376	1.6	3,127	11.4	3,082	4.7	689	4.5
CSES 2013	14,678	2.1	3,146	0.6	3,163	4.7	657	4.8
CSES 2014	15,184	3.4	3,412	8.4	3,261	4.7	696	4.9

Source: Cambodia NIS (National Institute of Statistics), CSES (Cambodia Social Economic Survey).

[Figure 2-3] Cambodian Age Structure of Population



Source: CIA, Factbook (2014).

2.2. Phnom Penh Population, Households, Income, and Migration

In 2014, the population of Phnom Penh was 1.68 million, 10.9% of the national population and 53.3% of urban population. The average annual urban and Phnom

Penh population growth rate since 2010 has been around 1%p. higher than the national population growth rates. As a result, urbanization rate (urban pop./National pop.) and primacy rate (Phnom Penh pop./National pop.) has gone up to 20.5% and 10.9% respectively <Table 2-3>. Barring statistical error, these numbers appear to contradict the popular belief that the rural to urban migration, especially migration to Phnom Penh, is rapidly progressing. In fact, the population concentration in Phnom Penh is still lower than in 1970.

<Table 2-3> shows the estimated urban and Phnom Penh in-migrants, based on an assumption that the natural birth rates in these areas are the same as the Nation. Urban migrants peaked in the 1980s at 511.6 thousand persons in ten years, while the number of Phnom Penh migrants was the largest in the 1990s at 319 thousand persons in ten years. After 2000, the number of urban and Phnom Penh migrants dropped to half that of the previous decade. Currently, the urban migrants are increasing slightly at around 30 thousand per year, while the number of Phnom Penh migrants remains very stable at around 15 thousand per year. In 2013 and 2014, the contribution of migration in the Phnom Penh population growth was around half of the natural birth.

<Table 2-3> Cambodian Urbanization Trends

(Unit: persons, %)										
	1960	1970	1980	1990	2000	2010	2011	2012	2013	2014
A.Nation (annual growth)	5,720	7,022 (2.1)	6,699 (-0.5)	9,057 (3.1)	12,223 (3.0)	14,365 (1.6)	14,606 (1.7)	14,865 (1.8)	15,135 (1.8)	15,408 (1.8)
B. Urban (annual growth)	588	1,121 (6.7)	663 (-5.1)	1,408 (7.8)	2,272 (4.9)	2,846 (2.3)	2,916 (2.5)	2,993 (2.6)	3,075 (2.7)	3,161 (2.8)
C.Phnom Penh (annual growth)	389	900 (8.8)	238 (-12.5)	615 (10.0)	1,149 (6.4)	1,510 (2.8)	1,552 (2.8)	1,595 (2.8)	1,639 (2.8)	1,684 (2.7)
B / A	10.3	16.0	9.9	15.5	18.6	19.8	20.0	20.1	20.3	20.5
C / A	6.8	12.8	3.6	6.8	9.4	10.5	10.6	10.7	10.8	10.9
estimated urban migrants from the previous period		399.2	-406.4	511.6	371.8	175.8	22.3	25.3	27.6	30.5
estimated P.P migrants from the previous period		422.5	-620.6	293.2	319.0	159.6	16.7	15.5	15.0	15.4

Note: The number of urban and Phnom Penh migrants from the previous period was calculated by assuming that the natural birth rates in those areas are the same as the National population growth rate.

Source: United Nations, Department of Economic and Social Affairs, Population Division (2014), World Urbanization Prospects.

One can, however, question whether these statistics can be trusted. It is known that a sizable number of migrant workers do not register themselves in Phnom Penh to avoid fees and taxes. Nevertheless, if we accept that the population statistics at least reflect the general trends, urban as well as Phnom Penh migration has abated in recent years. We do not know if this phenomenon is temporary or permanent. If one looks into the income gap between the rural and urban areas, however, one is inclined to conclude that the recent trends may not last.

Reflecting that Phnom Penh is the center of economic growth, the household and the per capita income of the city is more than double the national level, both in terms of average and median <Table 2-4>. Even among urban areas, income in Phnom Penh is greater than other urban income, i.e., 20% higher in terms of the average income, and 40% higher in terms of the median income.

Note that the average income is much higher than the median income, indicating that there are a sizable number of high-income outliers. Moreover, even if the rural income has grown faster than the urban income recently, the rural-urban income gap is still significant.

<Table 2-4> Cambodian Monthly Disposable Income Trends

(Unit: 1,000 Riels)

A. Average Income

	per household						per capita					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Cambodia	736	877	871	1,014	1,231	1,424	158	197	198	228	288	331
Phnom Penh	2,016	1,944	1,793	1,870	2,498	2,836	414	428	406	432	580	681
Other Urban	1,089	1,468	1,158	1,493	2,103	1,858	234	329	267	342	509	435
Other Rural	554	676	713	813	928	1,155	121	153	162	180	216	265

B. Median Income

	per household						per capita					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Cambodia	384	471	562	663	782	974	87	112	135	157	192	233
Phnom Penh	1,258	1,303	1,250	1,379	1,646	2,018	268	290	298	320	380	473
Other Urban	632	780	826	953	1,216	1,306	141	188	198	230	294	310
Other Rural	323	410	469	561	666	833	73	96	114	133	163	200

Source: Cambodia NIS (National Institute of Statistics), CSES(Cambodia Social Economic Survey).

The past experience of other Asian capital cities shows a wide range of population concentration trends. The primacy rates (population of the primate city/national population) of Seoul and Kuala Lumpur were around 10%, similar to Phnom Penh at the present, in 1960 and 1990, respectively; then the rates more or less doubled in two decades. Manila and Bangkok, on the other hand, reached the 10% primacy level in 1970 and 1990 respectively, but the rates did not increase much afterwards. Jakarta and Hanoi, in contrast, have not yet reached the 10% level.

〈Table 2-5〉 Primacy Rate Trends of Asian Countries

	1960	1970	1980	1990	2000	2010	2020	2030
(Unit: %)								
Cambodia (Phnom Penh)	6.80	12.82	3.55	6.79	9.40	10.51	11.68	13.50
Korea (Seoul)	9.42	16.90	22.05	24.48	21.48	20.22	19.34	19.08
Indonesia (Jakarta)	3.02	3.43	4.11	4.58	4.02	4.00	4.19	4.71
Laos (Vientiane)	3.58	5.85	6.49	6.67	8.20	11.90	16.61	20.24
Malaysia (KL)	4.22	4.13	7.02	11.52	17.83	20.55	23.87	25.57
Myanmar (Naypyidaw)	-	-	-	-	-	1.9	2.0	2.4
Philippines (Manila)	8.66	9.87	12.56	12.87	12.83	12.73	12.63	13.11
Thailand (Bangkok)	7.86	8.43	9.97	10.41	10.20	12.37	14.94	17.06
Vietnam (Hanoi)	1.27	1.41	1.64	1.65	2.05	3.16	4.52	5.40

Source: United Nations (2014).

The United Nations predicts that the primacy rate of Phnom Penh will be 13.5% in 2030, putting the city in the same league as Manila and Bangkok. However, the geography of Cambodia is very different from that of the Philippines and Indonesia – both of which consist of a large number of islands - or from Vietnam, which has a long narrow shape. Moreover, unlike Thailand, which has had a stable sociopolitical background, Cambodia has a recent history of mass displacement and relocation. As a result, people move more freely, unbound by the geography or cultural background. If this observation is correct, then the UN projection seems to be overly conservative.

Considering the large income difference among regions, it is surprising that massive rural-to-urban and nation-to-Phnom Penh migration is not taking place. One can conjecture that full-scale rural-to-urban and nation-to-Phnom Penh migration trends have not yet begun in Cambodia. If the rural-urban income gap persists, the momentum will build up and a tide of migrants may burst into the city in the future. If so, the Phnom Penh housing market will experience a great shock, one which the

city is not prepared to cope with.

2.3. Housing Stock, Supply, Conditions, and Prices and Rents

In the past 10 years, quantitative as well as qualitative housing indicators (such as the proportion of households with a single room or with a flush toilet) have somewhat improved for Nation, but some of them (such as living space per household and per person) have deteriorated for Phnom Penh <Table 2-6>. Nevertheless, housing conditions in Phnom Penh are far better than Nation in almost all aspects. Phnom Penh residents, on average, live in larger and better equipped housing units than those in other parts of the country.

<Table 2-6> Cambodian Housing Conditions Trends

		2004	2007	2008	2009	2010	2011	2012	2013	2014
Avg. living space per household(m ²)	Nation	42.8	44.9	44.7	41.3	45	43.5	44.2	44.4	46.3
	Phnom Penh	70.1	77.3	80.2	61.8	64.4	58.8	55.2	52.7	60.7
Avg. living space per person(m ²)	Nation	8.7	9.5	9.4	9.1	9.4	9.4	9.5	9.6	10.0
	Phnom Penh	13.1	15	15.5	11.7	13	12.4	12.1	11	12.5
Avg. number of rooms	Nation	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5
	Phnom Penh	2	2.3	2.2	2.1	2.2	2.2	1.9	1.8	2.1
Avg. persons per room	Nation	3.6	3.4	3.3	3.3	3.4	3.3	3.2	3.3	3.2
	Phnom Penh	2.6	2.3	2.2	2.5	2.3	2.2	2.4	2.6	2.4
% households with a single room	Nation	74.3	73	72.6	70.1	71.4	71.7	69.6	69.2	66.4
	Phnom Penh	41.5	36.6	36.4	38.5	36.8	33	43.7	44.9	37.1
% improved toilet*	Nation	24.7	33.3	32.8	34.7	40	43.6	45.1	51.7	55.9
	Phnom Penh	95.5	97.2	97.8	98.4	97.1	97.6	94.7	98.4	98.1

Note: Improved toilets include pour flush/flush connected to sewerage or septic tank, Pit latrine with slab. Unimproved toilets include pit latrine without slab/open pit, latrine overhanging field/water, public toilet, open land.

Source: CSES (Cambodia Social Economic Survey).

Tenure statistics show that the majority of households reside in their own house <Table 2-7>. Own-house ratios of 93.6% for Nation and 86.5% for Phnom Penh are extraordinarily high. However, the high ratio of own-house residence seems to be exaggerated, and does not guarantee tenure stability nor a high standard of living conditions.

The land tenure situation in Phnom Penh is complicated and in a confused state (Biddulph, 2011; Bristol, 2007; Khemro and Payne, 2004). Sometimes, there is no clear distinction between legal and illegal occupancy and/or ownership. For instance, one may consider himself/herself an owner of property if he/she has purchased it from a local authority (such as a police official, village chief, representatives of the Sang Kat or Khan) or the previous owner. In most cases, however, the previous owner or the local authority sells plots without any ownership rights for their own benefit. In such cases, if a transaction is recorded and a hard copy of script exists, even if it is a handwritten receipt without any legal authority, it is often enough to claim compensation in cases of municipal relocation. However, such ownership is not certain. These uncertain property rights may not protect the “owner” from being evicted.

If “free occupation” in <Table 2-7> indicates squatters, then their ratio in Phnom Penh has declined very rapidly since 2011.

<Table 2-7> Cambodian Tenure Status Trends

		(Unit: %)								
		2004	2007	2008	2009	2010	2011	2012	2013	2014
Own	Nation	94.7	93.1	94.5	94.2	93.8	93.0	93.1	93.8	93.6
	Phnom Penh	85.7	83.8	82.0	80.5	79.2	79.9	86	85.3	86.5
Free occupation	Nation	3.6	4.8	2.9	3.2	3.5	3.9	3.9	3.3	3.6
	Phnom Penh	5.0	4.2	3.4	4.1	6.0	6.8	2.2	1.8	2.5
Rent	Nation	1.4	2.0	2.6	2.5	2.6	3.0	2.7	2.9	2.4
	Phnom Penh	9.2	12.0	14.6	15.3	14.8	13.0	11.8	12.9	10.6
Others	Nation	0.2	0.1	-	0.0	-	0.0	0.0	-	0.1
	Phnom Penh	0.1	-	-	0.1	-	-	-	-	0.0

Source: CSES (Cambodia Social Economic Survey) (each year).

2.4. Housing Condition of Low-Income Households in Phnom Penh

2.4.1. Informal Settlements in Phnom Penh

According to UNICEF (2014), 25% of Phnom Penh residents live in the informal settlements.²⁾ Informal settlements on public lands are usually alongside relatively wide streets, railway tracks, riversides, and water reservoirs (known as natural lakes). The most vulnerable families live on public land where there are no private owners who would evict them. However, the living conditions are harsh. People are living in makeshift shelters under threat of flooding and/or with bad access as well as unhealthy conditions. Informal settlements on private lands are typically small clusters of shelters located in back alleys. There are also people living in dilapidated buildings or on rooftops located in the center of the city. Since 1995, rural migrants have also developed squatter areas in rural fringes of the city or on public land where no construction is allowed, with an expectation that they may somehow get tenure rights in the future. In addition to permanent settlers, there are also seasonal migrants who regularly move in and out of the settlement area because of floods. Most residents in informal settlements are subject to health issues with hygiene problems, lack of personal security, and a shortage of basic infrastructure and other public services.

The population of Phnom Penh has more than doubled between 1980 and 2000 with a large number of migrants flowing into the city, and in the process enormous number of informal settlements have sprung up (Pierre, 2003). Residents of such settlements are rural migrants leaving the countryside out of indebtedness or for economic opportunities, refugees returning from camps, and people who were abandoned by their family. The reasons for coming to Phnom Penh mostly entail economic opportunity.

An informal settlement resident may have some sort of recognizable occupancy rights. However, all private ownership of land was abolished in 1975, and the ownership system has been slowly reintroduced since 1979. This means that most property rights are precarious, and most urban dwellers could be considered informal settlers. There is a report that 78.9% of the urban population in Cambodia are informal settlers due to this reason. This percentage is quite high compared to neighboring countries with similar urbanization history (UN Habitat, 2010). Laos which shares similar characteristics of economic growth with Cambodia has the

2) Slums are highly congested urban areas marked by deteriorated, unsanitary environments, dilapidated buildings, and social disorganization. Squatters settle on land, especially public or unoccupied land, without right or title. Squatters include those who settle on public land in order to gain the title to it. To avoid the negative connotations of such words, we use the expression “informal settlement” in this report.

highest slum population of 79.3%. The informal settlement problem of Phnom Penh is a classic one which can be observed in other capital cities with postcolonial histories.

2.4.2. Status of Tenants

There are the poorest of the poor who cannot afford to purchase even a squatter settlement. They rent a shelter on a weekly or monthly basis with the constant threat of eviction by their landlord and the local authority. According to a study conducted by a local NGO, the minimum monthly rental was \$4, whilst the average monthly rent price was \$26.47 (STT, 2014). The rental arrangements are normally practiced in a very simple way; no leasing documents, no guarantee, etc. Renters or lessees can be easily abused by their landlord since there is little protection for them.

2.4.3. Inferior Living Conditions

2.4.3.1. Water

In 1999, only a quarter of the slums were officially connected to the city's water supply network. People who do not have access to public water source have to buy water from private sellers, paying 3 to 15 times the price of public water (Pierre, 2003). Those who cannot afford to pay often use surface water from rivers or lakes, but the quality of water is so poor as to cause health problems.

Furthermore, the job of carrying water from the source falls on women, who have to spend, on average, a couple of hours a day for the task. The water supply authority aims to reach 100% of coverage for all city people by 2020 (PPWSA, 2016).

2.4.3.2. Sewerage and Waste Collection

Many poor settlements do not have a functioning sewerage system nor flood water drainage mechanism. One third of the settlements do not have any system to discharge storm or waste water. Another third have set up their own drainage system. Poor drainage causes mosquitoes and other parasites to breed, and waterborne diseases may infect wide areas of slum settlements. Only 30% of families in poor settlements have access to indoor toilets. Human waste discharged into open space causes a health hazard and the degradation of the local environment (Pierre, 2003). Public rubbish collection does not cover the poor people who live in the lower parts of settlements.

2.4.3.3. Electricity

Squatters cannot be officially connected to the main electricity distribution network run by Electricité Du Cambodge (EDC). Those who do not have an official connection to EDC electricity buy electricity from private vendors who are registered to EDC, but the price is two to three times the regular rate and the supply is not stable. Individuals with an electricity meter also sell electricity without any registration at a price of three to five times the regular rate. There are private vendors who run their own generators. Charges are based on the number of electrical appliances and it is at least five times the regular EDC rate. Typically 20% of the households in a settlement do not have electricity (Pierre, 2003).

Thanks to the new subsidy, electricity consumed by garment workers who use under 50 kilowatts a month cost around \$0.15/kwh, while the regular tariff is around \$0.18/kwh (EDC, 2016).

2.4.3.4. Public Services

Poor people in the slum area are settled in isolated areas. Services such as education and healthcare cannot be easily accessed. The cost of food is high and economic activities for housewives and personal safety are compromised due to this isolation.

3. Cambodia's Housing Policies and Housing Problems in Phnom Penh

Informal settlements and urban poverty are caused by rural-urban migration, unbalanced wealth distribution, poor urban services, insufficient infrastructure provision, and limited participation in local governance. There are new policies such as Social Land Concession (2003), Circular 3 (2010), and National Policies on Housing (2014) which attempt to address the housing issues in urban areas in particular.

3.1. Social Land Concession

Social concession land may be granted to a person or group of persons of Cambodian nationality for social purposes, in regard to one or more of the following purposes defined by article 3 of Sub Decree No. 19/ANK/BK of May 19, 2003:

- Provide land for residential purposes to poor homeless families
- Provide land to poor families for family farming

- Provide land to resettle families who have been displaced resulting from public infrastructure development.
- Provide land to families suffering from natural disaster.
- Provide land to repatriated families.
- Provide land to demobilized soldiers and families of soldiers who were disabled or died in the line of duty.
- Facilitate economic development
- Facilitate economic land concessions by providing land to workers of large plantations (chamkar) for residential purposes or family farming.
- Develop areas that have not been appropriately developed.

The Commune Council may initiate a Community Social Land Concession Program by preparing social land concession plans according to the conditions of the social land concession plan. The Community Social Land Concession Program may also be initiated by citizens or any organization working with citizens. However, this initiation must be conducted through the Commune Council of Commune or Sangkat (district) where the concession land is located and the social concession plan must be prepared in response to the necessary condition of the social land concession. In practice, land concession activities are found in rural areas, where the land price remains reasonably affordable and land still belongs to the government and local authorities.

3.2. Circular No. 3 on Squatter Settlement Resolution

Circular 3 is a resolution that aims to respond to the high number of squatter settlements and to find a solution for temporary settlements on state land illegally occupied after the era of the Khmer Rouge. Many of the squatter settlements have grown up on state-public land. To legalize their settlement, the land must be turned into state-private land.³⁾

The Circular Specifies the Procedure:

- Data on the Actual Number of Temporary Settlements Collected

Each team must be formed with community representatives and other actors registered.

Identification, mapping and clarification of temporary settlement sites: Physical characteristics of settlements, current and future use of the land, and the level of precariousness of the land are identified. A report must be produced with proposals

3) State-public land is the land owned by the State and not available for sale or rent. State-private land is land owned by the State and available for the State to sell or rent.

on what to do with the land and approved by the Province or the State Land Management Committee.

- Household and Population Census in Temporary Settlements

Collection of data at a household level based on household members' status of ownership of land. Suggestions from local residents collected.

Meeting with state authorities and civil society to negotiate solutions for each settlement case: Once a decision is made, a working group must develop an action plan which must be approved by the Capital or the Provincial State Land Management Committee.

- Discussion to Identify the Solution Plans for Each Cases

For those settlements where the plans are approved, further discussion must be carried out to specify details. For those settlements where the plans are not approved, plans and policies must be re-discussed.

- Basic Public Infrastructure and Services to Support Livelihoods

Identifying boundaries for installation of basic public infrastructure and services.

Participation of stakeholders in development: Stakeholders must continue to be supported during and after the process of upgrading or relocation. Processes such as initiating community savings groups or community organizations must be accompanied by professionals who are well equipped to provide this support.

3.3. The National Policy on Housing

The National Policy on Housing (NPH) was formulated to implement the Political Platform of the Royal Government of Cambodia, the 5th legislature of the National Assembly. This policy intends to help low- and middle-income households and vulnerable groups to afford adequate housing, to speed up municipal, urban and rural development, to solve temporary living conditions in informal settlements, to cooperate with various development partners and charities, and to build national and sub-national housing programs for the short-, medium- and long-term.

This Policy Aims:

- To provide general people, especially low- and middle-income households and vulnerable groups with access to decent housing or improving a house to

ensure the right to adequate housing

- To promote municipal, urban and rural development
- To provide resolution to households that are living temporarily in a dis-organized structure to have access to adequate, safe, and comfortable housing and/or livelihood
- To encourage collaboration with development partners, civil society, charity, and private sector to establish national and sub-national housing program for short-, medium-, and long-term

NPH specifically lists the policy options in addressing the housing issues.

Option 1. Low-cost housing: The Royal Government could establish a housing program targeting low- and middle-income households and vulnerable groups by constructing low cost housing for sale at a reasonable price and/or by installments over a long term.

Option 2. Collaboration with private sector: The government might collaborate with private property development companies. After the construction is completed, the companies might sell a certain percentage of the residences at market price; the rest shall be granted to the State, as agreed in a contract, for either renting or selling at affordable prices to low- and middle-income households through installments. The state may give land to property developers if the developer provides housing in any part of the land acquired from the state for those citizens in need of housing support through installments over 15 to 20 years without any interest. The received installments shall be kept in an account at the sub-national level to be used at other sites. In cases where the private- sector developers have land and investment capital for developing a housing scheme, the State may cooperate with them. Such development shall be encouraged in order to establish social and physical infrastructures, and to provide necessary public services at, or near, the development site. As a response, the private-sector property developer shall grant a certain proportion of development to the state for social housing.

Option 3. Collaboration with development partners and civil societies: Development partners and civil societies could collaborate with each other to provide low- and middle-income households and vulnerable groups with adequate and affordable housing.

Option 4. Housing for rental: The state may build housing for rental for those groups of citizens in need, with a specific contract of no more than 15 years with an

affordable rate. If the private sector is engaged in such rental housing construction, the State might provide investors with incentives such as reduction of some targeted tax and VAT. There has not yet been a case of public rental housing or state land leased for low-income residential.

Option 5. The state directly provides poor households/communities with land for housing construction: The state might directly provide land and loans for housing construction to individuals or to communities. The state can provide low- and middle-income households or communities with land in the form of donation, social land concession, or sale or perpetual lease at a low price for housing construction purposes. The people in the communities are responsible for constructing houses for themselves from their own expense, or loans from housing funds, financial/banking institutions, or NGOs. Loan payment should be made over a long period of time. The state should select sites close to urban areas with access to basic infrastructure and services. The implementation of this option should be conducted on a large scale to achieve the economy of scale and to support public services. Such large-scale developments are also expected to attract investors from the private sector.

Option 6. Relocation: Relocation could be implemented for those who have illegally occupied state land such as right-of-ways, railway tracks, channels or rivers, land belonging to schools, hospitals, public parks, risky areas, prohibited areas, on other infrastructures, and on privately owned land, or land which the private sector is granted with legal rights to occupy. The relocation should take place on a suitable site close to urban areas with access to basic infrastructure and services, as well as employment opportunities. Housing safety should be ensured as well.

Option 7. On-site upgrading: Regarding on-site upgrading, the state, national and international development partners, development agencies, NGOs, private sector, and the communities shall contribute for the better development of infrastructure and basic services. However, residents themselves are responsible for housing improvement individually. This option might blend with self-help efforts through savings and loans provided by the community.

Option 8. Forest policy for family housing: To contribute to promoting adequate housing, local communities, especially the poor and the vulnerable groups living in a forest community, can utilize community forests for residential purposes with prior consent of the competent authorities.

Option 9. Assurance of shelter for employees: Employers are urged to provide adequate housing or accommodation with clean water systems, electricity, and sanitation for their employees. Effective implementation of this option can be carried out through the labor law enforcement.

The General Department of Housing was recently established under the Ministry of Land Management, Urban Planning and Construction. This general department will play a key role in carrying out the housing policies.

3.4. Bottlenecks in Housing Supply

There are no official statistics, but housing construction has been very active in recent years. Residential projects for condominium and Borey⁴⁾ dominate the construction sector. According to the National Bank of Cambodia, construction investment was more than 2 billion USD over the last few years, and the number of projects keeps growing year by year. However, such an increase in housing construction does not directly affect the affordable housing problems for low-income people, because those developments are for the mid- to high-income households. Meeting the demands of low- and mid-income households and vulnerable groups is not an attractive business strategy for private developers.

Under such a circumstance, it is not easy to achieve the professed goals and strategies of the housing policies. The Cambodian government must cope with the following factors, which work as bottlenecks in improving housing conditions for the poor. One can easily see that most of them are beyond the scope of housing policy. They can only improve with economic development and the rise of income and wealth. From the perspective of the housing policy, these factors are more of policy environments than policy targets. The task of housing policy makers then is to establish realistic policy goals and adhere to policy measures which will work even under such unfavorable environments.

3.4.1. Poverty and Unstable Employment

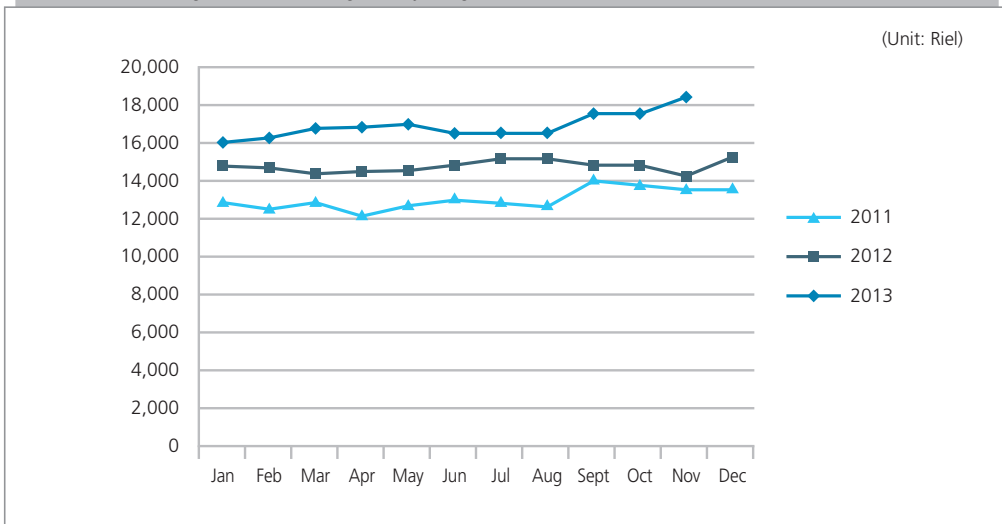
Migrants coming to Phnom Penh have expectations for better education, higher living standards, and greater economic opportunities. However, most of them cannot access any public services and proper job opportunities. Studies conducted by the World Bank, the UN, and other institutions indicate that families living in slum areas are just above or under the poverty line [Figure 2-3]. UNICEF found that only 2% of the family heads of slum households have secondary school education and the rest are either primary school level or illiterate. More than one third of the residents of informal settlements are working in the garment industry, and around 25% are small vendors or construction workers [Figure 2-4]. They are low-paid jobs with an unstable income.

Families spend 45% of their income for food and 16% for social events such as wedding ceremonies (UNICEF, 2014). A large sum is spent on repayment of debt,

4) Commonly known as modern houses.

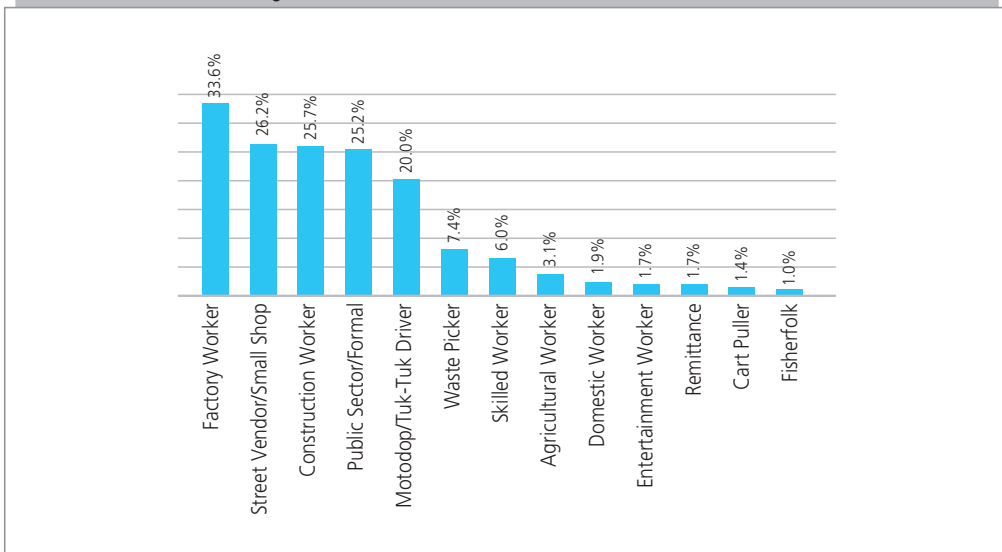
health, and transport. Access to public services sometimes requires informal payments which may be burdensome to the low-income families. Regardless of the increasing trend of an average daily wage, those urban unskilled laborers face the challenges of financial instability.

[Figure 2-4] Average Daily Wage of Urban Unskilled Labor, 2011-2013



Source: World Food Program (2014).

[Figure 2-5] Income Activities of Household Members



Source: UNICEF (2014).

3.4.2. Insecure Land Tenure System

Registration of land in urban areas remains a difficult task, with an often complex and unresolved situation of illegal settlements (Kheang and Sokbunthoeun, 2011; USAID, 2010). In particular, it is not easy to negotiate with those who do not have legal ownership to the land which they have obtained through an informal transaction. Such cases cause problems in granting legitimate ownership of the property.

In the last few years, the government has placed a great deal of effort and resources into improving land registration system across the country. At the present, Cambodia has two land registration approaches for land rights, namely sporadic land registration and systematic land registration. The systematic parcel-by-parcel land registration, which is the new approach, is applied area by area and village by village, and its one-visit-per-parcel principle stresses transparency and participation. The system consists of various components such as public information, adjudication, demarcation, surveying, documentation, public display, confirmation of the records, and delivery of the title. The system, in short, is designed to ensure transparency, accountability, and a strong and rapid participation from the public. As a consequence, a large number of land titles have been successfully issued to the legal owners, especially in rural areas. On the other hand, there are more titles to be granted to legal claimers, but it is a great challenge to deal with illegal tenures, especially in urban areas.

3.4.3. Limited Access to Housing Finance

The Global Property Guide (2014) conducted a survey and presented residential property price of Phnom Penh in 2014. Flats cost around US\$3,000 per square meter in the prime residential areas. Cost of villas range from US\$3,500 to US\$4,500 per square meter, with smaller villas fetching higher prices. Rents range from US\$9 to US\$13 per square meter per month. On average, land price increases 15% annually. With current house and land prices, housing is not affordable for the low- and many middle-income households even with housing loans.

Major private banks in Cambodia provide housing loans, which may vary depending on the bank, but share common features such as: loan amount between 60% and 70% of property value; maturity between 10 and 20 years; interest rate between 8% and 10%; a collateral is required for the loan. In such a term and with high housing prices, low-income households cannot afford to buy a house and pay back the mortgage. Banking procedures are also complicated for those low-income people who are not suitably educated and have a low-level of financial literacy.

Credit growth has been more than 30% per year in the past couple of years. The real estate and construction sectors are responsible for such an increase and, in 2015, the IMF advised the government to enforce macro prudential regulations (IMF, 2015). While traditional banking cannot help with the housing problems of low-income households, Micro-finance institutions (MFIs) offer housing improvement loans with an interest rate of 3% per month with collateral. However, the supply of funds is not sufficient and the interest rate is not favorable to low-income households. Other players such as the government and NGOs have their own limitations in supplying funds for low-income households.

3.5. Land Sharing Approach: Cambodian Experience

The bottleneck factors work negatively on housing policy programs. Plans which look good on paper frequently run into insurmountable obstacles. A good example is the experience of land-sharing approach, which aims at clearing informal settlements and providing permanent housing for the poor at the same time. Since 2003, the land-sharing approach has been implemented by Phnom Penh municipality to address the housing shortage of the poor and vulnerable groups. Four pilot projects were announced for on-site upgrading: Borei Keila – Approx. 2,000 families; Dey Krohom – Over 1,450 families; Santhiheap (Railway A) and Roteh Ploeung (Railway B) - Railway A and B together over 450 families.

In these projects, it was necessary to resolve disputes between land occupants, private or public landowners, and/or developers who wanted the land for redevelopment (Paul, 2005). The land-sharing scheme was supposed to be a 'win-win' solution for these major stakeholders. For slum residents, the scheme would allow them to remain on site in the city center, with the provision of free or inexpensive new housing. For the municipality of Phnom Penh, the scheme would eliminate slum areas in the city, and serve public interest. The cross-subsidization would reduce the fiscal burden. In addition, the municipality could promote commercial development in the city. For private developers, the scheme would give them opportunities to access prime location in the city center, without the need to go through time-consuming and messy eviction processes.

Precedents of Bangkok have revealed that there are a number of preconditions for such an upgrading scheme to work successfully. There must be a booming property market, community organization and consensus, well-established communities, third-party intermediation, physical/technical feasibility, and financial feasibility. Phnom Penh had three out of the six pre-conditions: buoyant land market, well-established settlements, and innovative arrangements to finance land-sharing schemes.

Ultimately, however, the land-sharing projects in Phnom Penh did not produce intended outcomes <Table 2-8>. Reasons for the failure of the land-sharing approach include lack of adequate consultation with the residents about the land-sharing agreement and building designs; lack of transparency in awarding land-sharing contracts to developers; irregularities in the procedures to identify eligible beneficiaries and the allocation of housing units.

Also, the fact that a number of projects were secretly planned among small group of people resulted in weak bargaining power. In particular, it was difficult to form a consensus in the communities, which were often divided into one group of people who wanted redevelopment and another group, who were against. The two groups could not bridge the gap. The perception that community leaders were ‘selling out’ slum areas to developers was also strong.

<Table 2-8> Pilot Land Sharing Settlements in Phnom Penh

Name of Settlement	No of families	Total area (ha)	Landowner before land sharing	Negotiation period	Intermediary organization	Summary of outcome for slum dwellers
Borei Keila	1,776	14.1	MoEYS	2003-2004	MPP	2 ha. reserved to rehouse residents in 10 apartment blocks; developer received 2.6 ha. for commercial development and later bought remaining portion of land
Dey Kraham	1,465	4.7	MPP	2003-2005	None	Planned relocation of all residents, after unsuccessful land sharing negotiation
Railway A (Santipheap)	70	1.3	State Railway Co. lease to developer	2003-2008	None	Individual relocation of residents, after unsuccessful land sharing negotiation
Railway B (Roteh Pleung)	255	10	State Railway Co. lease to developer	2003-2008	None	Individual relocation of residents, after unsuccessful land sharing negotiation

Source: Phnom Penh Municipality (2014).

Uncertainty about who holds rights of what kind, who would pay for what and the low economic ability of residents are at the heart of disputes among residents

and between the residents and outsiders. Any housing policy program must deal with such problems either by overcoming them or by circumventing them.

Having learned from past experiences, the government has considered new approaches which seem to be more practical and are more welcomed by the beneficiary. Public-Private Partnership (PPP), which is a broader concept than the land-sharing approach, is now one of the policy options to address affordable housing in urban area. The draft PPP policy, of which housing development is one of the priority actions, will soon be ready. This time, the government appears to be more cautious in selecting options to address the housing issues - it should start with pilot projects before expanding to a larger scale. Moreover, the procedure of implementing the programs/projects will also be more detailed and stringent in order to ensure success by selecting qualified private developers as partners and reaching the right target groups.

4. Korean Housing Market and Policies⁵⁾

4.1. Overview

When Korea was liberated from Japanese colonial rule in 1945, the country was one of the poorest in the world, and could not do much to alleviate the housing shortage problem. The problem became worse during the Korean War (1950-53), during which time around 20% of the housing stock was destroyed. In any country, securing adequate housing for all citizens is a major challenge that requires significant allocation of national resources. However, as a developing country, Korea could not mobilize much resource for the housing sector. What is peculiar to Korea is that the improvement in housing conditions has been achieved with relatively little resource allocation. Government policies have emphasized building up housing stock which was primarily paid by home buyers. Assistance for home buyers relied more on the supply of inexpensive land and price regulation of new houses than on budgetary or financial resource allocation.

The Korean housing policy has been a great success in certain respects, but has perhaps been lacking in other areas. Countries with similar conditions to Korea in the early development stage may find some useful means of improving housing conditions for their citizens without many resources. However, they should also take a lesson from Korea's failures, of which there are numerous examples.

5) This section on Korean housing policy is a revised and supplemented version of the similar sections in Son and Lee (2014) and Son (2015). The revision and additions were made to draw specific implications for Cambodian housing policy.

4.2. Long-term Trends in Housing Conditions

4.2.1. Population, Households, and Migration

<Table 2-9> shows demographic trends in Korea. Its population in the year 2010 was 48.6 million, around 94% greater than it was half a century ago when the economic development had barely commenced. Its population growth, however, has slowed to an annual rate of around 0.5% recently from 2.60% in the early 1960s, and is expected to turn negative sometime around 2030. As Koreans have fewer children and as the traditional extended family structure has weakened, the average household size has dropped from 5.56 persons in 1960 to 2.7 in 2010.

〈Table 2-9〉 Korean Demographic Trends							
		1960	1970	1980	1990	2000	2010
Population (1,000)	Nation	24,989	31,466	37,436	43,411	46,125	48,580
		(100%)	(100%)	(100%)	(100%)	(100%)	(100%)
	Seoul	2,445	5,536	8,364	10,613	9,891	9,794
		(9.8%)	(17.6%)	(22.3%)	(24.4%)	(21.4%)	(20.1%)
	Capital Region including Seoul	5,194	8,894	13,298	18,587	21,347	23,836
		(20.8%)	(28.3%)	(35.5%)	(42.8%)	(46.3%)	(49.1%)
Population Density (persons/Km ²)		254	327	385	432	475	486
Households (1,000)		4,361	5,576	7,969	11,355	14,318	17,339
Average Household size (persons per household)		5.56	5.24	4.55	3.71	3.10	2.70
Urbanization Ratio (%)		28	41.2	57.3	74.4	79.7	82.9

Source: National Statistical Office, Population and Housing Census (each year).

Since the early 1960s, export-oriented industrial development policy has rapidly transformed the country's agriculture-based economy into a modern industrial one. In this context, the population living in urban areas has increased from 28% in 1960 to 57.3% in 1980, and to 82.9% in 2010. Early industrial development was centered around Seoul and other major cities, with a corresponding pattern of inter-regional migration. Population concentration in the Capital region, consisting of Seoul, the city of Incheon and the Gyeonggi Province, has been particularly pronounced.

Major cities during the 1960s were not prepared to accommodate the large number of in-migrants. As a result, housing shortage and price hikes, traffic

congestion, crowded schools, and overstretched public services were inevitable. The government has regarded this regional imbalance as a major policy concern since the mid-1960s, and the location of so-called “population inducing facilities,” such as colleges, factories, and large commercial buildings in the Capital region have been discouraged. However, such regulations could not reverse the population trend.

In the mid-2000s, the government decided to solve the problem once and for all by relocating many of ministries and public entities outside the Capital region. An administrative center (Sejong City) is being built with a target population of 500,000, and 13 smaller new towns are being developed in various parts of the country to house public corporations and relocated employees. Dispersing the ministries and public corporations would certainly result in considerable economic inefficiency, but the gains in terms of regional equity were considered more important.

4.2.2. Housing Stock and Conditions

Trends in housing stock by type of house are shown in <Table 2-10>. From 1970 to 2010, total housing stock has more than tripled. The housing supply ratio, a popular indicator of housing stock adequacy, was around 70% in 1990, but is now more than 100%.

〈Table 2-10〉 Korean Housing Stock Trends					
	1970	1980	1990	2000	2010
Total	4,359 (100%)	5,318 (100%)	7,160 (100%)	10,959 (100%)	13,883 (100%)
Single Detached house	4,154 (95.3%)	4,652 (87.5%)	4,726 (66.0%)	4,069 (37.1%)	3,797 (27.6%)
Town house	146 (3.3%)	161 (3.0%)	602 (8.4%)	1,266 (11.6%)	1,750 (12.6%)
Apartment	33 (0.8%)	373 (7.0%)	1,628 (22.7%)	5,231 (47.7%)	8,185 (59.0%)
Others ¹⁾	25 (0.6%)	131 (2.5%)	202 (2.8%)	392 (3.6%)	151 (1.1%)
Housing Supply Ratio (%) ²⁾	78.2	71.2	72.4	96.2	112.9

Note: 1) Mostly houses within non-residential buildings.

2) Housing Supply Ratio = Housing Stock / Households excluding one person household and non-blood related households.

Source: National Statistical Office, Population and Housing Census (each year).

The table also shows that, of the various housing types, the number of apartments and their proportion in the total housing stock have increased very rapidly. The apartment is a community housing arrangement in a building five stories or taller, with each unit being individually owned. As urban land became scarce and technology for building high-rise structures advanced, the apartment became popular in the major cities in the 1970s. Between 1995 and 2000, the apartment accounted for 81% of all new housing construction, much higher than the 29% in the latter half of the 1970s. Currently, more than 90% of new houses built in major cities are apartments.

As income rose, and to a considerable extent, apartments became a popular housing choice, the average household began to enjoy a larger and better home. Housing quality indicators of all types show that Korean families have enjoyed greatly improved housing conditions over time. <Table 2-11> shows that the average size of a house, and dwelling area per person / household, etc. have increased, while the number of persons per room and the ratio of households living in one room have decreased. As late as in 1980, less than one in ten households lived in a house without hot water, less than one in five households had a flush toilet. Now almost all Koreans enjoy these modern amenities.

<Table 2-11> Korean Housing Quality Trends

	Unit	1970	1980	1990	2000	2010
Average size of a house	m ²	47.9	68.4	80.8	81.7	94.2
Dwelling area per person	m ²	6.8	10.1	13.8	20.2	25.0
Dwelling area per household	m ²	35.9	45.8	51.0	63.1	67.4
Persons per room	persons	-	2.1	1.5	0.9	1.4
Households occupying one room	%	-	-	25.8	7.9	7.6
With hot and cold running water	%	-	9.9	34.1	87.4	96.9
With flush toilet	%	-	18.3	51.3	87	97.6

Source: National Statistical Office, Population and Housing Census (each year).

4.2.3. Tenure

Trends in housing tenure are shown in <Table 2-12>. The ratio of households residing in their own houses decreased from 63.6% in 1975, to 49.9% in 1990, and then picked up in the 1990s. The declining owner-occupancy ratio until 1990 can be explained by the rising urban population due to the rapid urbanization, along with a failure to supply a sufficient number of homes. The owner-occupancy ratio increased later, primarily in the urban areas where massive housing construction programs were concentrated.

