

The Myanmar JOURNAL

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Letter from the Editor-in-Chief

The Korea Myanmar Research Institute (KOMYRA) has supported the ongoing projects on the mutual development of Myanmar and Korea in the entire field of society, economy, culture, education, science, and related industry. As a part of our efforts to provide convenient access to understand Myanmar and Korea worldwide, KOMYRA has co-published the Myanmar Journal with Yangon University of Economics (YUEco) since August 2014, and now we release the Myanmar Journal Vol. 5, No. 1.

This issue features various topics that may be of international interest, such as academic and industrial researches mainly concerning economic and social changes, FDI, education, welfare, culture, renewable energy, mobile finance, etc.

We hope this journal continues to promote understanding about the present status and the potential capacities of Myanmar and Korea, and facilitate in-depth international exchange and cooperation.

I would like to express my deep gratitude to the Editorial Board and the Staff of KOMYRA who have contributed their valuable supports towards the publication of this issue of the Myanmar Journal.

February 28, 2018

Youngjun Choi *yj choi*

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INFORMATION ABOUT The Myanmar Journal

The Myanmar Journal (ISSN 2383-6563) is the official international journal co-published by Yangon University of Economics (YUEco) and Korea Myanmar Research Institute (KOMYRA).

This journal aims to promote the mutual cooperation and development of Myanmar and Korea through intensive researches in the entire field of society, economy, culture, and industry.

It will cover all general academic and industrial issues, and share ideas, problems and solution for development of Myanmar.

Articles for publication will be on-line released twice a year at the end of February and August every year on the Myanmar Journal webpage.

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A Study on the Foreign Direct Investment in Myanmar: Economic Status of Myanmar before and after of New Government and the Barriers for Foreign Investment in Myanmar

Jae-Woong Byun

Keimyung University

ABSTRACT: Foreign direct investment (FDI) plays an important role in the development of an open and effective international economic system and a major catalyst for development. FDI is one of the most effective ways of integrating the transition economy into the global economy by providing the necessary technical and management know-how for capital as well as the host country's restructuring companies. There is also evidence that there is a positive correlation between FDI inflows and economic growth through the effects of FDI inflows and the spread of advanced technologies. Foreign investment in Myanmar increased sharply from \$ 8 billion between 1988 and 2010 to \$ 4 billion in 2011 and reached \$ 49.9 billion at the end of September 2014. Of the Asian countries, Korea is one of the largest investors in Myanmar. Korea is the 6th largest exporter and the fifth largest importer in Myanmar in fiscal year 2013-2014, the sixth largest trading partner in Myanmar, and trade worth 1.7 billion US dollars. This article analyzes the study of foreign direct investment in Myanmar.

Key words : FDI, Export, Import, Investment Law, SOC,

I. Introduction

Foreign direct investment(FDI) is an important role of an open and effective international economic system and a major catalyst to development. It is one of the most effective ways by which transition economies become integrated to the global economy as FDI provides not only capital, but also technology and management

know-how necessary for restructuring firms in the host countries. There is also evidence that there is a positive correlation between FDI inflows and economic growth of the host country via the spillover effects of advanced technology (Borensztein, De Gregorio, Lee(1998), Balasubramanyam et al(1996), Afraro, Chanda, Kalemli-Ozcan, Sayek(2002), Gorg and Strobl(2001), Grossman and Helpman(1995), Blomstrom and Sjöholm(1999), Haskel et al(2002), Keller and Yeaple(2003), Javorcik(2004), Fernandes and Paunov(2008), Zhang(2001), Choe(2003), OECD(2002)).

Myanmar is a developing country in the Southeast Asia and the United Nations categorized Myanmar as one of the least developed countries. Its market is untapped compared to other countries in Asia. Foreign investment in Myanmar rapidly increased from 8 billion USD between 1988 and 2010 to 40 billion USD in 2011 and reached up to 49.9 billion USD at the end of September 2014.¹⁾ Among Asian countries, South Korea is one of the most prolific investors in Myanmar. South Korea became the 4th highest exporter, the 5th highest importer, and the 6th largest trading partner of Myanmar with trade valued at 1.7 billion USD in the 2013-2014 fiscal year.

This paper analyzes a study on the foreign direct investment in Myanmar: economic status of Myanmar before and after of new government and the barriers for foreign investment in Myanmar. Section II examine general economic status of Myanmar(2014-2017). Section III analyze the difficulties of doing business in Myanmar. Section IV analyze the New Investment Law and its implications.

II. General Economic Status of Myanmar (2014-2017)

GDP growth rate for 2016 was 6.3%, 1% less than last year. The world gas price causes the decrease in natural gas export. The real GDP growth in Myanmar has slightly decreased since 2016 (8.0% in 2014, 7.3% in 2015). Economic growth at 5.9% was below expectation though above the 3.5% average for an emerging market and developing economics in 2016. Inflation moderated from 10% in 2015-2016 to 6.8% in 2016-2017.

1) Myanmar Central Statistics Organization.

Table 1. General Economic Status of Myanmar (2014-2017)

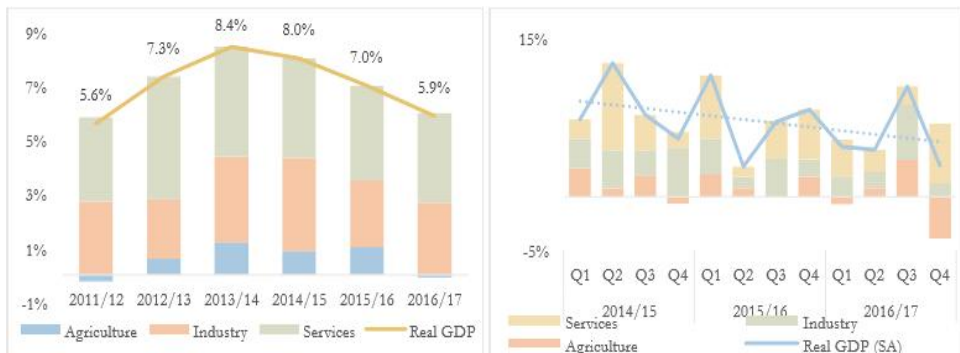
Index	2014	2015	2016	2017(Esti)
GDP Growth Rate(%)	8.0	7.3	6.3	7.5
GDP per capita (US\$)	1,275.0	1,148.0	1,269.0	1,374.0
Nominal GDP (US\$ Billion)	65.6	59.5.0	66.3	72.3
Inflation(%)	5.1	10.0	7.0	6.9
Unemployment rate(%)	4.0	4.0	4.0	4.0
Export*(US\$ Million)	12,523.7	11,136.5	11,904.0	7,218.5
Import*(US\$ Million)	16,632.6	16,577.8	17,198.8	9,089.7
Trade Balance* (US\$ Million)	-4,108.9	-5,441.3	-5,294.5	-1,871.2
Foreign Investment *(US\$ Million)	8,010.0	9,483.0	6,649.0	4,242.0
Foreign Debt (US\$ Million)	6,351.0	7,444.0	9,144.0	-
Foreign Exchange Reserve(US \$ Million)	8,728.0	8,463.0	8,913.0	-
Interest Rate(%)	10.0	10.0	10.0	10.0

Source : IMF, Myanmar Central Statistics Organization, Ministry of Commerce Myanmar
 *FY : April~next year March.

In 2016, after the Myanmar government has changed, increasing investment in energy, communication, construction, and service sectors, increasing export of raw materials, and increasing inflow of visitors had a great impact on the economy. However, due to the price increases in electricity, real estate, and rent, the inflation reached 6.9% in 2017. Economic instability in Myanmar resulted due to low foreign exchange reserves, the lack of central bank control over the foreign exchange, strengthening foreign reserves.²⁾

2) World Bank(Oct 2017).

Figure 1. Real GDP Growth and Sector Contribution by Quarter (2011-2017)



Source : Ministry of Planning and Finance (MOPF), World Bank(Oct 2017).

The development of an export-oriented textile and clothing industry in Myanmar after the shift to a market-oriented economy is a newly adapted. The policy is the continuation of the previous military regime in Myanmar. Its origin goes back to the early 1990s: state-owned, military-related textile and clothing factories pursuing a policy of import substitution started to produce for the foreign market after companies had formed. In particular, investments from Korea and Hong Kong entered into Myanmar's textile market as joint ventures. This sector's growth was fuelled by the growing market demand from the European Union (which took approx. 50% of production) and the USA (approx. 45%). Geographically the garment industry is concentrated in and around Yangon, where production takes place in the large industrial zones and industrial parks, especially in Hlaing Tharyar Industrial zone.³⁾

Myanmar has a massive and young labor population,⁴⁾ and one of the lowest labor costs within the region. The average wage of a factory worker in 2010 are about 3 USD a day, which is lower than other countries in Asia. For example, Indonesia pays 4 USD, Vietnam pays 5 USD, and China and Thailand pay 18 USD. But Myanmar has set a minimum wage at 3600 kyats (2.80 USD) for an eight-hour work day. Under the newly-established level, Myanmar's minimum monthly pay would be around 67 USD a month, based on a six-day work week. The low labor cost will give Myanmar a competitive advantage over thriving garment makers such as Vietnam and Cambodia where the monthly minimum wage ranges from 90 USD to 128 USD, according to the International Labor Organization by Directorate of Investment and Companies Administration (DICA).

The low wages, however, attract FDI in manufacturing industries which may lead Myanmar to advance its economic prosperity and of producers. EIU expect real GDP

3) Kraas, Spohner, Myint(2017).

4) World Bank and EIU estimation: 36.0 million by 2015.

growth to average 7.3% a year in the forecast period, driven in large part by strong investment activity. Consumer price inflation will remain stubbornly high in the forecast period, averaging 7.5% a year.

Foreign investment inflows will remain large as regulatory, and legal and institutional reforms are introduced. For example, the government announced that the shipping sector would begin shifting to an electronic system for all documentation work. The upgrading data systems and the expansion of facilities will remove some capacity constraints at Myanmar's strained ports.

2016-2017 was a difficult year for both agriculture and industry. Coinciding with low global growth and investment flows to EMEs(Emerging Markets and Developing Economies) in 2016 was a slowdown in investment demand in Myanmar. Myanmar's agriculture sector contracted slightly in 2016-2017, contrary to expectations of recovery from the effects of heavy flooding in 2015. Livestock and fisheries continued to grow in 2016-2017, showing early results from increased investment, though forestry contracted further. The government is also supporting, through concessional loans, the initiative proposed by the Myanmar Rice Federation to establish 33 Agribusiness Service Centers. The Myanmar Purchasing Managers' Index indicates that 2016-2017 was a difficult year for the manufacturing sector. Rising input costs have exacerbated competitiveness challenges for Myanmar's fragile manufacturing sector.

Table 2. Export and Import of Myanmar (2014-2017)

FY	2014-15	2015-16	2016-17
Exports	12,581	11,148	11,832
Change		-11%	6%
Imports	16,633	16,516	17,201
Change		-1%	4%
Trade Balance	(4,052)	(5,368)	(5,369)
TB(% of GDP)	-6.2%	-9.0%	-8.5%

Source: Ministry of Commerce.

Table 3. Production of Oil and Natural Gas (2005-2017)

FY	Oil (thousand barrel)	Natural Gas(ton)
2005-2006	7,964	437,729
2006-2007	7,660	460,442
2007-2008	7,621	476,832
2008-2009	6,891	405,521
2009-2010	6,965	439,615
2010-2011	6,788	450,381
2011-2012	6,623	455,393
2012-2013	6,197	467,025
2013-2014	6,115	482,276

2014-2015	5,851	653,288
2015-2016	4,706	695,591
2016-2017(2017.1)	3,630	552,189

Source : Central Statistics Organization Myanmar.

Natural gas exports, which helped to buffer big increase in investment related imports in 2013-2015, continued to decline in 2016-2017. They declined by 30% in value in 2016-2017 compared to 2015-2016, which was already 10% below the previous year. Most jobs are in domestically-oriented small and medium enterprises(SMEs). More than 80% of formal jobs are in the 95% of SMEs, many of them located outside main business cities, which only supply to the domestic market.