〈Table 2-12〉 Korean Housing Tenure Trends

(Unit: %)

	Total	Owned	Chonseil Rental	Monthly Rental	Free or Other Arrangement
1975	100	63.6	17.5	15.7	3.3
1980	100	58.7	23.9	15.4	1.9
1990	100	49.9	27.8	19.1	3.2
2000	100	54.2	28.2	12.6	2.8
2010	100	54.2	21.7	20.1	2.7

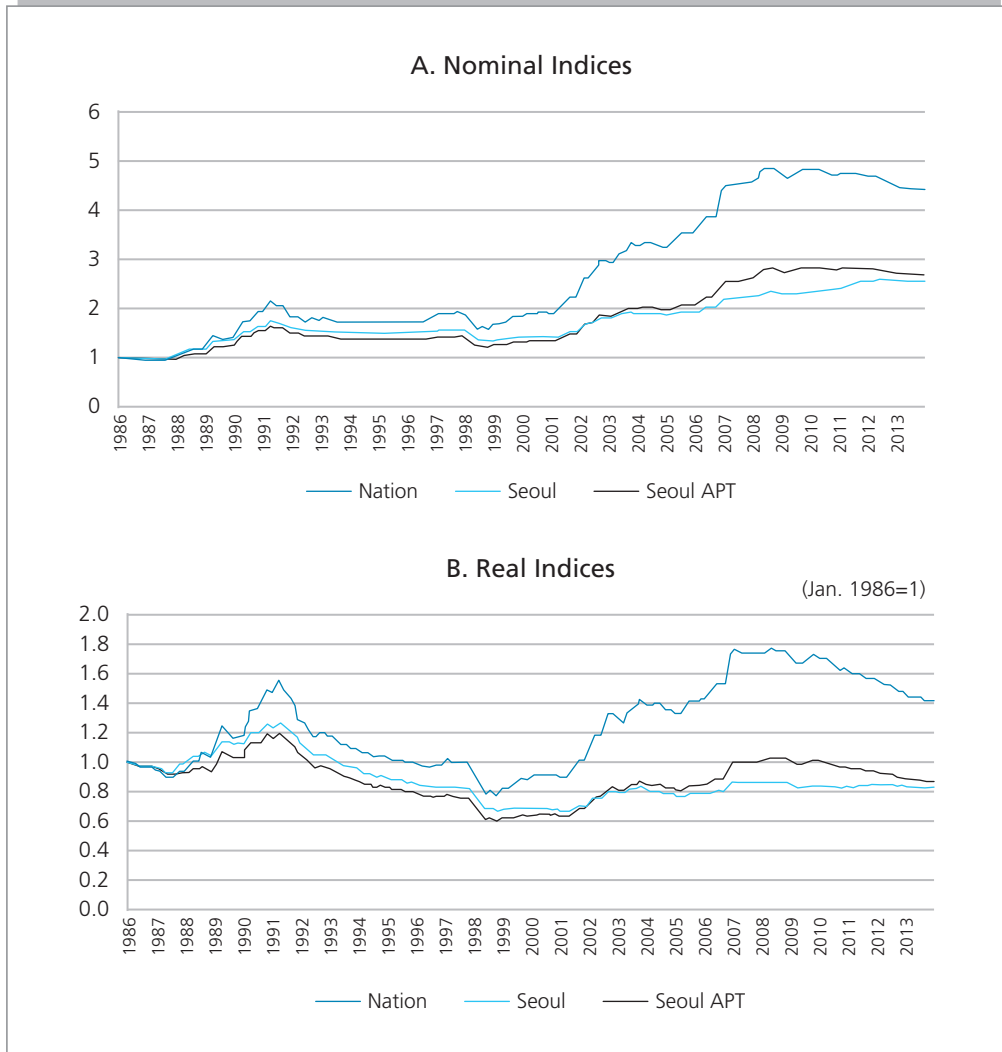
Source: National Statistical Office, Population and Housing Census (each year).

The Korean real estate rental market has a peculiar rental contract called Chonseil. With a Chonseil rental contract, the tenant makes a large deposit in lieu of monthly rent payments, and the interest income that accrues to the landlord constitutes the rent. At the end of the rental term, which is usually a two-year period, the deposit is returned in full to the tenant. Under steady house price inflation, capital gains are an additional, and usually more important, source of income for the landlord. This traditional tenure choice has recently been undergoing a fundamental change. A gloomy prospect of capital gains due to prolonged housing market recession as well as low interest rates has diminished the rate of return for Chonseil landlords. They now prefer a monthly rental contract to a Chonseil contract. Outright monthly rental contracts and hybrid Chonseil and monthly rental contracts now account for around half of all new housing rental contracts.

4.2.4. Price Trends

Official house price statistics in Korea began to be compiled in 1986. Figure 5 shows that the national as well as Seoul's housing price indices at the end of 2013 are slightly more than 2.5 times that of 1986 in nominal terms. In real terms, house prices have actually decreased by 15-20%. Houses have become much more affordable in Korea in the long-run. These statistics would surprise any Korean, who would typically think that the house price inflation has been much higher than the general inflation. The gap between this perception and statistics may be due to differing housing price trends among regions and housing types. The apartment in Seoul's affluent Gangnam district has, for instance, shown consistently higher rates of price increase.

[Figure 2-6] Korean House Price Trends



Source: KB, KB Housing Price Trends (2015).

4.3. Korean Housing Policies

4.3.1. 1960s and 1970s

4.3.1.1. Formation of Regulatory Framework

Large-scale rural-to-urban migration in the 1960s overwhelmed Seoul and other major cities, where squatting became common wherever vacant land was found. The housing problem did not become a priority in national policy making, however, because the government was determined to mobilize as many resources as possible for industrial development and the accompanying infrastructure construction. A few housing projects were funded by foreign aid agencies, but housing was something that each household had to ensure for itself.

The government instead concentrated on setting up the basic rules and institutions. The Urban Planning Act and the Building Act were enacted in the early 1960s, and the Land Readjustment Project Act in 1966. The Korea National Housing Corporation (KNHC) was established in 1962, and the Korea Housing Bank (KHB) in 1968.

The policy concern for the housing problem grew in the 1970s because of the continued shortage of urban housing on the one hand and the rising expectations of the people on the other. Significant legislation in the 1970s included the Housing Construction Promotion Act (1972), the National Land Use and Management Act (1972), and the Urban Redevelopment Act (1976). In 1972, the government announced a plan to build 2.5 million houses over a 10-year period, but the plan could not be implemented because of the first oil-shock and subsequent economic recession.

4.3.1.2. Introduction of Anti-Speculation Measures

One of the key objectives of the land and housing policies since the late 1960s has been to suppress property speculation. Korea first experienced widespread real estate speculation in the 1960s, and it was blamed for the rapid increases in land and housing prices. The first anti-speculation measure was the Property Speculation Suppression Tax (1967), a predecessor of the current capital gains tax.

This tax was levied on corporate land which was determined to be speculative by a crude set of rules. This approach of first determining if a certain land was speculative and then heavily penalizing such a holding was passed on to other taxes and regulations. The fight against speculation has become the most important feature of land and housing policies. Anti-speculation measures have been used to

deter frequent property transactions, penalize “unnecessary” or “excessive” property holdings, and discourage private land developments. Even today, all real estate taxes and regulations contain elements intended to suppress property speculation.

4.3.1.3. Informal Settlement Problem

There already was a serious housing shortage problem when Korea was liberated in 1945. To make matters worse, the Korean War (1950-53) destroyed around 20% of the housing stock while a large number of North Korean residents fled to the south to escape communist rule (Cho, 1996). In the early 1960s, the country started the successful economic development programs, which were centered in Seoul and other major cities. Accordingly, massive rural-to-urban migration followed.

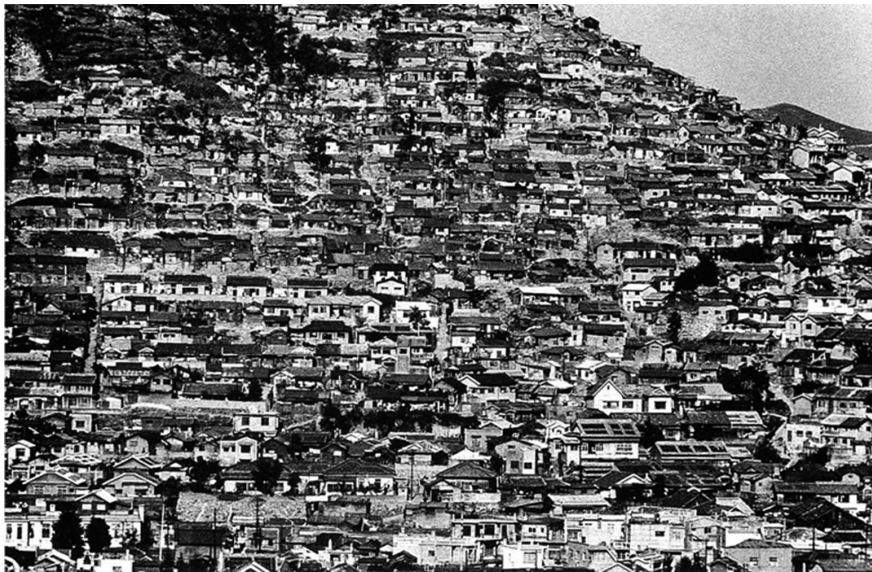
The housing shortage in the 1960s and 1970s, especially in Seoul, was the worst imaginable. Many people set up makeshift dwelling units anywhere they could find vacant land, such as river banks, hills in and around the city, and public land not monitored by officials. There is a report that, in 1970, 29% of all housing in Seoul was such illegal houses (Kim, J.W., 1980).

〈Table 2-13〉 Informal Housing Trends in Seoul

	Population	Households	No. Houses	Informal Houses	Informal Houses Demolished	New Informal Houses
1970	5,536,377	1,097,432	600,367	173,998	13,556	21,589
1971	5,850,925	1,151,078	624,547	166,957	7,041	18,492
1972	6,076,143	1,182,655	665,182	164,417	2,540	3,712
1973	6,289,556	1,215,538	700,754	160,085	4,332	1,160
1974	6,541,500	1,273,678	736,656	154,501	5,584	749
1975	6,889,470	1,410,748	763,084	134,462	20,039	707
1976	7,254,958	1,357,281	802,571	115,634	18,828	783
1977	7,525,629	1,529,323	838,514	100,715	14,919	777
1978	7,823,195	1,510,965	892,084	87,723	12,992	-

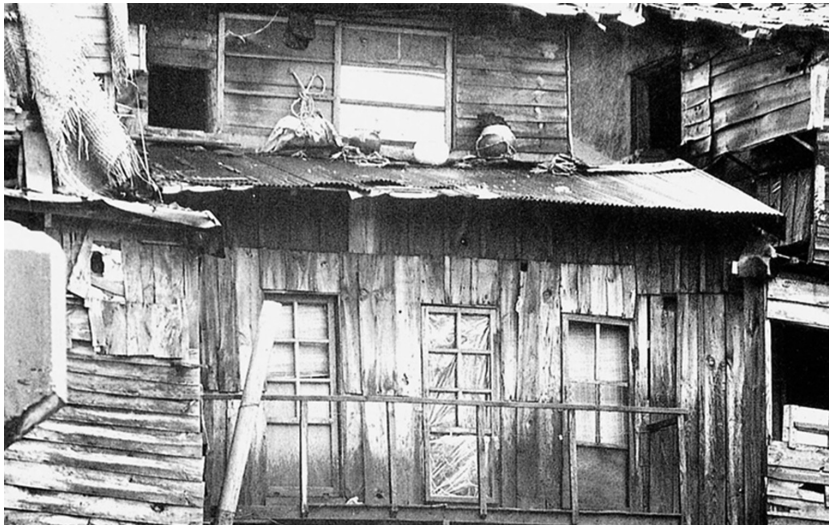
Source: Kim, J.W. (1980).

[Figure 2-7] Typical Informal Settlement Area ("Moon Village") in Busan, circa 1970



Source: National Archive (2015).

[Figure 2-8] Typical Informal Housing Unit in Seoul, circa 1970



Source: National Archive (2015).

Central and local governments have tried various measures to clear the informal settlements and reclaim public land. In the 1950s, lacking formal policy deliberation, the Seoul city government (hereafter, the City) demolished informal houses without compensation nor alternative housing. This approach could not continue against the fierce resistance of the residents. In many cases, cleared sites were resettled again almost immediately. In 1958, the City began to provide lots in other parts of the city when informal settlers had to be relocated (Chang, 1989).

A 1967 survey found that there were 137,234 units of informal houses. 61,562 units were allowed to be improved on site. However, if the lot was smaller than the building code regulation, or if there was an ownership dispute, the unit could not be legalized. Of these units, 75,672 units were located on prospective sites of public facilities or hazardous riverbanks, and had to be moved. Relocated families were given around 25m² of public land in outer areas of the city. These lots were not much more than rough lines on land which marked the boundaries.

Even basic infrastructure such as piped water and access roads were not provided, and residents had to install them themselves in addition to building their own houses. In most cases, the residents were not given full ownership of the land. They only had implicit leasehold of the land and full ownership of the structure which they had built. It was therefore natural that many gave up and moved back.

The City soon ran out of the vacant public land to accommodate informal settlers. In 1968, the City purchased 10 km² of land outside the city, and began to build a satellite city (Gwangju Project) to house 100,000 families evicted from Seoul. Again, basic services were not provided and living conditions were extremely poor. Worse yet, due to the lack of transportation services most residents found it difficult to commute to their place of work in Seoul. The new city became a “consumption city of the urban poor”. A violent riot broke out in 1971, and the project could not be completed.

Another approach to solve the informal settlement problem was to build “Citizen’s apartments” on the site of informal settlements. The City built and supplied low-cost units to the former residents without interior finishing, and 5-15 year mortgages were also provided. The original plan in 1968 was to build 2,000 apartment buildings which would house 100,000 families. However, one such apartment suddenly collapsed in 1970, killing 33 and wounding 40, due to its shoddy construction, and the program had to be discontinued.

New approaches had to be adopted with the change of regime in the City. The City first made sure that no new informal houses were built. Close on-site monitoring was implemented and public officials were punished if any new informal houses

were built under his or her jurisdiction. The City also employed twice-yearly aerial photos to spot new informal houses.

[Figure 2-9] Collapsed Citizen's Apartment (Wawoo Apt.), Seoul, 1970



Source: National Archive (2015).

〈Table 2-14〉 Korean Government Policies for Relocated Households

	Demolished	Relocation Site Provided	Cash Subsidy	Right for Subsidized Apt	Others	No. Informal Houses
1970	13,556	13,556 ¹⁾	-	-	-	173,998
1971	7,041	7,041 ¹⁾	-	-	-	168,307
1972	6,554	2,033	-	-	4,521	163,543
1973	4,936	1,486	2,087	-	1,363	155,467
1974	5,964	272	3,591	-	2,101	149,503
1975	20,039	18	7,194	8,688	4,139	135,326
1976	18,828	-	8,864	6,352	3,612	115,634
1977	14,919	-	6,694	7,410	815	100,715
1978	12,992	-	5,648	3,607	3,737	87,723
1979	3,618	-	3,095	2,539	523	157,068
1980	3,021	-	2,971	500	50	154,047
1981	1,790	-	1,790 ²⁾	1,790 ²⁾	-	152,257
1982	2,280	-	2,280 ²⁾	2,280 ²⁾	-	149,977
1983	4,059	-	4,059 ²⁾	4,059 ²⁾	-	145,918
1984	5,839	-	5,839 ²⁾	5,839 ²⁾	-	140,079

Note: 1) Gwangju Project

2) Estimates

Source: Chang, S.H (1989).

Small-scale resettlement (1972-) within the city continued, but new sites ran out and the program was discontinued in 1975. The City then began to pay cash compensation for tearing down informal houses, and the program continued into the 1980s. Instead of a cash payment, an informal settler could obtain the right to purchase a subsidized apartment built by the City. Although the price of a new apartment is usually beyond the economic ability of the settler, he or she could resell the right and make a handsome profit.

Another approach, which eventually solved a significant proportion of the informal settlement problem, was redevelopment. Many informal settlers had varying degrees of property rights to the land and/or housing structure. Some had land ownership, and most had ownership rights to the structure. Following the legal procedures, these right holders could form a cooperative which would redevelop the area, while the government would sell the public land within the project area to the cooperative at low cost, and the City would assist by upgrading infrastructure. However, neither the cooperative nor its members had sufficient expertise or funds for serious improvements. Various methods were tried with limited effectiveness in the 1970s.

In the 1980s, the government allowed large construction companies join in the redevelopment projects as a partner to the cooperative. A construction company would provide expertise and funds to execute the development plan, and recover the investment at the end of the project by selling a portion of houses to the general consumers. Members of this cooperative would exchange whatever property rights they have for new apartments.⁶⁾ This approach was successful in speeding up a large number of redevelopment projects. However, most cooperatives and their partner construction companies decided to build large-size high-rise apartments which could be sold at top prices, rather than small size apartments or town houses which suited the lifestyle and economic conditions of the cooperative members. All participants were more concerned with monetary profits rather than housing conditions of the original residents.

Another problem with the redevelopment was the conflict between tenants who were not members of redevelopment cooperative and owners who were members. Before the redevelopment, an owner and his or her tenants were more or less of a similar social and economic status. However, when a redevelopment project started, the owner could expect to reap a sizable profit while the tenant was forced to move away from the site with little or no compensation. As increasing numbers of former informal settlements were redeveloped, dislocated tenants found it increasingly

6) The exchange is based on the equal value principle. The original property rights are appraised and compared with the value of the new apartment unit. If the former is greater, the difference is paid to the owner in cash. If the latter is greater, the difference is paid by the owner.

difficult to find a new housing alternative. They thus began to refuse to be relocated and demanded compensation for the move. Of course, such compensation would increase the project costs, and the redevelopment cooperative would refuse the demand. In many project sites, physical violence erupted from such conflicts.

4.3.2. 1980s

[Box 2-1] Public Sector Dominance in Land Development

The government was reluctant to allow private-sector land development since it produced huge profits for landowners and developers. Large-scale land development was entrusted to the public-sector developers who would, in theory, recapture and reinvest the development gains for the general public. Public sector developers, such as the KNHC and the Korea Land Development Corporation (KLDC), have employed the development method, called the public development, which streamlines or obviates various permits, intergovernmental conferences, approvals, or licenses normally required of a private developer.

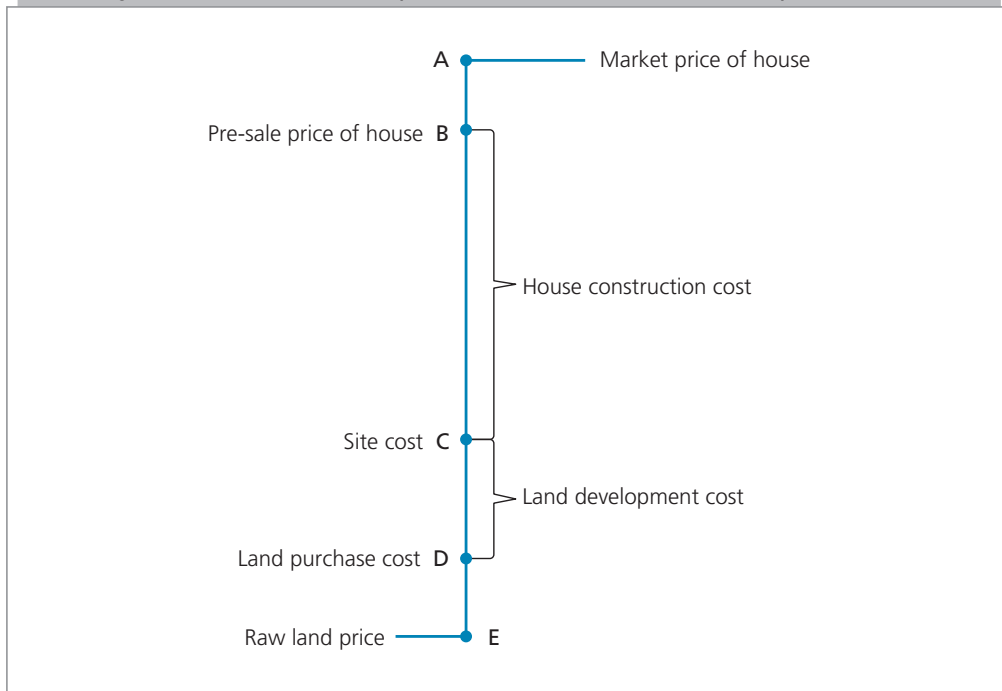
The land supply mechanism led by the public sector has generated a peculiar structure in Korean housing policy. While the government has not seriously intervened in the market of the existing houses, it has closely managed every stage of new housing construction because it can decide how much land is supplied when and where, who gets the land, for what purpose, and at what price.

Among the many regulations for new housing construction, the regulation of the sale price of new houses used to be the most important. When twenty or more new houses (in most cases, apartments) were sold, the price of a unit was set at construction cost plus normal profits. Such a regulated price was below the market price of a comparable house already in the market. The gap between the market price and the regulated price amounted to a subsidy to the lucky buyers, who were chosen in an elaborate rationing scheme among prospective buyers. The government's extensive involvement in land development was crucial in maintaining the price ceiling. The public development of land and the sale price regulation of new apartments have been two main pillars of Korea's housing policies.

The structure of division of development gains is schematically represented in [Figure 2-9]. Once an area is designated as a development site by the government, the owner of raw land within the boundary is forced to sell the land at an appraised price. The price amounts to a fair and just compensation, but may be below the level payable by a private developer. The public developer installs the necessary infrastructure, without government budget allocation, and prepares lots for sale, mostly to private home builders. The sale price of developed lots are below the market price, sometimes even below costs, but home builders in turn are required to sell the houses at the regulated price. Home buyers are the true winners in the whole process of land and housing development.

Source: Son and Lee (2014).

[Figure 2-10] Division of Development Gains in a Korean Public Development Scheme



Source: Authors own.

4.3.2.1. The Two Million Housing Construction Drive (1988-1992)

An export boom in the late 1980s was overwhelming, even for the Korean norm of fast growth. House prices and rents skyrocketed, and many low-income families could no longer afford rising rents. The Two Million Housing Construction Plan was the government's answer to the housing crisis. When the government announced its intention to build two million homes over a five-year period, which was equal to one-third of the existing housing stock in 1987, many people were skeptical. In particular, there was concern about the availability of land. However, as shown in <Table 2-15>, the plan more than accomplished its original goal.

〈Table 2-15〉 Housing Starts Before and After the Two Million House Construction Drive

Year	Total units	By Sector ¹⁾		By Type 2011			Housing Investment in GNP ²⁾
		Public	Private	Single Detached	Town House	Apartment	
1978-1982	1,103,949	485,737	618,212	541,601	116,047	446,492	5.26%
1983-1987	1,207,952	647,895	560,057	310,962	244,629	652,073	4.83%
1988-1992	2,717,682	905,454	1,812,228	363,659	471,903	1,884,224	6.94%
1993-1997	3,125,797	1,173,051	1,952,746	264,424	355,707	2,506,362	7.05%
1998-2000	1,144,234	422,376	721,370	92,322	112,109	939,803	5.43%

Note: 1) In addition to houses built by public sector suppliers, such as the KNHC and local governments, those built by private firms are also classified as public sector construction if they are, even partly, financed by National Housing Fund loans.

2) Average of annual ratios. Percentages of GNI for 1998-2000.

Source: Korea National Housing Corporation, Year Book of Housing Statistics (each year).

Five new towns were developed in the Capital region as part of residential land supply measures. Each was located within 20 km from the center of Seoul so that the new towns could absorb the housing demand in Seoul. The size of new towns ranged from 5 km² to 20 km² in land area, and 170,000 to 390,000 in terms of population. Building five new towns (rather, cities) with a total of around 300,000 housing units within five years would unsettle ordinary planners. Such a job could, however, be done because Korea already had the institutions and experience that could handle large-scale land development and housing supply.

Another significant element of the plan was that the government allocated, for the first time, a substantial budget to build public rental houses for low-income households. Low-income families would be left out as long as the houses had to be purchased. The government finally assumed the responsibility for taking care of those who could not afford to buy a house.

4.3.3. 1990s

Southeast Asian countries were hit by a foreign exchange crisis in early 1997, and in November, Korea fell from grace as well. The real estate and construction sectors were hit hard by the economic crisis. From the last quarter of 1997 to the end of 1998, the nationwide land price index fell by 13.8%, and the nationwide house sale price index and the Chonseil rent index fell by 13.2% and 20.1%, respectively. The number of new housing start-ups in 1998 was around half of 1997, and other indicators of the construction market, such as construction investment, building permits, and new construction contracts, all collapsed.

To revive the real estate market, the government lifted many regulations and punitive taxes. Firstly, several real estate taxes were temporarily reduced, especially for those who purchased new houses. Moreover, emergency financial assistance was provided to housing market participants. Secondly, the real estate market was opened up for foreign investors. Previously, people from abroad had to have a legitimate business purpose and apply for a permit to purchase Korean land. Now, any investor can purchase any piece of real estate for any purpose without government involvement. Thirdly, price regulation of new housing sales was finally lifted. The government had all but abolished the regulation in 1998 to deal with the massive stock of unsold houses around the country.

4.3.4. 2000s and Current Issues

4.3.4.1. Deregulation of Housing Finance Market

In the past, the housing finance sector was the most neglected among the housing related markets, and that was by no means an accident. The economy suffered perennial shortages of funds, and industrial finance was given higher priority than housing finance. Since official housing finance could only partially support the construction companies and home buyers, they had to rely on financial instruments, which are not reliant on financial intermediaries. One such is the Chonseil rental contract in which the owner of a house borrows from the tenant. Another is the prior sale of houses. Housing supply regulation allows the construction company to receive contract deposits and interim payments before the houses are completed. In effect, home buyers supply construction finance for the builders.

Financial deregulation in 1998 allowed every qualified consumer and housing developer to borrow funds from official financial institutions. In addition, the government established a legal framework for issuing asset-backed securities (ABS) in September 1998, mortgage backed securities (MBS) in January 1999, and real estate investment trusts (REIT) in April 2001. A specialized mortgage-pooling company (KoMoCo) was established in September 1999, which was modeled after Fannie Mae in the United States. KoMoCo was later merged into the Korea Housing Finance Corporation.

4.3.4.2. Changes in Demography and Economic Conditions⁷⁾

We observe that Korean housing market conditions are changing by the long-term trends in demography and economy.

Firstly, the population growth and inter-regional migration have declined significantly. In the twenty-year period between 1960 and 1980, the nation's population increased by 49.8%, and from 1980 to 2000, by 23.2%. Over the next twenty years up until 2035, the National Statistical Office forecasts a growth of only 2.5%, with a negative growth occurring sometime around 2030. Seoul's population grew by an astonishing 242.1% between 1960 and 1980, but it is expected to decrease by 5.7% between 2001 and 2020. Population growth, both nationally and in Seoul, will be less of a determining factor in the growth of housing demands.

Secondly, the growth in income is also slowing down. Over the fifteen-year period between 1965 and 1980, real per capita GNP grew by 10.2% annually, and over the next fifteen years to 1995, it showed an annual growth rate of 8.6%. As the economy matures and international environments deteriorate, recent real economic growth is below 4%. Thirdly, in the housing market, the housing supply ratio reached 100% in 2002. Although the housing supply ratio is a controversial measure, one cannot deny that the absolute shortage of housing stock is no longer as acute as in the past.

These long-term trends indicate that the housing market will be more stable than before, with less opportunity for capital gains. Indeed, the Capital region housing market is undergoing a prolonged recession after the global financial crisis of 2008. The government has tried to stimulate the housing market by reducing tax burdens and repealing excessive regulations which were introduced in the boom period of mid-2000s.

7) Extracted from 2013 Knowledge Sharing Program with Mongolia (Son and Lee, 2014) and 2014/15 Knowledge Sharing Program with Kuwait (Son, 2015).

4.4. Lessons from Successes and Failures of Korean Housing Policies

4.4.1. Factors of and Lessons from Successes

[Box 2-2] Land is the key

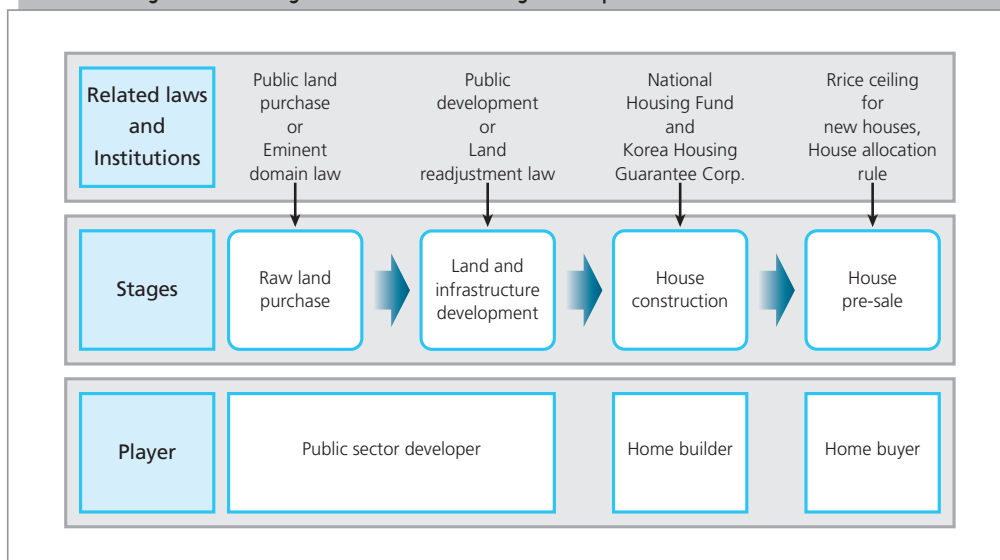
Many countries and cities complain that they do not have sufficient land upon which to build houses. By “land”, they seldom refer to physical land. Land in its natural state is plentiful everywhere, but land suitable for house construction is in short supply. Farmland, forest land, or any land in natural state becomes suitable for housing construction only after extensive civil engineering work including the installment of various types of infrastructure. Essential infrastructure such as road, piped water, sewerage, electricity, communication, and heat is just the beginning, modern urban life also requires schools, public offices, cultural and medical facilities and shopping centers.

The developer of land, working together with various service providers, needs to ensure that the whole range of infrastructure and urban services are provided within an appropriate timescale in newly developed area. However, service providers may not have sufficient resources at the time, or coordination among them may be difficult. Korea’s solution was to empower the public land developer such as LH to take responsibility for provision or coordination of the entire range of infrastructure. Much of infrastructure is funded and installed by the developer. Thus the development process is not constrained by budgetary process of the central or local governments.

Source: Son and Lee (2014); Son (2015).

As previously explained, the Korean land development system allocates development gains among participants of the process to induce cooperation. Such an elaborate system can work only with various laws and regulations supporting the system. [Figure 2-10] shows the major public institutions and legal frameworks which carry out each stage of the development process.

[Figure 2-11] Stages of Land and Housing Development and Public Intervention



Source: Son and Lee (2014).

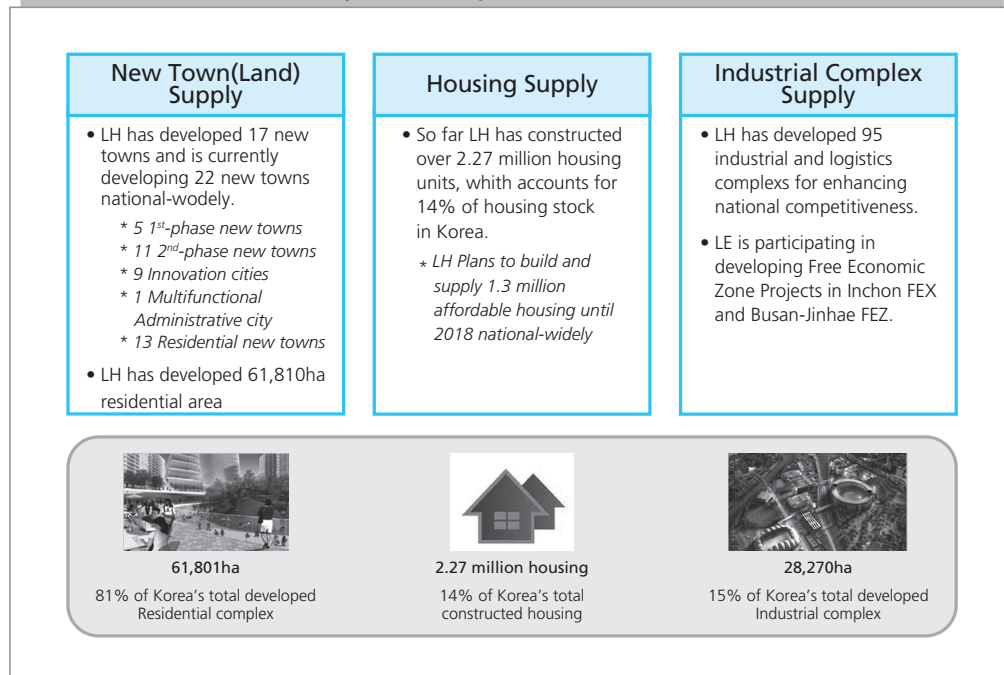
The land developer cannot, of course, sustain loss. Revenues from sale of developed lots must cover the infrastructure investment, engineering works, and raw land purchases. Since costs for the first two items are fixed by technology and market conditions, it is very important to save on land purchase. Without government intervention, land owners would have a stronger position over the developer, since each of them has a monopoly power on an essential piece of the project site. Private negotiations may thus produce a result that land owners capture most of the development gains. Only the collective execution of land purchase and compensation, with a background threat of compulsory purchase power, makes it possible to keep the landowners' monopoly power in check, and channel the development gains into infrastructure investment and low-cost housing provision.

LH, including its two predecessors, has been the most important public developer. As shown in [Figure 2-11], it has completed 17 new towns, and is currently developing 22 new towns around the country. Heavy reliance on public corporations in land development has certainly achieved its intended goal.

However, there have also been side effects. Firstly, the public corporations served the central government, and often ignored the local development plans. They usually designated project areas wherever they could find cheap land, but such farmland and forest land might not be the local government's choice for a future urban development site. Secondly, quantity goals are more important than quality of housing and environments to the public developers. With a mission to accomplish the government housing supply target, they usually try to build as many houses as

possible in any project site. The resulting urban form and housing style are stiflingly uniform all over the nation. Thirdly, public corporations are under heavy political pressure to invest in under-developed regions. However, demands for residential as well as industrial land are not sufficient in those regions, and projects sometimes remain stalled for a very long time.

[Figure 2-12] Major Achievements of LH



Source: LH (2013).

[Box 2-3] Simplify Policy Goals

For a long time, the theme of Korean housing policies was simple: “build as many for-sale apartments as possible”. The apartment suited modern lifestyle and continuous house price inflation made apartment purchase a profitable investment. The government ensured that supply of apartments met the expanding demands of middle-class Koreans. Land development, house construction, rules for house sale, and the housing finance system have all been geared for the mass production of apartments. Because the main policy goal was simple, it was easy to execute the policy in the most efficient manner.

However, the poor households were excluded from the benefits of the policy, since they could not afford to purchase a house even at the subsidized price. There is no denying that the neglect of the poor is a shame, but one should recall that, in the 1970s and 1980s, Korea was a developing country with limited resources. Instead of diverting resources from other policy goals such as industrial development, the government created a mechanism by which the middle class pay their way into home ownership. Millions of households benefited from this policy. There were few policy options which would satisfy both middle-class home buyers and the low-income class renters under the constraint.

Both pros and cons of the single-minded housing policy have merits, and one can only say that each country or city should make its own difficult decision depending on its own political as well as economic conditions.

Source: Son and Lee (2014).

4.4.2. Raise Funds within the Housing Sector

Since houses are expensive to build and to purchase, developers and home buyers generally cannot build or purchase houses without external financing. Until the deregulation of 1998, the Korean government effectively blocked financial resources from being diverted into the real estate sector, and the construction companies and home buyers had to rely on informal financial devices such as the prior sale of houses and Chonseil rental system.

The government also needs financing devices for its policy implementation. The most important public-sector financial institution in Korea is the National Housing Fund (hereafter, NHF).⁸⁾ It was established in 1981 by the government to support housing policies. The fund itself has not had offices or personnel of its own. The government has contracted out its management and operation commercial banks. The NHF has provided low-interest loans to builders and buyers of small houses below 85m². Since its establishment to 2010, the fund has financed the construction of 4.36 million houses, one third of all houses built during that period.

The NHF in its current form can make low-interest loans, not because the

8) The fund was renamed in 2015 as the National Housing and Urban Fund with the addition of urban renewal projects in its list of funding areas.

government funds its operation, but because it can sell its bonds at below market rates. Those who apply for a certain license, permit, approval, or real estate-related registration, and those who apply to buy subsidized houses, are obliged to purchase NHF bonds. Many such bond buyers immediately resell the bonds below the purchase price. Table 16 shows that another major funding source is the house pre-sale related deposits. People willing to buy a house in a pre-sale offering must deposit a certain amount of money in a designated savings account to be qualified to participate in the house sale lottery. In short, those who are presumed to benefit from real estate are required to contribute to the NHF.

〈Table 2-16〉 Revenue Sources of the NHF

(Unit: Billion Won, %)						
	1990		2000		2010	
National Housing Bonds	1,155	28.5	5,016	35.8	8,939	25.9
House presale-related deposits	1,289	31.8	231	1.7	8,348	24.2
Government endowment and loan	33	0.8	2,221	15.9	17	0.1
Repayment of loan	480	11.8	3,295	23.5	8,297	24.0
Housing lottery revenue	40	1.0	77	0.5	472	1.4
Interest revenue	219	5.4	2,590	18.5	4,084	11.8
Carryover from previous year	842	20.8	579	4.1	4,358	12.6
Total	4,059	100	14,008	100	34,515	100

Source: MLIT (each year).

The pre-sale of apartments, the Chonseil rental contract, the public development method, and NHF funding method all recycle money within the housing sector. With continual house price inflation, these devices have reallocated gains from house construction and investment in such a way that the government policy objectives are achieved. The housing sector is more or less solving its financing problem for itself, and the government could mobilize the nation's resources for economic development.

4.4.3. Factors of and Lessons from Failures⁹⁾

4.4.3.1. Fighting Against Speculation is Pointless

Property prices determined in the market have often been perceived to be “too high” relative to the intrinsic values by the government and the general public. Based on this presumption, the government has tried to “correct” the market by suppressing speculation. Although such an approach catered to the popular belief that a few speculators were causing all the trouble, there is little evidence which indicates that property price has not generally correctly reflected the state of supply and demand. Changes in demographic characteristics, rising income, growing economic activities, and rapid urbanization have contributed to the increasing demand for urban land and houses, which pushed up the price.

Notwithstanding this argument, regulations and taxes have evolved around an anti-speculation theme. At the peak of this evolution in 1989, the government introduced the upper limit on residential land ownership, a special charge to recapture development gains, and a tax levied on unrealized capital gains from under-utilized land. In essence, these and other anti-speculation measures aimed at suppressing demand for land. Normal economic development, however, requires more and more urban land, and anti-speculation measures cannot work against the rising land price trend.

One of the reasons why anti-speculation measures fail is that “speculation” is an abstract concept without a clear operational definition. Speculation generally refers to transaction or holding of seemingly excessive and unnecessary property, but what kinds and how many property transactions and holdings are speculation? Any answer must be arbitrary and will contain many nonsensical standards as well as loopholes. Land and housing prices rise because the demand exceeds the supply. The demand, coming from millions of households, cannot, or perhaps should not, be effectively controlled. In an attempt to prevent speculation, the government has tightly controlled the private land development and thus limited the supply of land for housing construction, and as a result accelerated property price increase (Hannah et al., 1991; Kim, J.H., 1994; Kim and Kim, 2000; Renaud, 1989).

Our argument does not categorically deny the role of the government in managing the property market. Firstly, the government can more effectively affect and facilitate the supply of land and housing. Thus, the supply side, rather than the demand side, should be the area upon which government efforts must be concentrated, and the government should not waste administrative resources in

9) Extracted from 2013 Knowledge Sharing Program with Mongolia (Son and Lee, 2014) and 2014/15 Knowledge Sharing Program with Kuwait (Son, 2015).

trying to fight against speculation.

Secondly, the government should not merely stand by when speculators make huge profits from buying and selling land and houses. The capital gains from such transactions are income, and as such, must be taxed accordingly. Such a tax should not try to identify a group of professional speculators and punish them. Instead, the tax should be a universal tax which applies to all capital gains of all property owners, with a possible provision of a tax relief for a principal residence.

Thirdly, there is a growing recognition that the link between the property market (especially, the housing market) and the macro-economic sectors (especially, the financial market) is important, and prudent management of the former is critical to avoid such catastrophes as the global financial crisis. The government should tightly supervise the financial market and institutions in order not to grow property bubbles.

4.4.3.2. Take Care of the Poor as Soon as Possible

Many countries have a large number of households that cannot afford to buy or rent a decent home. Assisting the poor so that they might maintain decent and stable housing is an important housing policy objective. The Korean government has always shown a degree of concern about housing conditions for the poor, but it has been neither persistent nor with sufficient resources. Low-income households have benefited relatively less from the housing policy which focused on supplying inexpensive for-sale houses bought by the middle-class households. Worse yet, they were frequently forcibly relocated, with minimal compensation, to make room for new construction. As increasing numbers of former informal housing areas were redeveloped and dilapidated low cost housing units were demolished, the availability of low-cost housing options decreased.

In Korea, most private rental units are originally built for sale, but the individual owners, for some reason, decide to rent out on a temporary basis. Such private rental houses are an essential element of the housing market, but they would not be helpful to the truly needy, who cannot afford to pay for them. The public sector must then take the responsibility for caring for them. The first large-scale government effort to build up public rental housing stock was the Permanent Rental Housing Program in 1988, as part of the Two Million Housing Construction Drive. To the dismay of well-meaning planners, however, this program was not popular among the intended beneficiaries. As Table 17 shows, the public rental housing stock in Korea has thus remained much smaller compared to other countries.

〈Table 2-17〉 Public Rental Housing in Selected Countries

Country	Proportion of public rental housing in total housing stock (%)				Proportion of public rental housing among all rental housing (2009, %)
	1980	1990	2000	2008	
Korea	-	-	2.3	4.6	10(2010)
The UK	32	25	21	17.8	53
The US	-	-	-	1	3
Canada	-	-	-	5	17
Australia	-	-	-	4.3	15
Japan	7.5	7.1	6.6	5.8	16
The Netherlands	34	41	36	32	75
Sweden	20	22	19	17	46
Denmark	14	17	19	19	51
Austria	-	22	23	23	59
Germany	18.3	10.2	7.1	5	9

Source: Jin (2011).

As Korea became more affluent and the merits of public rental houses came to be acknowledged by poor households, the public rental housing program gained new momentum at around 2000. In a period of about 15 years since then, the government has built up a stock of more than one million housing units for long-term rental operation. At about 6% of total housing stock, the absolute lack of public rental houses has been eased, though there is controversy concerning the right time for switching from the supply-side policy to a demand-side policy such as a housing voucher program.

Korean society as a whole may well be criticized for doing so little towards poor people's housing welfare for such a long time. Korea should have started to provide stable housing for the poor sooner, even on a modest scale, and build up experience and institutions for the long-term operation.

[Box 2-4] Do not Trust Banks Too Much

The real estate market frequently grows price bubbles, since the life span of a real property is very long, its value is not fixed, and banks sometimes lend excessively on property development and investment. A spectacular example of a property bubble and its aftermath is the Japanese experience of around 1990.

Korea was, however, different from Japan, since the real estate sector was mostly closed off from financial resources (Kim, K.H., 2000). When the Korean economy emerged from the Asian Economic Crisis, banks and other financial institutions were deregulated to make housing loans freely. Mortgage loans almost skyrocketed year after year. It was a perfect condition for a housing bubble to be created and grow; people expected the housing inflation to continue, and banks were making easy loans. In 2007, the government stepped in to impose upper limits of loan-to-value (LTV) ratio and debt payment-to-income (DTI) ratio. These regulations may have prevented the property bubble from growing, and Korea could thus avoid significant damage from the global financial crisis in 2007.

The construction finance market was, however, another story. Government supervision in this sector was loose, and financial institutions fiercely competed for market share. The total development loans, which are called the project finance loan (hereafter, PF loan), doubled in 2006 and increased by a further 50% in 2007. This explosion of PF loans reflected the construction boom at the time.

However, the housing market was hit hard by the global financial crisis in 2008 and many PF loans immediately became non-performing loans. In 2013, it was roughly estimated more than 500 development projects nationwide were stalled in various stages. Developers, contractors, and financial institutions involved in such projects were all in considerable trouble. Almost one third of the largest 100 construction companies went bankrupt, and more than a quarter of all savings banks - regionally based small banks - were suspended from operation.

Source: Son and Lee (2014).

Any real estate development project involves many risk factors, and every participant should be aware of how much risk he/she is taking and whether the risk is manageable. When the market is booming, however, this principle is hard to follow. Aggressive players prosper and crowd out prudent ones. Few market participants can resist following the leader. The individual financial institution is only interested in capturing the market share, not macroeconomic stability. Thus the government must take the full responsibility for maintaining stability in the financial market. It must put in place necessary regulations to prevent financial crises arising from the real estate development market.

5. Policy Recommendations

5.1. Prioritizing Policy Goals

Cambodia has established the Circular 3 and the NPH, and set up the General Department for Housing. However, much of the detail is yet to be filled with trials and errors through time. Principles expressed in the Circular 3 and the NPH for instance are idealistic and have universal value for any country at any time. However, some of idealistic principles may not be realistic for the specific situation of Cambodia. Moreover, priority has to be determined among valuable principles. On the administrative side, the General Department of Housing was set up in 2014, and the concrete policy measures implemented are too limited to assess the effectiveness of housing policies. Figuratively speaking, Cambodia now has a menu of housing policies from which to choose, but does not yet know which policy measures on those menu best suits the Cambodian needs and capacity. Thus, Cambodia is in its early stage of setting up a fully-fledged housing policy.

The most important elements of any successful housing policy are land and money. Without inexpensive land and a low-cost fund readily available, little can be done to improve housing conditions. Except for city-states such as Hong Kong and Singapore, “land” in housing policy consideration seldom refers to the natural land. Land suitable for housing construction must be equipped with a full range of infrastructure and social services. When land is in short supply, it is in fact the resources for infrastructure investment which are lacking rather than physical land.

While significant amounts of resources are required to solve the housing problems, Cambodia currently also has huge resource requirement for industrial development, infrastructure investment, education, health, etc.. It is not easy to secure sufficient resources for housing. The government must be creative in finding funding sources for housing. There is no magic formula to improve housing conditions for all citizens at once. Recognizing the political, economic, and social constraints, the government must set realistic policy goals, find the most appropriate policy measures, and build a legal framework and institutions around that policy.

Considering that Cambodia can mobilize only a limited amount of resources for housing at this stage of development, the housing policy must be more focused on what can and should be done. For instance, the government probably cannot pay for construction of extensive amounts of low-cost housing. However, it may contribute indirectly, for example, by providing inexpensive land for residential development.

Even if the government succeeds in mobilizing resources directly or indirectly by relying on its legal and administrative powers to provide as many low-income houses

as possible, the number will not be particularly high. If we consider that the housing demand in Phnom Penh may increase rapidly in the future due to economic growth and a potentially huge inflow of migrants, a housing policy exclusively focused on low-income citizens cannot meet the challenge. At this stage of policy development, the government should concentrate on establishing a legal and administrative framework, and find a workable mechanism (i.e. “flagship programs”) for housing supply, which can be repeatedly replicated.

Key to housing supply are land and money. Setting up a routine mechanism for the supply of land and money is the basis of any housing program, and thus should be the first priority. Such a mechanism would require the final consumers to pay for most, if not all, of the cost, implying that middle-income people should be the main policy target. The government should find ways of lowering costs for houses so that more Cambodians become homeowners on the one hand, and housing stock may be built up quickly on the other.

The housing policy must, of course, not neglect those on a low income and the vulnerable, but the extent of policy cannot go beyond the available resources. The government must search for creative ways of using its legal and administrative power, budgetary and financial resources, and other regulatory powers, for increasing the supply of low-income housing. For example, a land sharing approach may benefit both residents of informal settlements and private developers with little public resources. We have already seen that the pilot projects in Phnom Penh have not succeeded. The government needs to study why the projects failed, and how to adapt the method to make it work. Such trial and error process is inevitable in the search of effective policies.

Moreover, it must be recognized that high-quality data are vital in developing effective housing policies. Data which correctly reflects the situation of the housing market helps to formulate and improve the policy. We have already encountered some dubious data relating to the Cambodian housing situation. Efforts to improve the current data collection and processing system as well as developing new data are necessary. In particular, data on housing price trends needs to be collected as soon as possible. With a proper set of data, the housing policy can set quantitative goals to be achieved, and the effectiveness of the policy will then be measured in such quantitative terms.

5.2. Land Development and Supply

The supply of affordable housing, both for the low-income and middle-class households, requires inexpensive land equipped with the suitable infrastructure. As discussed in the previous section, Korea has relied on two development methods.

Both methods can pay the development cost with funds raised from the project, without relying on government budget allocation. One of the two methods, variations of each, or combination of the two, can be used for land development. Housing construction is best left to private-sector home builders.

5.2.1. Land Readjustment Method

The land readjustment method, also called the exchange-of-land method, was a legacy of Japanese colonial rule. Table 18 shows that ten land readjustment projects (939.1 ha) were completed in Seoul under colonial rule, and nine projects (132.6 ha) in the 1950s. Any area developed before 1980, such as the Gangnam district in Seoul, is a product of the land readjustment project. The ingredients of the land readjustment method are:

Public or private developer: Local government, public corporation, or a cooperative of landowners can be the developer.

Retention of original ownership: Original land ownership is retained throughout the development process. The costs of infrastructure investment, engineering works, and required services are all paid for by selling serviced lots (Doebele, 1979). The developer does not require a large initial capital, since it need not purchase land. The land owner's original land holding is decreased significantly in size; in the 1960s and 1970s, land owners, on average, received a serviced lot after deducting 30-40% of the original lot size <Table 2-18>. However, the value of the serviced lot is much higher than before the development. Thus, land readjustment project is an owner-friendly development method, and land owners' cooperation is easy to secure.

Fragmented land use: Use of the developed lot is left to the owner. The government wanted the land to be put into use for the construction of houses and other facilities as soon as possible for rapid urban development, but many land owners were not willing or able to build on their land, instead preferring to wait for the land price to rise.

〈Table 2-18〉 Land Readjustment Projects in Seoul

Developer		Area(ha)	Number of projects	Rate of deduction in size of lot(%)
Seoul city government	Before 1945	939.1	10	33.6
	1950s	132.6	9	22.8
	1960s	5,912.3	17	30.6
	1970s	4,000.5	11	42.5
	1980s	1,426.7	3	59.4
KNHC		302.5	3	43.9
Landowner cooperative		579.1	4	44.4
Total		13,292.9	57	35.4

Source: Cho (1996).

These qualities, however, can also be drawbacks. Firstly, there was a controversy that land owners retain too much of the gains from development. Secondly, a land owner's land use decision may not coincide with the government's wishes. Thirdly, the apartment became a popular type of housing in the mid-1970s, and home builders needed large-size lots on which to build apartments. Land readjustment projects usually returned small-size lots to original land owners, and could not meet the needs of apartment developers. For these reasons, the government decreed in 1983 that new land readjustment projects would not be allowed in the six largest cities.

5.2.2. Public Development Method

Since the early 1980s, public development has been the major land development and supply method. If the development process is left to the market, most of development gains will go to the original landowner. With the active involvement of the government through public developers, the government controls how much of the gains accrue to each participant in the process.

[Box 2-5] The Key Ingredients for Public Development

Public developer: Only the central and local government, or a public corporation such as KNHC and KLDC (currently LH) could be the developer. The government tightly controls location, size, type, and every detail of the land, houses, and urban facilities to be developed.

Transfer of ownership: The developer completely buys up land within the project site. The developer must therefore be able to mobilize a large initial capital for land purchase. The original land owners are compensated in cash based on appraisal and lose ownership. If the land owner does not cooperate, the public developer can exercise compulsory purchase power.

Comprehensive planning: The developer implements a comprehensive development plan approved by the relevant ministries, local governments, and planning committees. In a large-scale development, the development plan reflects, in addition to the usual city planning considerations, studies on inter-regional transportation impact, population concentration impact, environmental impact, natural hazard impact, and energy supply availability. Such planning ensures that the developed area, more of a city in a large-scale project, would exhibit the latest model of urban life.

Government control of development gains: Through its active involvement, the government determines the division of development gains among interested parties. Land owners are, in principle, excluded in this division. The central and local governments acquire free infrastructure. Home builders are supplied with low-cost lots, but are required to sell houses at regulated prices, obtaining only normal profits. Builders of low-income rental houses are provided with below-cost land, and thus the renters enjoy inexpensive rental housing. The major proportion of development gains are given to middle-class home buyers, who purchase a house at the regulated price, which is much lower than the market price.

The public development, together with the price control for new apartments, has been the most important tool of urban development and housing construction. Mass production of apartments since the early 1980s would not have been possible without the public development of land. In the 1980s, the public development projects were rather small-scale, mainly for developing “new town within town”. However, the scale of a public development project was expanded to a complete new city with the Two-million House Construction Drive (1988-1992).

Source: Son and Lee (2014).

5.2.3. Mix and Match, and More Creative Thinking

The public development method can be used when a well-funded public developer occupies a strong legal and administrative position for land purchase. With the land readjustment method, land owners’ share of the development gain is larger, and they tend to be cooperative with the land assembly. Depending on the site characteristics, the land readjustment method can be used on a part of the site, and the public development method on the rest. In either case, the rule of land development should be established in such a way as to support government policy priorities. For instance, the developer can be required to provide low-cost public rental houses, infrastructure and/or public facilities within or in the vicinity of the

project area, to alleviate fiscal burden of the government.

Land owners and developers need the government permits, licenses, and approvals at each stage of the development such as:

- Land concession and/or acquisition of public land
- Zoning changes and land use planning
- Infrastructure development and/or connection to main lines
- Physical alteration of land
- Building permits, and others

The government has every right to negotiate and impose conditions for permits, etc., for the public policy objectives. Of course, the extra burden on the developer must not be so high as to render the project unprofitable, and the whole process must be transparent.

〈Table 2-19〉 Large-Scale Urban Development in Phnom Penh by the Private Sector

Project Name	Area(ha)	Company Name
Beong Kak	133	Sukaco Inc.
Koh Pich (Diamond Island)	80	Canadian Bank
Camko City	119	World City
Grand Phnom Penh International City	233	YLP & Ciputra Group
Chrouy Changva	14	Sokimex
Satellite City	380	OCIC
Beong Chhouk	238	Sokimex
Green City (Satellite City)	2,634	AZ

Source: DPWT (2010).

Currently, land development and supply is generally left to the private developers in Phnom Penh. The government and/or the Phnom Penh City do not intervene even in the areas which are considered normal functions of the government in most countries. The land use plan in the project areas should conform to the overall urban development plan of the City, and basic regulations such as building coverage ratios, floor area ratios, and other standards should be enforced. Beyond these basic controls, profits from the large land development projects should be channeled into designated projects or programs to achieve public policy goals.

Of course, these principles may have to be compromised with the political and economic reality. For a few very large landowners and developers, the land readjustment method may suit the Phnom Penh situation. It would be best if the

government, Phnom Penh City, or a special purpose public entity becomes an efficient and honest public developer. Even when they do not, they should take the initiative in the development process. The government or the Phnom Penh City, together with the developers, should set the goals and directions of the development, and follow through the development process closely. Building up such a capacity is vital in implementing government land and housing policies.

At the very least, part of the gains accruing in the development process should be controlled by the government to improve the housing conditions of the residents. For instance, developers of former Beongs should be required to contribute to the supply of low-income housing.

[Figure 2-13] Beong Kak Area in Phnom Penh



Source: Authors own.

The direct involvement of the public sector as in Korea is desirable, but until the government is ready, employing the Vietnamese method as in Table 20 for the supply of social housing may be considered. Over 500,000 units of social housing are reported to have been built and transferred between 2008 and 2012 (Cho, 2014).

[Figure 2-14] Beong Tumpan Area in Phnom Penh



Source: Authors own.

〈Table 2-20〉 Vietnamese Social Housing Policy

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

Source: Cho (2014).

5.3. Raising Low-Cost Funds

In Korea, private-sector housing finance was deliberately suppressed before the Asian Economic Crisis (1997), and construction companies and households had limited access to the capital market. Alternative financial devices were developed such as the pre-sale of apartments and the Chonseil contract. However, with the financial deregulation around 2000, the market opened up fully to home buyers as well as developers.

In the public sector, the NHF (currently, National Housing and Urban Fund) was established in 1981, and has provided low cost loans to housing developers and home buyers. NHF can offer low cost loans because it has unique fund sources, some of which are almost taxes.

- Housing lottery proceeds
- Housing bonds which pay below-market rates but must be purchased for property registration and certain permits and licenses.
- Funds from savings accounts which are required for queuing up to purchase price controlled apartments

In Cambodia, NGOs and MFIs are valuable resources for the poor in improving their housing conditions. However, in building up a sizable housing stock, a more dedicated financial institution is necessary. Korea's NHF and its funding sources may be a good model.

The establishment of such a dedicated housing finance institution requires a large amount of initial capital, which may be burdensome to the government. Two other options can be considered. The first is the interest payment subsidy with which a beneficiary would get a loan from the private bank, but part of the interest is paid by the government. Compared with the direct loan, interest subsidies can help a greater number of low-income beneficiaries.

The second scheme is the housing loan guarantee or insurance. Again, a beneficiary would take out a mortgage from a private bank, but with a small fee, payment of the interest and principal is guaranteed by the government, or rather, a government-backed institution. With such credit enhancement, the interest rate will be as low as the government bond, benefitting the home buyer greatly.

5.4. Improving Housing Welfare for the Poor and Vulnerable People

Houses are inherently expensive in relation to income or wealth, but one cannot lead a healthy and decent life without stable housing. Bridging the gap between the housing needs and the economic ability of the poor is a difficult problem. Since many countries around the world share the same problem, policy makers in many countries have collectively developed a set of standard policy prescriptions. Table 21 shows a list of such policy measures that can be employed for the low-income housing problem. Depending on its own needs and circumstances, each country would select a few of the most appropriate measures from this list.

〈Table 2-21〉 Housing Policy Instruments for Low-Income Households

	Increased Supply		Enhanced Demand Capacity	
	Direct measures	Indirect measures	Direct measures	Indirect measures
Own	Public Housing Construction	- land development and supply - construction subsidy - tax preference for home builders - relaxed building code and land use regulations	- subsidy for house purchase - low interest mortgage loan	- tax preference
Rental	Public Rental Housing Construction	- land development and supply - construction subsidy - subsidized loan and tax preference for landlord	- housing voucher - purchase house and rent to low-income household	- rent control - tax deduction for rent payments

Source: Kim, S.W. (2008).

5.4.1. Supply Side Measures

Of these measures, construction and operation of rental houses with public funds is perhaps the most aggressive and expensive policy. In addition to securing funds for site purchase and house construction, a public rental housing program raises many difficult questions such as location of the site (i.e. fighting not-in-my-back-yard, i.e., NIMBY sentiments), the selection of beneficiaries, maintenance of the property, prevention of potential sociological problems such as the emergence of “social underclass”, eventual redevelopment, and others.

The Korean government did not directly invest for public rental housing until

the Two-Million Housing Construction Drive (1988-1992). The drive was primarily for middle-class home buyers, but contained 250,000 units of permanent rental houses (hereafter, PRH). The PRH program was financed by the government budget (85%) and rental deposit (15%), and targeted the urban poor. Each of successive governments subsequently introduced its own brand of public rental housing program, resulting in a complicated array of programs. The government's budget, subsidized loans from the NHF, and tenant contribution fund these programs.

Although the public rental housing program is too costly to implement on a large scale, Cambodia should start a modest scale program as soon as possible. First of all, it will display societal compassion towards its most unfortunate members, and the government has promised to start such a program in Circular 3 and the NPH. The program should be within the boundary of available resources, target the truly needy, and supplement other urban and housing programs. For instance, the program may accommodate those who are relocated from the infrastructure investment sites.

Public rental housing is a costly venture, and entails much more than the construction of housing units. It is necessary to learn from pilot projects how best to build and operate units, to select residents, and to provide living assistance to them.

Low-cost public rental housing is predominately a supply-side approach. The government should fully utilize government property, regulatory and administrative power, and other means to cut down on costs, especially in acquiring land at minimum or no cost. For instance, as in the Vietnamese social housing program, requiring land and housing developers to build and operate a certain number of rental housing units, or letting them provide land for such an operation, will be possible.

Generating and promoting private-sector rental housing sector should also be considered. It was already mentioned that the high ratio of people living in their "own house" may actually reflect the confused state of property ownership. If the confusion gradually settles down with the progress of the land titling program, poor households may have more difficulties in securing low-cost housing options. There will be fewer informal settlement areas which partly rely on a confused state of ownership. With a clear title the owner will more forcefully claim his/her property rights, and try to evict informal residents. Low-cost private rental housing sector should accommodate such low-income households. The government should aid the private-sector low-income rental housing operators by allocating low cost land and finances.

5.4.2. Demand Side Measures

As for a demand side approach, Thailand's Baan Mankong ("secure housing") program deserves a serious consideration.¹⁰⁾ This is Thailand's community-based slum upgrading program which started in 2003. A semi-governmental entity, the Community Organizations Development Institute (CODI) supports and works with community groups such as savings groups, promotes collective action, and negotiates with land owners for the sale or lease of land and with local governments for building permits, etc. The Baan Mankong program offers a range of options for the community to obtain secure land tenure and improve housing and living conditions.

- *Upgrading* preserves the location, character, and social structure while improving living environments
- *Reblocking* is a more systematic way of improving existing communities by making adjustments to install sewers, drains, walkways and roads
- *Land sharing* allows both land owner and slum residents to benefit by dividing land and allowing the community to buy or rent part of the land for their housing, in exchange for returning part of the land to the land owner to develop commercially
- *Reconstruction* entirely rebuilds community on the same land or land nearby, either under long-term lease or outright land purchase
- *Relocation* to sites often far from existing community offers housing security through land-use rights, outright ownership, or a long-term lease.

The community engaged in a Baan Mankong project receive a subsidy for infrastructure improvement and low-interest subsidized loans, and supporting organizations receive administrative support grants. As of 2011, the program was underway or completed in 1,546 communities, benefitting over 90,000 households. The government has a target to reach 300,000 households in 2,000 communities across the nation.

The primary objective of the Baan Mankong program is to turn the urban poor into owners of their upgraded house, if not land. However, by supporting and enabling the poor community, the program goes beyond physical upgrading. The community collectively makes decisions on and manages planning and improving

10) The Baan Mankong program is a demand-side approach while the Baan Ua Arthorn ("we care") program, which sells subsidized housing units built by the National Housing Authority, is more of a conventional, supply-side public housing program.

houses and infrastructure, communal finance, environment, income generation, and welfare.

A study on completed sites (Archer, 2012) reveals that housing and environment are greatly improved, and tenure security is enhanced by obtaining a formal long-term lease of land and a title for the house. There is, however, some apprehension regarding what will happen after the 15- to 30-year lease. In addition, many residents feel the burden of monthly loan repayment, since they did not pay for land before the program. With the Baan Mankong program, the community is the holder of land lease and borrower of the loan. An individual member of the cooperative cannot sell or rent the house for profit, and must return the house to the community if they wish to move out. Consequently, a Baan Mankong house cannot be an investment for profit, which may have both positive and negative consequences.

The motivation behind the Baan Mankong program, that slum dwellers are under tenure insecurity as well as the threat of eviction and they are excluded from many services and facilities, is shared by Cambodia. The problem of insecure tenure is resolved by negotiating long-term leases or buying land collectively, as well as improving infrastructure and upgrading or rebuilding houses. Funds from community savings groups are supplemented with 15-year government loans. The same approach may, or may not, work in Cambodia. For instance, in the land sharing experience, a lack of trust among community members and with outside developers was the main factor which led to unsatisfactory results. Such trust cannot be built in a short period of time automatically. In Thailand, CODI has worked for more than a decade in building up such trust and enabling communities.

A successful housing program in one country cannot be easily transplanted to another. However, it is worth studying, and small-scale pilot programs should be enacted. Fortunately, there are many international and domestic NGOs working hard to improve the living conditions of the poor in Phnom Penh, and many of them are well aware of the Baan Mankong program. Most of them also maintain a good cooperative relationship with the government. Together with such NGOs, the government should experiment with a Cambodian version of Baan Mankong program.

References

- Archer, Diane, Baan Mankong Participatory Slum Upgrading in Bangkok, Thailand: Community Perceptions of Outcomes and Security of Tenure, Habitat International 36, 178-184, 2012.
- Biddulph, R., Tenure Security Interventions in Cambodia: Testing Bebbington's Approach to Development Geography, *Geografiska Annaler: Series B, Human Geography*, 93(3), 223-236, 2011.
- Bristol, G., Cambodia: The Struggle for Tenure. Unpublished Case Study prepared for Global Report on Human Settlements, 2007.
- Chang, S.H., Urbanization, State, and Urban Poor, H.K. Kim ed., Ch 5, Informal Housing Area and Redevelopment, Nanam Publishing, 1989. (in Korean)
- Cho, J.H., Housing Policies, 50 Years of Korean National Physical Development, KRIHS, 1996. (in Korean)
- Cho, Man, Social Housing Development Policy in Vietnam: Lessons from the Korean Experience and Policy Recommendations, 2013 Knowledge Sharing Program with Vietnam, KDI, 2014-5.
- Doebele, William, Land Readjustment as an Alternative to Taxation for the Recovery of Betterment: The Case of South Korea, in Bahl, Roy ed., *The Taxation of Urban Property in Less Developed Countries*. The University of Wisconsin Press, 1979.
- Eletricity Du Cambodge, Annual Report 2015 (in Khmer), <http://www.edu.com.kh>, 2016
- Global Property Guide, Attractive returns on apartments in Phnom Penh, 2014.
- Hannah, L., K.H. Kim, and E. Mills, Land Use Control and Housing Prices in Korea, *Urban Studies*, Vol. 30, No. 1. 1991.
- IMF, Article IV Consultation-Press Release, Staff Report, and Statement by the Executive Director for Cambodia, 2015.
- Jin, Meeyoun, Transitional and Future Policy Direction of Rental Housing System in Cross-national Comparative Context, Land and Housing Research Institute, Korea Land and Housing Corporation, 2011.
- Kheang, Un and So Sokbunthoeun, Land rights in Cambodia: How Neopatrimonial Politics Restrict Land Policy Reform, *Pacific Affairs*, 2011.
- Khemro, B. H. S., & Payne, G., Improving Tenure Security for the Urban Poor in Phnom Penh, Cambodia: an Analytical Case Study. Habitat International, 28(2), 181-201, 2004.
- Kim, J.H., A Critique on Anti-Speculation Policies, Deregulation, Korea Economic Research Institute, Summer 1994. (in Korean)
- Kim, J.W., A Study on Informal Housing Policies: Case of Seoul, Master's Thesis, Graduate

-
- School of Public Policy, Konkuk University, 1980. (in Korean)
- Kim, K.H. and J.H. Kim, Political Economy of Government Policies on Real Estate in Korea, *Urban Studies* 37(7), June 2000.
- Kim, K.H., Could A Price Bubble Have Caused the Korean Economic Crisis?, in Mera, Koichi and Bertrand Renaud eds., *Asia's Financial Crisis and the Role of Real Estate*, Sharpe, Sept. 2000.
- Kim, K.H., Housing Prices, Affordability and Government Policy in Korea, *Journal of Real Estate Finance and Economics* 6(1), Jan. 1993.
- Kim, S.W., Policy Directions for Improving Housing Welfare of the Low-Income Households, in Kim, Song, Lee, and Cho, *Studies in Housing Market and Policies*, KDI, 2008. (in Korean)
- Paul, E., Land Sharing in Phnom Penh: An Innovative but Insufficient Instrument of Secure Tenure for the Poor, 2005.
- PPSWA, Annual Report 2015 (in Khmer), http://www.ppswsa.com.kh /Administration/downloads /finance/annualreport/PPSWA_Annual_Report _2015%28KH%29.pdf, 2016
- Pierre F., Urban Slums Reports: The Case of Phnom Penh, Cambodia. (Massachusetts Institute of Technology: Department of Urban Studies and Planning), <http://www.ucl.ac.uk/dpu-projects/GlobalReport/pdfs/PhnomPenh.pdf>, 2003.
- Renaud, B., Compounding Financial Repression with Rigid Urban Regulations: Lessons of the Korea Housing Market, *Review of Urban and Regional Development Studies*, Vol. 1, No. 1, 1989.
- Son, J.Y. and Siwook Lee, Formulating Cumulative Strategy for Financing Housing Program in Mongolia, 2013 Knowledge Sharing Program with Mongolia, KDI, 2014.5.
- Son, J.Y., Enhancing Kuwait's Housing Care Program: Demand-side Approach, 2014/15 Knowledge Sharing Program with Kuwait, KDI, 2015.5.
- Suh, S.H., The Effects of Deregulation of Apartment Sale Price on Housing Prices, *Housing Studies*, Oct. 1994. (in Korean)
- UCL Development Planning Unit London, *Re-imagining Cambodia*, 2014.
- United Nations, Department of Economic and Social Affairs, Population Division, *World Urbanization Prospects*, 2014.
- UN-HABITAT, *State of the World's Cities 2010/2011: Bridging the Urban Divide*, Earthscan, 2010.
- UNICEF, *Phnom Penh Multiple Indicator Assessment of the Urban Poor*, 2014.
- USAID, *Cambodia-Property Rights and Resource Governance*, 2010.

2015/16 Knowledge Sharing Program with Cambodia:
Knowledge Sharing on Cambodia's Social Overhead,
Human Capital, and Housing Development:
Korea's Experience and Policy Recommendation

Chapter 3

A New Method of Cambodian Teacher Education Policy

1. Introduction
2. Current Conditions of Cambodian Education
3. Diagnosis of Teacher Education Policy in Cambodian Education
4. Contextualizing Korean Experiences into Cambodian Teacher Education Policy
5. Quick Five Policy Attention for Cambodian Teacher Education

A New Method of Cambodian Teacher Education Policy

Se-Yeoung Chun (Chungnam National University)

Summary

The main purpose of the study is to understand the key issues and characteristics of the teaching system in Cambodia and how Korean experiences can be used as lessons learnt to address issues of Cambodia's teaching system. From the study, Cambodian education is summarized as meeting the big challenge of low performance indicated by those salient indicators such as low enrolment in secondary education and high dropout rate. The lack of good and sufficient numbers of teachers must be the reason for this poor performance. Therefore, Cambodian education should make efforts to retain the good teaching force. However, the low attracting power as well as the inefficient training and motivation system are also interrelated, thus preventing the retention rate from rising.

Therefore, the four dimensions of teacher policy, namely, attracting, training, motivating and retaining need to be comprehensively and systematically inter-designed for the most effective system of education. Responding to the teacher issues, the 2015 Teacher Policy Action Plan (TPAP), elaborated from the 2013 Teacher Policy, was adopted by the MoEYS in order to comprehensively address the issue of teacher quality improvement by linking a range of strategies to the powerful incentive of a significant increase in income and social status. However, there are still some discrepancies and shortsightedness in overcoming these issues and in accomplishing the visions and targets of present tasks of Cambodian education.

Korean experience has been contextualized in the sense of how to provide the quickest policy options. Korea was identical to Cambodia in every sense of teacher shortages at the beginning, but the situation is quite different today. Therefore, it is natural to ask how it was possible to overcome this deficiency. Having said this, it is quite true that there are no scientific investigation and answers which can be relevant and benchmarked conveniently enough to provide an easy solution to the Cambodian problems. In fact, numerous types of analysis and proposals have been made in this area of teacher policy. Indeed, Cambodian TPAP must be evaluated as one of the best policy proposals in that sense. However, one distinct aspect is not present: that is, the unique experience that Korea has gone through. What Cambodia must learn from Korea needs to be incorporated through two levels of learning: first look and deep learning.

First, looking at Korean education from the perspective of teacher education, the critical factor lies in the personnel status of teachers as public officials, of which the government must control the numbers, remuneration, discipline, and promotion. In addition, the purpose-oriented closed training system of prospective teachers has consolidated the unique culture of the teaching profession in Korea. With the acknowledgement of these characteristics, one can find some implications from the Korean experience in relation to two factors: one in controls of quantitative expansion of teachers and the other in the institutionalization by law. Deep learning can be begun by the first question of how different Cambodia is from Korea before asking whether Cambodia can apply any Korean model. Incidentally, the investigated facts in this study show almost the same conditions for Cambodian education today as the Korean education of yesteryear: the high demand for education and the limited financial resources – despite differences between Hangul and Khmer characters. Therefore, one hypothesis can be set up for the Cambodian development of education: that is, making the best use of education demand for overcoming financial limitation and finding a supplementary tool for teaching and learning for Khmer literacy. Now, it is time to look into the deeper story of Korean education and teacher policy. There are five core inferences to be drawn and the five quick policy options.

Five inferences: The first was the birth story of the education sector as the one of the most prosperous industries during the poor economic stage. The second relates to the maximum utilization of financial resources for education sector. The third is that teacher policy has been well regulated within these two stories of prioritizing education money into teacher policy and a further emphasis on elementary teaching in rural schools. The fourth concerns the secrets of retaining teachers and the last is the Public-Private Partnership (PPP). Now, the five lessons for Cambodia are suggested as following:

1) Key attention to people's demand for education: Data shows there is a huge demand for education among Cambodian parents and students. This is very common across all Asian countries. This demand can be utilized to employ PPP as a quick policy model. Private education capital can be encouraged as the partner for participating in providing educational opportunities including private schools and private teacher training centers. Foreign education capital also can be invited.

2) Key attention to rural, elementary and girls/women's education: Education as the self-creating sector can begin its growth only when the critical mass or the essential birth is made. Equal distribution of educational opportunity is the mandatory task towards actualizing this. Every valuable resource of Cambodian education should be prioritized and put into this urgent sector of rural elementary schools. Boys and girls must be treated equally. Here particularly mothers' literacy is the key factor for supporting students' success in schools. Accordingly, adult literacy classes in the rural area also must be a key area for attention. Sending teachers first to rural elementary schools and letting them teach girls and mothers will be the fundamental basis for Cambodian education.

3) Key attention to historical heritage of teacher respect: Data also shows there is general respect within society for schoolteachers. This means teachers can be retained once they are fully recognized as the teachers in schools and society even though there is some hardship in working conditions within the national teaching environment. Therefore, teacher policy needs to be balanced between the economic and educational aspects.

4) Key attention to joy of teaching and learning: The essential factor for success in teacher policy is, to a large extent, that both teachers and students enjoy their teaching and learning. Even under the poor exterior conditions of education such as crowded classrooms and lower teacher salaries, they can work in unison in schools once they believe in teaching and learning. However, the present teaching-learning process mediated through Khmer and English supplementary contents/textbooks appears to have some fundamental barriers although these have not yet been fully investigated. Therefore, various and urgent actions need to be taken for developing and providing teachers and students with more effective materials: ICT-based digital contents and solutions must be one such transcendent way of approach.

5) Key attention to autonomy of education authorities: In order to keep the above four concerns in mind, one last important area of attention must be paid to the full autonomy of education authorities, especially at a local government level. Every level of education authority is encouraged to be given full autonomy to the teacher personnel administration, school and teacher financing and all other educational governance matters. Through this, they can utilize their full power for

the best use of even the limited amount of resources.

1. Introduction

1.1. Rationale of the Study

Even though basic education in Cambodia has been improving over the last few decades, these achievements are still behind other countries in South East Asia. For instance, the literacy rate of people over 15 years' old is one of the lowest, and the pupil-teacher ratio is the highest one in the Association of Southeast Asian Nations (ASEAN) <Table 3-1>. As ASEAN integration is due to the end of 2015, the entire society doubts the quality of education, labor competition and the mismatch of students' skills between demand and supply of the labor force in the market. Moreover, as the result of national high school exam reform in 2014, the passing exam rate dropped by 25.7%, which is the lowest since 1994, as the passing rate was so high, 87%, in 2013. A second chance for the exam was provided for the failed exam students and the overall passing rate was just above 40%.

<Table 3-1> Pupil-Teacher Ratio and Youth Literacy Rate in ASEAN

Indicator	Year	Bru	Cam	Ind	Lao	Mal	Mya	Phi	Sin	Tha	Vie
Pupil-teacher ratio in pre-primary education	2013	13.4	28.6	14.9	17.4	19.0	-	-	-	-	18.9
	2014	17	31.3	-	19.2	-	28	-	-	-	17.6
Youth literacy rate, over 15-year old both sex (%) (Estimated data)	2015	99.6	91.5	99	90.2	98.4	96.3	97.9	99.9	98.2	98.1

Source: UNESCO Database (2015).

The Ministry of Education, Youth and Sport believes that a high-quality teacher is the most important force in improving student performance and achievement. By upgrading the standard of its teaching force, Cambodia can improve the quality of its educational services for all. In this regard, in 2014, the reform agenda of the Ministry of Education, Youth and Sport focused on the enhancement of teacher quality as one of key reforms in the education sector.

Meanwhile, teacher policies and legislation were developed as the instruments to address issues in teaching system and to improve the quality of teaching. For example, in January 2015, the Ministry of Education, Youth and Sport adopted the Teacher Policy for Action Plan (TRAP) in order to attract and maintain competent

candidates to work as teachers in public schools.

Now the TPAP-related efforts need to be reexamined for better teacher education policy and the ways in which the relevant lessons from other advanced experiences could be compared and integrated into a new TPAP. In this regard, the Korean experience has been chosen as a valuable case study.

1.2. Purposes and Contents of the Study

The main purpose of the study is to understand the key issues and characteristics of the Cambodian teaching system and how Korean experiences can be used as lessons learnt to address issues regarding the teaching system in Cambodia. In order to achieve the purpose, this study will comprise:

- Investigation of the current conditions of Cambodian education
- Identification of teacher education issues as the key variables for Cambodian education
- Sharing Korean experiences of teacher education relating to the Cambodian context
- Suggesting quick policy options for Cambodian teacher education policy

1.3. Methodology

1.3.1. Field Visit

In order to understand issues of the teaching system and the quality of education in Cambodia, a Korean expert visited the country three times to meet key stakeholders in the education sector including the Secretary of State for the Ministry of Education, Youth and Sport, the education officer for the Asian Development Bank (ADB) Office in Cambodia, Directors of the Teacher Training Center in Phnom Penh and Kandal Province, Director of the National Institute of Education, the Dean of the Education Department in Royal University of Phnom Penh and the principals of primary and secondary schools in the center and outskirts of Phnom Penh. Moreover, he also met school principals in primary and secondary schools in order to understand issues related to teachers in the rural area during the fieldwork for data collection in Siem Reap Province.

1.3.2. Documents Review

The study team has reviewed the most recent relevant documents of key issues, policies and legislations of the teaching system in Cambodia to examine the current issues of teacher education in Cambodia. Most of the teacher issues in the education system are drawn from a Work Bank Report in 2015 “Educating the Next Generation: Improving Teaching Quality in Cambodia”

1.3.3. Interview-Based Survey

Third, a small survey was conducted to check and compare the perspectives of teachers, students and parents on the teaching and quality of education in both rural and urban areas. Phnom Penh and Siem Reap had been selected as the areas to conduct the survey. Three high schools, middle schools and primary schools had been selected in an urban area in Phnom Penh and in a rural area (Bakorng District) in Siem Reap Province. Individual interviews with teachers, students and parents are used in both rural and urban areas during the fieldwork for data collection.

Various issues regarding teacher policies have been covered in the data collection, including teachers’ respect, aspirations for children education, language barriers hindering learning capacity, private demand for education, teachers’ level of economic compensation and teaching/learning efficiency. The sample size of the survey was planned as in <Table 3-2>. However, the actual sample size has changed slightly from the original sample size plan.

Since a mail-based survey collection could not be conducted for the Cambodian situation, all surveys were carried out by individual face-to-face question and answer methods by employing local trained interviewers.

〈Table 3-2〉 Sample Size of The Survey (original plan and actual sample size)

Respondent	Type of School	Rural (Siem Reap)		Urban (Phnom Penh)		Total	
		Original	Actual	Original	Actual	Original	Actual
Student	Upper (Grade 12)	100	90	100	90	200	180
Teacher	Primary	30	30	30	30	60	60
	Lower	30	30	30	30	60	60
	Upper	40	30	40	30	80	60
Parent	Primary	100	90	100	90	200	180
Total		300	270	300	270	600	540

Source: Authors own.

2. Current Conditions of Cambodian Education

2.1. Historical Background

The traditional education system in Cambodia was developed in the early seventh century for only the elite members of society and the study of Buddhist philosophy was the highest degree of education. However, the integration of traditional education into the modern schooling system started in the early twentieth century during the period of French colonial rule (Dy, 2004).

The period of the 1950s-1970s was known as the most successful one for the education system in Cambodia. In the 1960s, Cambodia had one of the highest literacy rates and most progressive education systems in South East Asia (Dy, 2004, citing Dunnett, 1993), but political instability dragged Cambodia's education down into crisis.

The Khmer Rouge regime (1975-1979) destroyed entire soft- and hardware infrastructures for the country. During the course of the regime, the value of education was not recognized and entire education institutions and schools were closed at all levels. In addition, most educated people and professional teachers, doctors, and engineers, etc. were killed. It is estimated that 75% of teachers were killed during Khmer Rouge regime, along with 96% of university students, and 67% of primary and secondary students (Clayton, 1998).

In the 1980s, the education system was resurrected. At that time, there were only a few surviving specialists and educators to lead the Ministry of National Education and Vietnamese advisors played the key role in designing the curriculum, and training and recruiting teachers at all grade levels. The slogan of government strategy was called "the literate teaches semi-illiterates and semi-illiterates teach illiterates." By the 1980s, 37,000 teachers had been recruited, but only 10% of them met the formal education qualification (Dy, 2013).

In the mid-1990s, the First Socioeconomic Development Plan (1996-2000) broadened education development policies, strategies and targets, primarily addressing basic education towards reconstruction and economic development. The Ministry of Education Youth and Sports (MoEYS) and development partners such as the World Bank, the Asia Development Bank and other international organizations worked in cooperation to achieve basic educational targets for all. However, due to diverse factors, the achievement of this goal was slow, including the shortage of competent teachers, and lack of classrooms, textbooks, teaching materials, along with an unattractive study environment, to name just some (UNESCO, 2000).

2.2. Current Conditions of Education

2.2.1. Low Performance of Education System

The performance of an education system can be measured in many ways. Here, three representative indicators of enrolment, dropout and completion rates were investigated and reviewed with regards to analyzing the Cambodian education system and revealing its underlying problems.

2.2.1.1. Enrollment Rate

In the academic year 2014-2015, the student gross enrollment rate across the entire kingdom was 111.2%, of which 94.2% is in the urban area and 115.2% in the rural one. This enrollment rate has not changed significantly when comparing with data from 2010-2011. For lower secondary level in academic year 2014-2015, the student gross enrollment rate across the whole kingdom is 53.3%, of which 58.3% is in the urban area and 52.1% is in the rural one. The gross enrollment ratio in lower secondary school drops by around 50% when compared with the enrolment rate in primary schools, but there is no such difference in enrolment rate between rural and urban areas <Table 3-3>.

〈Table 3-3〉 Gross Enrollment Ratio from Academic Year 2010-2011 to 2014-2015

Year	Primary School			Lower Secondary			Upper Secondary		
	Whole Country	Urban	Rural	Whole Country	Urban	Rural	Whole Country	Urban	Rural
2010-2011	116.0	111.1	116.9	58.5	76.0	54.9	32.9	68.6	25.3
2011-2012	123.3	96.0	129.5	55.0	61.4	53.5	30.6	53.6	24.8
2012-2013	123.4	92.6	130.5	53.6	59.4	52.2	27.4	47.2	22.3
2013-2014	116.1	96.1	120.8	53.3	60.0	51.7	24.9	42.8	20.3
2014-2015	111.2	94.2	115.2	53.3	58.3	52.1	24.2	40.6	19.9

Note: Gross enrollment ratio can be over 100% since it includes the over-aged students for the respective grades(same in the tables following later in the report)

Source: EMIS&HMIS, MoEYS (Year 2011-2015).

In upper-secondary schools, the student gross enrollment rate across the whole country is 24.2% and the enrolment rate in rural area is two times lower than the urban one. The enrolment rate in upper secondary decreased almost 50% comparing with the enrolment rate in lower-secondary schools. Even though Cambodia has achieved remarkable success in its enrollment rate at primary school level, the enrollment rate in lower- and upper-secondary school is still low, at around 50% and

25%, respectively.

2.2.1.2. Dropout Rate

At the primary level, the student dropout rate in the whole kingdom is 8.3%, of which 5.7% is in the urban area and 8.8% is in the rural one. The dropout rate has decreased slightly from 2011 to 2015. At lower- and upper-secondary school level, the dropout rate increased slightly from 19.6% in 2011 to 21.0% in 2015, but the dropout rate increased remarkably at upper-secondary school, from 11.8% to 27.5% from 2011 to 2015 <Table 3-4>. This increase is around 15.7%, and the increase between rural and urban areas is almost the same.