Table 4. Foreign Investment by Sector (2011-2017) (USD in million)

Sector	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018 (10.2017)
Agriculture	-	9.7	20.3	39.7	7.1	-	130.2
Fishery and Livestock	-	5.6	96.0	26.9	8.2	96.6	16.4
Mining	19.9	15.3	32.7	6.3	28.9	-	-
Manufacturing	32.3	400.7	1,826.9	1,502.0	1,064.9	1,179.5	1,484.3
Electric	4,344.0	364.2	46.5	40.1	360.1	909.8	120.6
Oil and gas	247.7	309.2	-	3,220.3	4,817.7	-	-
Transportation and communication	0.6	-	1,190.2	1,679.3	1,930.9	3,081.1	489.3
Hotel and tourism	-	300.0	435.2	358	288.3	403.6	154.4
Real estate	-	-	440.6	780.8	728.6	747.6	1,062.4
Industrial Complex	-	-	-	-	10.0	-	5.3
Others	-	14.8	18.5	357.3	235.9	231.3	779.0
Total	4,644.5	1,419.5	4,107.1	8,010.5	9,481.2	6,649.8	4,242.1

Source : Myanmar Investment Commission (MIC)

Myanmar's 2,800 kilometers long coastline provides rich fish products and complex geological structure. In particular, there are abundant mineral resources such as limestone, copper, lead, zinc, tin, and tungsten. So, foreign investment in natural gas has higher demands and Myanmar has already exported natural gas in the biggest amount.

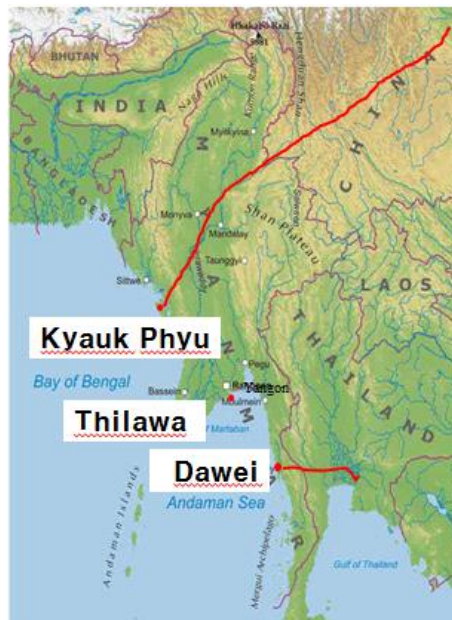
Table 5. Status of Myanmar Minerals

General Category	Minerals
Very Rich	Jade, Ruby, Sapphire, Limestone
Rich	Copper, Zinc, Tin, Tungsten, Gold, Coal
Fairly Rich	Antimony, Nickel, Iron, Manganese
Poor	Chromite, PGM minerals, Radioactive minerals, Diamond, Fertilizer Minerals, Mercury

Source : Ministry of Resources and Environmental Conservation.

Myanmar Government planned to develop three special economic zones (SEZ): Thilawa SEZ, Kyauk Phyu SEZ and Dawei SEZ. Among the SEZs, Thilawa SEZ is close to Yangon, the biggest city in Myanmar, and now many companies from Korea and Japan invest in this SEZ.

Figure 2. Special Economic Zones



Source : Ministry of Commerce.

III. The Difficulties of Doing Business in Myanmar

1. The Difficulties of Doing Business in Myanmar

The difficulty of doing business in Myanmar really depends on the sector. Foreign investors are interested in the manufacturing sector. The hardest part of doing business in Myanmar is the poor infrastructure, especially electricity.

The most attractive factor of investing in Myanmar is cheap and quality labor. Myanmar can expand the domestic sector and diversify the export sector to create new and better job opportunities. Myanmar's large and young labor force and relatively low wages offer an comparative advantage in labor-intensive industries.

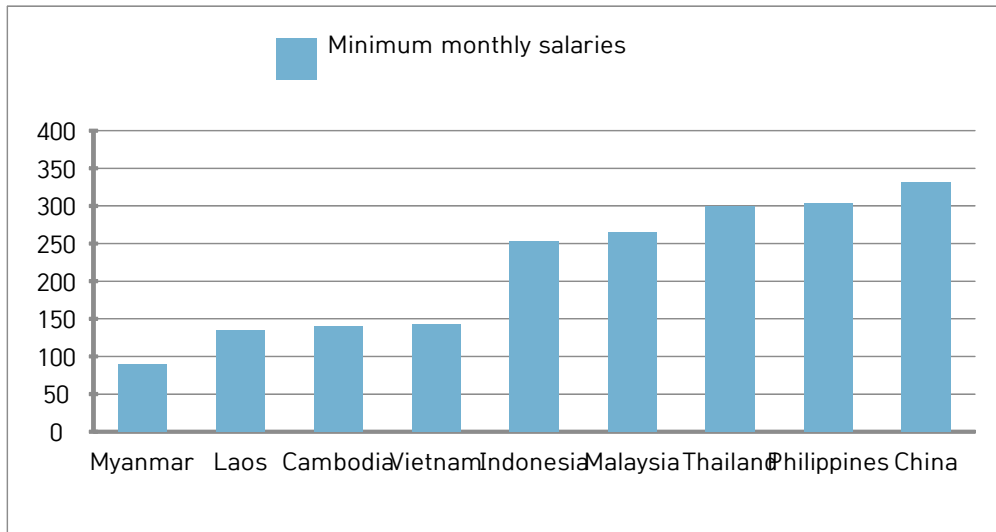
According to data by KOTRA, Myanmar's minimum wage, which is 90 USD, is lower than the wages of neighboring countries: China (332 USD), Vietnam (143 USD), Cambodia (135 USD) and Laos (135 USD). However, the problem is that while the cost of labor in Myanmar is low, productivity is also low. For example, in <Table-6>, the medium salary for the managing director is 5 million kyats, while a general worker is 1.25 million kyats. The wages of general labor and general manager have risen more than three times since 2010. In fact, many Korean companies that recently entered in Myanmar faced the difficulty of hiring middle-level employees. And in 2017, the minimum wage issue is the most popular issue in investing in Myanmar. The minimum wage committee decided to request between 4400 and 6500 kyats, it will be announced in January 2018.

Table 6. Salary Payment of Myanmar Companies (2016)

Sr	Position/rank(Local Staff)	All the companies		
		Minimum	Medium	Maximum
MMK (1 USD = 1350MMK)				
1	Managing Director	1,500,000	5,000,000	9,000,000
2	Director	1,000,000	1,500,000	5,000,000
3	General Manager	600,000	1,000,000	2,500,000
4	Manager	375,000	600,000	1,800,000
5	Assistant Manager	250,000	400,000	1,200,000
6	Supervisor	170,000	350,000	730,00
7	Accountant	220,000	450,000	1,000,000
8	Assistant Accountant	180,000	250,000	700,000
9	Secretary	165,000	300,000	750,000
10	Receptionist	150,000	200,000	350,000
11	Office Staff	150,000	200,000	400,000
12	Sales Staff	150,000	200,000	600,000
13	Driver	160,000	250,000	450,000
14	Security Guard	120,000	140,000	230,000
15	General Worker	100,000	125,000	210,000
16	Cleaner	90,000	100,000	180,000
17	Unskilled/hard labor	3,500	5,000	8,000

Source : Myanmar Survey Research Company, 2016 Salary Survey Report.

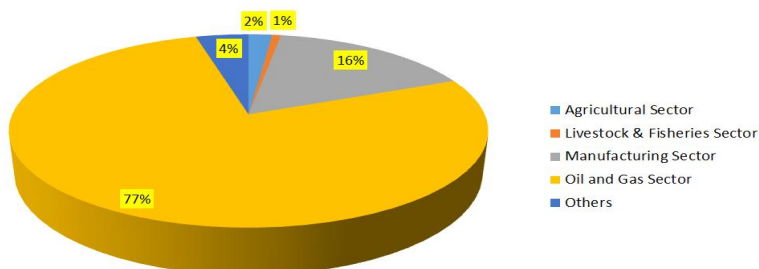
Figure 3. Minimum Monthly Salaries of Myanmar and Eight Other Countries(2017)



Source : Cost of Doing Business in Myanmar, Survey Report 2017.

As we know, Myanmar is still weak in manufacturing and agriculture is the backbone of the industry. But the figure in Myanmar's GDP structure is somewhat different. The proportion of farming accounted for 57.3% of GDP in 2002-2001 FY fell sharply to 26.2% in 2015-2016 FY. On the other hand, the proportion of industrial and service industries has grown significantly, 35% and 38.8% respectively. Myanmar's GDP composition looks like any other industrialized country, but it shows more weakness in the industrial sector. While foreign direct investment increased in the manufacturing sector, such as garment industry, the creation of value-added agricultural products remained flat and the proportion of small business increased.

Figure 4. Investment of Korea by Sector



Total Enterprise (136), Total Investment (3551.321 USD in million)
 Source : Myanmar Investment Commission.

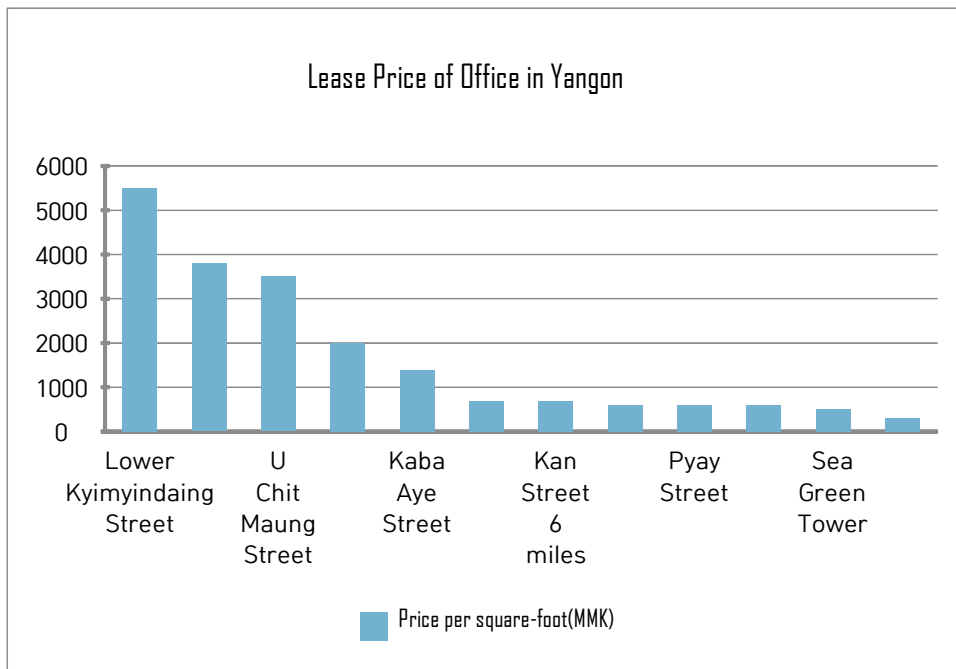
2. Two Barriers in Investment in Myanmar: Infrastructure as Power & Real Estate

Power is the biggest barrier to investment in Myanmar. Myanmar's electricity supply is only about 30% in 2016. Although there are natural gas and hydroelectricity, the electricity is still insufficient. Currently, 90% of the electricity is exported to China. Myanmar's the largest hydropower project Myitsone Dam is about 30% of China's investment, which is already underway, but Myanmar government has suspended it. The problems of Myanmar's electricity supply are not only in terms of generating capacity but also transmission infrastructure. As the hydroelectric plant is located in the mountain regions to the north and most electricity consumers are from the south of the country, such as Yangon, so it will lose about 25% of its power during electricity transmission and distribution.

Real estate in Myanmar is also one of the barriers to investment in Myanmar. Many foreign investors are challenged with the price of land and apartment. In the downtown area, the price of rent ranges from 40,000 USD to 60,000 USD per acre. Land prices also has risen to 70 USD for one square meter. In addition, the industrial zone land price has risen from 3 USD to 6-7 USD per one square meter per year. Myanmar government also see high industrial rental rates as a barrier to attract foreign investment. Although the industrial park that was developed by the private sector is expensive. There are many industrial cites but the price is rising. As a solution to this problem, the government is considering the further development of state-owned land into an industrial complex.

It is difficult to invest in the potential inland areas such as Shan, Kachin as located in mountain ranges. So, the infrastructure of this area is deficient, such as the quality and quantity of roads, electricity, etc. However, the infrastructure projects of OPEC are now under construction.

Figure 5. Lease Price of Office in Yangon



Source : Directorate of Investment and Company Administration(2017), "Cost of Doing Business in Myanmar".

IV. New Investment Law and Its Implications

The new contract law is summarized as simplifying the investment approval process, differentiating incentives, and easing investment difficulties. The Myanmar Investment Commission (MIC) has published a list of geographical zones that will be conferred the most tax relief, as well as the government's list of promoted sectors, which will enjoy tax exemptions, and those that will be restricted to varying degrees.⁵⁾ In the past, all foreign investment cases were approved by the MIC (Myanmar Investment Commission), allowing the local government to approve the case under the local government for the past five million dollars. The system was designed to make the investment process easier by creating an endorsement procedure in addition to the official investment approval process. In particular, the time limit for investment deliberation was defined, not to mention the time limit for return to avoid unnecessarily delaying procedures.