<Table 3-4> Dropout Rate in Cambodia from Academic Year 2010-2011 to 2014-2015

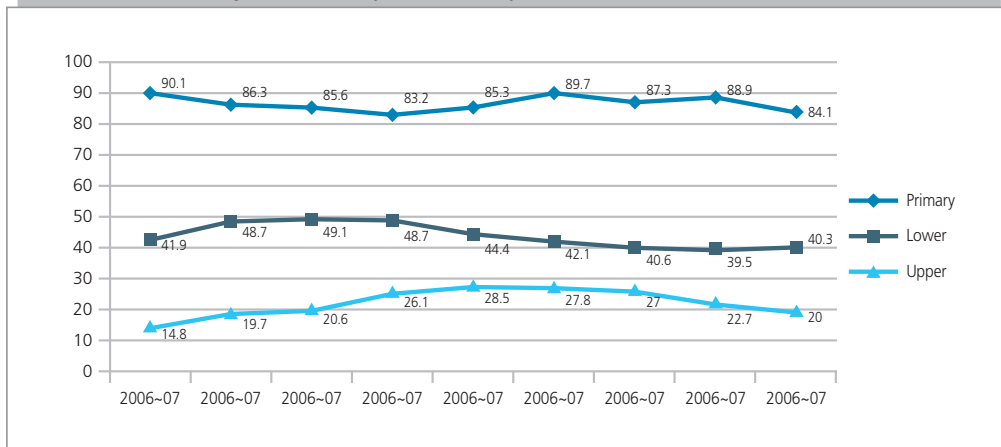
Year	Primary School			Lower Secondary			Upper Secondary		
	Whole Country	Urban	Rural	Whole Country	Urban	Rural	Whole Country	Urban	Rural
2009-2010	8.7	6.5	9.1	19.6	11.1	22.0	11.8	6.7	15.0
2010-2011	8.3	6.1	8.7	21.7	13.1	24.0	13.7	7.8	17.0
2011-2012	3.7	5.3	3.5	20.0	12.7	21.9	10.1	-1.0	15.7
2012-2013	10.5	7.8	10.9	21.2	14.3	23.2	14.0	8.3	17.2
2013-2014	8.3	5.7	8.8	21.0	14.3	22.9	27.5	22.4	30.4

Source: EMIS&HMIS, MoEYS (Year 2011-2015).

2.2.1.3. Completion Rate

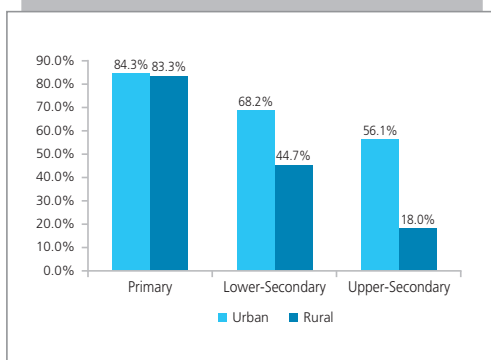
The completion rate in primary, lower secondary and upper secondary remains largely level over the years, although the rate has changed slightly from 2007 to 2015. For instance, the completion rate of primary school decreased from 90.1% to 84.1% from 2007 to 2015, and the completion rate of upper-secondary school increased slightly from 14.8% in 2007 to 20% in 2015 [Figure 3-1]. From this data, it can be noted that the completion rate at lower- and upper-secondary school is quite low at around 20%. The main challenge is how to encourage students to complete their education and how to develop students' skills after leaving school, as most students who leave before the completion of upper-secondary school have a very low skill level, and cannot even find unskilled work in agriculture and industrial processing (CDRI, 2015). Simultaneously, the completion rate in rural areas is worse than urban one, as the completion rate in upper-secondary schools is only around 15.7% compared to the urban area's 35.8% in 2014-2015 [Figure 3-2] and [Figure 3-3]. Paucity of resources, low-quality teaching and a shortage of teaching facilities are among main problems in encouraging students to complete their study.

[Figure 3-1] Completion Rate by Level of Education 2006-2015

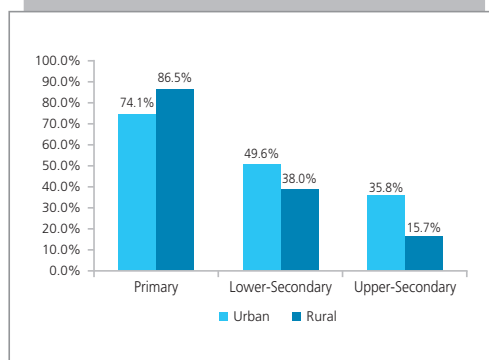


Source: Ministry of Education, Youth and Sport (2015).

[Figure 3-2] Completion Rate in Urban and Rural in 2009-2010



[Figure 3-3] Completion Rate in Rural and Urban in 2014-2015



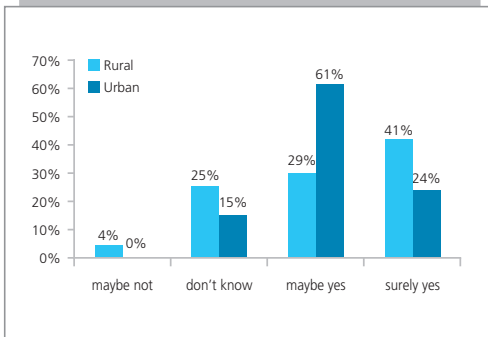
Source: Ministry of Education, Youth and Sport Indicator 2009-2010 and 2014-2015.

2.2.2. High Aspiration and Private Demand of Education

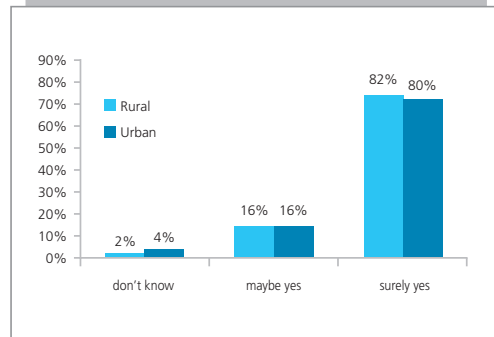
The results from the survey conducted by the study team found that most responding students in rural and urban areas wish to pursue their studies at university ([Figure 3-4] and [Figure 3-5]), and most of them have confidence that they will pass the matriculation test after graduating from high school because they thought that they were learning well in the classroom ([Figure 3-8]). A majority of 65% of responding students in the rural area evaluated their study level as excellent, which is higher than that of the more urban area, at 54% ([Figure 3-9]). However, when asking parents about the expectation for their children to study in university, responding parents in the rural area have less confidence than parents in the urban area. In short, both parents and students have high self-aspirations concerning higher

education. However, parents in the urban area are more confident than those in the rural area.

[Figure 3-4] Parent: Do you expect your child will go to university?

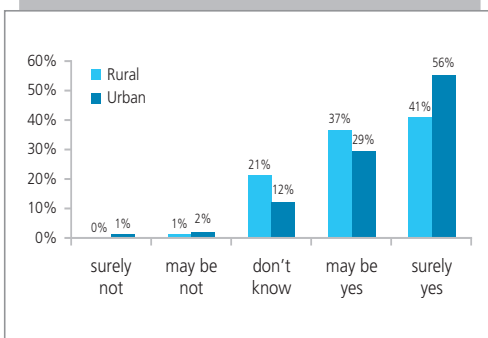


[Figure 3-5] Student: Would you like to go to university?

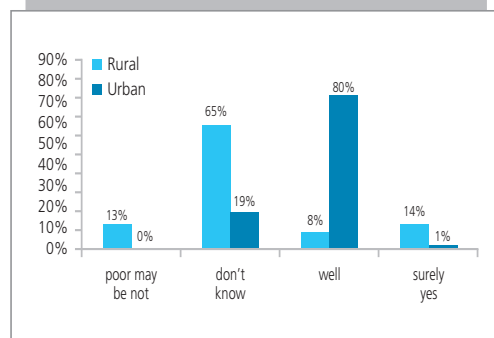


The demand for private education is quite high in both the urban and rural areas. Students in rural and urban areas have different opinions about private tuition. Students in urban areas believe that private tutors are better than the teachers in public school. Parents in urban and rural areas have agreed that private teachers teach better than teachers in school, yet this difference is not significant in the statistics [Figure 3-10]. The results showed that parents and students have some demand for private tutoring and education to compensate for the possible deficits from school education, which is evidence of social demand for education in Cambodian society.

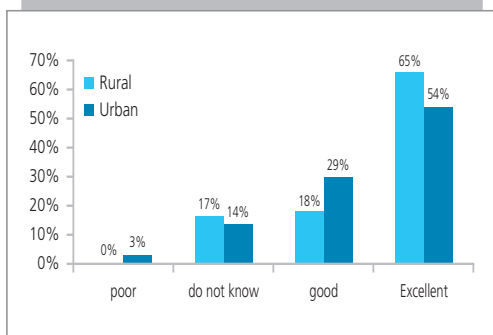
[Figure 3-6] Student: Do you think you can pass the matriculation test?



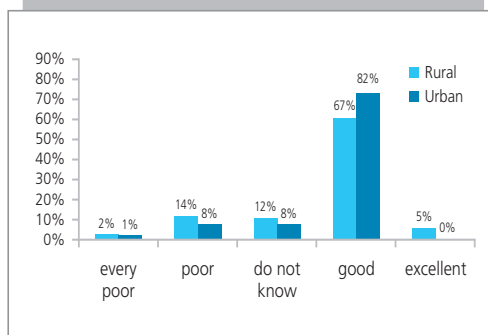
[Figure 3-7] Parent: Can your child pass the matriculation test?



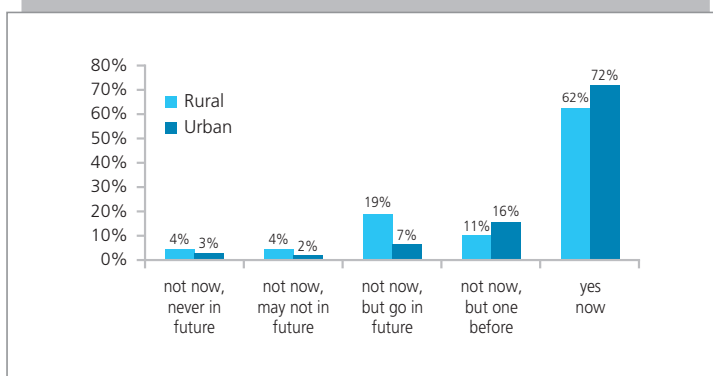
[Figure 3-8] Parent: How do you evaluate your child's learning level?



[Figure 3-9] Student: How would you evaluate yourself regarding your learning level?



[Figure 3-10] Student: Do you go to private schools/tutoring during out of school hours?



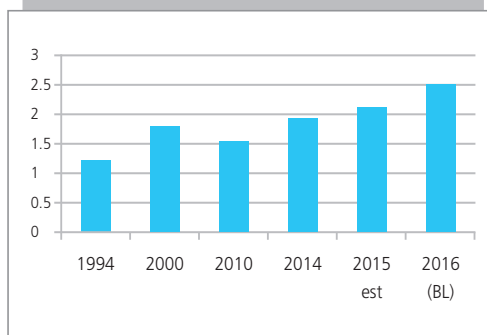
2.2.3. Permanent Issue of Money: Poor Public Spending in Education

Government spending on education has increased gradually since 2009. From 2006 to 2010, the spending decreased from 19.2% to 16.4% but the percentage of the national budget for education has increased gradually from 15.5% in 2013 to 18.3% in 2016 [Figure 3-11], of which teacher salary and allowance accounts for 78-80% of the budget. Conversely, the share of GDP in education is around 2.5%, which is lower than the international standard of around 5% [Figure 3-12]. However, it is a sign that government spending in education has increased year by year over the last four years, focusing on teachers.

[Figure 3-11] Percentage of National Budget in Education



[Figure 3-12] Share of GDP in Education



Source: Education Financing (2016).

2.2.4. Literacy and Language Barrier

2.2.4.1. Adult Literacy

For the last ten years, the adult literacy rate has continued to increase from year to year. In 2013, the adult literacy rate reached a peak at 80.7% for all adults (15-45) who can read and write and communicate as such in their everyday activities or business <Table 3-5>.

<Table 3-5> Adult Literacy (15 years and above) by Geographical Domain and Sex in %

Domain	CSEC 2004			CSEC 2009			CSEC 2014		
	Women	men	Both sexes	Women	men	Both sexes	Women	men	Both sexes
Cambodia	59.9	80.3	69.4	65.9	82.7	73.9	71.8	84.8	78.1
Phnom Penh	86.6	96.8	91.3	89.0	97.2	92.7	92.3	97.4	94.8
Other urban	71.2	85.9	78.1	80.0	92.8	86.1	80.0	90.7	85.1
Other rural	54.4	77.1	65.0	60.6	79.4	69.5	66.7	81.7	73.9

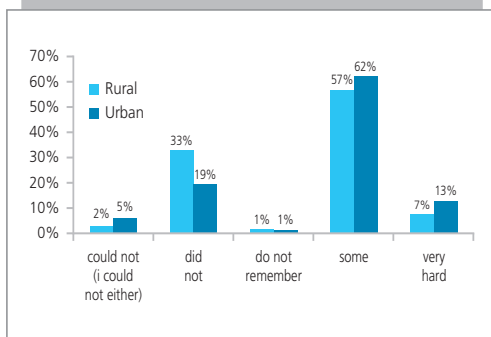
Source: CSES (2014).

By gender comparison, the adult literacy rate of males is higher than females even in urban or rural areas, and adult literacy across the whole kingdom has gone up in the last 10 years. However, the adult literacy rate in Cambodia is one of the lowest in ASEAN, and requires further attention and interventions. In addition, rural women are not as literate as the urban group, which must be urgently tackled because they are the most critical demographic influencing children's literacy.

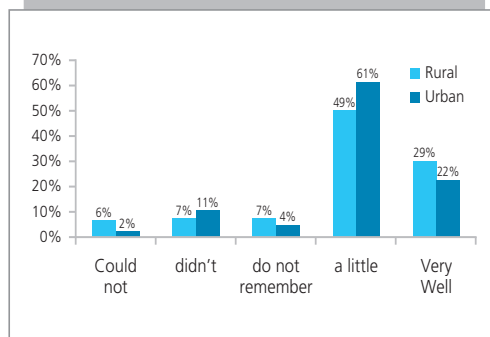
2.2.4.2. Language Barrier in Teaching and Learning

The English language is considered imperative for a successful educational outcome, and 45% of responding parents in rural areas sent their children to English classes prior to formal education and another 25% will send them to English classes soon. Parental opinion on sending their children to English classes is similar to students' opinion about their ability to speak English. For instance, 35% of responding students in secondary school thought that they could speak English well, although around 20% could not evaluate their English ability (Figure 18). Students thought that the English language was important in helping them learn at school, although another difficulty for them is the shortage of pre-existing knowledge through pre-study of this subject [Figure 3-17].

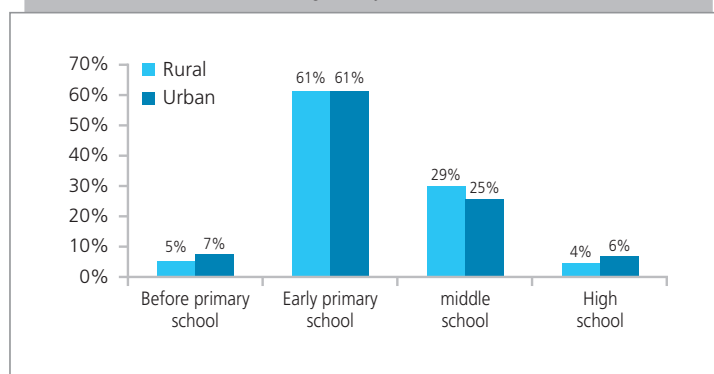
[Figure 3-13] Parent: Did you teach your child how to read and write Khmer before they went to primary school?



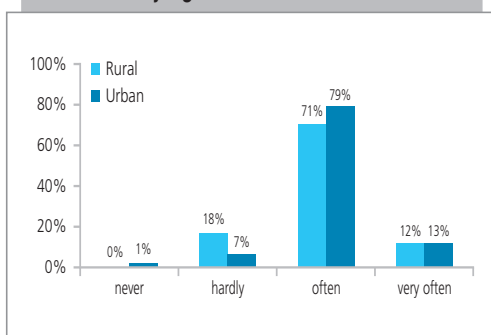
[Figure 3-14] Student: Did your mother teach you how to read and write Khmer before you went to primary school?



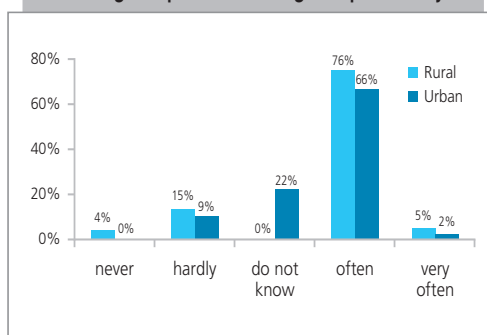
[Figure 3-15] Student: When did you start to read and write Khmer well enough for your standard?



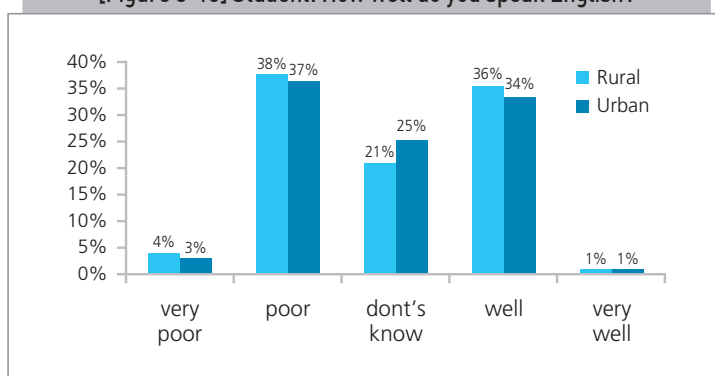
[Figure 3-16] Student: Have you experienced difficulties in comprehending words when studying Science and Maths?



[Figure 3-17] Student: Do you feel some time constraints when learning because of your shortage of pre-knowledge or pre-study?



[Figure 3-18] Student: How well do you speak English?



In terms of studying science and mathematics, most students encountered difficulties in comprehending professional words, while around 70% of responding students stated that they encountered difficulties often. Around 50% of responding parents said that their children met difficulties often in comprehending words in science and mathematics [Figure 3-16].

To summarize, the English language is very important in helping students succeed in school and life, and normally parents send their children to English class beforehand. One concern that is that up to 30% of students cannot read and write the Khmer language very well until middle school and up to 80% of students have difficulty understanding words in science and mathematics.

2.2.5. Lack of Teaching Force and Disparity

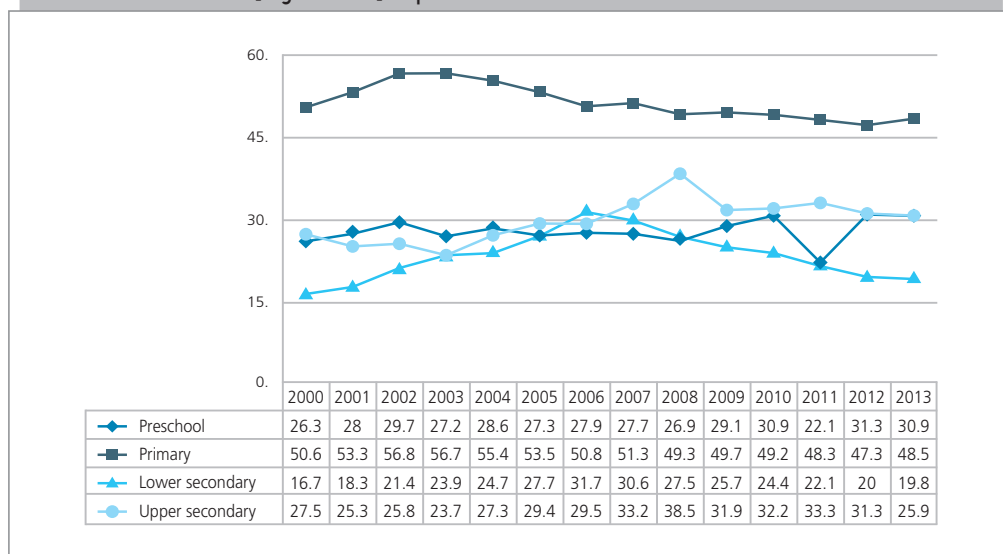
There are many reasons behind the low performance of the Cambodian educational system. One of the most salient and important ones is considered the capacity of its teachers to provide a high quality and quantity of education. This phenomenon has been noted through numerous reports and government documentation.

2.2.5.1. Quality Lack by High PTR (Pupil-Teacher Ratio)

Based on a report issued by UNESCO (2015), the Cambodia Education for All 2015 National Review, the student-teacher ratio in primary school level is still high, raising concerns and requiring further attention. In the academic year 1999-2000, the student-teacher ratio is 50.6, falling slightly to 48.5 in the academic year 2012-2013 [Figure 3-19]. The slight decrease of this ratio is due to an increase in the number of teachers across the entire Kingdom. However, despite the ratio decrease, it still exceeds the teaching standard of 40 students per teacher.

At lower-secondary school, this ratio increased from 16.7% in the academic year 1999-2000 to 19.8% in 1012-2013. The increase of graduate students who completed the full nine years of education might have contributed to increases in eligible teachers. At upper-secondary school, the decrease in the ratio is due to the increase of teachers who completed expanding their skills and began to teach at upper-secondary school.

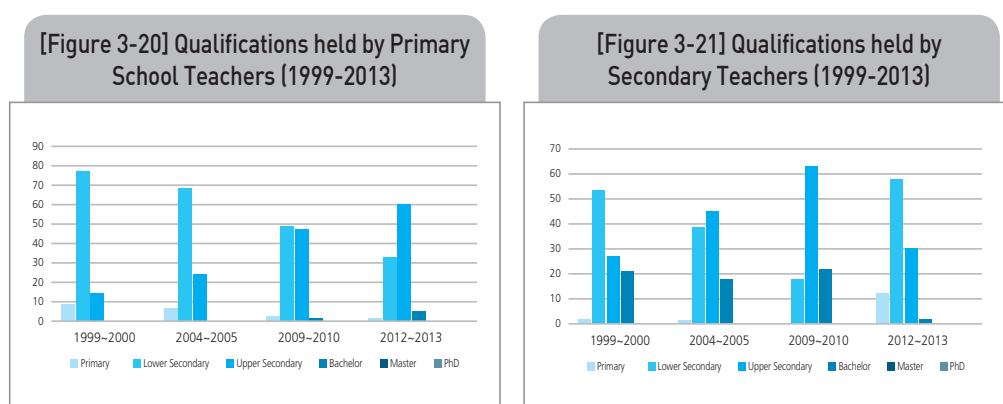
[Figure 3-19] Pupil-Teacher Ratio from 2000 to 2013



Source: EMIS, MoEYS (UNESCO, 2015).

2.2.5.2. Quality Lack due to Low Teachers' Qualification

Teachers' qualifications are an issue to which MoEYS is attending by recruiting more teacher trainees with higher degree qualifications. [Figure 3-20] shows that, in 1999-2000, teachers with lower secondary level qualifications were at 77%, while teachers with upper secondary level were only at 14.12%. The number of teachers holding lower degrees decreased by 33.21% and teachers with high school degrees increased by 60.45%. This increase indicates the upgrading of teachers' skills, and for primary school teachers contributed to the improvement of educational quality at primary school level (UNESCO, 2015).



Source: EMIS, MoEYS, UNESCO (2015).

[Figure 3-21] shows that the total number of secondary school teachers who had completed only lower secondary education decreased from 52.38% to 11.99% from 1999-2000 to 2012-2013. Secondary school teachers who had completed upper-secondary education increased from 26.56% to 56.98% in the same time period. Moreover, the percentage of teachers who gained a bachelor degree increased from 20.08% to 29.52% in the same period (UNESCO, 2015). The policy of developing teachers' skills towards a Bachelor degree through additional training is a significant reason for the increase.

2.2.5.3. Mismatch between Teacher Demand and Supply

In 2013-14, teaching staff represent 83% of the total MoEYS staff in the whole kingdom. There are 88,818 teachers in the system, of which approximately 52% are teaching in primary level, 31% at lower secondary, 12% in upper secondary, and 5% in preschools.

One of the fundamental problems with the teaching supply is the number of educational personnel who leave the teaching profession (many permanently), at

more than 2,000 per year (2,017 in 2012; 2,137 in 2013). At the same time, however, the total number of new teachers recruited and trained is around 5,000 annually. The high rates of attrition are particularly noticeable at upper-secondary level, which creates major supply problems and lowers quality. Moreover, the utilization of teachers - including deployment and the pupil-teacher ratio - is not appropriately implemented compared to the policy targets set by the government.

In 2015, there were 83,051 public school teachers working across all levels across the country, a 10% increase compared to 2007 statistics (World Bank, 2015). Among all teachers, 44,840 are teaching at primary level, 27,054 at lower secondary, and 11,157 at upper secondary.

Rectifying this shortage of teachers is one of main issues in strengthening the quality of education in Cambodia. Based on the research conducted by VSO, UNESCO, and the NGO Education Partnership (2014), Cambodia has a teacher shortage, especially primary teachers. For instance, in a commune in Siem Reap (Khmar Danday Commune), both teachers at primary and lower secondary school have to teach more than one class at the same time; they start teaching a class in one room, then soon move to another room; in Rattanakiri province, five of 14 teachers interviewed taught double shifts and two of them have to teach multiple grades. This affects teachers' ability to become fully conversant with their subjects.

However, currently, the number of teacher trainees graduating from the Teacher Training Center (TTC) has increased to 5000, a slight rise from 2006, at 3700. These 5000 teachers go some way to mitigating the numbers who leave teaching yearly, including 1500 retirements, 1000 turnovers, along with an average annual increase of stock teachers required of 2500 (World Bank, 2015).

Teachers' supply and demand appears to have reached equilibrium. However, teacher shortages are still a problem, especially in rural areas. This is because greater numbers of primary teachers seeking more training at the TTCs to develop their skills to become lower-secondary teachers – a choice that reflects the higher salary.

2.2.5.4. Disparity in Rural Public Elementary School Teachers

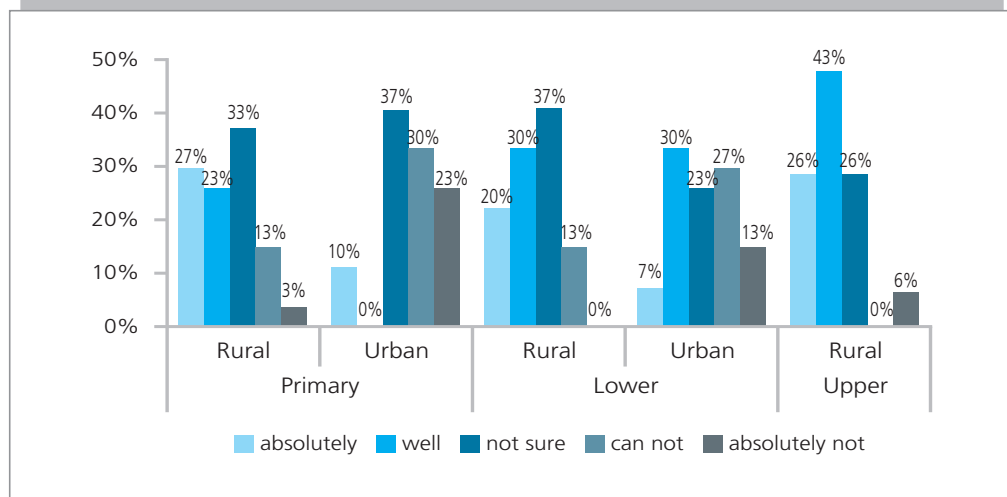
Teacher placement in Cambodia is done through academic merit. Those who graduate from TTCs are registered to list their post preferences in order. If they score highly on the exit examination, they will be able to select their first location preference. Trainees from remote and disadvantaged areas are required to return to their own selected location. School locations close to family, home province, urban area, location requirements and knowing the school director are very important factors for student teachers' decisions in choosing the school location (World Bank,

2015, p.64).

When asking student teachers about working in remote areas, fewer than 20% of trainees at the Regional Teacher Training Centers (RTTCs) and only 33% of trainees at the Provincial Teacher Training Centers (PTTCs) want to work in remote schools, typically due to the isolation and the low salary. Incentives for teachers in remote areas were extremely low, trainees said. Trainees reported that if they went to work in the remote area, they would receive 59,000 Riel (14.75\$) for trainees from PTTC and 85,000 Riel (21.25\$) for trainees from RTTC, but teachers in rural areas reported that they received only 10\$ a month as additional incentives and normally the incentive money was delayed for 71 days on average (Work Bank, 2015). Therefore, stronger incentives for teachers working in remote areas are needed to encourage teachers to work in these locations.

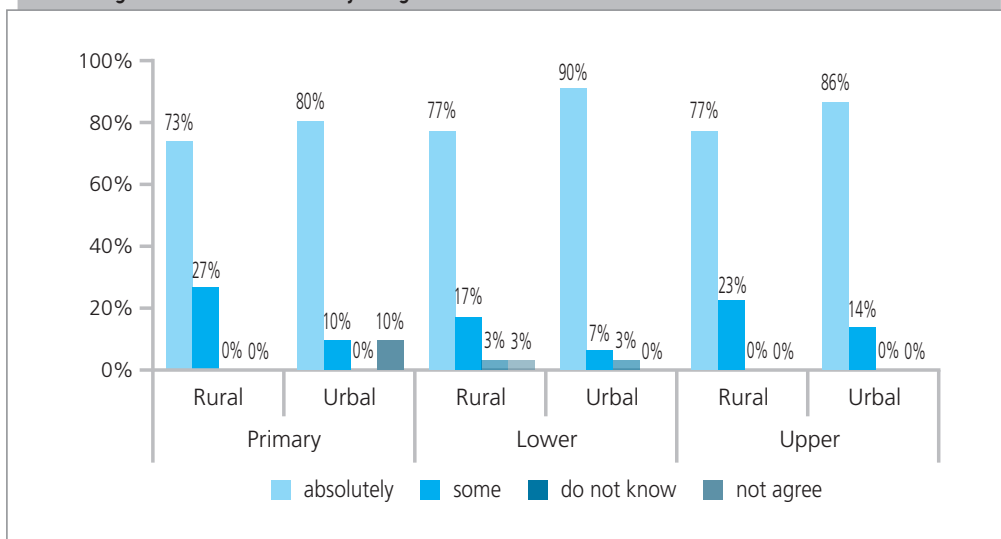
When asking teachers about their likelihood of working in rural areas with further incentives such as salary, housing, transportation and others, teachers in rural areas responded with more willingness to work in rural areas than teachers in urban areas [Figure 3-22]. Teachers would be eager to work in rural areas if more incentives are provided.

[Figure 3-22] Teacher: Would you work in rural schools if there were some other incentives such as salary, housing, transportation and others?



Most agree unconditionally with more incentives for rural teachers ([Figure 3-23]), which should be taken into account for the urgent policy for reducing teacher shortages in rural areas.

[Figure 3-23] Teacher: Do you agree with more incentives for teachers in rural areas?



2.2.5.5. Contract Teacher Problems

Contract teachers were used in 1996 and 2002. At their peak, contract teachers comprised 9% of all teachers in Cambodia. It aimed to foster the rapid recruitment of teachers among those from local communities with some experience in children's programs. Many such teachers, however, did not have the proper pedagogical and formal education qualification. Contract teachers also received their payment irregularly and late. Since 2002, the number of contract teachers has been greatly reduced, partially as a reflection of greater outputs from teacher training institutions as basic education became widespread, and partially as a response to combat corruption in the local appointment process and 'ghost' teachers on staff payrolls. By 2008, contract teachers remained only in specific disadvantaged geographic areas such as Otdar Meanchey, Ratanak Kiri and Siem Reap, to address severe teacher shortages.

During the field visit in Siem Reap Province in December 2015, all primary schools visited had some contract teachers. Primary school principals reported that they requested teachers that graduated from district education office but no teachers were available. Moreover, a school principal said in 2015, that the Ministry of Education, Youth and Sport allowed contracted teachers to teach at primary school, but this had not allowed in the last few years. Before 2014, regular teachers were allowed to teach double shifts, but in 2015, MoYES announced they were not going to allow this to continue.

3. Diagnosis of Teacher Education Policy in Cambodian Education

3.1. Poor Attracting Future Teaching Force

3.1.1. Teacher Compensation Level

Why do students choose to become teachers? The reason is that they like teaching activity (58%), followed by valuing education (21%), and having no other alternative career choices (13%) (World Bank, 2008). When students base their decision to become a teacher on the first two reasons, they will become a good teacher after their formal pedagogical training. In contrast, those who become teachers due to no alternative career choice, will exacerbate the problem of poor quality of education. Moreover, students who finished their high school and enter TTCs for their teaching career are often those who graduated with grades D (satisfactory) or E (limited achievement) (80%) and even scored very low in Mathematics. Thus, most teacher trainees are those who did not perform so well at high school.

〈Table 3-6〉 Average Nominal Income in Other Professions in Cambodia, Thailand and Vietnam

Year	Cambodia		Thailand		Vietnam	
	Teachers	Other professionals	Teachers	Other professionals	Teachers	Other professionals
2007	75	139	485	340	-	-
2008	85	152	542	364	-	-
2009	83	139	518	358	148	151
2010	101	177	565	408	151	171
2011	110	184	632	440	167	190

Source: World Bank (2015).

The salary may be one of the key reasons why teaching is not seen as a desirable career. Salary comparison between teachers and other professionals shows that teachers' salary is lower than other professions by around 40% in 2011 and 40.6% in 2007 (<Table 3-6>). In the regional comparison, the salary of other professions is higher than teachers' salary by just 12% in Vietnam, while teachers' salary in Thailand was higher than other professions by around 40% (World Bank, 2015, P.25).

Teachers' salary is the most pressing issue in the Cambodian education system. Korm (2011), in his study on the performance and pay of the civil service in Cambodia, found that pay significantly improves performance of all teachers and

civil servants in Cambodia. At present, teachers are not able to properly support themselves with the salary they receive each month. They need to work a second job such as selling fish on the market on Saturdays and Sundays to earn some extra money to meet their living costs (World Bank, 2008).

Teacher salary is calculated based on the basic salary scale and other incentives and allowances including work experience, functional allowance, pedagogic allowance, placement allowance, special work incentive, family related allowance, and performance incentive, yet teacher salary is still low compared with other professions. In this regard, the government has increased teacher salary 20% annually in the last decade. Table 7 shows that the minimum monthly salary rate of a new teacher at primary, lower secondary and upper secondary level in 2013 was 97\$, 102.6\$, and 140.5\$ respectively (<Table 3-7>).

In addition to their monthly salary, teachers can gain income from other sources such as private tutoring, other forms of informal fees and a second or third job. Approximately 97% of teachers are reported to be giving remedial classes but most of them teach during working hours and around 34% of teachers tutor outside of class. In doing this, teachers will charge from 300-500 Riel (7-10 cents) per hour on average so that a teacher with 16 students can earn additional income of around 60\$ per month (World Bank, 2015, P.77). Students also need to pay other informal fees for their teachers that are not officially required in the classes - including fees for examination worksheets and lesson handouts, etc.

However, another main source of teacher income is their second or third job, and some teachers can even earn more than with their teaching job. Therefore, the increase of teacher salary would be crucial in ensuring that their salary can support their living costs and that they have enough time to focus on their teaching.

<Table 3-7> A Minimum Monthly Salary of a New Teacher by Teaching Level (2013)

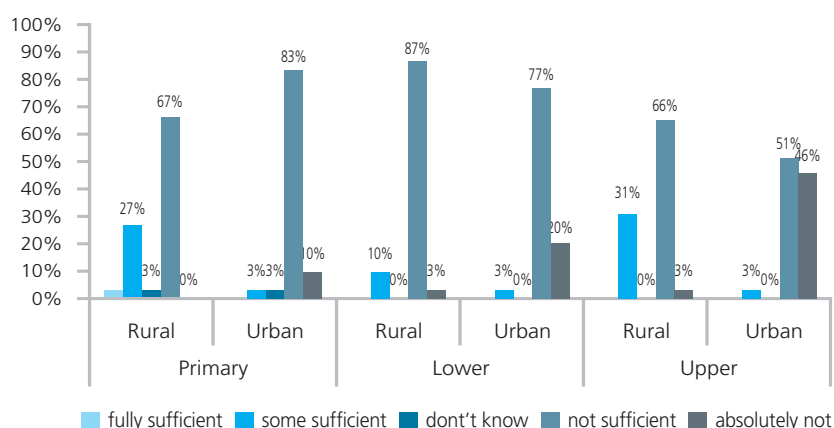
Teaching level	Basic salary index	Basic salary (riel)	Functional allowance	Pedagogic allowance	Other incomes
Primary	C3/14 (with former salary scale)	$150 \times 1520 = 228,000$	60,000	8,000	0
Primary	C3/14 (with updated salary scale from Sep/13)	320,000 (minimum rate*)	60,000	8,000	0
Lower secondary	B3/14 (no revision in 2013)	$220 \times 1520 = 334,400$	66,000	10,000	0
Upper secondary	C3/14 (no revision in 2013)	$315 \times 1520 = 478,800$	71,000	12,000	0

Note: *= minimum rate for pre-primary teachers from September 2013.

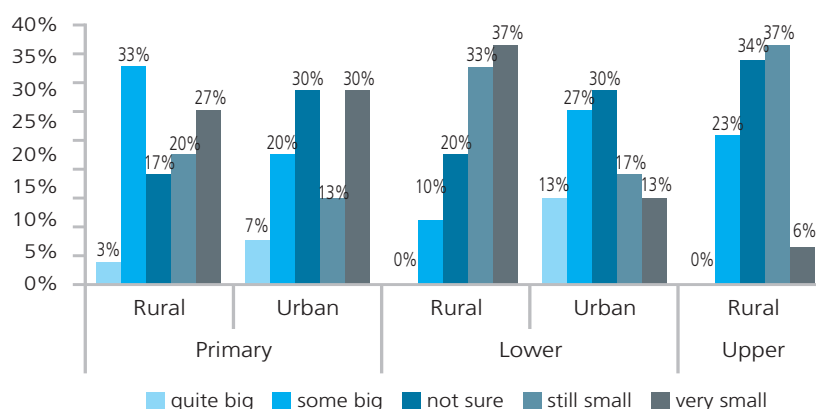
Source: World Bank (2015).

Similar issues of teachers' salary are found in the survey. Teachers' living costs exceed salary and teachers in both the rural and urban areas said the salary was not sufficient to support their family, although with the current salary teachers in the rural area may be able to support their family more effectively than teachers in the urban area, see [Figure 3-24] and [Figure 3-25]. Therefore, teachers need to find a second job and teachers in the urban area appear to earn a higher salary from their second job than their main one.

[Figure 3-24] Teacher: To what extent is your salary from this school sufficient for your monthly living costs?



[Figure 3-25] Teacher: If you earn any other income, how significant is it in comparison with your school salary?



3.1.2. Incentives for Teachers

Monetary and non-monetary incentives are the most important factors to motivate teachers. The report *Assessing Impact of Incentives on Teacher Motivation* in 2012 (page. 63) stated that the higher monetary incentive for teachers, the higher their motivation. For instance, 84% of teachers said that they had commitment and motivation as regards teaching, but the low salary and the unfavorable conditions such as salary deduction and payment delays as well as low prospects for career development are demotivating factors. In addition, non-monetary incentives are also important for teacher motivation in building teacher competences, roles and imbuing spirit.

Teachers' demotivation is another significant problem found in most public schools in Cambodia. According to a report issued by the World Bank and the Ministry of Education, Youth, and Sport (2008), to the limited access to the further professional development for teachers affects the quality of education students receive. Poor leadership across schools along with corruption and nepotism some of the root causes of this demotivation. Lack of a platform to freely express themselves is another factor found in report – teachers feel they cannot speak what's on their mind, and, freedom of expression is limited in their workplace. Geographical isolation and the long rainy season also have a significant effect on both teachers' and students' attendance, especially those who live in rural and remote areas. The roads in these locations become very muddy at this time, and students and teachers find it hard to get to school. In conclusion, the above factors directly or indirectly contribute to students' cognitive development, repeat, and dropout.

3.2. Weak Teacher Training System

3.2.1. Current Teacher Training Centers and their Obstacles

For a combination of historical, geographic and socio-economic reasons, MoEYS has trained teachers using a considerable variety of methods. Since the early 1980s, the period required to complete state-run teacher training has steadily increased: In the beginning only 3 or 4 months of training and then extended to minimum years of formal education plus pedagogical training such as 3+1 (3 years of formal education plus 1 years of pedagogical training), 4+1, 5+3, 7+1, 8+1, 7+3, 10+3, 10+4, 11+1, 12+1, 12+2 up to BA+1.

There are four different types for teacher training in Table 8, including: (i) One Pre-School Teacher Training College (PSTTC), providing training for pre-school teachers, (ii) Eighteen Provincial Teacher Training Colleges (PTTCs), providing training for primary school teachers, (iii) Six Regional TTCs (RTTCs), providing training for

lower-secondary school teachers and, (iv) the National Institute of Education (NIE), providing training for upper-secondary school teachers.

〈Table 3-8〉 Training Formulation at TTCs

TTCs	Period of Training	TTCs	Period of Training
PSTTC	12+2* or 9+2**	RTTCs	12+2
PTTCs	12+2 or 9+2	NIE	Bachelor+1

Note: * "12+2" means 12 years of formal education plus 2 years of pedagogical training TTCs

** "9+2" means 9 years of formal education plus 2 years of pedagogical training TTCs

Source: World Bank (2015).

The teacher training system has trained a total of 111 batches or approximately 102,000 teachers. According to EMIS, 2004, 69% of primary school teachers finished grade 9, 7% had completed their primary education, and 24% had finished grade 12. In contrast, 44% of secondary teachers had finished upper-secondary education (grade 12) while another 18% held a post-secondary degree. Not all teachers receive pre-service training before they start their teaching career, although 78 % of primary school teacher had gone through the two-year pre-service training, and 97% of lower secondary teachers had secured their pre-service qualifications.

By 2020, the MoEYS' ambition is to ensure as many Basic Education teachers as possible reaching new standard of BA+1 and MA+1 for Senior Level teachers. Currently, it is estimated that more than 75,000 teachers have qualifications below BA equivalency (EMIS, 2013). At present, the increase of BA holders in the teaching profession is slightly more than 2% annually, meaning that, without a bold policy intervention, the number of teachers with a BA qualification by 2020 will only stand at 28%. Thus, one of the most urgent tasks for pre-service and in-service provision is to ensure opportunities for as many teachers as possible to reach the new BA equivalency.

In brief, Cambodia does not have sufficient fully qualified teachers across all teaching levels and its educational system faces problems such as a mismatch in demand and supply.

Due to the shortage of teachers in some areas of the country and to respond to the demands of teachers in those areas, training formulations have been set out differently in each training center. For instance, the 12+2 formulation is applied for training teachers teaching in lowland provinces, whereas the 9+2 is applied for training teachers teaching in more remote and disadvantaged provinces.

Based on the survey conducted by World Bank in 2015 in three RTTCs of 301 trainees and seven PTTCs of 651 trainees studying in year 2 in the studying formula of 9+2 and 12+2, some key issues facing in TTCs have been found.

The Ministry of Education Youth and Sport uses Teacher Standard as a guideline for teaching competence, but fewer than 10% of trainees at RTTC and 22% of trainees at PTTCs fit the standard, and only 5% of trainees at RTTC and 14% at PTTCs have a written copy of the standard (Work Bank, 2015, P.48). Thus, the teacher standard has not contributed towards teacher preparation.

Trainers in PTTCs and RTTCs were asked about their opinion on the major constraints in teaching trainees, of which lack of teaching material and adequate preparation of trainees before training are considered most significant. A total of 36% of trainers in RTTC rated lack of teaching materials as being the most problematical, and 20% of trainers in RTTC rated the lack of sufficient preparation of trainees before training. However, the PTTC does not consider these problems to be significant. In contrast, PTTC considers lack of laboratory facilities (21%) and available time for providing training (13.9%) are the top two major constraints in their experience (Work Bank, 2015, P.54).

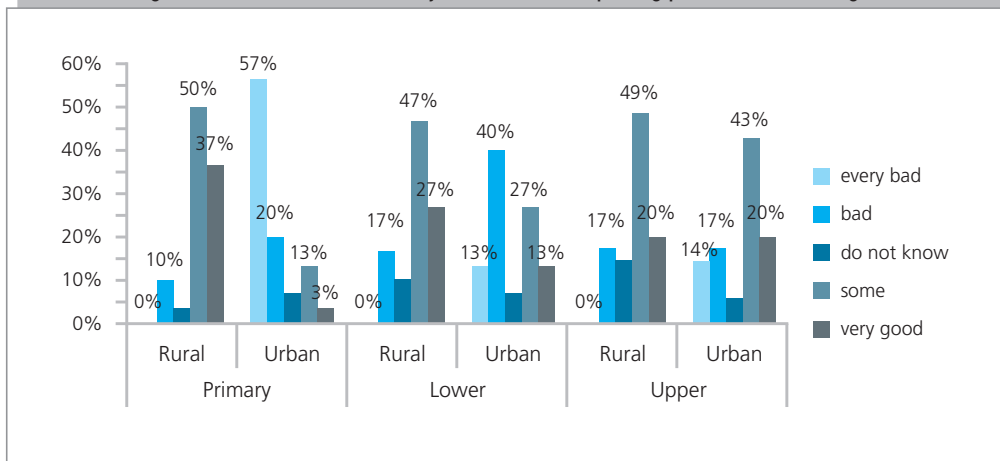
3.2.2. Shortage of TTCs

When asking teachers regarding the opening of private TTCs, significantly higher numbers of teachers in the rural area agreed with opening private TTCs because they thought that this would provide them the opportunity to expand their skills no such opportunity is available in their province. If they want to receive additional training they need to travel to another province, and thus do not have convenient access to public TTCs. In contrast, while teachers in the urban area have differing opinions about opening private TTCs, the majority felt this is a bad idea ([Figure 3-26]).

If comparing between school levels in the urban area, more teachers at upper-secondary school level agreed with the idea of opening private TTCs than teachers in primary and lower-secondary schools. Teachers in upper-secondary schools thought that such centers would entice more competitive teachers to teach in both private and public schools. In addition, teachers in upper-secondary schools hoped that opening teacher-training centers would provide greater opportunity for them to teach in such organizations.

In short, there is a higher demand among teachers for opening private TTCs in the rural area than the urban area. However, teachers in urban areas appear worried about the quality of service potentially provided by private TTCs.

[Figure 3-26] Teacher: How do you think about opening private TTCs/colleges?



3.2.3. Teacher Applicants' Quality

More highly educated teachers will be a primary factor in improving student achievement and performance. The World Bank (2008) stressed that better student performance is associated with the level of teacher degree. This means that if a teacher is highly educated and holds higher degree, students appear to have more success in school.

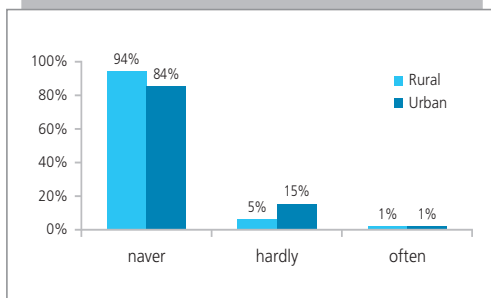
As mentioned above, most applicants applying for TTCs have grade E. There are various reasons for this. Most universities in Cambodia exclude high school students graduating with grade E for applying for scholarship and only candidates with grades A to D are eligible to apply for both public and private universities while students with grade E are eligible to apply for TTCs. In addition, the announcement date for teacher selection is later than other universities. It might therefore be that students who are not accepted by universities will apply for TTCs as their last choice. A further reason may be that students who took their entrance exam at TTCs said the entrance exam selection was every easy and only the completion of two-year training was difficult (World Bank, 2015, P.37). Therefore, it is not the priority choice for high school students, and only students who failed in applying for other courses might choose the teaching course for primary and middle schools.

3.3. Low Motivation for Teachers

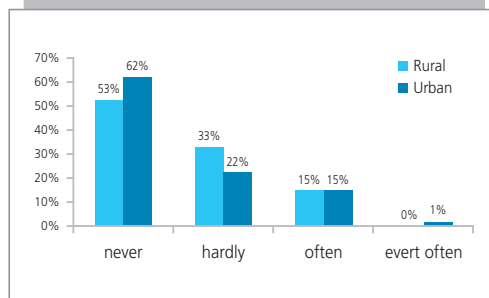
3.3.1. Teaching Aids for Teaching-Learning Efficacy

Teacher competency is every important for students' learning outcome. However, some other issues are reported such as shortages of textbooks and lack of teaching aids such as computers, the internet and reference books, which are very important in modern teaching methodology. Both students in rural and urban areas say they rarely use a smartphone or computer to find information for their studies and most families in urban and rural areas were reported they did not even have smartphone or internet access to search information at home ([Figure 3-27] and [Figure 3-28]). This shortage of teaching materials and the difficulties in comprehending words in science/mathematics as well as the lack of laboratories are the main obstacles for teaching students science/mathematics effectively.

[Figure 3-27] Parent: Do you know if your child has ever participated in laboratory experiments in science class?



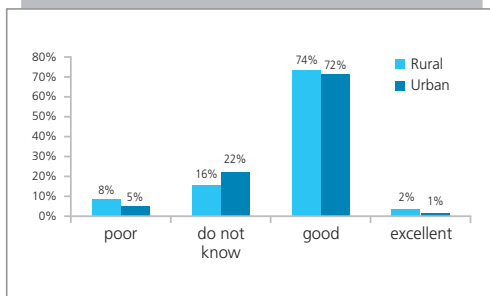
[Figure 3-28] Student: How many times have you participated in laboratory experiments in science class?



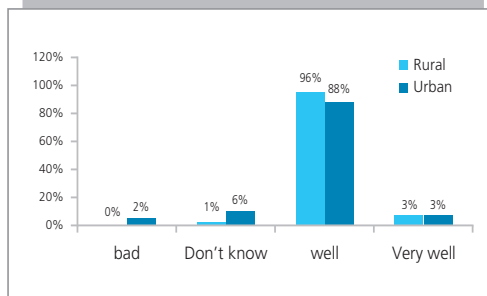
3.3.2. Teacher Evaluation and Professional Support

Most teachers are evaluated through an official evaluation form at least every one to two years, but the majority of teachers in urban areas are evaluated more often than those in rural and remote areas. Even though a teacher evaluation system is available, this evaluation has little relation to the evaluation of teacher performance, teacher competencies or student outcomes. The main content of the current teacher evaluation form focuses on the value of the government's civil servants, such as "working for the national benefit" and "solidarity". In short, most teachers are familiar with the teacher evaluation form but the evaluation has contributed very little towards improving teaching outcomes for teachers and learning outcomes for students (Work Bank, 2015, P.82).

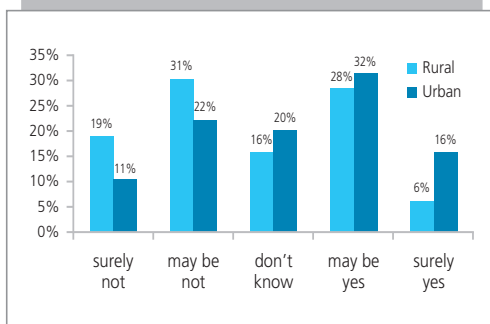
[Figure 3-29] Parent: Do you think your child can do very well in school?



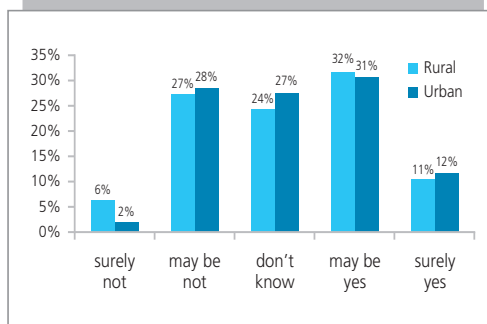
[Figure 3-30] Student: Does your teacher teach well?



[Figure 3-31] Student: Do you agree that private tutors teach better than schoolteachers?



[Figure 3-32] Parent: Do you agree that private tutors teach better than schoolteachers?



However, results from the survey found that students are generally satisfied with teacher performance. More students in rural areas thought that teachers teach them well than was the case in urban areas. Both students and parents like what is being taught in schools in both rural and urban areas ([Figure 3-29] and [Figure 3-30]). In addition, both students and parents are satisfied with the results from the teaching in schools. However, 70-80% of students are also taking private tuition to expand their knowledge, and students in urban evaluate private tutors slightly better than public teachers ([Figure 3-31] and [Figure 3-32]).

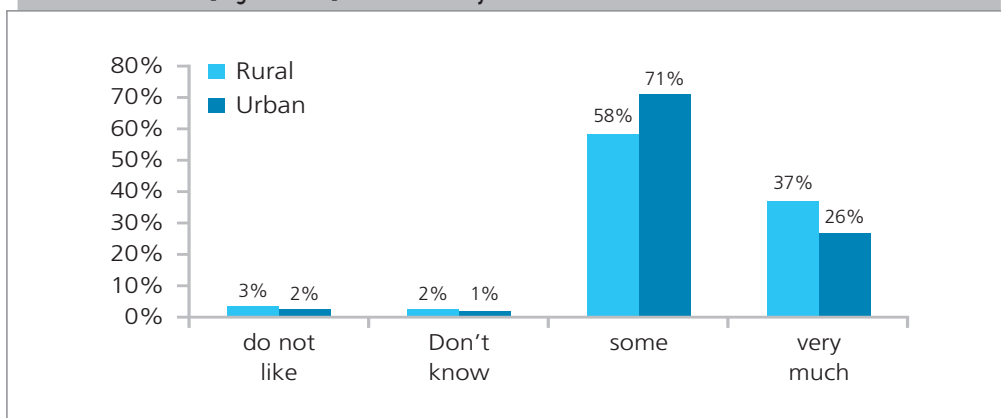
3.3.3. Level of Teacher Respect

A few questions relating to students, parents, and opinions of teachers were asked to reveal the levels of respect to which teachers are held. Data from the survey showed that most students, parents and society at large in both rural and urban areas respected teachers, but teachers in rural areas are more respected than their urban peers. When parents were asked “does your child like their schoolteacher?” more students in rural area like their teachers than do students in urban area, see

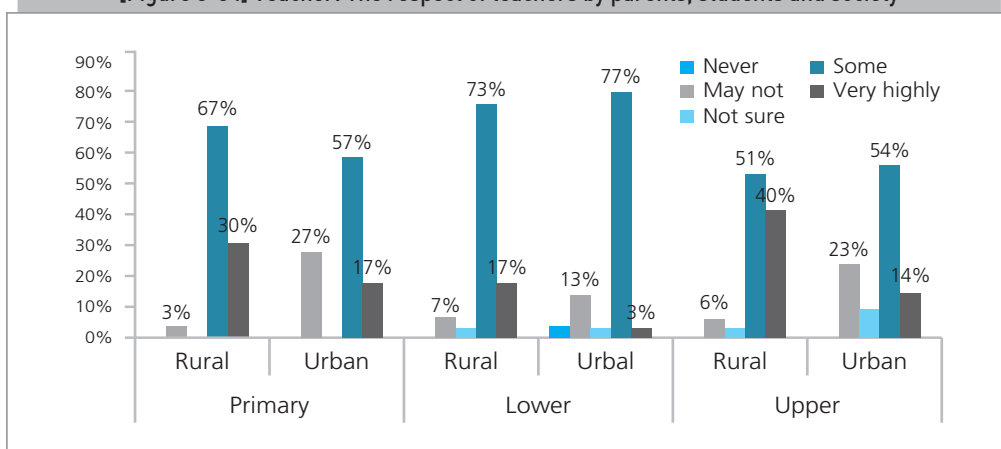
[Figure 3-33]. A related question, “Are you respected by students, parents and society” was asked to teachers at primary and secondary schools.

Teachers in primary and lower-secondary school in rural areas feel better respected than those in the urban area, although there is no difference between rural and urban area for teachers in upper-secondary schools ([Figure 3-34]). The different means testing indicates that teachers in rural areas are better respected than teacher in the urban area.

[Figure 3-33] Parent: Does your child like the schoolteacher?



[Figure 3-34] Teacher: The respect of teachers by parents, students and society



In short, students, parents and society generally respect teachers. Both students and parents like what their teachers are teaching in schools in both the rural and urban areas. In addition, both students and parents appear satisfied with what

teachers are teaching at school, yet teachers in rural area thought that teachers there teach better than teachers in the urban area.

4. Contextualizing Korean Experiences into Cambodian Teacher Education Policy

4.1. Current Responding Teacher Education Policies in Cambodia

4.1.1. Teacher Policy Action Plan (TPAP)

Policy issues related to teaching reviewed and analyzed in the previous chapter (III) can be regrouped into four main areas, namely attracting, training, motivation and retention. From the status review, Cambodian teacher issues can be restated and summarized as following:

“Cambodian education meets the big challenge of low performance indicated by such salient indicators as low enrolment in secondary education and high dropout. Lack of good and adequate numbers of teachers must be the reasons behind this poor performance. Therefore, Cambodian education should make efforts to retain the good teaching force. However, the low attracting power as well as an insufficient training and motivation system are also interrelated, preventing Cambodia from transcending these problems. Accordingly, the four dimensions of teacher policy, namely, attracting, training, motivating and retaining should be comprehensively and systematically inter-designed for the most effective system of education.”

Responding the teacher issues, the 2015 Teacher Policy Action Plan (TPAP), elaborated from the 2013 Teacher Policy, was adopted by the MoEYS in order to comprehensively address the issue of improving the quality of teachers by linking a range of strategies to the powerful incentive of a significant increase in income and social status. Its vision, goal, objectives and nine strategies are as following:

Vision: To develop teachers with the knowledge, skill, moral and professional competencies recognized by society.

Goal: To develop teachers with the quality, competencies and accountability in line with their professional code of conduct as well as providing fostering conditions to fulfill their profession effectively.

Objectives:

- To attract and motivate competent personnel into the teaching profession
- To ensure quality of pre-service teacher training
- To ensure regular professional development and in-service training for teachers
- To ensure the conditions necessary for teachers to fulfill their professional activity effectively and efficiently

Nine Strategies:

1. developing legislative instruments and mechanisms
2. attracting competent individuals into teaching
3. defining the standards of the teacher-training system
4. developing TTCs
5. rationalizing teachers to meet the needs of educational institutions
6. provision of in-service training and professional development for teachers
7. teachers motivated and retained in the system
8. strengthening effectiveness of school leadership
9. strengthening teacher monitoring and evaluation mechanism/systems

This reform has resulted in a period of fundamental change, with the entire teaching service being subject to new rules and regulations governing teaching conditions. Minister Naron of MoEYS re-categorized the above nine into seven areas and elaborated some substantial policy options:¹⁾

4.1.1.1. Attracting Competent Individuals into Teaching Profession

- Provide financial and social benefits to teachers by improving the remuneration system, salaries, and other financial and social benefits.
- Diversify entry points into the teaching profession (allowing the Bachelor degree holders from both public and private higher education institutes (HEIs) to obtain a teaching license)
- Provide accelerated training for the existing 12+2 teachers to be upgraded to BA holders
- Make TTC entry requirement more selective (National Competition stops applying provincial ranking)
- Candidates scoring Grade A, B, C on the Grade 12 national exam are automatically admitted to TTCs
- Revised TTC Entry Examinations: (i) Ensure exams in line with Law, Justice, Transparency, and Accountability, (ii) Written test, (iii) Face-to-face interview for shortlisted candidates, (iv) Raise upper age limit, and (v) Monitor the training).

1) Source: Hang Chuon Naron, Minister of the Ministry of Education, Youth and Sport, Slide Presentation on Vision of Education Reform in Cambodia, 2015.

4.1.1.2. Teacher Training

- Revise PRESET curriculum across all levels by creating B.Ed. (12+4) PRESET curriculum for Grade 12 graduates to become Basic Education teachers in RTTCs focusing on Psycho-pedagogy, ICT, methodology, foreign languages, mathematics and the sciences
- Creating MA+1 PRESET for MA holders to become upper-secondary teachers in NIE.
- Piloting B.Ed. (12+4) PRESET at two RTTCs
- Improve the teacher induction process to be more effective.
- Develop the infrastructure of the TTCs
- Transform TTCs into centers for teacher development
- Increase (professional) qualifications and experience of educational personnel at centers to at least MA standard.

4.1.1.3. Teacher Management

- Modernize teacher planning supply and demand by integrated all data sources (EMIS, HRMIS, HEMIS, NFEMIS, FMIS)
- Strengthen teacher utilization based on staffing norms and principles to improve the implementation of teacher deployment
- Improve the process and procedure of teacher recruitment/selection and the retention of outstanding teachers
- Delegate the recruitment and management of teachers
- Involving SSC members and stakeholders to actively participate in decision making over teachers and school matters (recruitment, awards, sanctions, local life skills, transfers, discipline, evaluation, public reforms, meetings, students' voice, assessment of their local services, etc.)

4.1.1.4. Professional Development for Teachers

- Cultivate a culture of lifelong learning and sharing the experiences with educational network groups and upgrade teacher's qualification to BA through three six-week training programs.
- INSET Development and Implementation (Strengthen the knowledge of teachers teaching grades 9 to 12 on the prioritized subjects of Khmer, math, history and sciences)
- Create a comprehensive regular INSET system with three types of training: (a) On-site INSET, (b) Irregular INSET based on the need of MoEYS and, (c) Regular INSET with appropriate system and program.
- Upgrade teacher trainers' qualifications to at least MA standard to meet the market demand and to be respected and given value by society.

4.1.1.5. Teachers Motivated and Retained in the System

- Improve conducive working environments and living conditions of teachers through the provision of salary, remuneration/compensation, social welfare, general benefits and retirement benefits, particularly for female teachers and those who work in remote and disadvantaged areas (including salary, family allowance, study health insurance, life insurance, loan/credit schemes, subsidized housing, overtime teaching, pension benefits etc.)
- Provide more teaching/learning materials, equipment/tools and research references to teachers
- Provide more facilities to improve working conditions of teachers in rural and remote schools (sanitation, teacher housing)
- Provide recognition and rewards to outstanding teachers (to remain in the system)
- Create Teacher Cup (achievements and experiences) to share best lessons on each core subjects including retired teachers.
- Set up teacher career pathway.
- Develop a regular support network such as Study Clubs/Professional Associations by subjects for technical support, conducting research, organizing conferences, and publishing achievements and best experiences.

4.1.1.6. Strengthening School Leadership

- Develop School Director Standard, School Management Handbook
- Train school directors based on School Director Standard with priority given to women
- Create School Director Association/Council; and establish mechanism to support school directors.
- Protect and promote rights of teachers to ensure that all teachers receive equal justice through transparent school management.

4.1.1.7. Strengthening Teacher Monitoring and Evaluation System

- Improve the effective teacher management information system
- Creating a monitoring and evaluation mechanism for all teachers which is based on Teacher Professional Standards, staffing norms, teacher qualifications, and Teacher Career Pathway;
- Strengthen on-site monitoring through inspection and provide the rights to school directors to monitor and give feedback to teachers.
- Improve scope and capacity of inspections, collect feedback from teachers for improving education-related policies (conduct annual survey to track teachers' opinions on recent policy reforms, working conditions, incentive schemes).

- Define the rights of school board of directors of public education establishments in making decisions over the management and organizational development.

As suggested in this study, the above strategies need to be regrouped into four major areas of attracting, training, motivating and retaining. The issue of retaining is the combined outcome of the above issues, which can broadly be defined as the lack of the teaching force needed for creating a desirable standard of education. An inefficient retaining policy results in the lack of teaching force in both terms of quantity, such as high PTR, and quality, such as low qualifications. In fact, the retaining policy depends very much on the potential attracting power to the future teaching force and resolving the poor teacher training system. Even though a good number of teachers have entered into the system, they cannot be retained unless proper motivating schemes come together.

Now TPAP needs to be examined in regard to whether it addresses fully the identified problems and tasks of Cambodian education and teacher issues. If yes, they must be retained for implementation, and if not, new proposals must be supplemented, which is the purpose of this report.

4.1.2. Supplementing Needs for TPAP

〈Table 3-9〉 Comparative Analysis of TRAP's Responses to Teacher Issues in Cambodia

Issue area	Realities by indicators	Responding Policies in TPAP
Inefficient Retaining and Lack of teaching force	• High PTR(Pupil-Teacher Ratio) • Mismatch between teacher demand and supply • Teacher placement and shortage in rural areas • Contract teacher option	• Responding in general • Not yet a sophisticated and systematic enough approach other than providing a general direction for modernizing management • Not yet sophisticated and systematic enough an approach
Weak Training	• TTCs • Teacher applicants' quality and selection	• Improving capacity of TTCs, but not showing adequate results as yet • New announcement states that students with grades A, B, C will automatically receive admission to study for two years at a Provincial Teacher Training Center or Regional Teacher Training Center without taking entrance exam. • As the result of new selection criteria, 1500 students with grades B and C have been offered school admission to study at PTTCs and RTTCs.

〈Table 3-9〉 Continued

Issue area	Realities by indicators	Responding Policies in TPAP
Poor Attracting	Teacher's salary	- From 2016, teacher salary at all teaching levels is to be increased. - Primary school teachers will receive at least 200\$ per month. Lower secondary teacher will receive around 250\$ per month and upper-secondary teacher will receive at least 300\$ per month.
Motivating teachers	- Teacher Evaluation and professional support - Teacher Respect - Teacher support for Teaching-learning efficacy	- No new responding policies. - Team members in Teacher Policy for Action Plan (TPAP) are conducting two studies relating to teacher career path development and performance-based rewards for teachers in Cambodia. - School leadership-based teacher monitoring and evaluation - No new responding policies. - No new responding policies

Note: TPAP is the Teacher Policy Action Plan prepared by MOEYS in 2015.

Source: MOEYS (2015).

4.2. Korean Experiences of Teacher Education Policy

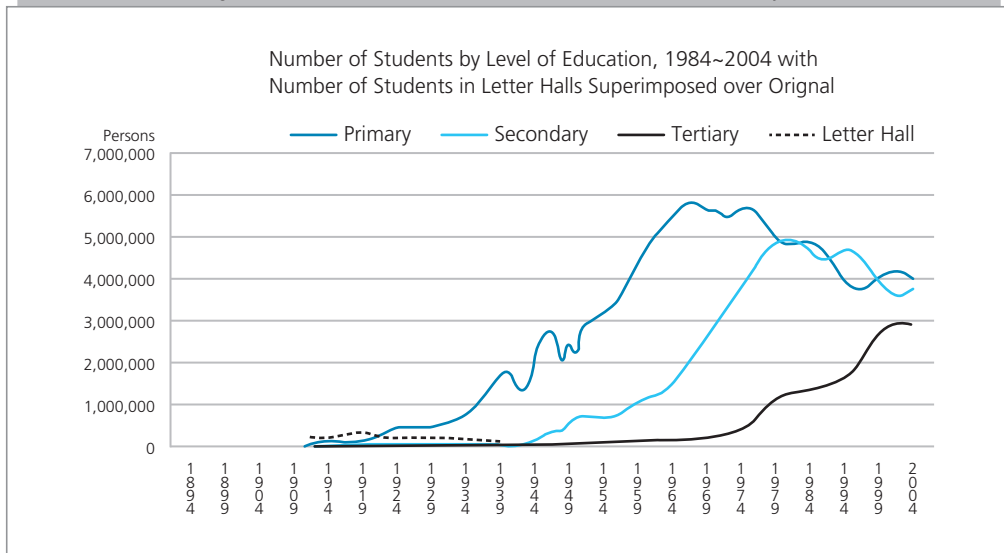
4.2.1. General Background

Korea was identical to Cambodia in every sense of teacher shortages in the beginning, but is quite different these days. Therefore, it is natural to ask, how did the country overcome this? It is quite true that there are no scientific investigations and answers which can be considered completely relevant and easily transposed to current Cambodian problems.. However, Cambodian TPAP must be considered as one of the best policy proposals toward this goal. Nonetheless, one facet is not there, the unique path the Korean nation has taken. Before considering the differences between the two countries, it is first to consider the initial similarities.

Needless to say, there were initially severe shortages in the teaching force. Right after the liberation from Japanese colonial rule, Korea faced a serious shortage of teachers who could teach in Korean. As clearly shown in the two pictures below, educational expansion and development in terms of number of students from the literacy classes to higher education was dramatic during the last one hundred years, particularly the miraculous surge in the period just after the liberation from 1945 to 1964 in the primary level, followed sequentially by secondary and tertiary. The illiteracy rate was reported in to be 1945 was over 75% and the enrolment rate in

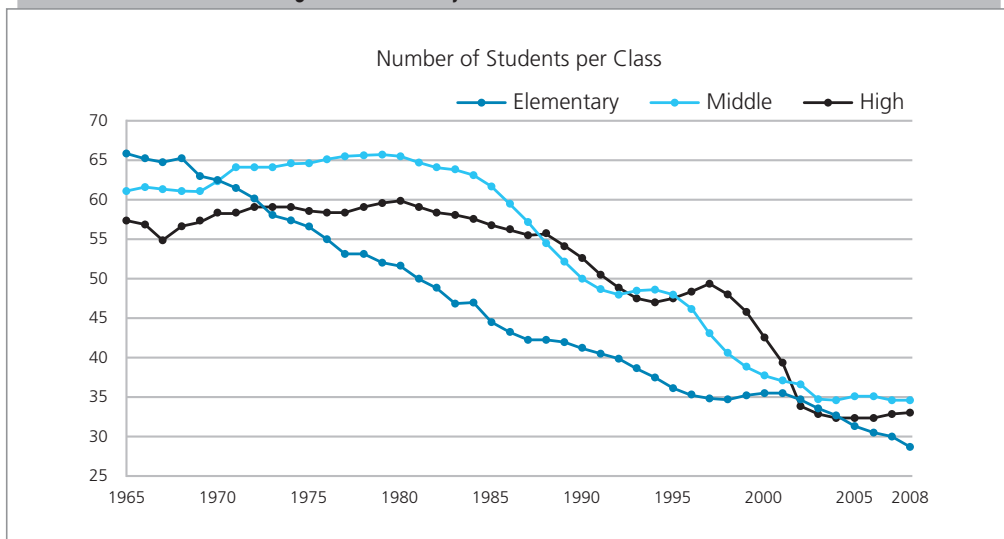
primary school only around 25%. However, the literacy rate climbed to 75% and enrolment rate up to 90% in 1955 just ten years later. This was even despite the Koran War, when over 10% (about 2 million) soldiers and civilians were killed.

[Figure 3-35] Drastic Growth of Korean Education over 100 years



Source: KS. Kim (2016).

[Figure 3-36] Heavy Burdens of Korean Teachers



Source: Ministry of Education (S.Korea). Statistical Year Books, 1965-2008 (2009).

How was it then possible to have made the miracle of Korean education happen? What kind of policies for attracting, training, motivating and retaining teachers were there in this period? There were, in fact, not such specific tools as might be expected. As seen in the Fig.2, Korean elementary school teachers taught over 65 students per classroom on average in the beginning, and was estimated to be over 90 in urban areas, which clearly evidences the severe shortage of teachers.

This shortage lasted until 1990s, which would suggest that teacher shortages are ubiquitous at the early stages of developing national education. Therefore, a certain kind of alternative thinking is necessary in order to find a solution.

4.2.2. Some Basic Information of Korean Teacher Policy

4.2.2.1. Training

The teacher training system in Korea was started by a total transformation from the vestiges of Japanese colonial rule to an American-influenced model. Emergent needs for primary school teachers from normal schools at the upper-secondary level were established, including the admission of middle school graduates. For secondary school teachers, two-year normal colleges opened in the beginning and later developed into four-year colleges in the 1960s. Primary school teacher training, however, took a little longer time to upgrade into four-year colleges in the 1980s.

It is worth noting that teacher shortages had been the most important factor from the outset, and were never fully supported by those normal schools and colleges. Contingent responses had therefore been periodically employed to complement this shortage through numerous temporary and supplementary training systems. In fact, normal colleges and universities functioning as the exclusive and closed suppliers have now been set up as the exclusive backbone of the teacher training system in Korea, although significant numbers of secondary school teachers are still trained by the affiliated training courses in these ordinary university departments together with the schools of graduate education. This suggests that primary school teachers were more prioritized and supplied as the very basic educational standard by the public and state controlled teacher-training system, while secondary school teachers were supplemented by a non-public and open system. One distinct element in Korea from this perspective was the active and even influential participation by private teacher-training institutions specifically for secondary school teachers. Private universities have been authorized to operate teachers' colleges since 1965 and university graduates from there who majored in certain industries also received the opportunity to become teachers.

Teacher training for vocational and technical education was also very much

reinforced. In the beginning, many agricultural high schools opened in rural areas and colleges of agriculture supplied their teachers. During the industrialization period of the 1970s and 1980s, the one special technical teacher college opened in Chungnam National University provided several thousand technical teachers a year. This shows Korean government dealt with the teaching force demand in a very practical manner, opening teacher training program in any form necessary (Hong, 2015).

4.2.2.2. Attracting and Motivation

Job securities and status including salary and pension have been very strongly reinforced since the first enactment of education law, specifically by The Education Law enacted in 1949 and the Public Educational Official Act in 1953.

The teaching profession has been firmly legalized and institutionalized regarding working conditions in a way that has been absolutely independent from that of other public officials. As public officials, they are guaranteed their personnel status, and retain tenured job security until the retirement age of 62, reduced since 1998 from 65. This tenure is completely secured from any unfair enforcement of law. The status of teacher as public officials has contributed to job security, which eventually became the supporting organ for sustainable teacher placement of rural and remote schools. The continual supply of teachers, even for islands or other isolated areas, was also hugely influential on universal education.

This is also a result of the teacher staffing and incentive policy having been applied to private schools not too long after the public ones. In fact, the motivation and incentive system between public and private school teachers is now identical.

However, there is one very distinct condition to have been endured by Korean schoolteachers, that is the overcrowded classroom - the so-called 'bean sprouts classroom'. They had to manage two or three shifts of such classes every day. Even worse, the salary was not initially so competitive either. According to a survey performed by the Korean Federation of Education Associations (KFEA) in the early 1960s, the salary of elementary school teachers KRW 6,220(around US\$22) was only around half that of their required monthly expenditure in Seoul, of about KRW 12,270. The salaries for middle school teachers, KRW 7,690 (US\$ 27) and for high school ones, KRW 8,860 (US\$ 32), also forced them to run into debt every month. This matter was concern a great concern, not only to teachers but also to policy-makers (Central Educational Research Institute, 1965; Chai, 1966).²⁾

2) Central Education Research Institute, Korean Education and Foreign Assistance Programs. September 1965, Seoul; Korea. This report was prepared to the seminar in which domestic and foreign scholars and experts participated in discussing the current issues and policy recommendations concerning educational development in Korea. This material introduced several critical debating issues, which laid

The rapid economic growth created more well-paid jobs in private sectors, and many teachers left the profession for other jobs, notwithstanding the increase of teaching certificate holders. The turnover rate was as high as 7.0% for elementary schools, 10.8% for middle schools, and 10.3% for vocational high schools in 1970,³⁾ and these trends lasted until the late 1970s. However, economic growth also helped the Korean government by providing better incentives for teachers. The government continuously raised the salary for public officials as well as teachers to balance rising price levels. The salary of elementary school teachers was raised and paid at the equivalent rate to secondary ones from 1985.

The Korean Federation of Education Associations (KFEA)⁴⁾ have joined with Korean society to appeal for improving teachers' working conditions since its foundation in 1947. The Special Act on the Improvement of Teachers' Status in 1991⁵⁾ is also one such endeavor.

4.2.2.3. Current Issues and Implications

While Korea achieved its miraculous and nation-building educational development based on successful government policy, the current task of transforming toward a knowledge-based global society is a major challenge for more educational policy. Even though many bright students are still joining to the teaching force, their social status and self-belief are not high as might be desired. The government has therefore addressed many new policies to revitalize the passion of teachers. Numerous social demands of rapidly changing societies ask more from teachers and schools, which cannot be achieved without changes to rigid outdated systems. The systems established during the industrialization period are not suitable for teachers to manifest their talents and professionalism in the modern digital age. The results of an international survey show that Korea teachers had an average level of job satisfaction but ranked the lowest in terms of self-belief, as can be understood in this context [OECD, 2009; 2014⁶⁾].

the foundation of the educational structure of Korea.

Chung, Tai-si, Problems Facing the Enhancement of the Status of Teachers in Korea. *Korea Journal*, Vol. 6, No. 7, July 1966, pp.13-17.

3) Lee, C. J., Education in the Republic of Korea: Approaches, Achievements, and Current Challenges. In Fredriksen and Tan edited, *An African Exploration of the East Asian Education Experience*. World Bank Press, Chapter 5, 2008, pp.155-217.

This book chapter gives a comprehensive overview of Korean educational development. It explains how Korea rapidly expanded its educational opportunities for the people, and also how vocational education has been developed corresponding to economic growth.

4) The KFEA was organized in 1947 to promote the economic, social, academic and professional status of those who are engaged in the teaching profession through strengthening its nature as a professional body rather than by adopting union methods.

5) It is translated in English at the following website: <http://www.law.go.kr/main.html>

6) <http://www.oecd.org/edu/school/talis-2013-results.htm>

This suggests that there is never one sustainable model. There must be a process of continual change even with such a successful policy. Teaching policy in Korea has been extraordinary many times, but never all of the time. Cambodia should therefore learn carefully, even from Korea.

4.2.3. What Cambodia Can Learn from Korea

4.2.3.1. First Glance

The critical factor of Korean teacher policy lies in the personnel status of teachers as public officials, of which the government must control the numbers, remuneration, discipline, and promotion. In addition, the purpose-oriented closed training system of prospective teachers has consolidated the unique culture of the teaching profession in Korea. With the acknowledgement of these characteristics, one can find some implications from Korean experience as follows.

A. Controls on the Quantitative Expansion of Teachers: The government has strategically controlled the quantitative increase of teachers. At the initial stage, the government focused more on elementary schools by recruiting more teachers for them, and later recruited more teachers for middle schools, then high schools. The increase of teachers by school levels was closely related with the sequential expansion of education in Korea. It was also interwoven with the personnel status of teachers as public officials of the central government. Their numbers and salaries were carefully controlled by the related ministries of finance and civil services as well for the soundness of public finance. The education ministry still has to undergo ongoing negotiation with these ministries for more teachers and higher salaries every year. This structural control has regulated the numbers of teachers to avoid a surge in applicants, and prompted the educational ministry to choose between the class size and pay of teachers. The government has chosen to keep the salary of teachers at a certain level, forsaking greater numbers of teachers, especially for secondary schools. The strategic approach of ‘larger class size but high pay’ contributed to the development of teaching profession to some extent [Han, 2001⁷⁾; UNESCO, 2009].

B. Institutionalization by Law: All the major systems concerning teacher policy have been institutionalized by the laws, decrees, and regulations, guaranteeing the continuity and stability of the policies. This institutionalization could be bolstered by the coordination and support from other ministries and the congress. The Public Educational Officials Act (1953) is the exemplary legislation in this regard. This includes the qualification of teachers, recruitment and promotion, remuneration,

7) Han, Y., 한국의 교원 보수 정책 평가 (The policies and structures of teacher salaries in Korea: A review). 교육 재정경제연구 [The Journal of Economics and Finance of Education], Vol. 10, No. 2, 2001, pp 271-298. (In Korean.)

training, status and disciplinary actions, and many other aspects. Based upon this basic law, the ministry can prepare more detailed decrees and regulations regarding each sector. However, this system has mandated strong control to the ministry of the central government, inhibiting the flexibility of local educational authorities and schools to some extent. However, the legal system has controlled the basic quality of teachers and protected their rights as custodians of the teaching profession.

4.2.3.2. Deep Learning

There have been many success stories for Korean education and its teachers' contribution. However, they can be not always be applied to other countries, one of the most difficult to transpose must be the cultural and historic conditions that created the 'Korean education fever' - the high demand for education - together with the great 'hangul (Korean alphabet)' as the extraordinary tool of teaching and learning. The second concerns financial resources - which is a universal factor for every country, and no exception for Korea at the outset. Therefore, it the first question must be how different Cambodia is from Korea before asking whether Cambodia can apply any Korean model. However, the empirical facts in this story show almost the same conditions for Cambodian education today as the Korean education of yesteryear: the high demand for education and the limited financial resources, though one difference between Hangul and Khmer characters. Therefore, one hypothesis can be postulated for Cambodia's development of education: that is, making the best use of education demand for overcoming financial limitations and finding a supplementary tool of teaching and learning for Khmer literacy. Now it is time to look into the deeper story of Korean education and teacher policy.

A. Education as the Self-Growing Sector: Primarily, it was the birth story of the education sector as one of the most prosperous industries during a low stage of economic development. The drastic growth of the educational population in terms of numbers of students, teachers and schools is by itself the evidence and indicator of economic growth. The Korean education sector was the market leader in creating the vast employment needs and labor market of the teaching force. Korean people invested only in education since there is no other choice. However, private education capital answered for the demand and participated in creating a new type of industry, education, which eventually created the teacher labor market and attracted the enormous future teaching force.

B. Exclusive Priority for Education Financing: The second story is about the maximum utilization of financial resources for education sector. This was a confluence of two major factors, the first of which is the entire autonomy and independence of education authorities from other political and administrative powers, especially in local education governance. Since liberation in 1945, one

of the most important and enforced policies has been the full autonomy of local education authorities, which was primarily copied from the American style of school district systems. Although the outcomes have not always followed through the original idea, generally the local autonomy of education has contributed towards educational growth. Local governors of education could have utilized the money exclusively to support students and teachers without any interference from local governors or politicians in the local jurisdiction. The other scheme is the firm and solid principle of financial resources towards the equal opportunity of education. Equality of opportunity has been the supreme principle of educational policy in Korea. The first priority of educational financing has been to the disadvantaged: elementary education first, rural schools first and girl students first. Once elementary education was completed, then secondary and tertiary education followed; once rural schools opened, then so did more urban ones; and with girls again at the fore, then education for all is achieved in the real sense.

C. Education Sector Tuned with Teachers: Teacher policy has worked in close harmony with these two stories. First, all education money was prioritized into teaching policy such as salary, teaching aids, training and so on. It was inevitable that this would happen because local education autonomy has been supposed to solely serve the educational sector, the teaching policy of which has naturally been given the benefit in the sense of priority. Second, teachers who worked in elementary and rural schools were given the first share from the least limited amount of money. *One school policy per town* was completed within ten years since the start, and significant financial resources were mobilized from various sources including town people when the public or government money was not enough at all for building a school in the town. Teachers were appointed and sent first to schools in isolated islands and mountain villages even if there was only one student to a school. Korean teachers were supposed to do their best to pursue the equal treatment of education for every student and the girls in rural elementary schools were the first target, even though they were the most difficult target to reach.

D. Hidden Factor in Retaining Teachers Despite Difficulties: Korean teachers in the 1950s to the 1970s, however, endured poor working conditions. There were numerous newspaper reports about the living difficulties of schoolteachers in both rural and urban schools. Almost 80% of monthly compensation came from parental support since government expenditure was barely developed in both its regulatory and symbolic aspects. The question is how they could have endured the poor conditions and have been retained? One answer must be the cultural and historical heritage of social respect for teachers. However, this alone would not have been sufficient for them to stay. Another factor might have been the fact of lack of employment opportunities outside teaching. This is quite true and applicable to many developing countries like Cambodia, and social respect must remain the

most important social capital for teacher policy. Another factor unique to Korea is explained by the relative easiness or effectiveness of their teaching practice in the school. The *hangul* as the instructional medium and *hangul* textbook distribution was invaluable towards teachers' enjoyment of teaching, which was also reinforced by students' love of learning. Therefore, the secrets of teacher retainment in Korea not only relate to economic tools but also social and educational ones.

E. PPP (Public-Private-Partnership): There is still one remaining question of where the initial small but valuable finance came from. In fact, the answer is relatively easy: parents' willingness to pay, private education capital's participation and the appropriate use of foreign donations and loans. Though free compulsory education for nine years of elementary and middle school education were proclaimed in the Constitution in 1948, significantly more than half the financing came from parents' payment and more than half of middle school students attended private schools at higher tuition rates. In the 1990s to the 2010s when the Korean economy advanced, many school tuition and fees in the elementary and middle schools were completely abolished. In addition, a huge variety of foreign consultants and researchers as well as direct donations for school building and textbook printing had significantly contributed to Korean education. Salary improvement and present-level job conditions of teachers have been accomplished since the 1980s when the Korean economy began to advance rapidly. Of course, such PPPs owed a huge debt to the people's demand for education.

5. Quick Five Policy Attention for Cambodian Teacher Education

What should Cambodia learn from Korean experience? Learning from others should be of key relevance to their internal circumstances and feasible for implementation within their limited resources. Cambodian circumstances regarding teacher education policy have been diagnosed by this study. These findings conclude that there are many common elements which Korea has already experienced from the outset. The weakness of Cambodian teaching system can be remedied if these conditions were to be deeply investigated and developed into a newer policy. In consideration of the similarities and differences between the two countries, the following five key lessons for Cambodian teacher education can be asserted.

5.1. Key Attention to the Population's Demand for Education

Data shows there is a significant demand for education among Cambodian parents and students. This is very common across all Asian countries. This demand

must be utilized to employ PPP as the quick policy model. Private education capital can be encouraged as a partner in providing educational opportunities including private schools and private TTCs. Foreign education capital also can be invited.

5.2. Key Attention to Rural, Elementary and Girls/ Women's Education

Education as a self-propagating sector can start its growth only when the essential critical mass point is reached. Equal distribution of educational opportunity is the mandatory task to actualize this. All potential resources of Cambodian education must be prioritized to be put into this urgent sector within rural elementary schools. Boys and girls must be treated equally. Here mothers' literacy in particular is the key factor to supporting students' success in schools. Therefore, adult literacy classes in the rural area also must be a key area of attention. Sending teachers first to rural elementary schools and letting them teach girls and mothers will be the fundamental basis for Cambodian education.

5.3. Key Attention to Historical Heritage of Teacher Respect

The data also shows there is a general respect in society for schoolteachers. This means teachers can be retained once their profession is fully recognized in schools and society even despite the frequently poor working conditions. Therefore, teaching policy must be balanced between the economic and educational aspects.