Investment incentives were divided into three areas that are divided into three

5) EIU(2017).

regions. Compared to the previous five-year corporate tax exemption periods for overcoat companies, the company's tax cut to 32 Township and 14 Mandalay tax statements were extended to three years. Given that the investment incentive in Yangon has been reduced, it is predicted that the benefits of tax exemption and SEZ will be relatively beneficial by the SEZ law. The new court created a new set of dispute resolution mechanisms and procedures to resolve disputes and difficulties in the dispute.

The real improvements and key achievements of the investment Law ("2016 iL") are the following:⁶⁾

1. The quality of drafting of the Investment Law is much better than that of the 2012 FiL and the 2013 mCiL. a number of meaningless or poorly phrased provisions have been deleted (such as the superfluous and confusing rule on loss carry forward, and the unnecessary previous rule on depreciation of (s. 27 c) of the 2012 FiL, now a simple accelerated depreciation) or written more clearly (such as the entire forex section, on which more below).

New Myanmar government basically has three approaches on the foreign investment: 1. Government delivers the ultimate in ground connectivity. 2. Government quality is trusted by the most discerning. 3. The government encourages foreign firms to invest in Myanmar.

2. The processes have been simplified. As it is explained in more detail below, a lighter version of a miC Permit called an approval Order is available for smaller projects, which are not considered strategic or as having a major environmental or social impact. Also, leases and charges only need a notification, no approval is necessary from the miC.

3. Some large meaningless rules have been dropped, such as the staggered maximum on foreign employees and the land price setting by the miC. The exclusion of miC Permits for branches was eliminated as well.

4. Myanmar investment law has been brought in sync with international investment rules already binding upon Myanmar (such as no expropriation without compensation, which is a rule of customary international law and thus already binding Myanmar) or investment treaties binding Myanmar (all Myanmar's bilateral investment treaties have, for example, rules on fair and equitable treatment, national treatment, most-favoured nation treatment and transfer of funds – it is, in fact, wise to make these obligations which Myanmar has to invite international investors part of Myanmar's domestic law, which can be invoked by all foreigners).

The benefit of FDI do not accrue automatically and evenly across countries, sectors and local communities. National inward FDI policies and the international investment

6) Edwin Vanderbruggen(2017).

architecture matter for attracting FDI to many developing countries and for reaping the full benefits of FDI for development.⁷⁾ Many countries have offered various investment incentives to attract foreign direct investment. Myanmar Investment Commission(MIC) is the government organisation, playing crucial role to induce foreign investment in Myanmar. In recent, new Myanmar government has changed its inflow FDI policy towards selective open door by introducing many regulatory regimes; cut various tax credit supports and incentives, open stock market, and simplified the processes and regulations.

Foreign investors are attracted by the Myanmar's general business environment; availability of semi- skilled labour; economic stability, and open door policy. For example, Myanmar government, in recent, introduces new company law that foreign investors can buy 35% of the equity in the stock market. Myanmar's inwards FDI policy is now necessary to move towards a more strongly rules-based attraction strategy toward open door policy based on structural elements which will include a sound legal system, transparent laws and regulations, streamlined investment approval procedures, good corporate governance, the strength of the R&D base and the R&D tax credit supports and incentives; the English speaking business; economic stability; regulatory regime, effective competition policy and a sound financial system and SOC, and competitive education system. Investing companies also recognise the importance of operating in a market. Myanmar provides adaptable workforce for international businesses looking to grow, and a platform for reaching markets in Europe, South East Asia, and India.

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7) OECD(2002).

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The Effect of Probation on Recidivism of Adult Probationer*

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ABSTRACT : The importance of probation is increasing due to the nature of restorative justice since the 2000s. Traditionally, facility management has been preferred for criminal management. But nowadays, the care of the community has focused on social adaptability. So many criminals are under probation and it is easy to return to society. However, the role of probation officers is in fact lacking in research on the satisfaction of adult prosecutors. Therefore, this study was conducted to investigate the effects of temperament on the probation satisfaction and the risk of recidivism in adult guardians.

Key words : probation, criminal management, return to society, recidivism, guardians,

I. Introduction

The importance of probation has been increasing due to the nature of restorative justice since 2000s. As for the management of criminals, traditionally the care in facilities had been preferred(Hye-Jung, 2011). But nowadays the care in community has been emphasized of their adaptability in society (In-Gon, 2013).

So lots of criminals are under probation which makes it easy to rehabilitate to society (Ministry of justice republic of Korea, 2017).However, there are insufficient researches on the satisfaction of probationer especially on adult probationers, although the role of probation officers has been emphasized in diverse studies like as criminal prevention, recidivism and protective treatment (Su-Young, 2006; Byoung-Youn, 2013 etc.).

* The paper was presented in the 9th International Conference of YUE, KOMYRA & KHU

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So this study is to carry out to explore the probation satisfaction of adult probationer and the effect of their temperament on the risk of recidivism. The influential variables on the risk of recidivism will be detected for prevention of repeated crime and reduction of criminals.

The major research problems are as in the following. 1. What is the related variables with the satisfaction of probation? 2. What is the condition of temperament of probationers and what is the related variables with it? 3. What is the condition of the risk of recidivism and what is the related variables with it? 4. What variables are influential on the risk of recidivism? The results will contrive to lower the risk of recidivism.

II. Research Methods

The subjects of this research are the probationers who are controlled in six cities and countries of East-Jennam province where the Sunchoeon Probation Office administers. The characteristics are shown in table 1.

Table 1. Characteristics of subjects

Charactaeristics	categories	frequency	%
sex	male	301	95.6
	female	14	4.4
age	19~ 30under	37	11.7
	30 ~ 40under	73	23.2
	40~ 50under	143	45.4
	60over	62	19.7
residence	lease	197	62.5
	own	118	37.5
education	elementary	23	7.3
	Middle school	56	17.8
	High school	156	49.5
	College over	80	25.4
job	Not have	91	28.9
	irregular	150	47.6
	regular	74	23.5
Marital stage	unmarried	111	35.2
	Divorce, separate	63	20.0
	Married	141	44.8
family	Have	27	8.6
	Not have	288	91.4

addiction	Have	56	17.8
	Not have	259	82.2
income	100 million under	91	28.9
	100~200 million	101	32.1
	200~300 million	74	23.5
	300 million over	49	15.6
Mental disorder	have	27	8.6
	Not	288	91.4

The 320 probationers were requested to check the questionnaire from October, 1st to November, 30, 2016 at the office. The 315 questionnaires were analyzed with SPSS/22, using t-Test, ANOVA, Regression.

The instrument of satisfaction was composed with questions about facility, counsel program, and officers based on the research of Su-young(2006). Each question was evaluated by 5 Likert scale. The questions about recidivism made with 12 questions were based on the research of Byoung-yun(2013) with 5 Likert scale. The instrument of temperament was composed using the modified KCPI test.

III. Results

1. Satisfaction and temperament of probationers

The satisfaction of subjects was revealed as average 3.95 in facility, 4.10 in counsel program, and 4.39 in officers. The probationers satisfied higher about the officers than facility or program. Table 2 shows there was a significant difference in probationer's satisfaction according to age, occupation, and monthly income level. In the case of age, the probationers under 30 years old were less satisfied than those over 30 years old. In the case of occupation, the unemployed persons had significantly lower satisfaction than the regular or non-regular workers. In the case of monthly incomes, groups with less than 1 million won and over 3 million won had significantly lower satisfaction levels than other groups.

Table 2. Difference of probationers' satisfaction by socio- demographic variables

		N	M (s.d)	S.D	F/t	Duncan
sex	male	301	62.63(4.18)	11.57	0.811	
	female	14	60.07(4.00)	10.69		
family	Not have	27	62.93(4.20)	9.90	0.194	
	have	288	62.48(4.17)	11.69		
Mental illness	have	27	64.40(4.29)	9.57	0.892	
	Not have	288	62.33(4.16)	11.70		
age	Under30	37	57.65(3.84)	14.70	3.439*	a
	Under40	73	63.11(4.21)	10.40		b
	Under50	143	63.92(4.19)	10.39		b
	Under60	62	61.11(4.07)	12.48		b
education	Elementary	23	59.91(3.99)	13.93	0.319	
	Middle school	56	63.48(4.23)	10.29		
	High school	156	62.11(4.14)	12.71		
	Over college	80	63.38(4.23)	8.94		
job	Not have	91	59.00(3.93)	13.19	6.520**	a
	Regular job	150	63.49(4.23)	11.54		b
	Irregular	74	64.86(4.32)	7.89		b
	Divorce	63	61.83(4.12)	13.88		
	Married	141	63.02(4.20)	11.11		
income	Under 100	91	60.03(4.00)	13.21	2.890*	a
	100 ~ 200	101	64.35(4.22)	11.08		b
	200 ~ 300	74	63.93(4.26)	10.99		b
	Over 300	49	61.20(4.08)	8.90		a

2. The condition of temperament and the variables influencing on it

As for the temperament of adult probationers, depression was very high, and anti-sociality was followed by < Table 3>. And patience and violence were surveyed as general. Subjects with mental illness showed more depression, anti-sociality, low patience, and violence than the subjects without mental illness as for the temperament. There was a significant difference in the temperament according to age, but the normal temperament appeared in the low age group and the old age group. For differences in job-related temperament, negative qualities were shown for

probationers of non-regular workers or regular workers comparing to unemployed probationers. Temperament can be seen to be related to mental illness.

Table3. Differences of probationers' temperament

		N	Mean (S.D)	S.D	F/t	P	Duncan
sex	male	301	31.33(2.08)	9.96	-0.193	0.847	
	female	14	31.86(1.99)	10.87			
family	Not have	27	35.96(2.25)	12.93	2.532	0.058	
	have	288	30.92(1.93)	9.57			
Mental illness	have	27	37.96(2.37)	12.21	3.671***	0.000	
	Not have	288	30.73(1.92)	9.54			
age	Under 30	37	36.03(2.25)	12.43	4.217**	0.006	a
	Under 40	73	30.36(1.90)	9.30			b
	Under 50	143	30.08(1.88)	9.53			b
	Under 60	62	32.68(2.04)	9.37			b
education	Elementary	23	32.96(2.06)	13.61	1.888	0.090	a
	Middle school	56	33.46(2.09)	11.17			a
	High school	156	31.26(1.95)	9.59			a
	Over college	80	29.59(1.85)	8.37			b
job	Not have	91	33.55(1.91)	10.39	3.272*	0.039	a
	Regular	150	30.23(1.89)	9.56			b
	irregular job	74	30.93(1.93)	10.00			b
income	Under 100	91	33.22(2.08)	11.39	1.710	0.165	
	100 ~ 200	101	30.98(1.94)	9.58			
	200 ~ 300	74	30.70(1.92)	9.24			
	Over 300	49	29.63(1.85)	8.76			

3. The level of risk of recidivism and the variables influencing on it

Table 4 represents that the condition of the risk of recidivism was the highest in the subcategory of law-abiding consciousness. The subcategory of re-socialization and avoiding crime were followed in order. The risk of recidivism showed differences according to the presence of supportive family members and academic achievement. It was found that the subjects with family members were more mitigating the risk of

recidivism than those without family members. And there was a high risk of recidivism in the group with low education.

Table 4. The level of risk of recidivism

	M (per item)	S.D	Sub categories	Item number	M(per item)	S.D
risk of recidivism	52.60 (4.38)	8.06	avoiding crime	4	17.33 (4.33)	2.90
			law-abiding consciousness	4	17.68 (4.42)	2.84
			re-socialization	4	17.59 (4.40)	3.20

4. Factors influencing on the risk of recidivism

Table 5 depicts that the variables influencing the risk of recidivism of adult probationers were probation satisfaction and the presence of supportive family. The effect of probationers' satisfaction was larger than that of presence of supportive family. This result shows that probation has been effective in crime prevention.

Table5. Factors influencing on the risk of recidivism

	variable	Model			
		B	β	t	p
Personal factors	Sex	-.293	-.007	-.154	.878
	Mental illness	2.004	.070	1.435	.152
	age	-.385	-.043	-.792	.429
	education	.640	.067	1.237	.217
	job	-.187	-.017	-.298	.766
	income	-.005	-.001	-.012	.991
environmental factors	Family support	3.329	.116	2.270*	.024
	Satisfaction of probation	.375	.536	10.889***	.000
F(p)		12.267***(0.000)			
R ²		0.308			

IV. Conclusion

Form these results, the following policy implications can be derived. First, programs considering age, the presence of occupation, and income differences should be prepared. In addition to this, appropriate programs should be implemented for those who are suffering from mental illness among adult probationers. There are not enough programs considering family or education level among the program for preventing recidivism.