5.4. Key Attention to the Joy of Teaching and Learning

The essential factor for success in teacher policy is, to some extent, how much both teachers and students enjoy their teaching and learning. Even with the poor exterior conditions of education such as crowded classrooms and lower teacher salaries, they can be united in schools if they believe in teaching and learning. However, the present teaching-learning process mediated through Khmer and English supplementary contents/textbooks appears to have some fundamental barriers that have not yet been fully investigated. Therefore, various and urgent actions need to be taken for developing and providing teachers and students with better effective materials: ICT-based digital contents and solutions must be one of such a transformative way of approach.

5.5. Key Attention to Autonomy of Education Authorities

In order to keep the above four areas of attention at the fore, final and the most important attention must be paid to the full autonomy of education authorities -

especially at local government level. Every level of education authority should be given the full autonomy of teacher personal administration, school and teacher financing and all other educational governance matters. Through this, they can utilize their full power towards the best use of even limited amounts of resources.

Taking all these lessons and attentions in consideration for developing new methods of Cambodian teacher education policy, one meta-solution can be designed for the establishment of a comprehensive Research and Development (R&D) center which would investigate the emergent necessities and the shortest routes towards innovating teacher education as the pivotal machine for the Cambodian development of education. Notably, government-initiated R&D centers have clearly been contributing to find the best solutions for national development. KEDI(Korean Educational Development Institute), for example, has been established in 1972 and has conducted many research and development projects, one of which is the teacher education: how to attract, train, motivate and retain the Korean teaching force. This experience can be one of the final and effective lessons to be adopted by Cambodia.

References

- Cambodia Independence Teachers Association. (n.d). Teacher's salary and term & conditions. Accessed on 15 December 2015. Retrieved from http://www.cita.org.kh/File/Education/Education%20Policy%20%20-%20Teacher%27s%20Salary%20and%20Term%20&%20Condition_English%20Version.pdf
- CDRI, Human Resource Development and Education for a Competitive and Creative Cambodia. Cambodia Outlook Brief, 2, 2014. Accessed on 2 January 2016. Retrieved from <http://www.cdri.org.kh/webdata/policybrief/ob14/ob2e.pdf>
- Central Education Research Institute, Korean Education and Foreign Assistance Programs, September 1965, Seoul; Korea
- Chung, Tai-si, Problems Facing the Enhancement of the Status of Teachers in Korea. Korea Journal, Vol. 6, No. 7, July 1966, pp.13-17
- Dy, S., S., Strategies and policies for basic education in Cambodia: Historical perspectives, International Education Journal, Vol. 5, No. 1, 2004, pp.90-97.
- Han, Y., 한국의 교원 보수 정책 평가 (The policies and structures of teacher salaries in Korea: A review). 교육재정경제연구 [The Journal of Economics and Finance of Education], Vol. 10, No. 2, 2004, pp.271-298. (In Korean.)
- Hang, C., Vision of Education Reform in Cambodia, 2015. Accessed on 2 January 2016. Retrieved from <https://drive.google.com/file/d/0B1ekqZE5ZIUJeFBmRTMycUxIY3M/view>
- Kim, K-Seok (2009). "Universal Access to Tertiary Educaion in Korea," Lee, C.J. et als. (2009). Sixty Years of Korean Education. Seoul: Seoul National University Press, pp.150-185 .
- Korm, R., The relationship between pay and performance in the Cambodian civil service (Doctoral thesis, University of Canberra, Australia), 2011. Accessed on 20 December 2015. Retrieved from http://www.canberra.edu.au/research repository/file /5aea8cba-27ff-e2e7-d368-62bedc4f79bb/1/full_text.pdf
- Lee, C.J, J. Adams and S.Y.Kim. Sixty Years of Korean Education. SNU Press, 2010.
- Lee, C. J., Education in the Republic of Korea: Approaches, Achievements, and Current Challenges. In Fredriksen and Tan edited, An African Exploration of the East Asian Education Experience. World Bank Press. Chapter 5, 2008, pp.155-217
- Ministry of Education (R.O.Korea). Statistical Yearbook of Education, respective years since 1965-2015.
- Ministry of Education, Youth, and Sport, Education Strategic Plan 2006-2010, 2005; 2010, Phnom Penh: MoEYS.
- Ministry of Education, Youth, and Sport, Education statistics and Indicators 2010-2011, 2011-2015, Phnom Penh: MoEYS.
- Ministry of Education, Youth, and Sport, Teacher Policy Action Plan, 2015, Phnom Penh:

MoEYS.

Ministry of Planning, Second Five Year Socio-Economic Development Plan 2001-2015, 2002. Accessed on 25 November 2015. Retrieved from <http://www.mop.gov.kh/LinkClick.aspx?fileticket=4v7l6zoLiH0%3D&tabid=206&mid=678>

Ministry of Planning, Cambodia Socio-economic Survey, 2014. Phnom Penh: MoP. Retrieved from http://www.nis.gov.kh/nis/CSES/CSES_2014_Report.pdf

NEP, Assessing the Impact of Incentives on Teacher Motivation, 2012. Accessed on 17 December 2015. Retrieved from http://issuu.com/nepcambodia/docs/final-assessing_the_impact_of_incentives_on_teachers

NGO Education Partnership, VSO, Valuing Teachers, Teaching Matters: A Policy Report on Motivation and Morale of Teachers in Cambodia, 2008, Phnom Penh: NEP.

Phin, S., Challenges of Cambodian teachers in contributing to human and social development: Are they well trained? International Journal of Social Science and Humanity, Vol. 4, No. 5, 2014, pp.344-348.

UNDP, Curbing Private Tutoring and Informal Fees in Cambodia's Basic Education, 2014, Phnom Penh: UNDP Cambodia. Accessed on 29 December 2015. Retrieved from <http://www.undp.org/content/dam/cambodia/docs/PovRed/Curbing%20Private%20Tutoring%20and%20Informal%20Fee%20in%20Cambodia%20Basic%20Education.pdf>

UNESCO, Education for All 2000 Assessment Country Report CAMBODIA, 2000. Accessed 10 December 2015. Retrieved from <http://unesdoc.unesco.org/images/0012/001215/121540Eo.pdf>

UNESCO, Cambodia: Education for All 2015 National Review, 2015, Phnom Penh: UNESCO.

World Bank, Educating the next generation: Improving teacher quality in Cambodia, 2015, Phnom Penh: World Bank Group.

World Bank, Teaching in Cambodia, 2008. Accessed on 2 January 2016. Retrieved from <http://datatopics.worldbank.org/hnp/files/edstats/KHMwp08.pdf>

1. Questionnaire

Questionnaires for Cambodian Teacher Education

1-1. For High school students (12th grade)

Sex: boy___ girl___

Come from: rural area ___ urban area ___

Graduate from: rural primary school ___ urban primary school ___

How old are you?___

1. Do your teacher teach well enough for you to understand?

___1) very well ___2) well ___3) don't know ___4) bad ___5) very bad

2. Did your mother teach you how to read and write Khmer before you came to primary school?

___1) very well ___2) a little ___3) don't remember ___4) did not ___5) could not

3. When did you start to read and write Khmer well enough for your standard?

___1) before primary school ___2) early primary school ___3) middle school
___4) high school ___5) not yet

4. Have you ever experienced difficulties in comprehending words when you are studying science or mathematics?

___1) very often ___2) often ___3) hardly ___4) never

5. Do you go to private schools/tutoring in out of school hours?

___1) yes now ___2) not now, but once before ___3) not now, but go in future
___4) not now, may not in future ___5) not now, never in future

6. Do you agree that private tutors teach better than schoolteachers?

___1) surely yes ___2) maybe yes ___3) don't know ___4) maybe not ___5) surely not

7. Are you sure that you can pass the matriculation test when graduating high school?

___1) surely yes ___2) maybe yes ___3) don't know ___4) maybe not ___5) almost not

8. Do you use other types of learning materials (computer, internet, reference books...) for your study?

___1) very often ___2) often ___3) hardly ___4) never

9. How well do you speak English?

___1) very well ___2) well ___3) don't know ___4) poor ___5) very poor

10. Does your science/mathematics teacher often use English words when teaching?

___1) very often ___2) often ___3) hardly ___4) never

11. How many times have you participated in laboratory experiments in science class?

___1) very often ___2) often ___3) hardly ___4) never

12. Do you use a smartphone or internet (PC) to search information for your studies ?

___1) very often ___2) often ___3) hardly ___4) never ___5) do not have

13. Would you like to go to university?

___1) surely yes ___2) maybe yes ___3) don't know ___4) maybe not ___5) almost not

14. How do you evaluate yourself regarding your learning level?

___1) excellent ___2) good ___3) don't know ___4) poor ___5) very poor

15. Do you think many of your classmates have difficulty learning because of their English skill?

___1) surely yes ___2) maybe yes ___3) don't know ___4) maybe not ___5) almost not

16. Do you think some textbook and subject knowledge is not relevant to your life?

___1) almost not ___2) some ___3) don't know ___4) some relevant ___5) very relevant

17. Do you feel some time difficulties in learning because of your shortage of pre-knowledge or pre-study?

___1) very often ___2) often ___3) do not know ___4) hardly ___5) never

1-2. For Primary students' parents (lower grades)

Sex of your child: boy ___ girl ___

Sex of responding parent: mother ___ father ___ or else ___

Where are you from? rural area ___ urban area ___

Which school does your child go to: rural primary school ___ urban primary school ___

Which grade is your primary child in ? ___

How old is your child? : ___

1. Does your child like the schoolteacher?

___1) very much ___2) some ___3) don't know ___4) do not like ___5) hate

2. Do you know if your child's teacher teaches well?

___1) very well ___2) well ___3) don't know ___4) poor ___5) very poor

3. Did you teach your child how to read and write Khmer before they went to primary school?

___1) very hard ___2) some ___3) don't remember ___4) did not
___5) could not (I could not either)

4. Does your child read and write Khmer well enough to your standard?

___1) very well ___2) well ___3) don't know ___4) poor ___5) very poor

5. Have you ever heard that your child had difficulties of comprehending words when studying in science and maths?

___1) very often ___2) often ___3) do not remember ___4) hardly ___5) never

6. Do you send your child to private schools/tutoring out of school hours?

___1) yes now ___2) not now, but once before ___3) not now, but send in future
___4) not now, may not in future ___5) not now, never in future

7. Do you think if private tutors teach better than schoolteachers?

___1) surely yes ___2) maybe yes ___3) don't know ___4) maybe not ___5) surely not

8. Are you sure that your child can do very well in school?

___1) excellent ___2) good ___3) don't know ___4) poor ___5) very poor

9. Do you expect that your child will pass the final matriculation test when graduating high school ?

___1) surely yes ___2) maybe yes ___3) don't know ___4) maybe not ___5) almost not

-
10. Does your child use other types of learning materials (computer, internet, reference books...) for study ?
___1) very often ___2) often ___3) hardly ___4) never
11. Has your child started to learn English?
___1) yes early before ___2) yes just soon ___3) no ___4) may not
___5) never in future
12. Do you know if your child's teacher teaches science and maths well?
___1) very well ___2) well ___3) don't know ___4) poor ___5) very poor
13. Do you know if your child has ever experienced laboratory experiments in science class?
___1) very often ___2) often ___3) hardly ___4) never
14. Does your child use smartphone or internet (PC) for your study like searching information?
___1) very often ___2) often ___3) hardly ___4) never ___5) do not have
15. Do you expect your child will go to university?
___1) surely yes ___2) maybe yes ___3) don't know ___4) maybe not ___5) almost not
16. Do you think if you would be OK if your child finishes education at secondary school?
___1) surely yes ___2) maybe yes ___3) don't know yet ___4) maybe not
___5) absolutely not
17. How do you evaluate your child's learning level?
___1) excellent ___2) good ___3) don't know ___4) poor ___5) very poor
18. To some extent do you think English will be important for your children's success of life?
___1) very important ___2) important ___3) don't know ___4) some
___5) not important

2-1. Primary school teachers

Sex: male ____ female ____

Teaching experience: about ____ years

How old are you?: ____

What is your training background: non-Bachelor ____, Bachelor ____

How many schools have you taught before this school ?

Where are you from: rural ____ urban ____

Do your spouse work in public sector as well? ____yes ____no

1. Do you think your classroom students like you?

____1) very much ____2) some ____3) do not know ____4) may not ____5) almost not

2. Are your classroom students are learning well?

____1) excellent ____2) good ____3) don't know ____4) poor ____5) very poor

3. How many of your classroom students can read and write Khmer well?

____1) most of them ____2) some ____3) don't know ____4) few ____5) very few

4. Have you ever taught in other private schools than in this school?

____1) many times ____2) twice or some ____3) just once ____4) now ____5) never

5. Have you ever taught your school students out of this school hours?

____1) many times ____2) twice or some ____3) just once ____4) now ____5) never

6. How many students do you teach now in other schools and of your schools?

____ students in other schools ____ students of your schools

7. To what extent is your salary from this school sufficient for your monthly living cost?

____1) fully sufficient ____2) reasonably sufficient ____3) do not know ____4) insufficient
____5) absolutely insufficient

8. If you earn any other income, how significant is it in comparison with your school salary?

____1) quite big ____2) some big ____3) not sure ____4) still small ____5) very small

9. Can you work in rural schools if there is some other incentive like more salary, housing, transportation and others ?

____1) absolutely ____2) well ____3) not sure ____4) cannot ____5) absolutely not

-
10. Do you agree with more incentives for teachers in rural areas?
___1) absolutely ___2) some ___3) do not know ___4) not agree ___5) absolutely not
11. Do you agree that the quality of teachers is lower in the rural areas?
___1) absolutely ___2) some ___3) do not know ___4) not agree ___5) absolutely not
12. To what extent is teachers' competence of teaching important for Myanmar students' learning outcome?
___1) very big ___2) some big ___3) not sure ___4) some small ___5) very small
13. Do you think the textbooks are short of some content for classroom teaching?
___1) very short ___2) some short ___3) not sure ___4) not short ___5) no short at all
14. Do you think Khmer some short of explanations for scientific and high-level knowledge compared with English ?
___1) very short ___2) some short ___3) not sure ___4) not short ___5) not short at all
15. Do you think you are respected as teachers by your students and their parents, and by society in general?
___1) very highly ___2) some ___3) not sure ___4) may not ___5) never
16. Do you agree with the salary difference by Bachelor degree holders or not?
___1) absolutely ___2) some ___3) do not know ___4) not agree ___5) never
17. Do you agree with the mandatory service or conditional penalty for public school teaching of public school teacher training center graduates? (e.g. Those who graduate from public center must work only in public schools, or paying penalty)
___1) absolutely ___2) some ___3) do not know ___4) not agree ___5) never
18. What do you think about opening private TTCs/colleges?
___1) very good ___2) some ___3) do not know ___4) bad ___5) very bad

2-2. Secondary (Lower and High) school teachers

Sex: male ____ female ____

Teaching experience: about ____ years

How old are you : ____

What is your training background: non-bachelor ____, bachelor ____

How many schools have you taught before this school?

Where are you from : rural ____ urban ____

Which level is your school? lower secondary (7-9 grades) ____ high(upper) secondary(10-12) grades ____

Which subject do you teach? Khmer language ____ Social studies(incl. history....) Science & Maths ____

Does your spouse work in public sector as well? ____yes ____no

1. Do you think your classroom students like you?

____1) very much ____2) some ____3) do not know ____4) may not ____5) almost not

2. Are your classroom students are learning well?

____1) excellent ____2) good ____3) don't know ____4) poor ____5) very poor

3. How many of your classroom students can read and write Khmer well?

____1) most of them ____2) some ____3) don't know ____4) few ____5) very few

3-1. How many of your classroom students can read, write and speak English?

____1) most of them ____2) some ____3) don't know ____4) few ____5) very few

4. Have you ever taught in other private schools than in this school?

____1) many times ____2) twice or some ____3) just once ____4) now ____5) never

5. Have you ever taught your school students out of school hours?

____1) many times ____2) twice or some ____3) just once ____4) now ____5) never

6. How many students do you teach now your school and others?

____90____ students in other schools ____280____ students of your schools

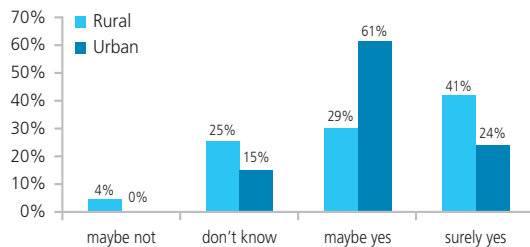
7. To what extent is your salary from this school sufficient for your monthly living costs?

____1) fully sufficient ____2) some sufficient ____3) do not know ____4) not sufficient
____5) absolutely not

-
8. If you earn any other income, how significant is it in comparison with your school salary?
___1) quite big ___2) some big ___3) not sure ___4) still small ___5) very small
9. Can you work in rural schools if there is some other incentive like more salary, housing, transportation and others?
___1) absolutely ___2) well ___3) not sure ___4) cannot ___5) absolutely not
10. Do you agree with more incentives for teachers in rural areas?
___1) absolutely ___2) some ___3) do not know ___4) not agree ___5) absolutely not
11. Do you agree that rural teachers are of a lower quality than urban ones?
___1) absolutely ___2) some ___3) do not know ___4) not agree ___5) absolutely not
12. To what extent is teachers' competence of teaching important for Cambodian students' learning outcome?
___1) very big ___2) some big ___3) not sure ___4) some small ___5) very small
13. Do you think the textbooks' contents are sufficient for classroom teaching?
___1) very short ___2) some short ___3) not sure ___4) not short ___5) not short at all
14. Do you think if Khmer is lacking in explanations for high-level and scientific knowledge compared with English?
___1) very short ___2) some short ___3) not sure ___4) not short ___5) no short at all
15. Do you think you are respected as teachers by your students and their parents, and by society in general?
___1) very highly ___2) some ___3) not sure ___4) may not ___5) never
16. Do you agree with the salary difference by Bachelor degree holders or not ?
___1) absolutely ___2) some ___3) do not know ___4) not agree ___5) never
17. Do you agree with the mandatory service on conditional penalties for public school teaching of public school teacher training center graduates? (e.g. Those who graduate from public center must work only in public schools, or paying penalty)
___1) absolutely ___2) some ___3) do not know ___4) not agree ___5) never
18. What do you think about opening private TTCs/colleges?
___1) very good ___2) some ___3) do not know ___4) bad ___5) very bad

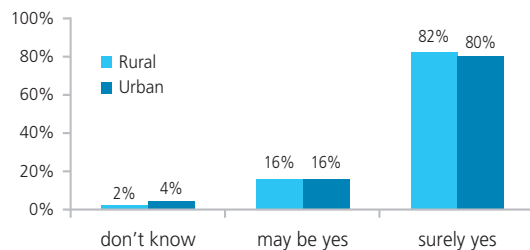
2. Data Outputs from Survey

[Figure 3-4] Parent: Do you expect your child will go to university?



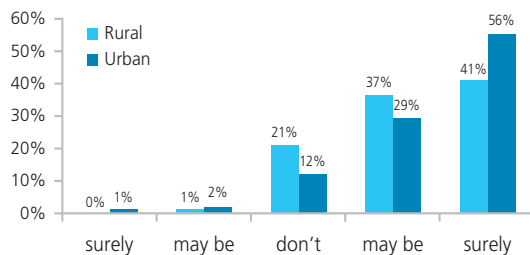
Location	Score	T-Score	P-value
Rural	4.07	0.186	0.00
Urban	4.09		
Total	4.08		

[Figure 3-5] Student: Would you like to go to university?



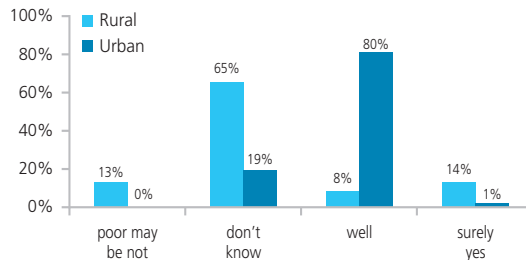
Location	Score	T-Score	P-value
Rural	4.80	0.596	0.216
Urban	4.76		
Total	4.78		

[Figure 3-6] Student: Are you sure that you can pass the matriculation test when graduating high school?



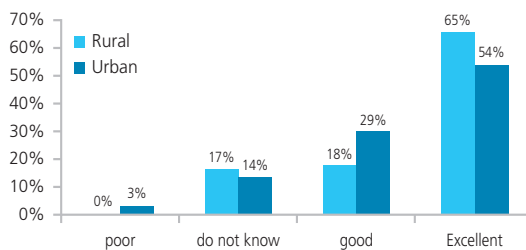
Location	Score	T-Score	P-value
Rural	4.18	1.582	0.638
Urban	4.37		
Total	4.28		

[Figure 3-7] Parent: Do you expect that your child will pass the final matriculation test when graduating high school?



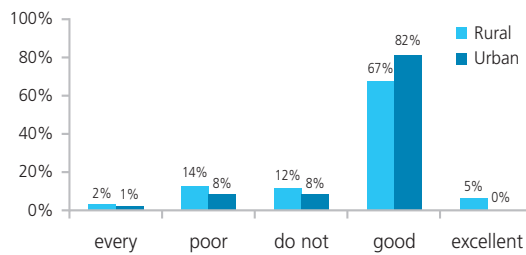
Location	Score	T-Score	P-value
Rural	3.23	6.119	0.00
Urban	3.82		
Total	3.53		

[Figure 3-8] Parent: How do you evaluate your child's learning level?



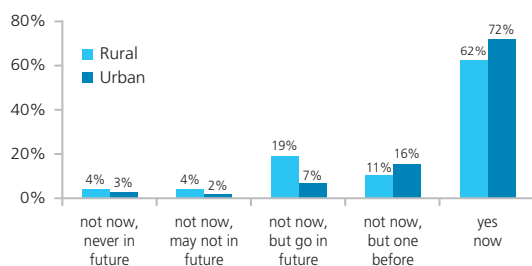
Location	Score	T-Score	P-value
Rural	3.60	1.033	0.003
Urban	3.72		
Total	3.66		

[Figure 3-9] Student: How do you evaluate yourself concerning your learning level?



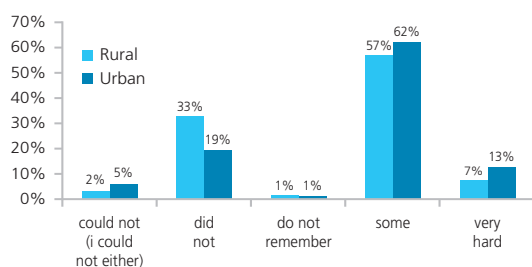
Location	Score	T-Score	P-value
Rural	4.48	1.266	0.502
Urban	4.34		
Total	4.41		

[Figure 3-10] Parent: Do you expect your child will go to university?



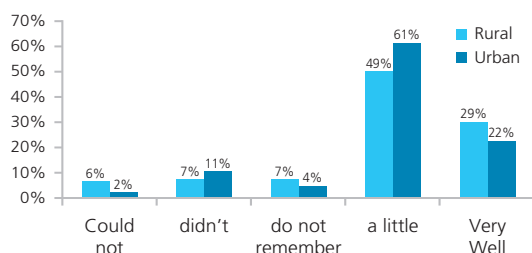
Location	Score	T-Score	P-value
Rural	4.22	1.853	0.005
Urban	4.51		
Total	4.37		

[Figure 3-13] Parent: Did you teach your child how to read and write Khmer before coming to primary school?



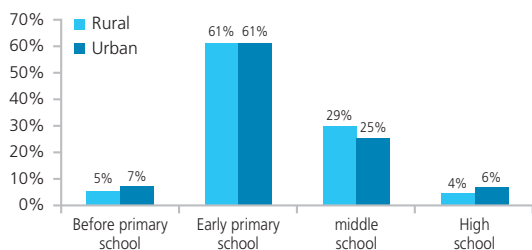
Location	Score	T-Score	P-value
Rural	3.35	1.466	0.195
Urban	3.58		
Total	3.47		

[Figure 3-14] Student: Did your mother teach you how to read and write Khmer before you came to primary school?



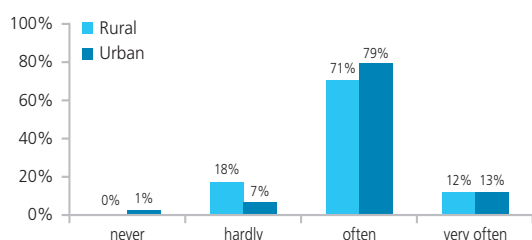
Location	Score	T-Score	P-value
Rural	3.88	1.141	0.117
Urban	3.91		
Total	3.90		

[Figure 3-15] Student: When did you start to read and write Khmer well enough to your standard?



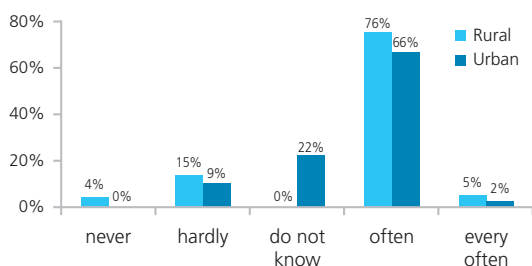
Location	Score	T-Score	P-value
Rural	2.33	0.216	0.625
Urban	2.31		
Total	2.31		

[Figure 3-16] Student: Have you ever experienced difficulties in comprehending words when studying science and maths?



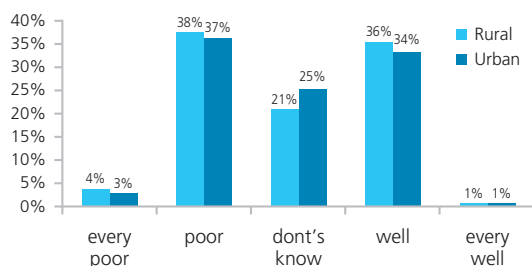
Location	Score	T-Score	P-value
Rural	2.94	1.259	0.144
Urban	3.03		
Total	2.99		

[Figure 3-17] Student: Do you feel some time difficulties in learning because of your shortage of pre-knowledge or pre-study?



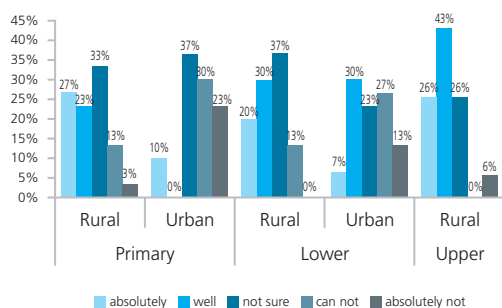
Location	Score	T-Score	P-value
Rural	3.63	0.092	0.175
Urban	3.61		
Total	3.62		

[Figure 3-18] Student: How well do you speak English?



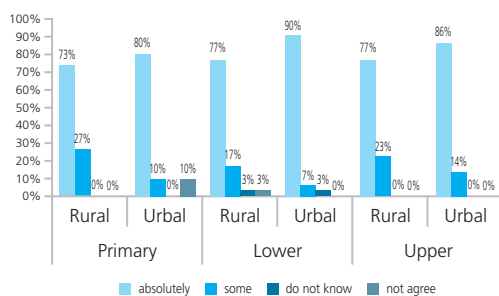
Location	Score	T-Score	P-value
Rural	3.08	0.076	0.45
Urban	3.07		
Total	3.08		

[Figure 3-22] Teacher: Would you work in rural schools if there are some other incentives like more salary, housing, transportation and others?



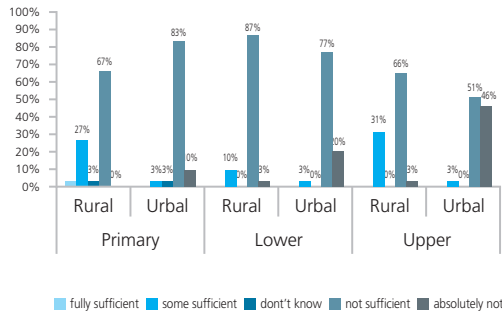
Type of School	Location	Score	T-Score	P-value
Primary	Rural	3.57	3.816	0.816
	Urban	2.43		
	Total	3.00		
Lower	Rural	3.57	2.383	0.291
	Urban	2.90		
	Total	3.24		
Upper	Rural	3.83	4.583	0.016
	Urban	2.54		
	Total	3.19		

[Figure 3-23] Teacher: Do you agree with greater incentives for teachers in rural areas?



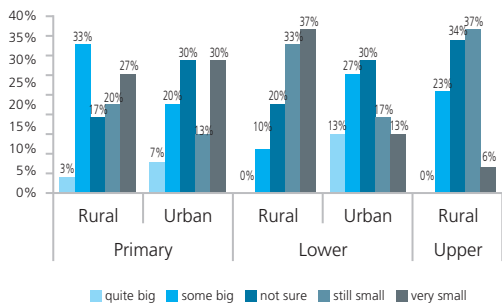
Type of School	Location	Score	T-Score
Primary	Rural	3.57	3.816
	Urban	2.43	
	Total	3.00	
Lower	Rural	3.57	2.383
	Urban	2.90	
	Total	3.24	
Upper	Rural	3.83	4.583
	Urban	2.54	
	Total	3.19	

[Figure 3-24] Teacher: To what extent is your salary from this school sufficient for your monthly living costs?



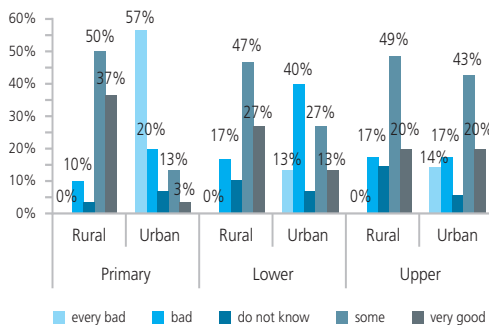
Type of School	Location	Score	T-Score	P-value
Primary	Rural	2.67	3.247	0.00
	Urban	2.00		
	Total	2.34		
Lower	Rural	2.17	1.902	0.875
	Urban	1.87		
	Total	2.02		
Upper	Rural	2.60	5.043	0.00
	Urban	1.60		
	Total	2.10		

[Figure 3-25] Teacher: If you earn any other income, how high is it in comparison to your school salary?



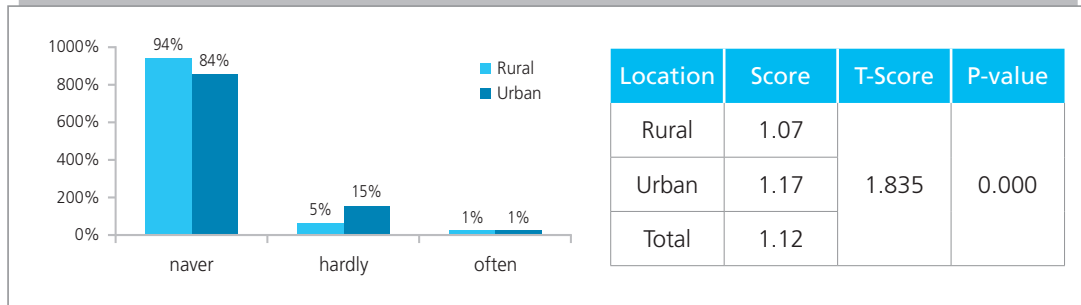
Type of School	Location	Score	T-Score	P-value
Primary	Rural	2.67	0.199	0.816
	Urban	2.60		
	Total	2.64		
Lower	Rural	2.03	3.666	0.239
	Urban	3.10		
	Total	2.57		
Upper	Rural	2.74	1.76	0.052
	Urban	3.20		
	Total	2.97		

[Figure 3-26] Teacher: If you earn any other income, how high is it in comparison to your school salary?

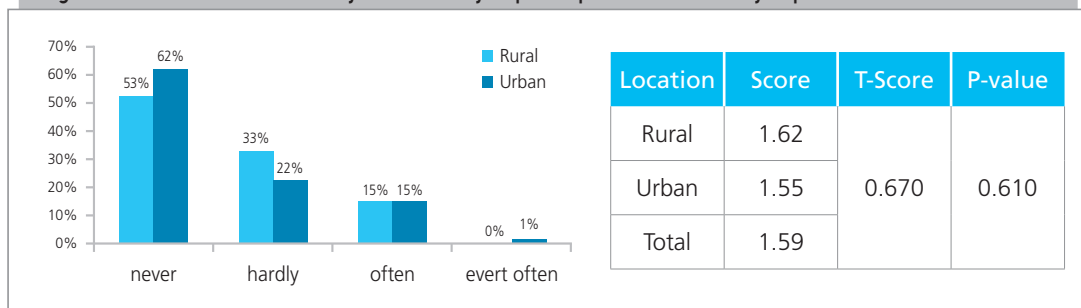


Type of School	Location	Score	T-Score	P-value
Primary	Rural	4.13	8.172	0.049
	Urban	1.87		
	Total	3.00		
Lower	Rural	3.83	3.156	0.01
	Urban	2.87		
	Total	3.35		
Upper	Rural	3.71	1.199	0.009
	Urban	3.37		
	Total	3.54		

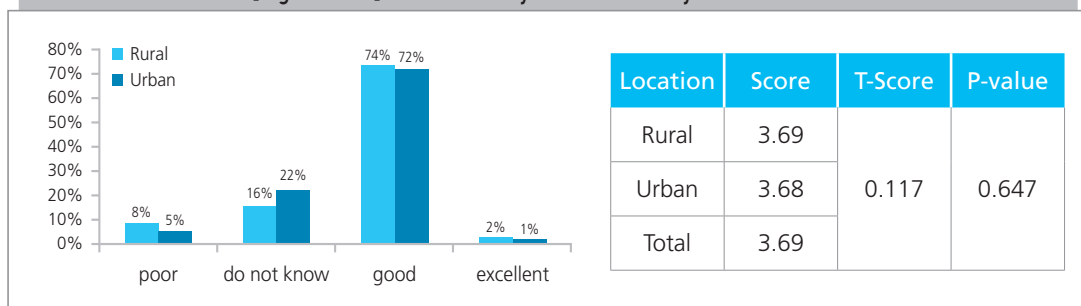
[Figure 3-27] Parent: Do you know if your child has ever participated in laboratory experiments in science class?



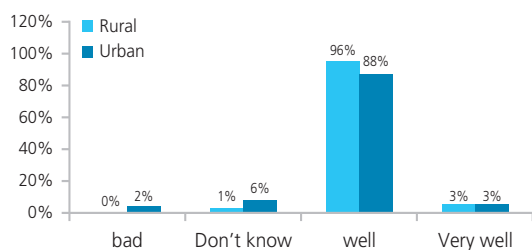
[Figure 3-28] Student: How many times have you participated in laboratory experiments in science class?



[Figure 3-29] Parent: Does your child do very well in school?

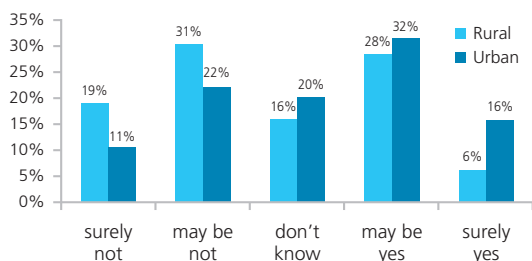


[Figure 3-30] Student: Does your teacher teach well?



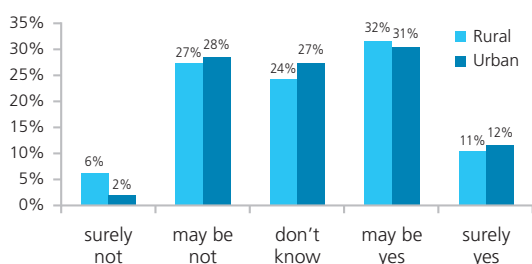
Location	Score	T-Score	P-value
Rural	4.02	1.980	0.02
Urban	3.93		
Total	3.98		

[Figure 3-31] Student: Do you agree that private tutors teach better than schoolteachers?



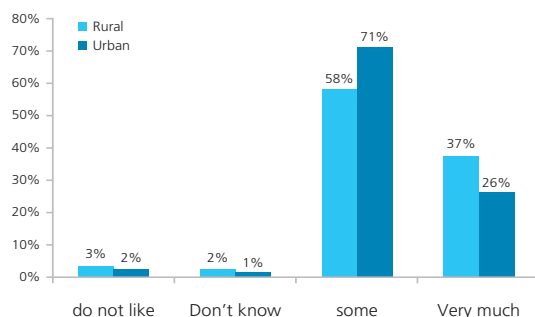
Location	Score	T-Score	P-value
Rural	2.73	2.619	0.784
Urban	3.20		
Total	2.97		

[Figure 3-32] Parent: Do you think private tutors teach better than schoolteachers?



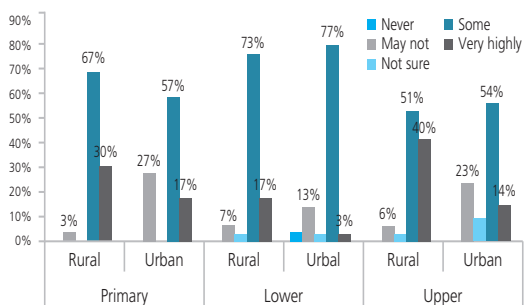
Location	Score	T-Score	P-value
Rural	3.13	0.534	0.547
Urban	3.21		
Total	3.17		

[Figure 3-33] Parent: Does your child like the schoolteacher?



Location	Score	T-Score	P-value
Rural	4.28	0.826	0.048
Urban	4.21		
Total	4.25		

[Figure 3-34] Teacher: The respect of teachers by parents, students and society



Type of School	Location	Score	T-Score	P-value
Primary	Rural	4.23	2.658	0.003
	Urban	3.36		
	Total	3.80		
Lower	Rural	4.00	1.779	0.043
	Urban	3.63		
	Total	3.82		
Upper	Rural	4.26	3.054	0.058
	Urban	3.60		
	Total	3.93		
Total	Rural	4.17	4.409	0.00
	Urban	3.62		
	Total	3.90		

2015/16 Knowledge Sharing Program with Cambodia:
Knowledge Sharing on Cambodia's Social Overhead,
Human Capital, and Housing Development:
Korea's Experience and Policy Recommendation

Chapter 4

Developing Skills and Industry for Higher Labor Productivity in Cambodia

1. Introduction
2. Basic Tool of Productivity Analysis and Capability of Policy Implementation
3. Current Status of Two Industrial Sectors and the Labor Market
4. Policy Items and Recommendations for Enhancing Productivity
5. Conclusion

Developing Skills and Industry for Higher Labor Productivity in Cambodia

Jai-Joon Hur (Korea Labor Institute)

Summary

To discern and understand the value chain and potential of so-called strategic industries, and to understand the factors influencing the productivity of those industries, help the Royal Government of Cambodia (RGC) to implement a structural and stabilization policy and a relevant manpower policy that responds to the needs of firms and industry. Only then, can the policy decision makers of the RGC create a policy framework, establish a strategy and introduce measures for improving productivity.

For this purpose, this study first attempted to identify the competitiveness and value chain of both the agro-processing and garment industries, their perspective on productivity and the characteristics of skills needed by Cambodian firms.

Second, based on the diagnoses, the study proposed ways of improving the value chain, calling attention to controlling its evolution appropriately and ways of enhancing the productivity of the nation by addressing factors which are deemed to substantially influence the productivity of the Cambodian economy.

Third, this study not only aimed at identifying strategy and action programs for improving productivity, but also providing examples of how to implement them.

In Cambodia, the productivity of the service sector is as high as that of the

industrial sector, which is not usual in other developing countries. This explains why qualified persons have preferred to prioritize a job in services. However, the productivity of the industry sector to which the garment sector belongs has been continuously surpassing the service sector's productivity from 2010.

The degree of vertical integration is very weak in both the agro-processing and garment sectors. Not only the weak infrastructure, but also the high cost of logistics, electricity and processing hinders structural change. Skills demand and work attitudes are barely being met by labor market participants. Meanwhile, union behavior and the rapid growth of the minimum wage - which far exceeds the productivity growth rate - is increasing risk to the garment industry.

There are a considerable number of policy items to which the RGC will have to pay attention in achieving higher productivity in the economy. These include allocating scarce resources (especially capital) efficiently, expanding social overhead capital such as transportation facilities, the supply of electricity at cheaper price, IT infrastructure, supplying skills needed, and encouraging entrepreneurship. To address these challenges, the RGC may refer to Korea's experience on allocation of credit borrowed from the international capital market, financing of domestic capital from advantaged firms and consumers, and how to discover entrepreneurs to accomplish moving from the low-productivity trap to the high-productivity route. To address the challenge of lack of 'work ethic' or 'work attitude' in the labor market, it seems necessary to upgrade primary education qualitatively.

Above all, the key or secret to productivity growth lies in boosting entrepreneurship, helping them break through, and then requesting proactive models for sustainability and prosperity. This is what the history of, not only Korea, but also other industrialized countries' industrial development tells us. Skills upgrading sometimes results from the process, but sometimes has to lead the growth of industry and productivity.

The sharp and continuous increase of the minimum wage exceeding productivity growth, along with unions' behavior of hindering productivity growth in the garment industry, calls for the attention of the RGC and a need for the RGC to pursue structural change to attenuate the expected risk. The current situation of the Cambodian garment industry, the second most important engine of the Cambodian economy, should be carefully controlled to guarantee a smooth transition, together with developing medium- and long-term plans to enhance productivity. This is of particular importance in Cambodia because the exchange rate adjustment mechanism is almost completely absent.

It is difficult to transcend the current low-productivity state. The government

policy for the development of a specific industry requires a synthesized package of all actions, and many elements are also needed such as entrepreneurship, market, capital, social overhead capital, skill, etc. Only a bold but very much scrutinized approach can render it possible to initiate the transition process by concentrating resources on a strategic area and by combining resource allocation rules with entrepreneurship.

It should also be borne in mind that improving and enhancing public institutional capacity and promoting good governance are equivalent key factors to raise the productivity of Cambodian workers and Cambodian firms' competitiveness.

1. Introduction

This study was initiated by the Secretariat of the Committee for Productivity of Cambodia (The CPC is the inter-ministerial government body of the Royal Government of Cambodia for planning with autonomy. Its staff are composed of those dispatched from different ministries and experts from academia and policy think tanks). The CPC has been searching for ways of enhancing the labor productivity of Cambodia; one of the key stabilization factors for the successful implementation of Cambodia's Industrialization Development Policy (IDP) and sustainable growth.

Royal Sub-decree No. 267 on the creation of the CPC mandated the Committee to conduct studies and research on the labor economy, labor productivity and competitiveness for the Government. However, the CPC is without such technical arms. Therefore, policy research on industrial productivity was needed.

The objective of IDP includes promoting human resource development, and enhancing productivity and competitiveness. This requires the government to implement structural changes and stabilization strategies with proper attention paid to Human Resource Development (HRD). The challenges in Cambodia's labor market and competitiveness are multifaceted. They include the identification of the value chain and ways to improve it on the one hand, and a diagnosis of the demand for labor and qualifications needed on the other.