So it is necessary to supplement programs by focusing on the individual characteristics. The variable that had the greatest influencing effect on the risk of recidivism was the satisfaction of probationers. It revealed that the existence of the probation office had took a significant role. In order to rehabilitate the criminals, the programs which enhance the level of satisfaction of probation should be expanded by the improving the accessibility and the management of officers and supervision for the

subjects.

Especially it is demanded to reinforce the professionalism of probation officers and to improve the conditions of labor to heighten the probationers' satisfaction. Successful rehabilitation and re-socialization of adult probationers also should be emphasized for healthy life of probationers in their community as well as preventing recidivism. For the safety of the people and development of the community, the role of probation center should be reinforced as a hub.

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Recycling of used lead-acid battery (ULAB) of solar home system (SHS): Current practices in Bangladesh

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ABSTRACT : The solar home systems (SHS) in Bangladesh has received applaud for its use of renewable energy. But the proponents of SHS largely ignored the problems of the recycling of used lead-acid battery (ULAB) that is employed in this system. Improper recycling of ULABs can result in environmental disaster and human health hazards. In this study, the current practices of recycling of ULABs from SHS are examined in the Bangladeshi context. This study is explorative in nature and a qualitative research methodology was applied to complete this. A semi-structured interview of 25 stakeholders of ULAB recycling was conducted to find out the current practices in recycling of ULABs used in SHS. The study found that the ULAB recycling sector is largely dominated by informal recyclers. As the Informal recyclers don't comply with any environmental safety and regulations, a large amount of lead and electrolyte from each recycled ULAB is going to the earth every year. Informal recyclers use coal inefficiently to extract lead from the lead paste, which in turn harms the surrounding environment. The study also found that there is reluctance by the battery producers in collecting ULABs and in their absence, there has been a prevalence of brokers in the collection of ULABs used in SHS. It was also revealed by the study that the producers buy processed parts of ULABs from the informal recyclers apart from the formal sources. Some policy level decisions are needed to be taken to mitigate these risky and unsystematic practices.

Key words : Solar home system (SHS), Battery recycling stakeholders, used lead-acid battery (ULAB), Battery recycling, Bangladesh battery recycling practices

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I. Introduction

Throughout the world, the concept of generating electric power through solar energy has gained traction in the recent times (Modi, Buhler, Andreasen, & Haglind, 2017). According to International Energy Agency (IEA) technology roadmaps, solar energy would count for a total of 27% of the electricity production of the world within 2050 (IEA, 2014a, 2014b). Keeping up with the world trend, Bangladesh is also observing the rise in the use of solar energy to produce electricity. The use of solar home system (SHS) has received attention because its Photovoltaic (PV) based generation of energy using renewable energy source like sunlight (Taheruzzaman & Janik, 2016). The SHS program of Bangladesh is being led by Infrastructure Development Company Limited (IDCOL) which is a government subscribed non-bank financial institution (NBFI) (IDCOL, 2017a, 2017b). Currently, the total number of solar home systems (SHS) in Bangladesh is close to 4.5 million and the total power generated by these is amounted to 179 MW (SREDA, 2017). The number of total SHS is expected to rise to 6 million by 2020 (Pavel, 2016) and it will contribute to 10% of the total electricity production of Bangladesh by that year (SREDA, 2016).

The revolution in the use of solar powered energy has received some scrutinization in the literature, especially regarding the improper recycling of used lead-acid battery (ULAB) in the solar home system (SHS) (Gottesfeld & Cherry, 2011). The improper recycling can eventually result in the cognitive deficiencies among the adults and children. In particular, the children living close to the area of ULAB recycling is vulnerable (Albalak, Rebecca, Noonan, & Buchanan, 2003; de Freitas et al., 2007). In fact, in a densely populated country like Bangladesh, lead contamination through improper recycling has the potential to become an emergency as a similar case was observed in the heavily populated Uruguayan capital where lead contamination became "an environmental, sanitary, and social emergency" (Manay, Cousillas, Alvarez, & Heller, 2008, p. 95).

Except for few reports, this concern has been mostly ignored by the researchers in the context of Bangladesh (GDI, 2015; Waste Concern, 2005). This research will try to shed light on this long-ignored topic of major concern. Considering the significance of proper recycling process of ULAB, this study aims to find out the current practices of recycling batteries that are used in the solar home systems in Bangladesh. It is hoped that other South Asian countries with similar problems will also get valuable direction from this research.

II. Literature Review & Methods

Solar Home Systems (SHS) installed in Bangladesh are basically standalone solar power systems. The main objective of SHS is to provide off-grid electric energy to the households in rural areas. The essential components of an SHS consists of a solar PV panel, a 12 V battery and a charge controller (Chowdhury & Mourshed, 2016, p. 586; IDCOL, 2017d). Lead and its compounds and antimony which are used in the lead-acid batteries of SHS in Bangladesh are toxic in nature. They have been related to certain hazards to humans and the environment. According to a report by Green Earth, used lead-acid battery (ULAB) recycling industry is the world's top polluting industry in 2016. Lead Smelting industry was also ranked in the top three most pollution causing industries (Pure Earth & Green Cross Switzerland, 2016). It has been observed that people living around battery repair workshop, especially children are significantly prone to high blood lead levels (T. Ahmad, Mumtaz, Ahmad, & Rashid, 2017).

Also, high blood lead level and illnesses attributable to lead toxicity were observed among the workers of the lead acid battery manufacturing industries which included "frequent headache, numbness of the limbs, colic pain, nausea, tremor, and lead line on the gum" (S. A. Ahmad et al., 2014, p. 1). Lead sulfate contamination in lands and water bodies were identified by IDCOL of Bangladesh as a direct result of improper disposal and recycling of lead-acid batteries. This is to be kept in mind that Lead sulfate has the ability to contaminate groundwater. It was also found that very thin lead sulfide dust particles can pierce into the lungs and affect the body of human and other animals. (IDCOL, 2014, p. 6).

The electrolyte in the lead-acid batteries exists as a liquid form. It is basically sulfuric acid of a certain concentration. Sulfuric acid is a highly corrosive strong mineral acid. Its corrosiveness is notable on other materials, like metals and living tissues. If sulfuric acid is concentrated it can show strong dehydrating and oxidizing properties and can cause very serious damage upon contact (Zhang, Chen, Zhang, & Liu, 2016). In Bangladesh, about 50% of electrolyte (Sulfuric Acid) of a Lead-acid battery remains unutilized after the expiration of the life period of ULAB. But it is of an extreme surprise that no used lead-acid battery recyclers in Bangladesh collect expired batteries with electrolyte. They talk about weight and fire hazard for justifying this action (IDCOL, 2014, p. 32).

According to clear energy solutions center, the four stakeholders in the recycling of used batteries of SHS are consumers, distributors /retailers, recyclers and producers (Clean Energy Solutions Centre, 2016).

1. Consumers: This group of stakeholders should be primarily responsible for the proper disposal of the used battery or PV panel.

2. Distributors/Retailers: They are the parties identified with selling the SHS and spare batteries to consumers.

3. Recyclers: They basically recycle the used lead acid battery. They are identified as two types - formal and informal. Out of the seventeen companies who work as battery producers/suppliers in Bangladesh, only three have their own recycling plants. The rest of the companies have entered into arrangements with the existing three recycling plants to use their facilities (IDCOL, 2014). Apart from these three formal recyclers, there exists a large number of informal recyclers at the recycling industry of used lead-acid battery (Waste Concern, 2005).

4. Producers: Producers are identified as the recipients of recycled material after the recycling process of used lead-acid batteries.

III. Methods

Due to the lack of previous studies on this topic in Bangladesh, an exploratory descriptive qualitative research was deemed necessary. This research tried to find out the current practices of recycling lead-acid battery used in SHS. To do that, three stakeholders were selected from the literature. They were customers, Distributors/retailers, and recyclers. Among the two kinds of recyclers, informal recyclers were chosen because they are known for not complying with the environmental standards. And also because there are few studies on their recycling practices in contrast to formal recyclers. During conducting the interviews with the customers, distributors and informal distributors - another major type of stakeholders were identified. They are referred as "brokers" in this research. Brokers were also interviewed later in this research.

Figure 1: Description of the categories of participants and number of participants in the study

A semi-structured interview was conducted using a purposive sampling procedure. The interview was administered to 25 stakeholders. Although this research is constrained by small sample size of the respondents, we collected data from all the major parties involved in the recycling process of used lead acid battery. Customers were selected on the basis of their experiences with SHS. Their involvement with the recycling of battery was also considered. Distributors/Retailers was selected on the basis of the "selling of lead-acid batteries used in SHS". Their involvement with the battery recycling process was also kept in mind. We tried to keep a variation in regards to the shop size and customer base.

Brokers were scarce in number. As they move frequently through Bangladesh, the

importance of their availability during the interview process was paramount. So, availability was the major criterion in selecting the brokers. Informal recyclers were especially reluctant to talk about their recycling process because they face many difficulties from the local communities and administrations. So, very few informal recyclers consented to give the interviews. The eagerness and consent of the recyclers were considered before taking the interview.

The interview was conducted in three districts of Bhola – Bhola Sadar, Char Fasson and Lalmohan. The district of Bhola was selected because there is an abundance of SHS in this area (IDCOL, 2017c). The reason behind this abundance is that Bhola is an island district and many parts of this island doesn't have access to proper electricity through the main electricity grid. So, there is a soaring demand for SHS on this island.

For the interview of the informal recycler of battery, the industrial hub of southeast Bangladesh, Khulna was selected. Khulna was selected because the brokers told the researchers that they carry the used lead-acid battery to Khulna for the purpose of recycling. This information aligned perfectly with previous research (Waste Concern, 2005).

All the interviews were recorded in the local language which is Bengali. The interviewers read through the written text on the spot after the interview was taken. The interviewees verified the information and corrected any discrepancies that emerged. The findings were translated into English by the researchers. To maintain the integrity of the research, the interview text was also checked by someone outside the research group. Thematic data analysis technique was employed to find out the emerging themes from the data.

A Computer-assisted qualitative data analysis software (CAQDAS) named NVivo was used to identify the themes. The effectiveness of using the software in the data analysis process has been recognized in the past (Richards & Richards, 1991). NVivo was selected as the data analysis tool because it is very suitable for dealing with data in qualitative data analysis process and can perform thematic analysis effectively (Elaine, 2002; Leech & Onwuegbuzie, 2011). To clarify on the collected data, a circle graph was used in the analysis. In a circle graph, all the items are represented as points on the perimeter. Similarity between each item is indicated by connecting lines of varying thickness and color. For example, Similarity is indicated by blue lines and dissimilarity is indicated by red lines. The thickness of the lines indicate stronger similarity or dissimilarity (NVivo, 2017).

Figure 1: Circle Graph representing Cluster Analysis using horizontal dendrogram

III. Results & Discussion

Apart from four major stakeholders identified in previous research (Clean Energy Solutions Centre, 2016), our study identified another major kind of stakeholder. We refer to them as "Brokers". Their main tasks involve collecting ULABs from distributors/retailers and getting them to recyclers, both formal and informal. They serve as a crucial link in the recycling process of the used lead-acid battery in SHS. The major findings of the study is discussed below.

Results

1. Producers don't collect their used lead-acid batteries

It has been observed from the field survey that producers don't collect their ULABs from the distributors/retailers. As one distributor put it, "Big battery companies just sell their batteries and they couldn't care less about the old batteries". This finding is in direct contradiction with the IDCOL's report. The report stated that the producers are responsible for collecting batteries from regional centers and to transport it to the site where the batteries will be recycled or disposed in an environment-friendly manner (IDCOL, 2014, p. 23). But in reality, such a system was found non-existent. Rather, brokers were seen carrying the batteries from the distributors/retailers to formal and informal recyclers.

2. Collection of used lead-acid solar batteries are dominated by brokers

As mentioned in the above paragraph, a prevalence of brokers was found in the collection of ULABs. Their presence facilitated the decrease in the practices of locally recycling used solar batteries which were a usual practice 5-10 years ago. People are interested in buying new batteries and there is an abundance of brokers who will pay money for the ULABs. That's why recycling ULABs locally doesn't generate enough cash. As one former local recycler has put it, "The breaking of old batteries isn't so lucrative anymore, so I had no choice but to sell the old solar batteries to the brokers."

3. Electrolyte from used lead-acid battery is dumped on open space

Our study revealed that electrolyte from ULABs used in SHS was being dumped in open spaces such as open roads, drains and water bodies. This practice commenced

when brokers started to throw away the electrolyte before weighing and buying used solar batteries from distributors/retailers. This has become a popular practice and sometimes the Distributors/Retailers throw away the electrolyte before the brokers even comes to buy the used solar batteries. The literature also confirms that no ULAB recyclers in Bangladesh collect used solar battery with electrolyte (Batteiger, 2015; IDCOL, 2014, p. 32).

4. Used lead-acid battery recycling activities are highly centralized

Although IDCOL's SHS program has been established in all the districts of Bangladesh (IDCOL, 2017c), majority of the battery recycling activities are taking place in the capital Dhaka and in a major industrial hub called Khulna in southeastern Bangladesh.

5. Many users are switching from SHS to only battery based system

An alarming trend for SHS is that many users are switching from SHS to only battery. The reason explained by the respondents is the higher cost of installation of solar home system. That explains why informal sector has seen a boom in selling SHS materials (GDI, 2015).

Three general reasons for this have been identified from the study. Firstly, ULABs sellers are more interested in selling batteries to users than brokers because they can get good price that way. Secondly, users think it is costly to set up a solar home system, that's why they are switching to only battery based system. Thirdly, users think that using only battery is more convenient than a solar home system.

6. The life cycle of the lead acid battery is unpredictable

An important cause for consumer dissatisfaction as identified in our studies is the unreliable nature of the lifetime of solar batteries. It can range from 1-2 years to longer than 5 years. The investment of solar battery is a large which consists at least 30% of the total cost of SHS (Muzzamir & Foraji, 2014). This makes it very difficult to replace the battery before the expected life-cycle period. A number of factors such as quality and usage plays a role in the useful life of a solar lead acid battery. (Chowdhury & Mourshed, 2016).

7. Distributors/retailers wants a new battery recycling system in place

As reported by the distributors/retailers that they don't get the fair price by selling

ULABs and they want a new system in place and also a better pay scheme for selling ULABs used in SHS. These trends indicate the growing dissatisfaction of distributors/retailers as well. As one battery seller put it, "Not every battery should sell for the same price, there is a question of quality. They (the brokers) come and buy everything on the basis of weight."

8. A large amount of ULABs are finding their way to the informal sector

Distributors/retailers told that the return of the ULABs is lower than expected. They are saying that almost half of the ULABs find their way to their original distributors/retailers. And the whereabouts of other half aren't known to them. They are also recognizing the fact that the extended warranty period is playing a role in the low return of used lead-acid batteries as IDCOL's recommended useful life of batteries is five years now (IDCOL, 2017d). Other than that, they are saying a majority portion of the ULABs are finding their way into the informal sector.

9. Informal recyclers are harming the environment with inefficient recycling technologies and disposal system and these practices are indirectly incentivized by the producers.

9.1 The Informal recyclers don't follow any environmental safety standards

The informal recyclers break the battery in their shop's backyard. Every part of the battery such as plastic case, separator, lead alloy and lead plates are reprocessed for selling. The main components of the solar lead acid battery are Lead and lead alloy grid (which together comprises 24–30% of the weight of the battery), and Lead paste (30-40% of the total weight of the battery) (Zhang et al., 2016). From the metallic lead and lead alloy grid, they can easily extract lead that by simply heating it. They use heat gun (blowers) for this purpose. The success rate of recovering lead from lead metal and lead alloy grid is 90-95% (Waste Concern, 2005).

Therefore, the rest 5% goes to earth which is sent in to the environment. Long-term lead exposure will have serious health consequences regarding high blood pressure and increased chance of having cardiovascular diseases (Kirkby & Gyntelberg, 1985). The children are especially in higher risk who lives in the vicinity of lead recycling plant (de Freitas et al., 2007). Also, elevated lead levels were associated with lower birth weight in children, amongst other risks (Rodosthenous et al., 2017). Dust and soil lead level has a high correlation with blood lead levels and the distance from the recyclers (Albalak et al., 2003). Lead is also associated with impairing cognitive function in human (Needleman, 2004).

9.2 The informal recyclers use inefficient recycling technologies

However, the real problems the informal recyclers face is the extraction of lead from lead paste. It resembles to ash so an earlier study referred it as lead ash (Waste Concern, 2005). The process of lead ash extraction can get messy so the recyclers do it at night in the open field of Gollamari, a significantly distant place from the city. "We do it at the dead of the night, mostly on weekends so that no one can see what we are doing."As one of the participants of the study recalled. The whole process takes place on a pan made of iron. Firstly, a hole is dug into the ground. Fuel is inserted into that hole and some spaces are given for the oxygen to enter and facilitate the combustion process. The pan stays on the top of the heat produced by the combustion process. Coal is used inefficiently to generate heat.

Using coal as a fuel has been associated with air pollution (Cohen et al., 2017; Ma et al., 2017). Coal as a fuel can cause environmental degradation and the detriment of health on both adults and children (Finkelman & Tian, 2017; Perera, 2017). The recovery rate of lead from this so called pan/hole process is 55-70% (Waste Concern, 2005). Rest is going to the environment. It has to kept in mind that blood, dust and soil dust lead in the adjacent areas of lead recycling remains highly elevated (Kristensen, Taylor, & Flegal, 2017).

9.3 The disposing of waste by the informal recyclers isn't safe

Among the 450 kg solid waste collected from the city each day, 50-200 kg are from retail and sale market which includes Ismail Metal market and Sheikhpura market (Ahsan, Islam, & Shahriar, 2009). So, it can be said that for every 40 kg ash collected from the ULABs, 5kg ash is going directly to the land. In that ash, at least 60% or 3 kg is lead (Waste Concern, 2005).

9.4 Major buyers of recycled parts of ULAB are Producers, thus incentivizing the informal recyclers

The recovered lead is sold to some battery producers; mainly Hamko battery and Lucas Battery. Sometimes, informal recyclers just sell out the lead ash instead of recycling. It depends on the quality. They admitted that from every 40 kg ash, 5 kg ash are thrown away because the quality gets deteriorated to extract lead. Therefore, a significant portion of the total lead directly goes into the ground which is harmful for the environment (Laidlaw et al., 2017). By buying the recycled parts of ULABs from the informal recyclers, the producers are indirectly incentivizing the environmentally unsafe practices of the informal recyclers.

Table 2: Current practices and solutions of challenges for different stakeholders of SHS.

Discussion

Although there are many problems regarding the collection and proper recycling of used lead-acid battery, it can very well be solvable. There has to be a lead acid battery recycling management in place which will be both environment friendly and efficient. The problems observed through the research findings are mainly due to the fact that there aren't any proper waste management system. We should weigh waste management approaches or schemes with the processes which will be sustainable in the context of Bangladesh.

The role of lead acid battery has been debated a lot. Sometimes, it is said to be the weakest link of the entire solar home system (Chowdhury & Mourshed, 2016). The solutions to this problem can be the use of lithium ion batteries and also the use of solar mini grid. Each of the solutions should be weighed before reaching a verdict. As mentioned earlier, Lead-acid contents can include lots of toxic, hazardous, flammable, explosive substances that can easily create environmental as well as health related risks. Those materials can cause a variety pollutions as well as accidents such as fires, explosions, poisoning and leaks, contaminating environment and damaging ecosystem (Zhang et al., 2016). We have several laws/guidelines and incentives related to the proper controlling of the recycling process of used lead acid battery (IDCOL, 2014). But the abundance of a large number of informal battery recyclers otherwise points to the ineffectiveness of those preventive measures. What we need right now is the proper placement and strict monitoring of the acts/laws already established. Above all, formalized method of the collection of Lead acid battery for the recyclers is needed to be ensured by the law.

An economic analysis of PV stand-alone system showed that lead-acid battery is cheaper than that of lithium-ion battery. But in terms of energy density, maintenance, environment friendliness and lifecycle, lithium-ion battery is more suitable (Anuphapparadorn, Sukchai, Sirisamphanwong, & Ketjoy, 2014). It has been calculated that Li-ion battery, especially LiFeSO₄, can be a better replacement of conventional lead acid battery in the context of solar home system (Podder & Khan, 2016).

For the remote areas of Bangladesh, solar PV hybrid grid has already been suggested back in 2009 (Bala & Siddique, 2009). A non-government utility company named PGEL has been providing reliable power supply to the remote Sandwip Island since 2010. It has been observed from a study that solar PV minigrid is a viable technical option for rural electrification of rural markets (Khan et al., 2016). Not only is that, grid-connected solar home system is also a good options which reduces the need for a lead-acid battery and thus the reduction of complication associated with the recycling of those solar batteries (Mirhassani, Ong, Chong, & Leong, 2015; Mohammed, Mohammed, & Ibrahim, 2017). But, we have to carefully observe the pros

and cons of each of the approach before deciding on one or combining several solutions.

Acknowledgments

This project was funded by Ministry of Science and Technology Bangladesh in Capacity Utilization Programme under Special Allocation for Science and Technology.

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Appendix

Table 1. Description of the categories of participants and number of participants in the study

Category of interview Participants	Number	Interview Topics
Customers	6	1.Association with buying /selling batteries for SHS 2.Time observed in which battery in SHS becomes inapplicable to use 3.What do they do after the usage of the battery 4.Throwing any battery component in the environment 5.Problems faced in collecting/selling solar batteries
Distributors/Retailers	11	Same as Customers
Brokers	3	Same as Customers
Recyclers (Informal)	5	1.Number of old solar batteries recycled each month 2.Process of recycling 3.Part that are thrown out in the environment 4.Location of thrown out materials 5.Buyers of recycled materials.

Table 2. Current practices and solutions of challenges for different stakeholders of SHS.

Stakeholders	Current Practices	Environmental Impact	Solutions
Customers	Improper use and maintenance of lead acid battery. For Example: The users don't fill up the electrolyte level of batteries in due time.	Indirectly contributing to soil, water, and air pollution	Proper refilling of electrolyte in the battery. Proper maintenance and use of battery.
Distributors/retailers	Disposal of electrolyte in open spaces while selling old batteries to brokers	Adjacent soil and water is polluted	Use of neutralization tank
Brokers	Disposal of electrolyte in open spaces while collecting old batteries	Adjacent soil and water is polluted	Use of neutralization tank
Recyclers (Informal)	Lead emissions through improper recycling such as recycling without proper environment standards.	Adjacent soil, water, and air is polluted	Use of proper battery recycling method, limited use of fossil fuels like coal. Proper disposal system.

The Study on the Influence of Support Services and Caregiver Service for Elderly Visiting Home-Care Service Satisfaction

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ABSTRACT: Aging is one of the most important characteristics of modern society and it is happening all over the world. Korea is not exceptional in that population aging is faster than ever. The problem arises from the fact that older people can not maintain their health and quality of life as they get older. Long-term care insurance for the elderly is a social insurance system that provides services such as physical activity, daily life, household support, conversation with someone, and emotional support. With the introduction of the elderly nursing care insurance system, the burden of caring for the elderly has been alleviated, providing more specialized child care services, which has reduced the stress of caring for other family members. This study attempts to find ways to provide better services by analyzing factors that may affect the satisfaction of recipients of home visiting nursing services.

Key words : Support Service, Caregiver Service, Elderly Visiting Home-care Service, Satisfaction, Socio-demographic Factor,

I. Introduction

Aging is one of the most important characteristics of the modern society and is happening worldwide. Korea cannot be an exception, with the population aging more quickly than ever before. According to the National Statistical Office (NSO), it is reported at the year 2015, those older than the age of 65 accounts for 13.2% of the entire Korean population, which amounts to the number of six billion and five hundred seventy thousand(2016). The UN classifies the societies into three types: an "aging" society is where those older than 65 accounts for more than 7%, "aged" for more than 14%, and "super-aged" if more than 20%. In case of our own country, the

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proportion is expected to reach around 15% in 2020, with the ever-developing medical technologies leading to longer life spans. Also, in 2016, it was reported by NSO that in the year of 2015, one of five households was aged, and 32.9% of them were single-person households (NSO, 2016).

The problem arises in the fact that the aged are usually not able to sustain the good health and high quality of life as they get older. Chronical degenerative diseases and physical malfunction results in higher medical costs, and less economic activities due to physical problems eventually lead to less income. This causes the sense of crisis in families and increases the national supporting expenses. It was found the National Statistical Office NSO) that 18.1% of the productive population(age 15~64) must provide for the elderly, meaning 5.5 people are needed to look after 1 senior(2015). Also, about 10 years ago(2006), 67.3% of the seniors thought the "family" should do the care giving, but the percentage declined significantly into 34.1% in 2014. There is an increase in people with the notion that the older parents should be able to take care of themselves, or that the care-giving should be done by the family and the government/society altogether, or even if the family members do all the work, it should be done by the entire family (NSO, 2016)

Meanwhile, most of the elderly living in the current society are facing their advanced age without preparing for their declining years, causing conflicts between family members and disregarding the burden of taking care of them. As supporting the elderly rose as a problem not only involving the families but also the nation/society, in the April of 2017, Senior Long-term Treatment Insurance Law was established. from July 1st, 2008. This system, as a universal one for all seniors, attempted to curve the senior problems going social, and conduct the welfare services by the government.