The objective of this study is as follows. First, it tries to identify the competitiveness and value chain of both the agro-processing and garment industries, their perspective of productivity, and the characteristics of skills needed by Cambodian firms. Second, it proposes ways of improving the value chain, calling attention to controlling its evolution appropriately, and ways of enhancing the productivity of the nation by addressing factors which are deemed most influential to the productivity

of the Cambodian economy. Third, it tries to suggest an example of a strategic approach on how to implement them to transcend the low-productivity equilibrium.

It is expected that understanding these factors will help the Royal Government of Cambodia (RGC) to implement a structural and stabilization policy and relevant manpower policy that responds to the needs of firms and industry. Hopefully, this study will also lead to the creation of policy framework, strategy and measures for improving productivity.

This study is composed as follows. In section II, we introduce definitions of productivity and explain channels of productivity increase with an example of the Cobb-Douglas production function. In addition, policy recommendations for such countries as Cambodia should be made without losing the consideration of 'how to' implement them.

Section III diagnoses the current status of the Cambodian agro-processing and garment sectors and the skill needs in the labor market. The two sectors were selected as examples for diagnoses and policy conception. The agro-processing sector was recommended by the CPC, and additionally the garment sector was selected by the author. It confirms that, as Cambodia is in its initial stage of development, policy items and efforts required for Cambodia are diverse and that the skills needed by firms have a common characteristic across all categories of workers, which is 'work experience'.

Section IV suggests policy items for enhancing productivity based on the diagnoses from Section III and then proposes in simplified form how to get out of the low-productivity equilibrium towards a new path of productivity. Section V is a conclusion.

2. Basic Tool of Productivity Analysis and Capability of Policy Implementation

2.1. Definitions of Productivity and Channels of Productivity Growth

2.1.1. Definitions of Productivity

Let us define a function $f(\cdot)$ which produces Y units of valued added with K units of capital input and L units of labor input. Then the production function is expressed as follows:

$$Y = f(K, L) \quad f' > 0 \text{ and } f'' < 0$$

In the case of the Cobb-Douglas production function where α is a labor share and A is a technical coefficient,

$$\begin{aligned} Y &= AK(1-\alpha)L^\alpha \\ \ln Y &= \ln A + (1-\alpha)\ln K + \alpha \ln L \\ (\ln Y - \ln L) &= \ln A + (1-\alpha)(\ln K - \ln L) \end{aligned}$$

Thus

$$y-l = a + (1-\alpha)(k-l)$$

where y , a , k and l designate the growth rates of Y , A , K and L , respectively.

The growth rate of labor productivity is expressed as a sum of two components: the growth rate of capital-labor ratio multiplied by capital share and that of technical coefficient which reflects various factors such as technology, social infrastructure, institution, education, etc.

The average productivity of L is defined as Y/L . In the case of the Cobb-Douglas production function, a straightforward calculation gives the result that marginal productivity of labor $\partial Y/\partial L$, as follows:

$$\begin{aligned} \partial Y/\partial L &= \alpha AK(1-\alpha)L^{\alpha-1} \\ &= \alpha AK(1-\alpha)L^\alpha / L \\ &= \alpha Y/L \\ &= \alpha \times \text{average productivity of } L \end{aligned}$$

Thus, the growth rate of marginal productivity is equal to the growth rate of average productivity as long as the labor share α is constant. In reality, average productivity is easily observable while it is not generally true for marginal productivity, which is usually regarded as equal to wage level at competitive equilibrium. Therefore, when the production function of an economy is approximated by a Cobb-Douglas function, we can calculate the growth rate of productivity by calculating the evolution of average productivity and its growth rate.

2.1.2. Channels of Productivity Increase

Higher productivity is achieved when higher value added is produced for a given number of workers. Not only skills but also capital, technology, infrastructure, institution, etc. can contribute to producing the higher value added of firms. For example, labor productivity increases when more capital equipment is combined with

the same amount of labor, when the innovation takes place, raising the efficiency of existent manpower and/or equipment, when the market expands leading to a higher utilization rate of the same equipment, when relevant social infrastructure is constructed, for example, leading to cheaper transportation and communication costs, when public services become efficient enough to help productive activity, etc. as well as when workers' skills are upgraded through effective training or learning by doing. Therefore, policy tools for raising labor productivity are equally diverse. The HRD policy is just one such means.

A typical process of economic development is productivity growth achieved through industrial transformation. For example, in Korea's development history, the development process was first characterized by a transition from an agricultural economy to industrial economy on the one hand and from light industry economy to a heavy and chemical industry economy on the other. In the 1960s to mid-1970s, continuing migration from rural to urban areas provided an endless pool of workers for the urban industrial sector. At that time, the main industrial products were wigs, shoes, and plywood. All of them were labor-intensive goods produced by unskilled workers. Throughout the 1970s, Korea's clothes and textile industry was transformed from simple sewing factories to ones which produced semi-finished and intermediary products. On the other side of industry, semi-processed materials began to be produced. In the 1980s, the chemical industry - which is an upstream industry of the textile industry - was producing basic material for the textile industry, substituting formerly imported materials [Figure 4-1].

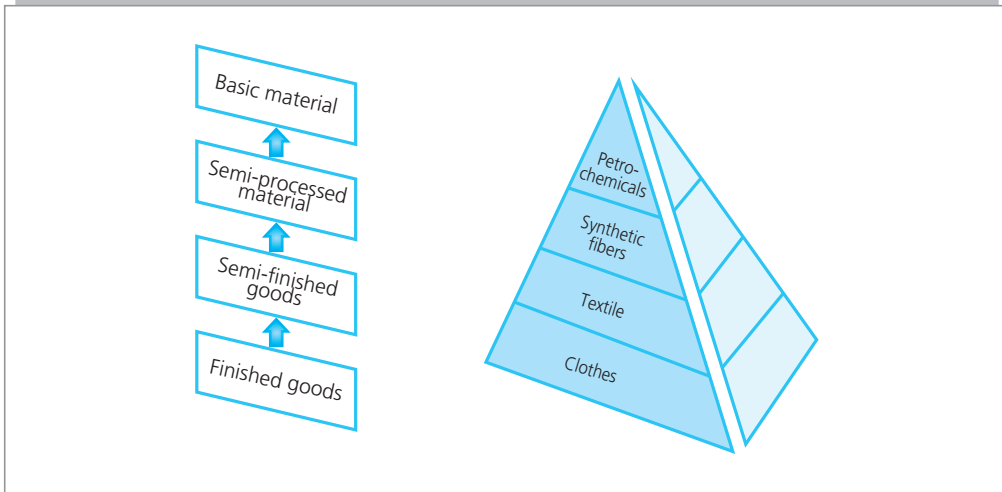
This rapid process of structural change continued throughout the 1980s and 1990s. The speed of development was extraordinarily fast in Korea compared to other OECD countries, as is shown in [Figure 4-2]. This industrial change continually accompanied Korea's economic development process, leading to the rapid growth of the economy.

Even though productivity increase with industrial development is a typical process of economic development, it does not happen automatically, particularly at the early stage of development. Political instability and poor public services are typical obstacles that hinder the initial triggering of the development process. Furthermore, many factors influencing productivity require trial and error or a learning period because of lack of know-how, the need of new installations because of absence of infrastructure, the need of streamlining resource allocation, the need of correcting because of distortions, etc. These are all obstacles that hinder productive activity and development.

When one factor functions well, others frequently do not. Even though productive factors operate positively at one time, the operation soon trudges and goes back

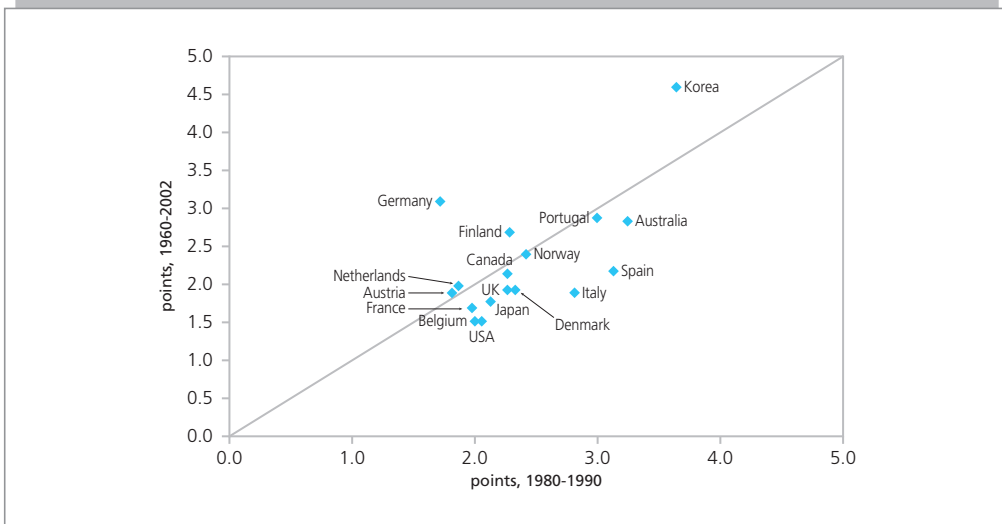
to the old mode of hobbling. It is thus difficult to guarantee continuity, as the process is not properly managed and monitored. Therefore, it is very difficult to trigger a self-perpetuating cycle of the development process. Therefore, at the early stage of development, capacity of coordinating existent potential is very much important.

[Figure 4-1] Industrial Development Process for the Clothes and Textile Industry and Chemical Industry



Source: : Oh (2009).

[Figure 4-2] Speed of Structural Change in Selected OECD Countries Measured by Modified Lilien-Indicator Based on Employment Per Industry



Note: The results are computed on the basis of the shares of disaggregated services industries in total employment, using STAN-employment data at the lowest level of aggregation possible.

Source: Wölfl (2005).

2.1.3. Growth and Productivity

Let Y and L be GDP and employment of an economy, respectively. Then the growth rate of Y can be written as a sum of two components: growth rate of productivity and that of employment.

$$\ln Y = \ln(Y/L) + \ln L$$

$$y = (y-l) + l$$

From this relation we can also confirm that growth is very much closely related with productivity growth. When the demographic structure is healthy in the sense that the young population growth rate is high, generally economic growth rate is high. A considerable part of the high economic growth rate of the Cambodian economy is explained by the employment growth during the last two decades.

2.2. Capability of Policy Implementation

One of objectives of this study, which is distinct from the other studies performed by technical assistance to the Royal Government of Cambodia, is to suggest how to implement recommendations to achieve goals or a to-do list: ways of enhancing productivity in this study. It is a relatively recent initiative that the RGC establishes development plans and tries to implement them. Previously, the RGC's efforts were focused on shaping a framework of the state, rehabilitating and reforming the institution of government administration, national defense and juridical system.

In pursuing development plans, the importance of agriculture to the economy was emphasized. Cambodia is an agricultural economy with more than a half of employment found in agriculture. The main products are rice, maize, soybean, and casaba, with few of them being processed and added higher value. It seems natural for the policy decision makers to prioritize agro-processing industry to raise the nation's productivity.

Development ideas and recommendations with proper diagnoses are abundant, performed by international development agencies other donor countries. NPRD (National Program to Rehabilitate and Develop Cambodia), SEDP I (Socio-Economic Development Plan I), PIP (Public Investment Program), NPRS (National Poverty Reduction Strategy), NSDP I (National Strategic Development Plan I) are direct and indirect products of those studies.¹⁾ In effect, these plans which pursue socio-

1) When the RGC receives aid from donor countries, the usage is usually related with, and rationalized by, the 'Rectangular Strategy' for Growth, Employment, Equity and Efficiency on the one hand, and the National Strategic Development Plan and Sectoral Development Strategies on the other. The National Strategic Development Plan is the second important policy document of the RGC and is the roadmap for the implementation of the Political Platforms of the Royal Government as well as the Rectangular Strategy.

economic development of Cambodia are, implicitly or explicitly, related with a productivity increase in the Cambodian economy.

Many background studies or recommendations thereof provide a to-do list to get out of the low-productivity equilibrium. However, as Cambodia is in its beginning stage of development in the proper sense, the RGC has to build, in a bold and scrutinizing manner, an appropriate expert group and specific action programs which are consistent with established development goals.

Previous studies set forth many constructive and suitable propositions to Cambodian policy decision makers regarding ‘what to do’, while ‘how to do’ seems to be merely assumed that it will be done in right way by field experts and Cambodian decision makers. In contrast, Cambodia’s technocrats seem to have plenty of concerns on how to implement propositions. It therefore seems imperative to address discussions about where to concentrate efforts and resources and how to implement a policy idea of raising productivity as well as what is necessary.

3. Current Status of Two Industrial Sectors and the Labor Market

3.1. Overall Industrial Structure and Productivity

3.1.1. Industrial Structure of Cambodia

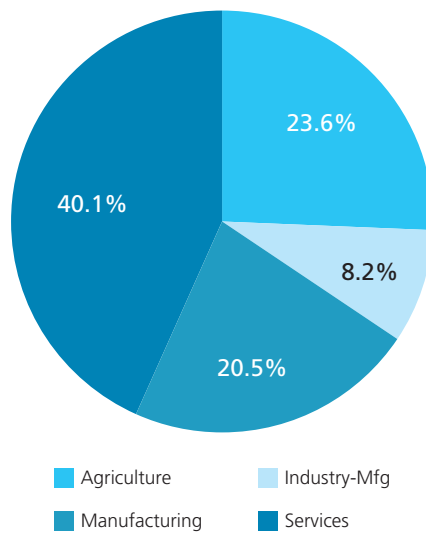
The economic growth rate of Cambodia recorded 7.3% per annum during 1995-2014. When the global financial shock hit the Cambodian economy in 2009, the growth stagnated at 0.1%. However, it soon recovered to a rhythm of 6.7% on yearly average since 2010.²⁾

If we examine production of value added by sector, as of 2014, agriculture produces 23.6% of GDP, and the industry contributes 28.6% to GDP, of which 20.5% is explained by manufacturing, and the proportion of services in value added is 40.1% [Figure 4-3]. The employment share of agriculture, industry and services is estimated to be 51%, 19% and 30%, respectively [Figure 4-4].³⁾

2) The statistics used here are cited from World Bank’s World Development Indicators database if not otherwise stated.

3) These figures on the employment share for 2014 are cited from the Korean Ministry of Foreign Affairs (2015). As the statistics on employment shares are collected only for a limited number of years in the WDI database, which is crucial for calculating both productivity and its growth, interpolation and extrapolation were made based on estimations performed with given data points. Details on method of interpolation and extrapolation are given in the Appendix.

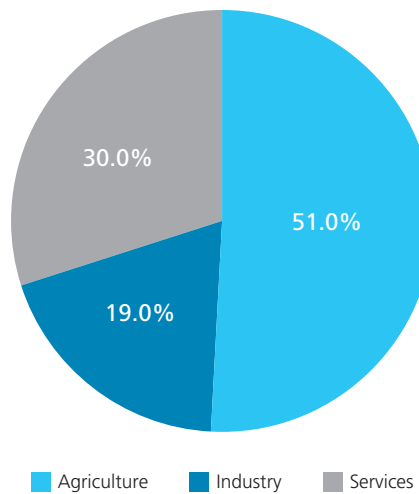
[Figure 4-3] Share of Value Added by Sector, as of 2014



Note: 'Industry-Mfg' designates industry without manufacturing

Source: World Bank, WDI (2015).

[Figure 4-4] Employment Share by Sector, as of 2014



Source: Korean Ministry of Foreign Affairs (2015).

3.1.2. Evolution of Productivity

<Table 4-1> shows the evolution of productivity by sector since 2010. The productivity levels were calculated from the constant price value added of each sector divided by employment - which was estimated by the method given in the Appendix. The two stylized facts from <Table 4-1> are:

- Productivity of services sector is comparable to that of industrial sector until 2010
- Productivity of the agricultural sector is very low.

The first is a distinctive fact which is innate to the Cambodian economy, which is not usual in other developing countries. By transforming <Table 4-1>, we can easily compare the productivity levels of three sectors. <Table 4-2> shows the relative productive levels normalized by industry sector productivity. The productivity level of the agriculture sector is around 30% of that of the industry sector. The productivity level of services sector is as high as that of industry sector in 2010.

〈Table 4-1〉 Productivity by Sector						
(Unit: 2005 constant price US\$)						
Year	'00	'05	'10	'13	'14	'15
Whole Economy	738	943	1,105	1,274	1,338	1,401
Agriculture	380	468	580	624	622	618
Industry	1,854	1,683	1,573	1,944	2,082	2,234
Services	1,457	1,526	1,550	1,670	1,747	1,824

Note: Productivity is defined as 'constant price GDP/employment'; the employment shares of each sector were interpolated and extrapolated from original WDI indicators;

Source: Author's own calculation based on World Bank, WDI (2015).

〈Table 4-2〉 Evolution of Relative Productivity Level				
((Unit: Industry Productivity=100))				
	'00	'05	'10	'15
Whole economy	40	56	70	63
Agriculture	21	28	37	28
Industry	100	100	100	100
Services	79	91	99	82

Source: Author's own calculation based on World Bank, WDI (2015).

3.1.3. Growth Explained by Productivity

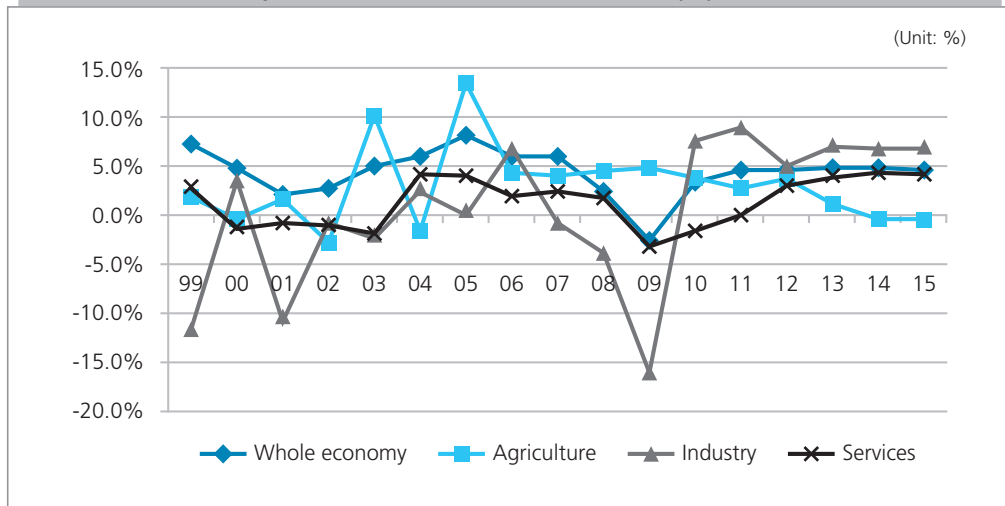
[Figure 4-5] shows the evolution of the annual growth rate of productivity by sector, together with that of the whole economy. The level and growth rate of productivity is the highest in the industry sector in industrialized countries. In Cambodia, the productivity level of the services sector is comparable to that of the industry sector and showed a higher growth rate to that of industry sector until 2010.

The growth rate of the industry sector productivity is predominantly high from 2010 onwards. This is explained by large-scale FDI in the garment sector in 2010. Whether this trend will continue or not has an important implication for policy decision makers of the RGC. If there is any uncertainty or risk in this trend, to discern the factors and how to make this trend sustainable will be a pending challenge for Cambodian policy decision makers.

As shown in 3.1.3, growth of an economy (or a firm) can be always decomposed into growth of productivity and that of employment, respectively. How high a proportion of Cambodia's economic growth resulted from productivity growth over the last 15 years? To answer this question, we decomposed the growth rate of the Cambodian economy into that of productivity and that of employment. The results are given in <Table 4-3>, where five-year average growth rates are arranged together with the average growth rate of the whole observation period. From 2000 to 2015, the average annual growth rate of the Cambodian economy amounted to 7.4%. Over the same period, the average annual growth rate of productivity and that of employment were 4.3% and 3.2%, respectively. That is, 57.5% of the economic growth is explained by productivity growth and the rest, 42.5%, explained by employment growth. The annual productivity growth rate which surpasses 4% is very much high, which is a signal of sound growth.

Will this trend continue? It is only possible when businesspeople with entrepreneurship implement new higher value added business activities and/or when workers raise their productivity by learning by doing and accumulating experience on the job. It suggests a policy agenda for the RGC to take initiatives in this context, which we will examine in Section IV.

[Figure 4-5] Growth Rate of Labor Productivity by Sector



Source: Author's own calculation based on World Bank, WDI (2015).

〈Table 4-3〉 Growth Rate of Economy, Productivity and Employment

(Unit: %)

		00-15 average	00-05 average	05-10 average	10-15 average
Economic growth rate	Whole economy	7.4	8.9	6.5	6.9
	Agriculture	3.9	4.9	5.0	1.9
	Industry	9.9	13.0	6.3	10.2
	Services	7.9	9.7	6.7	7.5
Productivity growth rate	Whole economy	4.3	4.9	3.2	4.8
	Agriculture	3.2	4.1	4.3	1.3
	Industry	1.2	-1.9	-1.4	7.0
	Services	1.5	0.9	0.3	3.3
Employment growth rate	Whole economy	3.2	4.1	3.3	2.1
	Agriculture	0.7	0.8	0.7	0.6
	Industry	8.6	14.9	7.7	3.2
	Services	6.5	8.7	6.4	4.2

Source: Author's own calculation based on World Bank, WDI (2015).

3.2. Agro-Processing Industry

3.2.1. Current Status of Agro-Processing Sector

As of 2014, Cambodia's agricultural sector accounts for 51.0% of total employment and 23.6% of GDP. It is therefore crucial for the Cambodian economy to promote domestic agriculture as the main supplier of raw materials, to raise technology levels, and guarantee acceptable quality and safety, thus enhancing the productivity of the agro-processing industry. Meanwhile,

Cambodia lacks processing and treatment facilities, their loss rates for harvested products are very much high (Chang, 2013). Surplus harvested agricultural products are exported to neighboring countries such as Thailand and Vietnam. However, the export of agricultural products is not significant. Farmers export raw products at a low price and Cambodia imports processed products at more expensive prices.

Nowadays, the role of agriculture is different from that of the past. It is frequently combined with traditional industry and services to become a form of industry in itself, producing higher value added than before. It is common in many countries that the development of agro-processing industry and the industrialization of agriculture is a joint process. It generates a new type of industrial sector to the extent that it is called sixth industry to emphasize that the new type is a combination of primary, secondary and tertiary industries in the classical sense.

As for Cambodia, it is still possible to distinguish the production phase of raw materials from the processing and transformation phase because the technology used is not so high-end, and the extent of vertical integration between agriculture and agro-processing is very weak. Cambodia's main agricultural products are rice, maize, soy and casaba. They are raw materials for processing. However, because the linkage between the agro-processing industry and domestic agriculture is weak, the value chain in the agro-processing industry can be simplified into two categories.

- For domestic products: cultivation of raw materials such as rice, maize, soy, cassava, etc. —milling or processing —transportation—food industry
- For imported raw materials such as wheat and feed: port facility services [import] —flour production or raising the livestock —food industry or export

Even though Cambodia is an agricultural country, the Cambodian economy is highly dependent upon imports for most foods and semi-processed products except for rice, the lack in process and treatment facilities resulting in a leakage of value-added to overseas. The vulnerable status of the agro-processing industry constrains productivity growth of the sector.

A natural consideration of policy decision makers can be to strengthen the linkage between domestic agriculture and the agro-processing and agro-food industry. The structure of the agro-processing industry has to increase value-added and may help develop the agricultural sector. However, constraints already appear entrenched. For example, as regards the first type of value chain categorized above between agriculture and agro-processing, the Cambodian agricultural product market is highly open to international competitors to the extent that the bases for domestic production of less competitive items are collapsing. The fact that processing has a broad base in the economy should be distinguished from the fact that it has real potential.

According to Wilkinson and Rocha (2008), who studied agro-processing in developing countries, food processing is an important manufacturing sector for low-income countries, explaining 15-20% of manufacturing value-added production or around 2% of total GDP. In Cambodia, the agro-processing industry employs 130,000 workers and contributes around 2.3% of the GDP (Chang, 2013). However, the firm size is small. In many cases, they are household-based processing and unregistered, and individual ownership is dominant. Consequently, the value added of processing is very small.

In Cambodia, the distribution of the manufacturing sector is sharply skewed towards the food and beverage industry in terms of the number of firms. Of over 30,000 agribusiness firms, 91% are small in size, employing less than five employees and having a capital outlay of less than \$1,000 as of 2012. Food, beverage and tobacco sub-sectors account for 10% of industrial production and only 4% of investment (Chang, 2013).

Most agribusiness firms are located in rural areas where transport facilities are greatly lacking and necessary services are frequently not available at the time when needed. The absence of timely services not only raises problems in transporting final products to market centers and ports, but also disrupts the collection of harvested raw materials for processing. The transportation problem is more critical in the case of quickly perishable products such as fruits, vegetables, fish and other related products. In effect, poor transportation services are one of the major factors which explain the post-harvest loss.

3.2.2. Upstream of Agro-Processing: Agriculture

The average farming area of an agricultural household is about 1ha (10 thousand square meters). The total agricultural land was 58,000 km² in 2013, which was 32.9% of the total land area (World Bank, 2015). Irrigation systems are very much scarce and the proportion of irrigated land statistics is not reported. Daily consumed vegetables

are imported from neighboring countries because the lack of irrigation hinders the cultivation of fresh vegetables.

Around 90% of the total agricultural land is cultivated land for four major crops: rice, maize, soybean and casaba. Out of this, 76.3% of the agricultural land, 2.72 million ha, is used for rice farming (Chang, 2013). The main source of agricultural income, as well as the most important economic activity in rural areas, is rice farming. The rice yield per ha is 2.6 tons. The productivity is considerably low in comparison to the neighboring countries of Vietnam and Thailand. Most farmers are used to working only during the rainy seasons.

Most of the rice is produced by individual farmers who are micro smallholders for self-sufficiency. They are weak in competitiveness. Large firms, which are usually FDI-linked, collect surplus rice from individual farmers. According to the Cambodian Ministry of Agriculture, Forestry and Fisheries (MAFF), Cambodia's annual rice production amounts to 9.5 million tons. Out of this, about 1.5 million tons are exported, of which more than 0.5 million tons seem to be exported informally after having been collected by Thai and Vietnamese firms. Because domestic capital formation is very much limited and income level is low, farmers want to sell paddy rice even before it dries. Thai and Vietnamese firms collect and buy this paddy rice to export via informal routes. (Interview with Rice Federation Cambodia in September 2015).

Agricultural production does not seem sufficient to support the agro-processing industry except for rice. Raw materials for the agro-processing industry in rural areas are limited. If there is any surplus product or raw material which is not final goods in itself such as rubber, it is taken to other countries by merchants from Thailand and Vietnam due to the lack of processing facilities and low productivity in the Cambodian territory.

It is evident that to enjoy an economy of scale, processing facilities should be relevantly sized. To invest and establish a company of that size, infrastructure and transportation facilities are necessary together with capital supply. They are all scarce resources in Cambodia which need to be addressed with a bold approach to break through.

3.2.3. KIRIROM: A Possible Model for Agro-Processing Company to be Pursued?

Among those firms the author visited in November 2015, the author found a one called Kirirom Food Production Company which can be considered a good firm model in the agro-processing industry. The company processes mango and produces

dry mango products. In Cambodia, huge numbers of mangos are abandoned every year because Cambodians prefer fresh fruits. Few tried to process high-quality mangos for export because processing costs, typically electricity, were high. However, Kirirom Company has jumped into the business. The company is, however, struggling to overcome international competition and the quarantine regulations of destination countries.

The origin of Kirirom Company was a mango farm. Initially, it was a hobby of the owner's father who liked to plant trees, especially mango trees. He started to cultivate mangos incrementally starting from 2002. The family now has 500 ha of mango tree fields. In mango fruit season, the family realized that a huge number of mangos were being thrown away in small and large farms. The family therefore assumed they would need to process them. Thus, in 2013, Kirirom Food Production was established and a 5,000 m² factory was built on a 60,000 m² area.

After one and half years, in Oct 2014, Kirirom factory started to produce dry mangos. The number of staff varies according to season and rank from 70 to 200 people. The value chain type of the Kirirom company is as follows:

- 'mango farms —collectors—factory—distributor exporter'

[Figure 4-6] KIRIROM Food Production Company's Logo and Packing



Source: Kirirom (2016).

The value chain contains the potential to realize spill-out of economic activity, mostly within Cambodia territory, which will provide and suggest more diversified work experiences for workers, which has not been possible in the traditional agriculture sector. It realizes a certain degree of vertical integration of agriculture activity with the manufacturing and services activity. This shows how to make the most of those primary products of Cambodia which have not received much attention as an export. It appears to provide an example of how to approach a solution to irrigation and infrastructure. It may provide an opportunity for eco-tourism or a bridgehead for the advancement of other activities. Of course, further research on the sustainability of Kirirom business including on-site diagnoses will be necessary to establish Kirirom as a practicable example of developing a new Cambodian agro-processing industry.

3.3. Garment Industry

3.3.1. Current Status of Garment Industry

The Cambodian economy has shown an average annual growth rate of 7.4% over the past twenty years. Open market policy and foreign direct investment (FDI) to the garment industry (including clothing, textile and footwear) played a locomotive role for the high performance of the economy. In 2009, the Cambodian economy, hit by the global financial crisis, was stagnant, showing a vulnerability to the overseas economic recession. The Cambodian economy is a highly open one. Domestic capital is insufficient and, as such, the importance of FDI is high. However, the Cambodian garment industry is characterized by simple processing and sewing exclusively oriented for export as a subcontractor of multinational company. Thus, it belongs to the lowest value chain of international division of labor. It shows very weak vertical integration within the Cambodian economy.

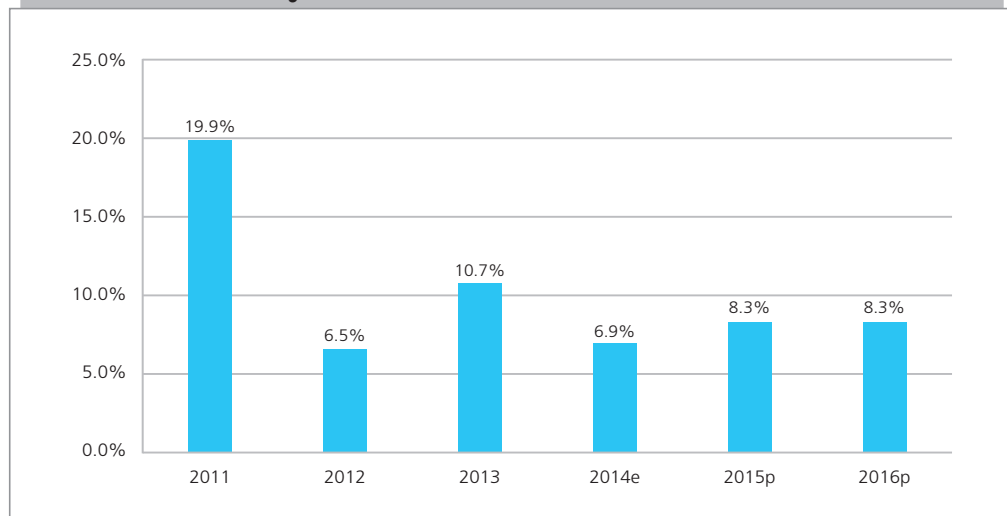
Despite this vulnerability, the garment industry has been the linchpin of the nation's economy. It is now the second biggest economic engine driving Cambodia's economy. From its small-scale start to the swift rise to prominence, the garment industry has played a pivotal role in Cambodia's social and economic development. In 2014, the garment sector grew 6.9% - down from 10.7% in 2013 - due to internal political tension and labor unrest after the July 2013 election. Furthermore, the industry is the country's largest employer, providing more than 600,000 jobs at 598 factories in 2014, of which 58 were footwear factories.

In addition to the number of jobs it provides, another positive influence of the garment industry on the labor market exists. It is found in the answer from a responsible manager Suntex Pte., Ltd. to the question of whether labor turnover is frequent.

“Workers will not prefer going to SMEs, because they satisfy only the minimum wage condition and other working conditions are poorer than here.”

Job opportunities for potential long tenure in themselves have a considerably good influence on the Cambodian labor market because the Cambodian labor market is characterized by an extremely high rate of resignation or labor turnover. According to the labor market survey on employers, the vacancy rate is high and firms claim particular difficulties in finding workers with ‘work experience’.⁴⁾

[Figure 4-7] Growth of Cambodia's Garment Sector



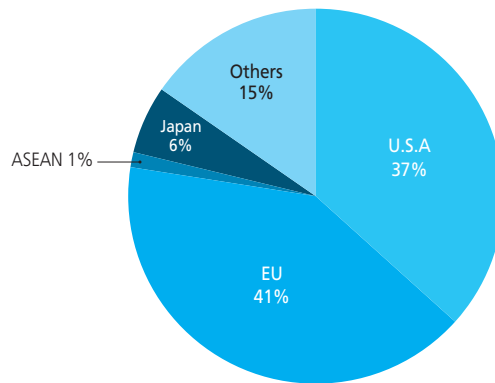
Source: CPC (2016).

In 2014, garment exports accounted for approximately 74% of the total exports, valued at roughly US\$ 6 billion. Cambodian garment exports are mainly dependent on the EU and US market. Export share to the US market in 2014 was 36.8%, down from 46.6% in 2010, whereas the share to the EU market increased from 37.9% in 2010 to 40.6% in 2014, indicating Cambodia's increasing reliance on the EU for its export market. Besides these two major markets, the ASEAN and Japan markets accounted for 1.2% and 6% respectively, while other markets made up around a 15% share of the total exports in 2014.

Finally, foreign direct investment (FDI) in the garment sector (in terms of fixed assets) experienced negative growth of 2.9% in 2014 compared to 2013 and accounted for 29% of the total FDI. Among major countries investing in the sector, China remained the biggest investor in 2014, taking up roughly 39% of the total investment in the sector, followed by Hong Kong at 18%.

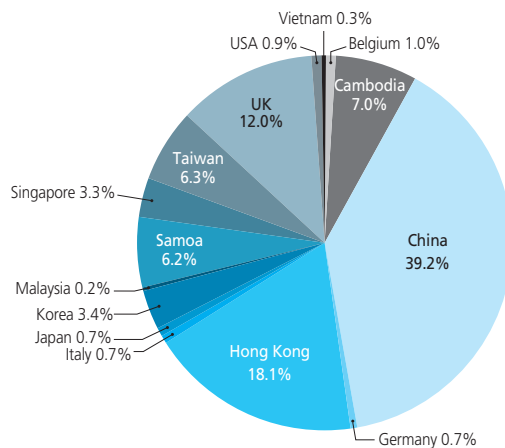
4) See III.4 for more detail.

[Figure 4-8] Share of Cambodia's Garment Export Volume by Destination Country, as of 2014



Source: GDCE Trade Data (2014).

[Figure 4-9] Share of FDI in Garment Sector by Country (in terms of fixed assets), as of 2014



Source: Cambodia Investment Board (2014).

3.3.2. Characteristics of Garment Export Firms Seen via Suntex Pte., Ltd.

The overall picture of production process and characteristics of garment factories in the SBU (Strategic Business Unit: an special industrial zone near Phnom Penh) can be described as follows. It is based on observations in Suntex Pte., Ltd.

The main products of Suntex are pants, shorts and T-shirts. Raw materials and intermediary goods such as fabric rolls, accessories, textiles and fibers are all imported. Locally purchased intermediary goods are carton boxes and polybags for packaging. The only customer is Adidas. Adidas qualifies licenses and controls the quality of products. However, Suntex is not a filial of Adidas. It is one of the global production units of Runtai International Trade Company (香港潤泰國際貿易有限公司) based in Hong Kong. Engineers and high-level personnel all work in Hong Kong.

The designs of products are similar to the other. When a sample arrives from Adidas, products are made following the sample. R&D is done in head office of Adidas. Production is entirely for exportation, with not even a part of them for local sale. Knowledge including R&D and engineering for running the factory is located in the back-end office in Hong Kong. Staff and manpower in Cambodia are for production, marketing, delivery, quality control and waste management.

There is also a small number of technicians for taking care of equipment, as this does not require any special training. Their skills can be sufficiently acquired by training on the job or learning by doing. Because the quality of school education is not good, they are not skilled workers.

The production process is mainly accomplished by a combination of sewing machines and operating sewers. The number of sewers is in the order of 2,500. These production line workers need no other skill than to read and write, therefore, does not require a certain education level. The compensation level is determined at minimum wage. Overtime pay, performance pay and insurance against accidents is additionally provided.

The production process is composed of several steps. When fabrics are released from the warehouse after inspection, they are moved to the cutting department where spread and cutting machines are operated by control panel. After cutting is accomplished, they are sent to the sewing department. The finished goods are then sent to the warehouse for export. In this process, equipment change or repair is hardly, if ever, necessary. The possibility of technique or technology transfer is as much limited or almost absent. The process does not require many technicians for equipment.

The incentives for Adidas and thus for Runtai to produce garments in Cambodia lie in the fact that the garments of Cambodian origin are allowed to be imported tariff-free in the EU. There are over 30 similar OEM producers in Cambodia. That is to say, many garment companies have established factories in Cambodia to enjoy cheap labor cost and tariff exemption when exporting to European countries. According to the manager responsible for Suntex, if tariff exemptions were not given any more,

many of them may leave Cambodia.

3.3.3. Management Condition of Garment Export Firms

In the history of the Korean clothing and apparel industry, starting from sewing clothes for export, industrial development was pursued to textile and fiber production and then to basic chemical materials for producing those textile and fiber, substituting imported intermediary goods and materials. Economic development plans were defined in close relation with the objectives, motivated by the need of entrepreneurs for workplaces to increase value-added. This process explains how an owner of a textile company was able to own a petrochemical factory.

The policy programs were defined by related government agencies and agents (those in ministries and public companies, etc.) coherently with the development plans as a way of helping raise export competitiveness and producing, substituting raw materials and intermediary import goods. As capital was insufficient, the Ministry of Finance sought loans and allocated the credit via banks. The Ministry of Commerce and Industry at that time defined support programs to boost the target industry in R&D, marketing, etc. The company Electricity of Korea differentiated the price of electricity to support export companies. When a new industry area was targeted, a necessary skill or manpower was identified and appropriate program followed supported by the Labor Administration Office (predecessor of Ministry of Labor), the Ministry of Education and the Ministry of Commerce and Industry.

A similar process was pursued in other light industry firms; then economic plans were naturally defined to extend the industrial horizon of the Korean economy from light industry to the heavy and chemical industry. The development process of firms implied human resource development via on-the-job training, learning by doing, and encouraging workers to higher education for greater opportunity for career development.

The present condition of the Cambodian garment industry is, however, different from Korea in the 1960s and 1970s. Garment companies are not owned by Cambodian entrepreneurs. The profit earned in the present garment industry has not been a source of finance for new investment in Cambodia (Of course, the nationality of ownership does not necessarily guarantee the investment place).

When Korea was pursuing its export-oriented growth strategy in the 1960s and 1970s, most other countries including Thailand and India were pursuing an import-substitution strategy. Vietnam and China were, in contrast, outside the market economy. Therefore, the competition was not, if ever, as fierce as that with which the Cambodian economy is now facing. In addition, industrialized countries' import regulations were not as strict as now.

Now to Cambodia, not only China but also Vietnam and Thailand are producing competing export goods. The privileged tariff status formerly given to products of Cambodian origin has not been given to Cambodian products by the United States since 2005. The tariff rate of the US on clothes is as high as 16%.

Meanwhile, the cost of logistics and electricity in Cambodia is known to be the highest in ASEAN countries. Together with this, formal export management fees and other informal document processing fees are making Cambodia less attractive as a production base. The minimum wage increase which has changed from US\$60 in 2012 to US\$128 in 2015 is adding additional pressure.

Currently, the merit of Cambodia as a production base is maintained due to the EU's preferential tariff rate which is given to products of Cambodian origin up to US\$6 billion on the condition of observing ILO conventions. As for Cambodia's status as a production base for exporting to the US, it is possible Cambodia's status will become less attractive when the TPP (Trans-Pacific Partnership) Agreement becomes effective among member countries because Vietnam is a member of TPP together with Malaysia and Singapore.

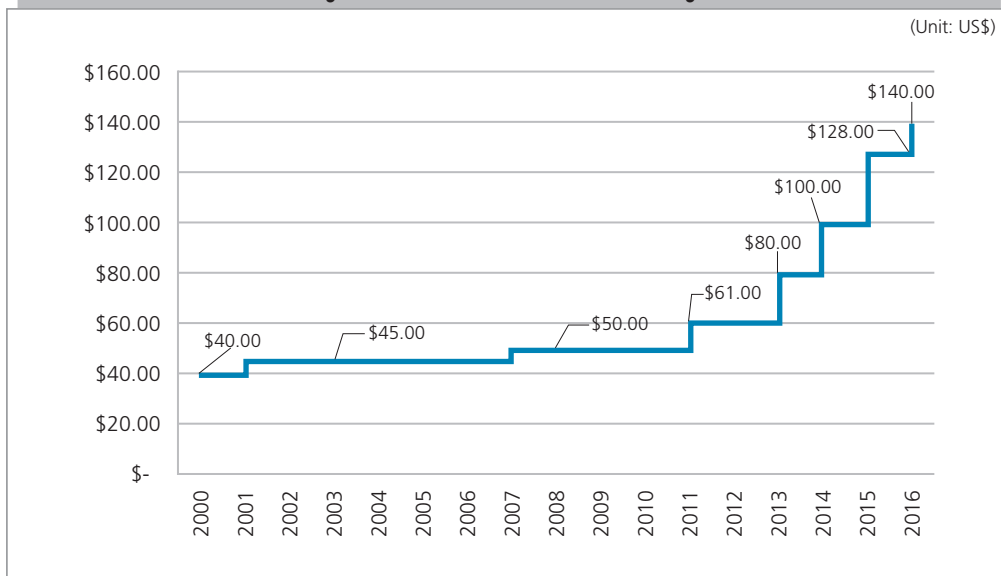
3.3.4. Minimum Wage and Productivity Improvement

In the last 15 years, Cambodia's minimum wage has more than tripled. In 2000, the minimum wage was only \$45 per month, increasing to \$50 in 2006. Set by the Arbitration Council, the minimum wage was once again increased to \$56 in 2008, \$61 in 2010, and \$66 in 2012. The major increase in minimum wage was in 2013, when it was increased to \$80, followed by a 25% increase in the following year. Moreover, this minimum only covers the garment and footwear industry, and is not a nationwide minimum wage.

The ordinary procedure of minimum wage setting is as follows. Prior to 2013, the RGC unilaterally set the level of minimum wage through the Arbitration Council; however, after the 2013 general election, the RGC began calculating the country's minimum wage by creating a tripartite minimum wage negotiation, comprising representatives of the RGC, unions, and the factory owners. The role of the tripartite negotiation creates a forum for the three groups to convene and discuss and present

findings in regard to how to calculate next year's minimum wage. This negotiation typically began in the middle of September and lasted for roughly 30 days until the three groups can compromise on one figure, which would be presented to the Labor Advisory Council (LAC). Once a consensus has been reached, the LAC will make a recommendation to the Prime Minister (PM) for consideration. In 2014, the LAC decided to recommend \$135 for the PM, and decided on \$140 as the 2016 minimum wage level.