Elderly Long-Term Care Insurance is a social insurance system, which provides for the allowances of services, including the support for physical activities, daily lives, and houseworks, or emotional support such as somebody to talk to, or give emotional support, to those older than 65, or those under 65 with difficulty to lead their daily lives alone, dementia, strokes, or Parkinson's disease being the cause of it. (Elderly Long-Term Care Insurance Law, Article 1, 2008) Through the Elderly Long-Term Care Insurance, the government attempts to improve the quality of life of the elderly, and is expecting that it would decrease the family burden of taking care of their elderly members, and increase the economic activities of the unofficial care-givers, create jobs in social services, and vitalize the senior-friendly business and the economy (The Ministry of Health and Welfare, 2006).

The beginning of Elderly Long-Term Care Insurance lowered the burden of the families taking care of their elderly members, and enabled them to acquire more specialized care-giving services, which led to a decrease in the care-giving stresses of

the other family members, and created better grounds for them to focus more on their economic and social activities. Therefore, it is estimated that the offset of Senior Long-term Treatment Insurance System provided welfare not only for the senior members of the society, but also the families taking care of them (Kang In-wha, 2011; National Health Insurance Corporation, 2015; Om Ki-tak, 2011; Lee Seul-bi, 2013).

In 2009, Korea first conducted the survey of the satisfaction of the services through National Health Insurance Corporation (NHIC), to collect the basic information to search for the successful development, as it started Elderly Long-Term Care Insurance from July 1st, 2008. Each year, the government makes up for the lack in the system and come up with better plans through the satisfaction surveys and collection of the citizen's opinion. As the result of the surveys, the satisfaction has been going up constantly each year, from 86.9% in 2011, then 89.1%, to 89.7% in 2015 (National Health Insurance Corporation (NHIC), 2015). Judging by these results, it seems that Elderly Long-Term Care Insurance, which has been conducted for seven years, has been regarded positively by the citizens in a continuous manner. Also, it is shown that the recognition has been constantly going up since 2011, as a survey conducted for the civilians in regards of Elderly Long-Term Care Insurance their knowledge of it turned out to be 73.0% (NHIC, 2015).

If we take a look at the categories of Elderly Long-Term Care Insurance Supply in the Elderly Long-Term Care Insurance (Elderly Long-Term Care Insurance Act, Article 23), it is divided into "Stay-at-home" supply, "Facility" supply, and "Extra Cash" supply. If the basic intention of the offset of Elderly Long-Term Care Insurance was in improving the quality of life of the seniors by letting them stay with their family members at home, the successful home-visiting care giving services in the "stay-at-home" category would be put in the front line. It was argued by Heung Mi-ryung (2003) that the issue of the elderly care giving and protection involves diverse areas such as medical, welfare, and housings, and takes a long period of time in building the infrastructure, and therefore, it should be dealt with at the early stage of the aging society, in a well-planned and thoroughly organized manner. Also, it can be said that home-visiting care giving services can lesson the costs of the family caused by the deinstitutionalization after the 1980's, and it also is a service that took account of the characteristics of the elderly, who prefer to be taken care of in their own homes, in which they have lived for their entire life, which is also shown in the study of Choi Eun-hee, which stated that the family taking care of their senior members has positive effects on their advanced lives. Therefore, home-visiting care giving services can be considered by far the first and foremost service for the senior members of the society, and for its successful establishment, the studies for improving the quality of the services is considered important.

This study attempts to find out the ways for providing better services by analyzing

the factors that could influence the satisfaction of the receivers of home-visit care giving services.

The subjects of the study for the achievement of the expected outcomes are as follows: First, the satisfaction rates of the subjects of the surveys, in regards of 1) support services for each area, 2) caregivers service, and 3) home-visit care giving services

Second, the relative influence of various factors(socio-demographic factors, satisfaction in support services for each area, and in caregivers) in regards of satisfaction of home-visit care giving services

II. Background Theories

Elderly Long-Term Care Insurance is a social insurance system in terms of social solidarity principle, providing long-term treatment services such as physical activities or housework supports, for those with difficulties in leading their daily lives by themselves, due to their old age or senile diseases. The system has its significance in that it attempts to each and every generation of family members as the government takes over the problem of long-term care giving, which has been done by the families for a long time. One can receive the services if he/she is a Korean citizen, who is 65 years old or older, or has not been able to properly do their daily activities for longer than 6 months due to senile diseases or other valid factors. To be more specific, the services include long-term care giving allowances provided by the principle of social solidarity, such as support in physical activities or housework, or support and encouragement in daily lives of the senior citizens, all of which is intended for improvement in the health of their advanced years and stability in their lives, eventually improving the quality of life of overall citizens by lessening the economic and social burdens of the family members taking care of their senior members.

When we take a look at the background of the Elderly Long-Term Care Insurance in Korea, for those in need of care giving and protection in more developed countries that experienced their societies aging ahead of us, the governments came up with social and official protective long-term measures. The flow of social measures established by the developed countries in regards of Elderly Long-Term Care Insurance, it could be divided into two categories: policies based on social insurance, such as Japan, Germany, Hungary, or Switzerland; and policies based on tax support, such as the UK, Sweden, or Norway (National Health Insurance Corporation (NHIC, 2016).

Korea began the introduction of Elderly Long-Term Care Insurance with such influences of the policies of other countries. The presidential candidates of 2001~2002

began to include such issues, and that is how the introduction of 'Elderly Long-Term Care Insurance' was announced to prepare for the upcoming aged society. Then, in 2003~2004, 'Public Elderly Treatment Guarantee Drive Plan' was established to facilitate a preparation system for Elderly Long-Term Care Insurance. Also, in 2004~2005, Elderly Long-Term Care Insurance Systems Drive Committee was comprised and operated, and during 2005~2008, it was operated with National Health Insurance Corporation in its center.

Looking at the proceedings of the legislation of Elderly Long-Term Care Insurance Act, it first went through the prior announcement of legislation from October 19th to November 8th in 2005. After it was submitted into the National Assembly on February 16th, 2006, and it went through seven examinations(2 by Han-nara Party, 2 by Yeolin-uri Party, 1 by Democratic Labor Party, and 1 petition for legislation). Then, on April 2nd, 2007, it passed the Assembly including its supplementary resolution, passed the Cabinet meeting on the 17th of the same month, proclaimed on the 27th, and was enforced from July 1st, 2008.

The background of the Elderly Long-Term Care Insurance is as follows: First, as the society began to be aged drastically, the number of seniors in need of care giving and protection is also in the rise, meaning that the society is getting older. In 2015, the population over 65 was 6 million and 569 thousand, taking up 13.2% of the overall population, which was 2 million and 204 thousand more than 2005, which was a decade ago. If this keeps going on, the senior population is expected to go up to more than 10 million in 2025, then 18 million in 2050, taking up as much as 37.4% of the overall population(National Statistical Office(NSO), 2015). This estimate shows the reality that the senior population is constantly on the rise from the time before Elderly Long-Term Care Insurance even began to the current years, and the number of seniors in need of care giving are also growing.

Accordingly, in the inspection of the actual condition of senior lives and their welfare demands nationwide, conducted by Korea Institute for Health and Social Affairs(2004), the proportion of the care giving years of the senior members going up to 5 years or more took up 39% of the entire population. Also in the inspection of conditions of elderly long-term treatment and protection conducted in 2006, the elderly with difficulties in daily life activities took up 8~10%. Based on these statistics, Public Elderly Treatment Guarantee System Drive Committee estimated the number of the seniors in need of care giving to be around 720 thousand. The increase of seniors in need of care giving and protection due to the aging population causes not only themselves but also their own families to suffer, and long-term care given patients have risen as a social problem as they become exhausted by being in the sickbed for too long a period. This has transformed into a very serious social problem, and the society was desperately in need of introduction of a public system.

Second, while the senior population increased, the family role declined due to weakening family functions, changes in family structure and awareness of care-giving of their senior members, and the social involvement of the female members. Also, in regards of family structure, the number of households of a senior citizen living alone grew from 16.2% into 33.0%, showing 16.8% of increase(Annual Population Report, 2006), and the change in the structure eventually led to the change in the awareness of care-giving of their elderly family members. According to the survey of care-giving awareness(NSO, 2004), 89.9% answered that the elderly must be taken care of by their own family members in 1998, but the percentage dropped into 70.7% in 2002, showing 19.2% decrease(Lee Eun-ju, 2007) And as 80% of the female members of the society, who used to be the at the center of care-giving of the seniors in the past, began to be more involved in the social activities in the past(Korea Institute for Health and Social Affairs, 2004), and the economic activities of the female citizens, who could play the most important role as unofficial care givers to the seniors(Jeong Kyung-hee, 2005), families being nuclearized as well as an increase in senior single households is indicating at the limitation in the family-centered care giving.

Third, according to the NSO, the cost of supporting the elderly appeared to be 10.2% in 2000, which means 9.8 productive people serving for 1 senior citizen <see Table 1>. If the society keeps aging at this pace, the number of productive population(age 15~64) per 1 senior citizen will decrease into 6.6 in 2010, and 5.5 in 2015, and even smaller in the coming years, which would then become a social problem to pay the cost for the support. High cost of supporting the elderly indicates higher proportion of the senior population than the productive population could provide. According to the recent report from the Ministry of Health and Welfare, there will be a decrease in productive population from 2017, and from 2020, we would be facing the social and economic risks caused by aging, The lack of labor force would become the reality from 2022, and the total population itself is expected to decline from 2030. And in all due course, it is expected in 2040 that out of 10 productive people, 8 would be taking care of the elderly, and 2 of the younger.

Table 1. The cost of supporting the elderly

(unit: per 100 people)

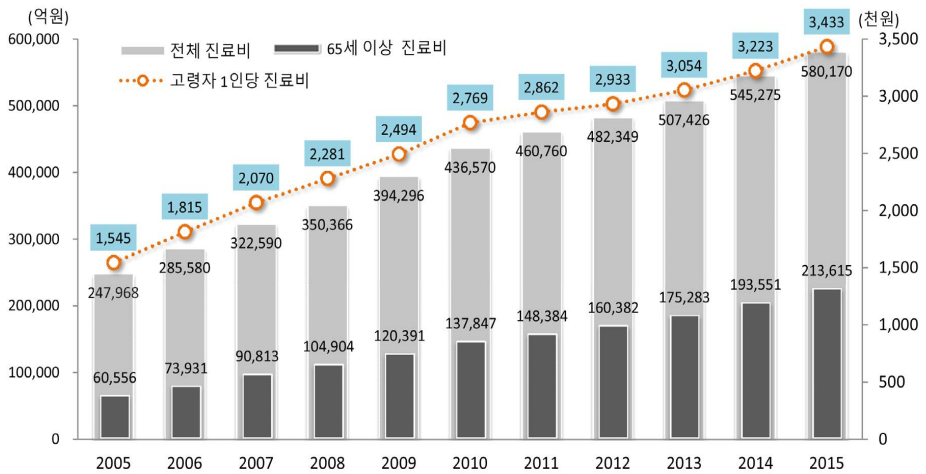
	total cost of supporting the elderly	cost of supporting the elderly	aged-child ratio	productive population per one elderly
1960 ^T	79.9	6.70	9.20	14.9
1966 ^T	88.0	6.20	7.60	16.1
1970 ^T	83.2	6.10	7.80	16.5
1975 ^T	71.1	6.00	9.10	16.8
1980 ^T	60.5	6.20	11.4	16.1
1985 ^T	52.1	6.60	14.5	15.2
1990 ^T	44.2	7.20	19.4	13.9
1995 ^T	40.6	8.30	25.8	12.0
2000 ^T	39.5	10.2	35.0	9.80
2005 ^T	39.6	13.0	48.6	7.70
2010 ^T	38.0	15.6	69.7	6.40
2010 ^R	37.3	15.1	68.0	6.60
2015 ^R	37.2	18.1	95.1	5.50

source: the statistics of Korea, ^Tthe aged and estimated future population, each year

Fourth, 87% of those older than 65 has more than one chronic disease, and to deal with this problem. the government is running the welfare system focused on facilities. However, with the lack of care centers or stay-at-home services, the aged are having difficulty taking advantages of the medical services(Lee Ho-seong, 2004), and the medical cost for the aged has become a big burden not only in the personal or familial but also in the social as well.

As one can see in [Figure 1], the medical cost for those over 65 was 6 trillion 55 billion and 6 hundred million won in 2005, but then in 2015, the cost goes up to 21 trillion 361 billion and 5 hundred million won out of the total medical cost of 58 billion and 17 billion won, which takes up 36.8%. Also, in the 2015, the medical cost per one senior citizen was 3 million 430 thousand won, which was 6.5% higher than that of the last year, and 3 times more than that of the average cost per person, which was 1 million and 150 thousand won(NSO, 2016) In the report 'The Study of Expenditure of Medical Expenses for Elderly People Over 65 Years', the health insurance policy researchers expect the health care cost for the elderly in 2060 would be up to 390 trillion 794 billion and 9 hundred million. Likewise, the rise of health care cost of the senior citizens is no longer the problem of merely a household; it is now one of the problems the entire society must be engaged in.

Figure 1. The medical cost per one elderly



source: National Health Insurance Service

III. Methods

1. Method of Subject and Data gathering

The subjects of this study were 300 random households of the care giving families in Soon-cheon City. They were all engaged with stay-at-home services after acquiring the proper grade for Senior Long-term Treatment Insurance System, and they took part in the survey. The period of survey lasted from June 17th, 2016 to August 16th, 2016, using a list of questions. The questionnaire was delivered directly through care-givers and social welfare workers to the receivers of the services, and was completed by one of the main care-giver of the family, after an extensive explanation of the purpose of the survey. Among 300 pieces, we received 290 in return, and 266 were used in total, with the exception of 24, which were incorrect or done in a careless manner.

2. Measurement

The tool used for the study was the questionnaire. It consisted of four sections : 1) the socio-demographic characteristics of the receivers of the services, 2) satisfaction with the services, 3) satisfaction with the care-givers, and 4) satisfaction with the

stay-at-home care giving services.

1) the socio-demographic Characteristics

The socio-demographic characteristics of the subjects were divided into 19 categories: service grades, gender, age, illnesses, religion, marital status, address, education, income, services currently being utilized, and how long and often it was used, the service giver, personal cost, the form of receiving the long-term care giving insurance, application paper of the long-term care giving insurance, and the time and cost of using the insurance. The reliability of the criteria of participation motivation used in the research showed to be high with Cronbach's $\alpha = 0.74$.

2) services satisfaction

The satisfaction with the services were surveyed with 15 categories of items : 2 in physical activity support, 3 in daily life support, 2 in personal life support, and 3 in emotional support. For the question items regarding the satisfaction with each category of the services, we used the questionnaire created by Lee Jae-kyung(2009), which was also used in the previous study. The reliability of the criteria of services satisfaction used in the research showed to be high with Cronbach's $\alpha = 0.89$.

3) the care-giver satisfaction

The questionnaire was created with reference to Lee Jae-kyung(2009)'s questionnaire, and consisted of 7 items overall. The items were as follows: "The care-giver is functional", "The care-giver is kind and polite", "The care-giver has a full understanding of the services required for the elderly", "The care-giver thoroughly manages the hygiene". The reliability of the criteria of the care-giver satisfaction used in the research showed to be high with Cronbach's $\alpha = 0.93$.

4) stay-at-home care-giving services satisfaction

For this category, we used the questionnaire created by Lee Byeong-man(2014), which was also used in the previous study. The items were as follows: "The care-giver respected my feelings when giving the services", "I think the cost for the services is reasonable", "My opinion was fully taken account of when signing the contract", "The explanation for the content of the contract was easy to understand", etc, and there were 12 items overall. The reliability of the criteria of stay-at-home care-giving services satisfaction used in the research showed to be high with Cronbach's $\alpha = 0.86$.

3. Data analysis

Data were analyzed using the SPSS Win 16.0 statistical program. To inspect the reliability of the scale, Cronbach's α coefficient estimates and technical statistics were used, as well as t-test analysis, one-way ANOVA, Duncan's post hoc analysis, Pearson's correlation analysis, and stepwise multiple regression.

IV. Results

1. Level of the services satisfaction, the care-givers satisfaction, and the stay-at-home care giving services satisfaction

The average and standard deviation of the satisfaction with the services, the care-givers, and the stay-at-home care giving services are shown in <Table 2>.

In regards of the satisfaction with the services, the average of the total value was 63.97, which was much higher than the middle value, which was 45, indicating that the receivers of the services have high satisfaction with the supporting services in each category. The values of the sub categories are as follows: 29.75 for physical activity support, 13.26 for daily life support, 12.89 for emotional support, 8.06 for personal activity support. With the average value of 5 to compare the score per item, the values are as follows: 4.42 for daily life support being the highest, 4.25 for physical support as the second best, then 4.30 for emotional support, and 4.03 for personal activity support. In other words, the satisfaction appeared to be the highest when the care-giver supported the daily chores of the elderly, such as cleaning, doing laundry, or cooking and doing the dishes, while it appeared to be less satisfactory regarding personal activity support, such as going to the bank or a hospital, because the frequency was much less than the former. Also, the total average value of the receivers' satisfaction with the care-giver was 30.41, which was 21 higher than the middle value of the total. Out of 5, 3 being the middle value, it appeared to be 4.34, which could mean that the receivers showed relatively high satisfaction with the care-givers. The average of total score of stay-at-home visiting treatment services was 51.43, which was higher than 36, the middle value, and out of five, it scored 4.28 in average, showing high satisfaction with the provided services.

Table 2. Level of services satisfaction, care-givers satisfaction, and stay-at-home care giving services satisfaction

variable		M	SD	Median	M (5point)	Median (5point)
	sub-variable					
the satisfaction on the support service per region	physical activity					
	support daily life					
	support	29.75	4.46	21	4.25	3
	personal activity	13.26	2.02	9	4.42	3
	support	8.06	1.54	6	4.03	3
	emotional support	12.89	1.97	9	4.30	3
	total	63.97	8.73	45	4.26	3
caregiver satisfaction		30.41	4.03	21	4.34	3
beneficiaries satisfaction		51.43	6.44	36	4.28	3

2. The influences of the factors(socio-demographic, support service satisfaction, and care-giver satisfaction) according to the stay-at-home visiting caregiving service satisfaction

We conducted multiple stepwise regression to find out the relative influence of socio-demographic, support service satisfaction, and care-giver satisfaction to the service satisfaction. The result is shown in <Table 3>.

Before we conducted regression analysis, we found out the Durbin-Watson factor through residual analysis as a regression process, and it appeared that the Durbin-Watson factor was proximate to 2, having no auto-correlation between the residuals. Also, the correlation between independent factors was $0.0314 < r < 0.5330$, showing no linear relationship, and with the range of $1.04 < VIF < 1.8$, no problem of multicollinearity in case VIF is higher than 10, and thus we conducted the regression analysis.

The factors for the regression analysis included not only the factors that went through correlation analysis, but also some of the main nominal variables converted into dummy variables. We performed a three-step verification in the process of the regression analysis for the study. Step I looked into the influence of socio-demographic factors to the receivers' satisfaction with the stay-at-home treatment services. Step II added support service satisfaction factor to the socio-demographic factor to look into the influence of these factors. Last but not least, Step III added care-giver satisfaction

to the former two to look into the influence of the three factors.

As one can see in the Table, the regression equation of Step I appeared to be ($R^2=.14$, $F=2.27$, $p<.01$), and more specific influence factors were service cost, frequency, period, age, service grade, and education, the first one being the highest. The most influencing factor in the regression equation of Step I was the service cost, showing 5% explanation power, and the total explanation power of these factors altogether was 14%.

The regression equation of Step II was ($R^2=.46$). More specifically, the influencing factors such as physical activity support service, service cost support, emotional support, personal activity support, age, frequency, and illness were the statistically significant. As support service satisfaction factors (physical activity support service, service cost support, service cost, emotional support service, personal activity support service, age, frequency, and illness) was added to the socio-demographic features of the subjects, the explanation power increased into 46%. This shows the 32% increase rate to the stay-at-home treatment services satisfaction. Also, in regression equation II, the factor with the biggest influence was physical activity support service, showing 30% explanation power, and the second highest was the service cost, showing 4% explanation power.

In Step III, care-giver satisfaction factor was added to the former two, and the regression equation appeared to be ($R^2=.68$). In Step III, satisfaction with the care-giver, service cost, emotional support service, physical activity support service, age, service time, personal activity support service, and service grade showed statistically significant results. Thus, in the regression equation of Step III, the biggest influence was shown in the care-giver satisfaction factor (56%), and the total explanation power of the factors in Step III was 68%.

In respect of the regression equations of Step I, II, III, one can recognize that care-giver service satisfaction is important, it being the biggest factor in total stay-at-home visiting treatment. This result corresponds with a previous study results of Lee Peo-ra (2009), which found out that the quality of care-givers, regardless of the possibility of getting into the facilities, is the most important and decisive factor to the service satisfaction. This can also be interpreted into the result of Yoo Jeong-in (2016)'s study, which argued that the perspective of thinking a care-giver as merely a nurse or a housekeeper did not have much effect on the service satisfaction, while the good and sincere feelings about the care-giver, emotional empathy, and creating rapports resulted into higher satisfaction. To sum up, how the receiver feels about his/her care-giver is the most important factor, and the process of the service rather than its result, and the affection, interest, and consideration are the core elements of care-giving services, and would also result in the receiver's satisfaction.

Table 3. The influences of the factors(socio-demographic, support service satisfaction, and care-giver satisfaction) according to the stay-at-home visiting caregiving service satisfaction

Step	variable	service satisfaction (N=266)		Rank of R ²	R ²
		B	β		
step 1	(Cons.)	40.5659	.0000		
	Grade	1.9860	.0994*	5	0.01
	sex a)	- .62982	- .0443		
	age	.6595	.1086*	4	0.01
	diseases a)	.6769	.0435		
	religion a)	- .3928	- .0303		
	spouse a)	1.1279	.0830		
	region a)	.7260	.0561		
	education	- .5961	- .0859*	6	0.01
	cohabitation a)	.5893	.0455		
	monthly income	1.1954	.0791		
	usage service a)	.2808	.0253		
	usage time	.9712	1262*	3	0.02
	service frequency	-1.8421	- .1351*	2	0.03
	patients sharing of the	- .5070	- .0353		
	services a)				
	supply type a)	.1800	.0131		
	proposer a)	.6001	.0263		
service time	- .4455	- .0508			
service cost	2.1983	.2729***	1	0.05	
		R ² = .14 F = 2.27 **			
step II	(Cons.)	17.0289	.0000		
	grade	1.2451	.0623		
	sex a)	- .3390	- .0238		
	age	.9559	.1575**	5	0.01
	diseases a)	2.0418	.1314*	7	0.01
	religion a)	.3011	.0232		
spouse a)	.9693	.0713			

monthly income	.1348	.0089		
usage service a)	- .5016	- .0452		
usage time	- .0226	- .0029		
service frequency	- .8623	- .0632		
patients sharing of the services a)	.2201	.0153		
supply type a)	.1843	.0134		
proposer a)	.4461	.0195		
usage time	- .6376	- .0727*	6	0.01
usage cost	1.4743	.1830***	2	0.03
physical activity support	.1140	.0970*	4	0.02
daily life support personal activity	- .2385	- .0686		
support e m o t i o n a l support	.3423	.0717*	7	0.01
c a r e g i v e r satisfaction	1.0470	.6549***	1	0.56
R ² = .68				
F = 22.84 ***				

- * p<.05, ** p<.01 *** p<.001
- a) dummy (The following variables is treated as a dummy variable)
 - sex: male(1), female(0),
 - diseases; paraiysis(1), etc.(0),
 - religion; yes(1), no(0),
 - spouse: yes(1), no(0),
 - region; urban(1), rural(0),
 - cohabitation; alone(1), etc.(0),
 - patients sharing of the services: own.spouse(1), etc.(0),
 - supply type; usual(1), etc.(0),
 - proposer: own. spouse(1), etc.(0)

V. Conclusion

The results of this study are summarized as follows. First, the satisfaction level on the support service per region, the satisfaction level on the caregiver, and the satisfaction level on the service provided had an average value of 63.97, which was higher than the median value of 45 points. From this, we can say that the satisfaction level among the beneficiaries is very high. The sub-factors under the satisfaction level on the support service per region were examined using an average value of 5 points. The results are as follows: daily life support scored the highest with a score of 4.42, followed by physical activity support with 4.25, emotional support with 4.30, and personal activity support with 4.03. Also, the satisfaction level on caregivers was higher than the median score of 21 as it scored 30.41. In an average value of 5 points with 3 as the median, it scored an average of 4.34 hence showing that there is a high satisfaction level on the service of the caregivers. Lastly, satisfaction level on service provided is shown to be very high as it scored 51.43, which is higher than the median total score of 36, and also scored an average of 4.28 in the median score of 5.

Second, the differences in the three satisfaction levels were examined according to socio-demographic variables. Results show that there was a difference in the satisfaction level of physical activity support service depending on the usage time, service period, usage cost, and income level. For daily life support, there was a difference according to the groups' religion, service period, age, and educational attainment. For personal activity support, there was a difference according to the groups' usage time, age, usage cost, religion, and diseases. Lastly, for emotional support, results show a statistically significant difference between groups in terms of cost. On the other hand, for the satisfaction level on the caregivers, there was a difference according to the service period, service provider, usage time, service requested, cost, and service frequency. For the satisfaction level on caregivers, results show a significant difference according to educational attainment, usage time, service frequency, rank, cost, service requested, age, type of long-term care insurance, long-term care insurance applicant, service period, guardian, and residence type.