[Figure 4-10] Evolution of Minimum Wages



Source: CPC (2016).

The minimum wage has increased dramatically in the past five years while electricity, logistics and processing costs in Cambodia are the highest among ASEAN countries. In this situation, it is natural that the Cambodian government and those firms which have invested in Cambodia are concerned with productivity increase. Productivity increase provides a margin for maneuver for firms experiencing profit squeeze. The Cambodian government has a particular reason for additionally being interested in enhancing the productivity of Cambodian workers.

In Cambodia, there are several garment export firms which are seriously thinking of moving factories to other countries such as Myanmar. The condition of Myanmar is somewhat similar to that of Cambodia 20 years ago. Some companies think that it would be better to move to Myanmar despite the political risks of the country. Several foreign firms which have operating factories in Cambodia have petitioned the US government to grant privileged tariff rates to garment exports of Cambodian

origin. When this petition is accepted, garment-exporting companies will be interested in production in Cambodia. Even in this case, however, the relatively advantaged situation of Cambodia cannot continue forever, because Vietnam and Myanmar will benefit comparable conditions via TPP or preferences granted.

One more constraint adds to this situation, one which does not exist in other countries. Cambodia is short of one policy instrument or adjustment mechanism compared to other countries. When the unit labor cost increases and thus international competitiveness decreases, it is usual adjustment path that the value of the Cambodian Riel depreciates to make Cambodian products cheaper in the international market.

In Cambodia, the exchange rate between Cambodia's national currency and the US dollar does not change. The Cambodian Riel is almost pegged to US dollar because of the broad circulation of US dollar admitted in the economy. It helps to attenuate the inflation rate. However, it also deprives Cambodian economy of one adjustment mechanism to attenuate a loss in competitiveness due to a rise in labor costs and the high cost of production such as high logistics and electricity costs.

The current situation highlights that the RGC should be alert about the possible risk and pursue structural change to attenuate the expected risk. The current situation of Cambodian garment industry, the second most important engine of the Cambodian economy, should be carefully controlled, together with developing a medium- and long-term plan to enhance productivity.

3.4. Skills Demand and Labor Supply

3.4.1. Structure of Population and Labor Force

Cambodia has an especially dark place in modern history this is reflected in the economy. The trace is particularly prominent in the labor market. Under the Khmer Rouge Regime, the core age population, especially intellectuals and technologists had been killed en masse or sought asylum in foreign countries. Therefore, a proportion of the core age working population is missing in Cambodia.

In the 1980s, a postwar baby boom followed. The annual average number of newly born children amounted to 401,000 from 1980 to 1985, and to 417,000 between 1990 and 1995 (Jeong, 2013). Due to the baby boom of the 1980s, the total population increased from 6.5 million in 1980 to 14.1 million in 2010. The population aged 35 or less now stands at 60% of the total Cambodian population.

Even though the youth population has increased enormously, in addition to the

loss of knowledge, know-how and work ethic, the history of the 1970s resulted in shortages of teachers and instructors in schools and universities, and of core workers who could play the role of mentor for new labor market entrants, transferring implicit knowledge. This is a very distinctive aspect of the skills shortage challenge in Cambodia.

In addition to this historical legacy, one of the most serious behavioral characteristics which aggravate the skills challenge is the dropout rate from school. In Cambodia, 60.2% of the population aged 25 or older have received no schooling, or have not completed primary education, and only 7.7% among them have achieved the upper secondary or higher level of education, and the average years of schooling in Cambodia was 4.8 in 2010 (Jeong, 2013).

Among the reasons for this low attainment, the majority are due to dropouts. Among the working age population, the enrollment rate at primary school is 59.6%, with 21.6% of them being dropouts. Among the 38.1% of the working population who have completed the primary education, almost a third of them (12.5% of the working age population) enroll at secondary level schooling. Then, about half of the secondary school enrollees (6.3% of the working age population) again drop out from the secondary schools. Among the secondary graduates, only half (3.0% of the working age population) of them enter colleges, and then the half of college students (1.5% of the working age population) again drop out (Jeong, 2013; Barro and Lee, 2013).

Including the dropouts and other reasons, 73.7% of the population aged 6 to 24 left at the primary or lower level of education in 2010, which is similar to Korea's enrollment rate to the tertiary education according to the Cambodian Ministry of Education and Youth. The dropout students are destined to become the unskilled youth in the labor market.

In Cambodia, the demand for skilled and semi-skilled labor is primarily found in the industry and services sector. However, according to the Ministry of Labor and Vocational Training, about 75% of trainees are receiving their vocational training in agriculture.

3.4.2. Skills Demanded by Firms

According to the data on workforce required by investment projects approved by the Council for Development of Cambodia (CDC) which may represent the foreign direct investors' demand for labor, about 55% concerned the demand for 'skilled' workers. Here, the definition of 'skilled' does not mean such occupational categories as managers, engineers, technicians and supervisors.

Instead, they correspond, in fact, to such occupational categories as sales workers and craftsmen. The second most demanded group was 'unskilled' common laborers, at around 35% of the demand from FDI investors. The third most needed was 'staff' (clerks). These three types of skill groups account for around 97% of the total demands of Cambodian workers by the CDC investment projects (Jeong, 2013).

A survey conducted by the National Employment Agency (NEA) on skill gaps and shortages in the six major sectors revealed that laborers and craft and trade-related workers were the most requested occupational category. The share of skill-shortage vacancies was in the order of 84.7% for elementary occupations, and it was in the order of 6.7% in the occupational category of crafts and related trade workers (Jeong, 2013).

Employers complain the 'skills' shortage of unskilled or semi-skilled workers would be related to primary or lower secondary education level, respectively, rather than that of high-skilled workers, which would be related with upper secondary or tertiary education level. The dimension of 'skills' that the employers need does not seem to lie more in such characteristics as language and attitude as firm-specific professional skills.

According to the NEA survey, top three skills needed but not present are 'work attitude' (52%), 'foreign language' (37%), and 'experience' (32%). Among special technical category workers, the top three most required but hard-to-find skill characteristics are decision-making (45%), experience (42%), and analytical skills (40%). Regarding professional category workers, the top three such skill characteristics are analytical skills (64%), decision-making (55%), and experience (37%) (Jeong, 2013).

Interestingly, 'experience' is a common characteristic that employers want in all categories of workers. Overall, what Cambodian employers expect from their employees when they seek staff is a kind of common sense and a work ethic rather than scientific and technical knowledge that can be learned from schools. This expectation may, of course, change once firms come to find staff with 'work experience' or common sense.

These facts suggest that the first priority has to be given to labor supply side and then to labor demand side to redress the challenge in the Cambodian labor market.

4. Policy Items and Recommendations for Enhancing Productivity

4.1. Factors Influencing Productivity

We have examined channels of productivity growth in section II. They are related with capital (K), labor (L), and technical coefficient (A). Factors influencing productivity are diverse, as given in Table 4, and productivity growth is influenced by these factors.

Some capital is invested by private sector firms, while social overhead capital is invested by government. All things being equal, more capital increased labor productivity. Work intensity, labor quality and the learning by doing process are factors influencing productivity which are related to labor. Skilled labor contributes more to production of value added than unskilled labor, leading to higher productivity.

The factors which relate to the technical coefficient are diverse. The financial system, tax system, R&D system, education and training system, circulation of information, union behavior, heritage, trust, non-tangible property rights, etc. all exert influence on labor productivity. They are typically non-tangible factors while physical capital is the tangible input. So called 'social capital' which is frequently cited in recent literature, comprises factors which are related with the technical coefficient.

The most important of all the factors for enhancing labor productivity would be entrepreneurship. Productive activity cannot exist in the absence of entrepreneurship. If there had not been entrepreneurs in Cambodia in the 1980s and 1990s, and in Korea in 1950s and 1960s, the two countries could not have achieved positive growth in the midst of the vestiges of civil war. The outcome, hence the productivity of labor, can be very much different even when the same amount of inputs are used, depending on entrepreneurial activity of entrepreneurs in the course of production activity.

Factors influencing productivity are equally diverse and labor productivity changes depending on them. Based on diagnoses of the two sectors (agro-processing and garments), and the evolution of productivity, we will investigate ways of enhancing productivities in the following and how to overcome bottlenecks with which the Cambodian economy is faced.

〈Table 4-4〉 Factors Influencing Productivity

Capital	equipment, land, building, etc.
Social overhead capital	roads, bridges, ports, railroads, airports, other transportation facilities, information and telecommunication networks, power plants, etc.
Labor	labor quality, work intensity, learning by doing process, etc.
Institution	finance, tax, R&D, education, training, circulation of information, corruption, union behavior, heritage, trust, non-tangible property right, etc.
Entrepreneurship	ability to create enterprise, ability to enhance productivity of firm, etc.

Source: Hur *et al.* (2016).

4.2. Credit Rationing for Efficient Allocation of Scarce Capital

In developing countries, especially in low-income countries at the initial stage of development like today's Cambodia and Korea in the 1960s, capital is one of the scarcest resources and access to the capital market is very much limited. This partly explains why the interest rate in developing countries is so high.

During the development plan era, the Korean government borrowed loans, instead of inviting FDI from international development banks or donor countries, and allocated it to the best performing firms. Koreans were not favorable vis-à-vis inviting FDI at that time because they had a bad memory of companies which exploited the Koreans during the colonial period.

With the given amount of resources, how to allocate them influences the productivity growth path and two different allocations may result in an enormous difference in the long term, even though the initial condition is similar. This is one of the most important factors which explains different economic performance between Korea and the other newly independent countries after World War II.

How can we allocate the scarce 'capital'? It is evident that it should be allocated to the most efficient firms in the economy. However, how can we identify the most efficient firms? In Korea, they were deemed to be exporting firms and they were allowed to access the capital with priority.

At the initial state of development, regulations are not properly enforced. Competition in the market is far from perfect because natural or institutional entry barriers exist on the one hand and monopoly or collusion is not a rare practice on the other. Consequently, the domestic market is highly protected. Firms' enterprise which compete only in the domestic market cannot be optimal from the national point of

view. Governments cannot be assured that they are running business optimally from a national perspective.

In contrast, to compete in the international market, firms have to pursue their production activity in the most efficient manner. In Korea, the loan, borrowed at a very low interest rate compared to the domestic rate from the international market, commercial or concessional, was allocated to export firms. As a matter of fact, at that time export firms were considered efficient firms because they earn international currency while foreign reserves had always been short.

Instead of looking at Cambodian farmers selling rice informally to Thai or Vietnamese merchants, allocating credit to Cambodian firms which officially export to foreign companies and pay taxes or fees, and to coordinate them with milling industry firms so that they can establish a vertical integration (cultivating rice and corn—collection—storage—export) would immediately contribute to reducing the informal exportation of rice and corn and in identifying competitive agricultural firms. Consequently, it will lead to a gradual decrease in the amount of informal exports to Thai and Vietnamese firms and the latter will come to buy rice and corn from Cambodian firms.

Such initiatives as credit rationing are liable to risk. The crucial determinant of whether or not it is successful depends on how to successfully discern those firms adapting themselves in the international market to export Cambodian products or services and reinvest their profit on the one hand, and the capacity of government and financial institutions which operate correctly on the other. Unless government decision makers are faithful to economic principles and are monitored to do so, credit rationing may fall down to means of rent seeking, and consequently distort the economic system. It is not an idea which automatically offers good results, but a correct implementation which will lead to such results.

4.3. Investment on Social Overhead Capital to Boost Firms' Activity and to Enhance Productivity

4.3.1. Financing

It goes without saying that the expansion of social overhead capital is indispensable at the initial stage of economic development. However, serious capital shortage is a general phenomenon at this stage. In general, there are two financing sources of investment: one domestic and the other foreign. Domestic financing sources are tax, bonds and savings. Foreign sources are loans from foreign countries or entities and the invitation of foreign direct investment.

- Domestic sources: taxes, bonds, and savings
- Foreign sources: loans and FDI

It is quite difficult to raise the compliance rate of tax paid in the short-term. In Korea, civil servants from diverse institutions such as the financing department of local government, fire station staff and police officers would go out to collect 'tax' from firms for personal use in the 1950s. At that time, the tax burden ratio, defined as tax revenue/GDP was in the order of one digit, say 6-7%. It was not until the National Tax Service was established in the 1960s that the ratio increased to over 10%. If the leakage is due to private embezzlement of civil servants, the Korean experience of tax collection in early period and subsequent improvement in tax administration can be helpful.

When economic growth rate is high and a purchase of real estate always led to capital gain, the Korean government had purchasers of apartments buy government bonds at a higher than market price. Those firms which obtained construction orders from the government were also required to purchase a certain amount of government bonds at a higher price. The resources gathered in this way were re-invested to construct new roads and dams, to establish an irrigation system, to build new apartments, and to expand public transportation.

This practice is still working. Purchasers regard the price difference between the purchase price and the price of bonds at spot market as part of the price for the apartment purchased and construction companies regard it as a part of construction costs. The Korean government could finance a part of necessary financial resources for the construction of SOCs based on this measure. Together with this, a nationwide savings promotion campaign and privileged interest rate was provided to students' and workers' long-term savings accounts to mobilize and accumulate domestic capital all along the development era.

Sources of procuring foreign capital can be diversified. Social overhead capital need not to be constructed on only a BOT (Build, Operate & Transfer) basis. The Cambodian government can borrow low-interest long-term loans from international markets or multilateral development banks to invest and procure a greater share in the infrastructure projects to provide social overhead capital services at a cheaper price. Of course, borrowing agents should be soundly monitored and induced to allocate the resources efficiently so that intended goals be achieved. Alternatively, loans are also susceptible to being used for rent seeking and the intended goal is not achieved.

4.3.2. Electricity

Cambodia's electricity bill is notorious among firms operating in Cambodia. It is one of main factors for foreign firms to be hesitant in investing there. It seems inevitable to take the initiative of keeping electricity costs down on a long-term basis. If an electricity cost down plan had been established, the RGC would have been able to cooperate with international experts to discern bottlenecks and constraints and overcome them. Unless a specific action plan is set up and implemented, the promotion of productive activity by supplying cheaper electricity is not possible.

4.3.3. Irrigation

Cambodia is short of irrigation facilities and 70% of vegetables consumed at the table every day are imported from Thailand and Vietnam. The economic development plan has to integrate definitive plans to expand irrigation facilities. At first, priority sites should be determined based on geographical feasibility studies of irrigation and the agricultural potential of regions. Subsequently, irrigation facility development should be implemented sequentially. Small-scale irrigation can be developed to motivate local farmers.

Alternatively, if local agricultural entrepreneurs need irrigation facilities to compete with Vietnamese or Thai agricultural products, the Cambodian government can perform a feasibility study. When agricultural productivity and competitiveness is deemed to be enhanced, the Cambodian government can invest financial resources to establish and organize irrigation facilities. The government entity to initiate this kind of process may be the CPC.

Expansion of irrigation facilities can be administered in the context of territorial management to make strategic bases for the development of the Cambodian economy. Strategic considerations can be, for example, to enhance the productivity of agricultural production in a certain area when entrepreneurs want to operate large-scale farmland in that area and process agricultural products to export.

In pursuing those initiatives, the RGC may ask for expertise from multilateral development agencies or donor countries. In any case, Cambodian experts have to work together with these foreign experts to take advantage of the knowledge stock of foreign experts and to learn by doing.

4.3.4. IT Infrastructure

To boost firms' activity and to enhance productivity, increasing public investment in power plants, not just handling on a BOT basis, in lowering electricity prices and

expanding the irrigation system from the most productive areas of farming, together with transportation facilities, are required. Priority of individual projects in each area will have to be defined strategically through the appropriate rationales.

In addition to investment in traditional social overhead capital such as electricity, roads, irrigation, etc., which raises the productivity of traditional activities, it seems necessary to proactively consider investment in IT infrastructure. IT infrastructure is a new type of SOC indispensable for new business opportunities. To stimulate new types of business, not only traditional SOC but also IT infrastructure should be given due attention. There are many kinds of SOC which Cambodia needs to expand. The minimum investment size may be not negligible at all while the capability of government budget and raising fund is limited.

This may be difficult for Cambodia due to constraints. However, the development process is making best practices to overcome such challenges. It is an unavoidable task for Cambodian decision makers, though it is substantial and challenging to expand SOC with priority, to determine the order of priority in each project, and to allocate limited resources.

4.4. Supply and Development Supply of Skills

4.4.1. Redressing 'Work Attitude'

HRD is emphasized in Cambodia's development plans and Rectangular Strategy. The diagnoses of Cambodian skill demand in III.4.2 suggest that Cambodia needs to first concentrate its capacity and resources on the labor supply side. Increasing only training services for as many workers as possible does not seem to redress 'work attitude' properly.

It is quite unique that firms cannot easily find individuals with the right 'work attitude' or 'work moral' in the Cambodian labor market. Whatever the cause is, it seems most reasonable to upgrade primary education qualitatively to attenuate or overcome this challenge.

To raise the enrollment rate and to lower the dropout rate in primary school is also imperative to attenuate this lack of 'work attitude'. They provide the basis for vocational education and general education in secondary schools, thus relating to overall education and training issues.

In the 1950s, public finance of Korean government was totally dependent upon foreign aid. Despite the difficult condition of government budgets, President Lee Seungman made elementary education compulsory and placed extensive financial

resources into it. The parents had a fervor for education and school-age children were eager to attend, which is distinct from the present Cambodian situation.

4.4.2. Skill Expectation Regarding Incumbent Workers

The expectation of Cambodian employers appears to change when they see incumbent workers, not labor market participants in general. They address the skills shortage of incumbent workers. Around half of the employers think that current workers do not perform their duties at the expected level required by their positions. The average share of employees considered not performing to the expected level of work amounts to around 21% and this share is the highest for 'plant and machine operators', at 26% (Jeong, 2013). This result implies that, for the incumbent workers, firms need firm-specific skills training and retraining.

Necessary measures are abundantly discussed and recommended by Jeong(2013), while Korea's experience of vocational education and training is extensively explored in Ra and Kang (2012) with references.

4.4.3. Making Industry Jobs More Appealing

It is a general observation that technicians are not found appropriately in Cambodian firms and offer the right skills. This also explains the slow upgrading of skills or innovations in manufacturing. The Cambodian economy is characterized by relatively high productivity in the services sector. While service jobs are physically less demanding than agricultural or industry sector jobs, the wage level of technicians in the industry sector is not more than that of service sector workers. These facts explain the tendency of Cambodian workers with 'right' attitude not placing a priority on technician jobs in manufacturing.

It is therefore necessary to introduce a deliberate inducing mechanism to attract workers with right work attitude to the agro-processing sector and other industry sector technician jobs. The solution will entail a combination of training and better compensation related to relevant qualifications. In order to encourage effective vocational education and training and enhance its suitability at industrial sites, a standardized qualification system is needed that measures the level of skills related with the corresponding qualification for manpower training.

Until the early 1970s, Korea's qualification system was managed by different ministries according to different criteria. In 1973, the Korean government wanted to synthesize and streamline those different qualifications which emerged in the process of industrial development and redressed mismatches, redundancies and mutual misrecognition of different qualification criteria by the legislation of the "National

Qualification Act”. In 1976, the Korea Skills Qualification Agency (later integrated into the Korea Vocational Training Management Agency under the authority of the Ministry of Labor in 1982) was established. As the industrial situation changed, the private sector was allowed to operate and manage the qualification system in 2000 and the national qualification degrees were simplified from eight to five levels of professional engineer, engineer, technician, master craftsman, and craftsman (Hur et al., 2016).

In the 1960s and 1970s, when Korea was encouraging the export of manufacturing products and a higher demand for technicians appeared, Korean firms were advised to pay a special allowance for technicians who had qualified licenses. In conjunction with this, the Korean government refined the qualification system so that qualifications can be a signal of manpower in the labor market. A special allowance was given to workers with relevant qualifications deemed necessary in the manufacturing firm where he or she worked. This special allowance encouraged technicians to acquire licenses with the prospect of better compensation in case of skills upgrading. Technical high schools prepared a curriculum through which trainees could acquire qualifications to give better compensation opportunities to their students.

4.4.4. Highly Educated Professionals

Scarcity of capital can be attenuated by loans or grants from abroad. Inappropriateness or absence of a certain institution can be improved or introduced by implementing a policy agenda based on a plan. SOC can be constructed and established according to priorities to aid higher productivity in private sector firms and other economic activities. However, manpower and experts with professional knowledge take considerable time to build. Developing teachers and establishing educational institutions takes as much time.

Evidently, the reason why the CPC wanted to investigate ways of raising the productivity of Cambodian economy is related to how to procure skills that aid industrial development and how to establish an economy that upgrades skills for enhancing productivity. Therefore, it is essential to discuss and investigate the possibility of procuring a foundation of skills formation under the present conditions, where scientists, engineers, technologists, technicians and skillful craftsmen are all scarce resources.

Instead of discussing and indentifying policy agenda to build the necessary human resources, I will here introduce an experience from Korea in the middle of the 1960s. As is the case with present day Cambodia, in the early 1960s Korea was short of scientists and engineers to plan and pursue industrial development as well as

technologists, technicians and skillful craftsmen. Many experts were also kidnapped to North Korea during the Korean War.

When Korea decided to send troops to Vietnam, the US Johnson administration proposed a gift aid to the Korean government. The Korean government could have suggested the building of a bridge or road. However, the Korean government decided to propose building a science and technology institute. This is the birth history of KIST (Korea Institute of Science and Technology), which has made a significant contribution to the industrial development of Korea and cradle to many other institutes of science and technology and techno-parks. It is a vision that the RGC has to keep in mind to have a model institute which can lead science and technology for the industrial development of Cambodia.

4.4.5. Good Job vs. Preferred Job

Last but not the least, a good job is not always a preferred job. It also a matter of policy consideration regarding technological progress now being processed on a world-wide scale, its impact on volatility of economy and the human resource development strategy of an economy.

There is an interesting episode in Korea in the early 1970s. The Economic Planning Board, the National Tax Administration, the Ministry of Commerce and other government bodies sent their staff to the KIST as trainees. More specifically, it was a section of the KIST which was in charge of scientific computing. They were supposed to learn from a KIST researcher who had just returned from the United States after having studied scientific programming in computer science. The staff from different Ministries had to learn and had to enhance the productivity of the Ministry using their knowledge of scientific computation.

The KIST trained those staff from different government bodies and they were then tested at the final stage of the education process. Unfortunately, all the staff asked the KIST trainer to give them a bad record. They thought they would to be posted to a programmer's job if they get a good record, which seemed a dull and demanding technical job. To know how to command computer language which others did not, to them meant they had to perform a challenging and tedious task at the Ministries to which they belonged, while what they preferred was to plan and exert authority.

Even if the government tries to diffuse a certain knowledge which can the improve working process or enhance productivity, the knowledge diffusion may become stuck when an appropriate inducement towards enforcing the mechanism is absent. Inducements can be either awards and citations or higher compensation for

the job.

4.5. Leveling the Playground of Labor Relation

We confirmed in Section II.1 that the growth rate of the average productivity was equal to that of marginal productivity. At competitive equilibrium, firms' activity is performed at the point where the wage level is equal to marginal productivity. Therefore, if real wage growth is higher than productivity growth, firms' profit will decrease and if the phenomenon continues without further productivity improvement, firms' profit will be recorded as negative. Subsequently, firms may lose out and decide to stop operating. Even if firms do not stop operating because of closing costs, at least firms will not invest further to expand production capacity.

The Cambodian garment industry is composed of firms with very generalized technologies rather than specialized technologies. The main source of their competitiveness comes from cheap labor costs. The investors' decision was induced by tariff exemptions and cheap labor costs. They appeared to have benefited from the very much low level of Cambodian workers and enjoyed a high level of profit, which continuously induced more FDI. However, during the recent five years, industry sector productivity increased at an annual rhythm of 7.0%. Meanwhile, minimum wage of the sector increased about by 20% over the same span.

The trend cannot be sustained for long unless firms produce higher value added products. Certain firms may decide to move toward neighboring countries such as Myanmar or Vietnam. If there are entrepreneurs who will create higher value added jobs, the situation may stimulate production activity to move toward higher value added activity. However, the condition of the Cambodian industry is mostly characterized by FDI firms which organized activities on a global level. Moreover, unless the number of workers who accumulate skills with relevant experiences and production activity of high value added increases, the productivity trend of the industry sector confirmed over the last five years is less likely to continue.

Meanwhile, the norms and regulations of industrial relations are not favorable. Around four thousand unions exist over in about 500 garment industry firms (interview with GMAC in November 2015). Most of unions are not much interested in enhancing productivity but are concerned with using the right to organize for the leverage of wage negotiation. Cambodia's labor law and politics does not appear to regulate or coordinate the union behavior appropriately.

There is an interesting case of how unions hampered investment. One footwear company invested in Cambodia with a view of increasing by up to thirty thousand workers, from the initial number of five thousand. Because of the union's rent-

seeking behavior, the firm finally reduced the capacity to only five hundred effective workers (interview with GMAC in November 2015).

According to the Cambodian Constitution, the right to form a union and to become a union member is guaranteed. Those rights were further detailed under the previous Labor Law, but those rights and how to govern those unions have changed under the recently adopted Law on Trade Unions.

It is estimated that 60% of workers in the garment sector are unionized. Workers are free to be a member of unions and can refuse or withdraw whenever they want; the current law prohibits employers from deducting union dues from the wages of the workers and to pay their dues for them. In enterprises of at least eight workers, a workers' representative can be elected to present their grievances directly to the employer.

Employers and unions can enter into a collective agreement as a means to determine the working and employment conditions of workers and to regulate relations between employers and employees. For collective agreements to become effective, employers have to register them with a provincial or municipal Labor Inspector. In the event that conflicts arise, settlement of disputes can involve an arbitrator or proceed to the court under the jurisdiction where the agreement was signed. If a solution is not agreed, workers have the right to go on strike. In the case of a strike, unions must file a prior notice of at least seven working days with the employers, indicating their reasons for the strike. In any case, the Ministry of Labor and Vocational Training is the government body responsible for facilitate the issue on labor concerns.

In Cambodia, around 4,000 firm-level trade unions exist in about five hundred garment companies. Individual companies do not seem to appropriately manage the labor relations. If each company has to negotiate with all the trade unions in the company, the relative number of trade unions is overly high. If they are required to do so, this will slow down productivity growth than to enhance it.

If new union is organized in a firm, their voice can better be reserved for a certain qualification period, for example until it evidences its normal union activities for at least two years. Conforming to ILO Conventions does not mean guaranteeing all the moral hazards of unions or the last-minute interest group. If one agenda has been approved by majority, a principle such as not deliberating the same issue twice during the term of one or two years depending on agreement by the labor law can be applied.

Any initiative to rationalize the industrial relations may give the impression

of labor repression as long as it includes an aspect of restricting unions' behavior. Simple persuasion through social dialogue may not be sufficient. The right moment for initiative taking has to be chosen - such as right after election. It may be accomplished with a welfare package for workers.

4.6. Encouraging Entrepreneurship While Interacting with Firms' Associations

It is very recently that employers of agro-processing industry began to organize an association in Cambodia. The Rice Federation Cambodia (RFC) was established in 2014 and the Federation of Association for Small & Medium Enterprises of Cambodia (FASMEC) was organized in 2010. It seems that associations of entrepreneurs in other areas have also been organized only recently.

The major role of industrial associations is to collect opinions of member companies and deliver them to the government. The communication and efforts of governments to respond to the opinions are a very important process for productivity increase. This kind of interaction can encourage the association to be a hub of information circulation.

It can contribute to building the capacity of associations to prepare rudimentary or draft policy ideas. For instance, the Garment Manufacturer Associations of Cambodia (GMAC) is already hiring a consultant to conduct research. Other industrial associations can be encouraged to perform such activities.

The communication process can provide an opportunity for discovering entrepreneurs who improve the potential of producing value added; not only for his/her own firm but also that of other firms.

4.7. One Example of Implementing Proposed Recommendations

In many studies conducted by Multilateral Development Banks such the World Bank and Asian Development Bank and experts of bilateral cooperation, many policy agenda, strategies, action plans and programs are suggested based on appropriate diagnoses. A considerable number of them share a common agenda. However, it is also true that many of them propose recommendations without explicit priority considerations.

Many to-do aspects should be implemented by Cambodia. From another perspective, this situation results from the fact that Cambodian economy lies in low-productivity equilibrium. How can Cambodia start to get out of this equilibrium

towards a new path to higher productivity? Where should they begin? Where and how to start seems to be left to Cambodian field experts, technocrats and policy decision makers, while Cambodian technocrats may be more interested in 'how to do' as well as 'what to do.'

The need for constructing transportation infrastructure, changing the way of supplying electricity, reducing dropouts of primary education, etc. were recommended in previous KSP studies such as Jeong (2013) and Chang (2012). It is difficult to get out of the former low-productivity state. To do so, Cambodia should concentrate its resources and efforts on a strategic area for a considerable time. This study suggests a bold example approach to initiate this transition process.

First, the Cambodian government may select a zone or two through geographical considerations to establish a trading center for collecting and processing raw materials, and distributing semi- and fully processed products. Even if the capital is not sufficient, it would be possible for Cambodia to mobilize internally, as was suggested above, and externally, by appealing to MDBs and donor countries with the proper vision and financial resources to construct an industrial zone in the limited area - where electricity is provided at a cheaper price and transportation is convenient enough to invite factories and firms.

Second, as soon as Cambodia finds entrepreneurs with the requisite enterprising spirit, the government can concentrate resources on their business plans and business items. Third, the way of allocating scarce resources may be borrowed from Korea's experience of credit rationing from the 1960s-1980s. Allocating resources to the most performing firms which process in Cambodia with Cambodian raw materials and workers and that export may be a good criterion.

The second and third measures may be liable to various criticisms, including the inappropriate collusion of politics and business. However, leading politicians have to be able to overcome such criticism for the purpose of good government vision.

The technocrats of the CPC should be able to design a plan of this spirit, collect advice, coordinate between different ministries and there should be a task force capable of doing so. The process cannot be completed in a year or two. However, it should be borne in mind that moving from the low-productivity equilibrium to high-productivity growth path should be accomplished within a generation. In effect, the Cambodian working age population will start to decrease from 2045.

5. Conclusion

So far, after having compared the productivity level and growth rates of different sectors of the Cambodian economy, we have investigated the current status of the Cambodian agro-processing and garment industries, together with the skills sought by firms regarding both job seekers and incumbent workers. Policy directions to enhance productivity were suggested based on factors influencing productivity growth. Korea's experience of policy development and implementation was cited when appropriate.

In Cambodia, service productivity is far higher than other sectors' productivity. This explains why qualified individuals prefer to prioritize getting a job in services. However, the gap between productivity of industry and that of services is continuously narrowing from 9.7 times to 4.4. The productivity of the industry sector to which the garment sector belongs has been continuously surpassing that of service sector productivity from 2012.

The degree of vertical integration is very weak in both the agro-processing sector and garment sector. Not only weak infrastructure but also the high cost of logistics, electricity and processing hinders structural change. The skill demand of work attitude is hardly met by labor market participants. Meanwhile, the union behavior and rapid growth of minimum wage which exceeds far higher than productivity growth rate is increasing risks to the garment industry, calling attention of the RGC that it should be controlled to ease smooth transition.

There are a considerable number of policy items to which the RGC that have to pay attention in order to achieve higher productivity in the economy. They include allocating scarce resources (especially capital) efficiently, expanding SOC such as transportation facilities, and the supply of electricity at a cheaper price, along with expanding IT infrastructure, supplying the skills needed, and encouraging entrepreneurship. To address these challenges, the RGC and refer to Korea's experience on allocation of credit borrowed from the international capital market, the financing of domestic capital from advantaged firms and consumers, and how to discover entrepreneurs to accomplish moving from the low-productivity trap to a high-productivity path. To address the challenge of lack of 'work attitude' in the labor market, it seems necessary to expand primary education quantitatively and upgrade it qualitatively.

Above all, the key or secret of productivity growth lies in boosting entrepreneurship, helping businesses break through, and then requesting for them proactive roles for sustainability and prosperity. This is what the history of not only Korea, but also other industrialized countries' industrial development tells us. Skills upgrading

sometimes results from the process and sometimes has to lead the growth of industry and productivity growth.

It is difficult to transcend the current low-productivity state. The government policy for development of a specific industry requires a synthesized package of all actions, and many elements are required such as entrepreneurship, markets, capital, SOC, skills, etc. Only a bold but very much scrutinized approach can make it possible to initiate the transition process by concentrating resources on a strategic area and by combining resource allocation rule with entrepreneurship.

It should be also borne in mind that improving and enhancing public institutional capacity and promoting good governance are equivalent key factors to raise productivity of Cambodian workers and Cambodian firms' competitiveness.

References

- Barro, Robert and Jonghwa Lee, Barro-Lee Educational Attainment Dataset, 2013, <http://www.barrolee.com/>.
- Chang, Jae Bong and Ung Luyna, "Strategies for Development of Agro-Processing Industry," Chapter 5 in 2011/12 KSP with Cambodia: Policy Agenda for Cambodia in SME, Industry and Trade, Seoul: KDI, 2012.
- Chang, Jae Bong and Lay Sokkeang, "Framework for Establishment of R&D in Agro-Processing Industry," Chapter 6 in 2012/13 Knowledge Sharing Program with Cambodia: Policy Agenda for Cambodia in Developing Industrial Skills, Industrial Complex, and Agro-processing Industry, Seoul: KDI, 2013.
- Jeong, Hyeok, "Cambodian Skill Shortage and Skill Mismatch Analysis with Policy Recommendations", Chapter 2 in 2012/13 Knowledge Sharing Program with Cambodia: Policy Agenda for Industrial Development in Cambodia, Seoul: KDI, 2013.
- Jeong, Hyeok, "Skill Need Assessment of Cambodia Labor Market," Chapter 3 in 2013/14 Knowledge Sharing Program with Cambodia: Policy Agenda for Cambodia in Developing Industrial Skills, Industrial Complex, and Agro-processing Industry, Seoul: KDI, 2014.
- Jeong, Hyeok, "Education Reform for Sustainable Growth in Cambodia: Focusing on Higher Education" Chapter 5 in 2014/15 Knowledge Sharing Program with Cambodia: Structural Reform to Ensure Cambodia's Competitiveness, Seoul: KDI, 2015.
- Hur, Jai-Joon et al, 2015 KSP-CAF Joint Consulting: Improving the Quality and Productivity of TVET in Colombia, Seoul: Korea Exim Bank, 2016 (forthcoming).
- Korean Ministry of Foreign Affairs, Cambodia, Seoul (Korean), 2015.
- Oh Wonchul, The Korea Story: President Park Jung-hee's Leadership and the Korean Industrial Revolution, Seoul: Wisdom Tree, 2009.
- Ra, Young-Sun and Soon-Hee Kang, Vocational Training System for a Skilled Workforce, 2011 Modularization of Korea's Development Experience, Seoul: KDI, 2012.
- Royal Government of Cambodia, Cambodia Industrial Development Policy 2015-2025: Market Orientation and Enabling Environment for Industrial Development, 2015.
- Stamer, M., "Strukturwandel und wirtschaftliche Entwicklung in Deutschland, den USA und Japan," Aachen, 1999.
- Wilkinson, John and Rudi Rocha, "Agri-Processing and Developing Countries," Working Paper, 2008.
- Wölfl, Anita, "The Service Economy in OECD Countries," STI Working Paper 2005/3, DSTI/DOC (2005) 3.
- World Bank, World Development Indicators 2015, available at <http://data.worldbank.org/>

products/wdi

□ Interviews in September and November 2015

- Committee of Productivity of Cambodia (CPC)
- Ministry of Agriculture, Forestry and Fisheries (MAFF)
- Ministry of Labour and Vocational Training (MLVT)
- National Productivity Center of Cambodia (NPCC)
- Federation of Association for Small & Medium Enterprises of Cambodia (FASMEC)
- Rice Federation Cambodia (RFC)
- Formation of Cambodian Association of Food Science and Technology (CAFST)
- Garment Manufacturer Associations of Cambodia (GMAC)
- Firms in agro-processing and agro-food sector: Men Sarun Flour Factory Co., Ltd; Lyly Food Industry Co.,Ltd; Vissot Co., Ltd; Kirirom Food Production Co., Ltd Cambodia; Wot-Natural Khmer Morning Handicraft; ABC bakery; Confirel Co., Ltd.
- Firms in garment sector: Bright Sky Pte Ltd.; Suntex Pte., Ltd.

1.1. Consideration of human capital or quality of labor

Even though we did not consider human capital explicitly in the production function in II.1), it can be taken into consideration in the production function. When human capital is considered, the production function we considered in II.1) can be modified as follows:

$$Y = AK^{1-\alpha}(hL)^\alpha$$

$$\left(\frac{Y}{L}\right) = A\left(\frac{K}{L}\right)^{1-\alpha} h^\alpha$$

where h is a measure of human capital or quality of labor.

When the quality of labor increases with the accumulation of human capital, h increases and the productivity increases subsequently.

1.2. Modified Lilien-Indicator and measures of structural change (Wölfl, 2005; Stamer, 1999)

According to the modified Lilien-Indicator, the speed of structural change can generally be expressed as a function of the weighted sum of changes in the shares of industries over time; the weights are given by the average shares of each industry over the respective time period.

This can be written as:

$$SC_t = \sqrt{\sum_{i=1}^n (\bar{x}_i) \cdot \left(\ln \frac{x_{i,t}}{x_{i,t-1}}\right)^2}$$

where $x_{i,t}$ is the share of industry i in total employment and $\bar{x}_i$ is the average index of the shares of period t and t-1.

In general, any indicator of structural change should ideally fulfil five conditions: the index should take on the value zero if there are no structural changes within one period; structural change between two periods should be independent of the time sequence; structural change in one period should be smaller or equal to structural change between two sub-periods; an appropriate indicator of structural change should reflect the variation around the mean, and it should take the size of sectors into account. While the original Lilien-index does not fulfil all these characteristics, the modified index is closer to meeting these conditions. Like most indicators for structural change, however, the modified index

is sensitive to the level of aggregation, and cannot be applied for comparisons between countries if it is based on different levels of aggregation across countries.

1.3. Estimated share of employment

First using data points available from WDI and others, we regressed the employment share of industry and services on multinomial function of time. We obtained the industry employment share ISt and services employment share SSt .

$$\text{Industry employment share: } ISt = -0.0491t^2 + 1.716t + 3.412 \quad R^2 = 0.9739$$

$$\text{Services employment share: } SSt = -0.0196t^2 + 1.2235t + 15.595 \quad R^2 = 0.9571$$

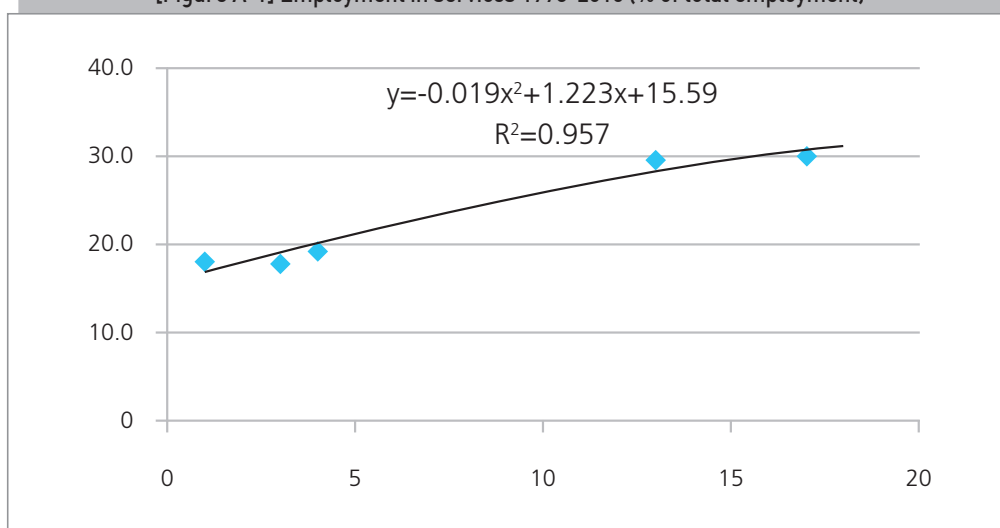
After having obtained regressed equations of industry and services sector, the employment share of each sector was calculated as follows.

$$\text{Industry employment share: } ISt = -0.0491t^2 + 1.716t + 3.412 \quad t=1998, \dots, 2015$$

$$\text{Services employment share: } SSt = -0.0196t^2 + 1.2235t + 15.595 \quad t=1998, \dots, 2015$$

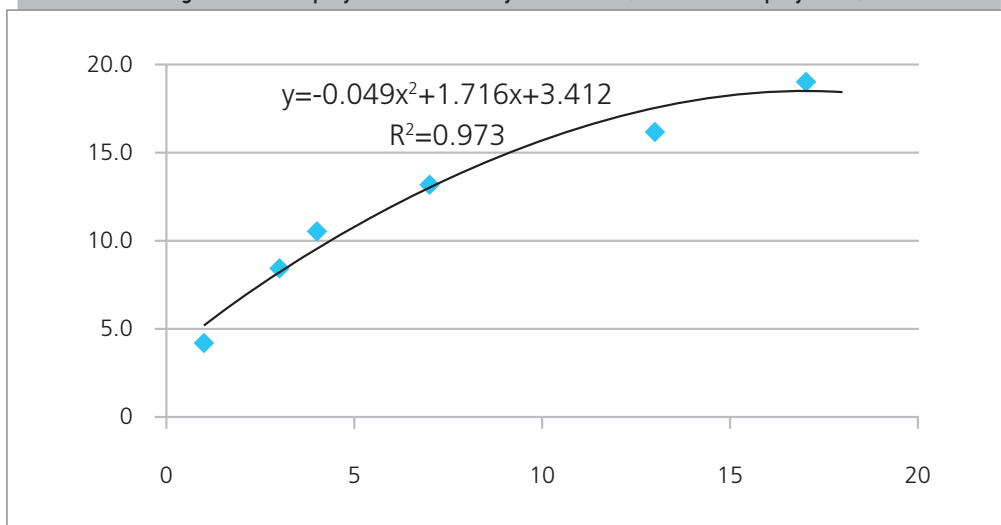
$$\text{Agriculture employment share } ASt = 1 - ISt - SSt$$

[Figure A-1] Employment in services 1998-2015 (% of total employment)



Source: Authors own.

[Figure A-2] Employment in industry 1998-2015 [% of total employment]



Source: Authors own.

www.ksp.go.kr

Ministry of Strategy and Finance

Government Complex-Sejong, 477, Galmae-ro, Sejong Special Self-Governing City 30109, Korea

Tel. 82-44-215-7762 www.mosf.go.kr

Korea Development Institute

263 Namsejong-ro, Sejong Special Self-Governing City 30149, Korea

Tel. 82-44-550-4114 www.kdi.re.kr



Knowledge Sharing Program

www.ksp.go.kr

Center for International Development, KDI

cid.kdi.re.kr