Third, the relationship among the three satisfaction levels were examined. Results show that there is a high correlation among the satisfaction level on the support service per region, the satisfaction level on the caregiver, and the satisfaction level on the service provided. The correlation between the satisfaction level on support service and physical activity support sub-factor had the highest correlation, whereas the satisfaction level for personal activity support was the lowest. Also, it was confirmed through analysis that there is a close correlation between the satisfaction level on

support service and on the caregiver.

Fourth, multiple stepwise regression was used to examine the relative influence of socio-demographic variables, satisfaction level on support service per region, and satisfaction level on the caregiver on the satisfaction level of the beneficiaries. The results of regression analysis I, II, and III are as follows: In regression analysis I, the factors that had a relative influence on the socio-demographic variables included service cost, service frequency, service period, age, rank, and educational attainment. The explanatory power of this service satisfaction is 14%. In regression analysis II, the satisfaction level for each sub-factors (physical activity support, daily life support, personal activity support, and emotional support) were included. The effect on the satisfaction level increased to 46%, and the net effect on service satisfaction was 32%. Also, the variables turned out to be the following factors: physical activity support service, service cost, emotional support service, personal activity support service, age, service frequency, and diseases. Finally, in regression analysis III, the satisfaction level on the caregiver was included. The variables were in the following order: satisfaction level on the caregiver, service cost, emotional support service, physical activity support service, age, usage time, personal activity support service, and rank. The explanatory power of these variables is 68%. In other words, in regression analysis III, the explanatory power increased by 22% by adding the satisfaction level on the caregiver, thus showing that caregiver satisfaction has a great influence on the overall service satisfaction level. Through regression analysis I, II, and III, the results of the study show that the most influential variable is the satisfaction level on the caregiver.

And this study gives suggestions based on the results: First, Senior Long-term Treatment Insurance has been raised as a very important social policy to respond to the recent social changes, with an ever-fast increase in the aged population, family nuclearization, and an increase in single senior households. Therefore, considering the characteristics of the elderly, who tend to prefer to be taken care of in their own home in which they have lived throughout their lives, the service hours need to be more diversified. For example, households with the joint bread-winning have to receive full-time care services for the elderly, which adds more burden to their limited income, and unexpected accidents could happen to a senior living alone if he/she gets the services of limited hours. The ways to diversify the available hours of the services must be taken into consideration.

Second, in respect of the result that the most influencing factor to the service satisfaction is care-giver satisfaction, the work condition of care-givers need to be improved, since they could bring the most satisfaction to the receivers than any other factors. The lack of welfare for the care-givers is shown in the fact that the time and money spent during the travel time of the care-givers is in no way compensated. Given this reality, employment separation rate is getting higher, and even if people

take their certificates that enable them to work, they don't actually do the work. Therefore, proper amount of incentives through higher salaries should be given to the care-givers, and they should be kept hired even if a receiver gets hospitalized and therefore no longer needs the service. The feasibility of the care-givers providing proper services is of question, as they are currently receiving terribly low salaries, in unstable employment status, where they have to do as they are told.

Third, as the quality of the service provided by the care-givers has a great influence on the service satisfaction, well-systemed education must follow. The psychological influence of the care-giver's mood is fairly great on the elderly, and thus, basic service education must be done more thoroughly, in order for the care-givers to have more affection and consideration toward the receivers of the service.

Fourth, as one can see from the result of the current study, the cost of the service has a big influence on the receivers' satisfaction. The cost-bearing rate of the service receivers is currently 15% of the total amount. However, considering that the health of the elderly is usually at a bad state, and most of the receivers are without any source of income, the cost itself could be a big burden. Even if those living alone, or those living in the countryside have the qualification to be service receivers, there is always the problem of having to pay for the cost of it, which is why the solutions for such problems should be taken into consideration.

Last but not least, the support service satisfaction(physical activity support service, daily life support service, personal activity support service, and emotional support service) has a positive correlation with the service satisfaction of the stay-at-home visiting treatment services and has a lot of influences. This means that more support service such as the aforementioned ones above should be added to help the elderly improve their survivor functions, by providing more comprehensive services.

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A Study on the Educational Conditions in Myanmar

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ABSTRACT : Education in national development is most important. It is meaningful to examine the educational situation and problems of Myanmar, which is spurring economic development these days. Collaboration in the international community is also the most urgent field. This study aims at the following four purposes. General information on the political, economic and social environment of Myanmar, foreign aid for public development, interdisciplinary and teacher training, actual conditions of pre-school education, etc.

Key words : Education, Teacher training system, Pre-school Education, Foreign Aid for Public Development,

I. Introduction

Education in the development of the country is more important than anything else. It is meaningful to look at the educational situation and problems of Myanmar, which is spurring economic development these days. Cooperation in the international community is also a field that is most urgently required.

Myanmar is located in Southeast Asia. It is bordered by four countries, Thailand, Laos, China and India. It is a peninsular state. The capital moved to Naypyitow from Yangon in 2005. But in reality Yangon is still the central city. The area is 676,577km², about 3.5 times the size of the Korean peninsula. The population is about 60 million. About 90% of the people believe in Buddhism. They use Myanmar as an official language. Forests, minerals and agricultural and marine resources are abundant.

ODA supports least developed countries. Myanmar is a representative country (UNICEF, 2013). The least developed countries are reported to the UN Committee for Development Policy (CDP). And, every three years, it is appointed by the UN General

Assembly. The standard is less than \$ 750 per capita GNI. The evaluation index is as follows.

Human Assets Index (HAI) - nutrition, health, education, education, illiteracy, etc. The production of crops belonging to the economic index, goods, service export stability, manufacturing and service sectors' importance to the economy etc. (UNICEF, 2015). National poverty is a serious problem for young children. The absence of nutrition, sanitation and health threatens life. In addition, it poses the following social problems. Absence of education and educational institutions, children who are exposed to the workplace, and wandering etc. (Lee Eun-hwa 1996). In terms of foreign aid assistance, Myanmar has a shortage of ODA support compared to other countries in Southeast Asia (unicef, 2014).

Japan has the biggest impact on ODA in Myanmar. The relationship between Myanmar and Japan began in the Second World War. At that time, Myanmar guerrillas supported Japan's invasion as a means to drive out British colonial rulers (Jeon Dong-jin, 2003). Japan signed a peace treaty with Myanmar in 1954. And provided \$ 200 million in grants. It was a compensation claim for war damage. Since then, Japan has provided various free supports. This is in contrast to the economic sanctions imposed by other Western countries for the democratization of Myanmar. It is interpreted as an intention to gain influence in Myanmar, which is rich in natural resources (Jeon Dong-jin, 2003)

Thailand has also taken various measures for the following three purposes (Ministry of Foreign Affairs and Trade, 2005)

- 1) Strengthen ties between ASEAN countries.
- 2) Ensure leadership position within ASEAN member countries.
- 3) Preemption of large markets in Myanmar

China has also maintained close ties with Myanmar. The following are the trends of aid agencies (international organizations and NGOs). Global Fund, The Myanmar Red Cross and Red Crescent Society, Save the Children, Unicef, Global Fund, The Myanmar Red Cross and Red Crescent Society, Save the Children, Unicef, International Hunger Action Organizations, and Religious Organizations.

The International Fund (Geneva Headquarters) has provided \$ 36 million for two years since 2005 for the purpose of fighting three Myanmar diseases (tuberculosis, malaria and AIDS).

Save the Children has established eight centers in Myanmar in conjunction with Early Childhood Care & Development (ECCD). It has undertaken community development projects such as childcare teacher education, child protection and education, purchase and production of teaching materials, health nutrition project, organization of local leader groups, education for capacity building etc.

In Korea, NGOs and religious organizations such as the Korea International Cooperation Agency (KOICA), the International Starvation Center, Good Neighbors and World Vision are supporting Myanmar.

The amount of ODA from 1991 to 2007 is 18.35 million dollars (annual average of 1.08 million dollars). Since 2002 when Myanmar joined ASEAN, the scale of cooperation has gradually expanded (KOICA, 2013)

In fact, invitation of trainees, development research, infrastructure construction, dispatch of specialists such as medical personnel and Taekwondo instructors, material support, and emergency aid etc.

World Vision and Save the Children provided support for early childhood education cooperation.

This study aims at the following four purposes. General information on the political, economic and social environment of Myanmar, foreign aid for public development, interdisciplinary and teacher training, actual conditions of pre-school education, etc.

II. Main subject

1. Education in Myanmar

Myanmar's academic system is 4-4-2. One year kindergarten is K-year (5 years old). Four years of elementary school, four years of middle school, and two years of high school. It takes a total of 10 years until high school graduation. It is two years shorter than Korea. One year of kindergarten is included in the school. Universities have two-year colleges and four-year universities.

There is a kindergarten course different from the elementary school course. Formally, K-grade is the same elementary school education. But, it is far from ideal kindergarten education in desks, chairs, and textbooks etc. And the ratio of teacher to student (PTR, Pupil / Teacher Ratio) was 65: 1 (UNESCO 2013). The teacher-to-student ratio is high and the quality of education is low. One teacher should take care of many students. Then, can not have individual attention. In addition, infusion and memorization education is done. Elementary schools are often operated in the morning and in the afternoon. It is because of lack of financial resources.

Education in Myanmar is handled by the Ministry of Education. Below that, it is divided into the Department of Higher Education and the Department of Basic Education depending on the age. The Basic Education Department is responsible for elementary and secondary education. The higher education department is responsible

for high school and college education. Between the ages of 2 and 4, early childhood education is administered by the Department of Social Welfare. There is a difficulty in the administration because the Ministry of Education is dualized and the early childhood education is in charge separately.

Myanmar has an automatic upgrade system. So, can go up to the next grade without tests or assessments. Elementary education (4 years) is a free education period. However, many children abandoned school due to economic difficulties in purchasing textbooks, school uniforms, and school supplies. The cost of education of parent for one child is about three times of the government one (Unicef, 2013).

There is no compulsory education system in Myanmar, and most of the tuition is borne by the parents.

Elementary school attendance rate is more than 90%. However, by the fifth grade, about 30% of the students quit. Secondary school enrollment rate is only about 40%. The enrollment rate for early childhood education is less than 10%.

The Human Development Index (HDI) surveyed by the United Nations Development Program (UNDP) in 2004 was 132 out of 177 countries in the world (Alice, 2007). There is a lot of public complaints about public education. At least the 10th grade is enough to get a job. Even graduate college, not easy to get a job. Most are elementary school education (fourth grade). This is due to economic difficulties. This tendency becomes more prominent toward the provinces.

The budget of the Ministry of Education is low. So it is difficult to establish a school in the province. As an alternative, the school establishes itself in the village.

The Ministry of Education recognizes the completion of this process. Teachers do not work in teaching jobs, but often get paid while doing other things (Yinthway Foundation Alice, 2008). A Buddhist temple scattered in Myanmar serves as a school. So, even if the ratio of receiving formal education is low, the literacy rate is as low as 10% (Unicef, 2013)

2. Teacher training system

Myanmar is not very popular with teachers. This is because the difference in living standards between cities and provinces is large. Most young people hope for housing in the city. But when become a teacher, have to go to the place where the government is issued. Big cities such as Yangon are already occupied by experienced teachers. New entrants must go to the provinces unconditionally. One reason is that wages are low.

There is the Basic Education Department under the Ministry of Education. It operates 13 teacher training universities nationwide. The training period is one year. All teachers start working in elementary school. If have three years of experience, can

receive one more year of training. If complete the education, will be certified as a secondary teacher. If have three years of secondary school teacher experience, receive a high school teacher certificate.

Recently, there has been a month-long communication process. This replaces the one-year regular course. It is a system that concerns the downgrading of the quality of teachers.

Since 1948, children aged 2-4 are in charge of the Department of Social Welfare.

They raise funds for parents. And a teacher education certificate for one month. The Myanmar government has been actively interested in early childhood education since 1998.

There is a Basic Education Department within MOE. The Department of Education Planning & Training (DEPT), a research institute under this category, studies kindergarten and teacher certification (1 month).

There are about 1,300 preschools in Myanmar (Alice, 2007). Most are run by individuals, communities, NGOs, and religious organizations. This is because the Ministry of Social Welfare does not have enough budget. Organizations related to early childhood education have created the Myanmar Mother & Child Welfare Association (MMCWA). According to MMCWA, 737 religions, 30 Save the Children, 55 Save the Children in the UK, 170 Save the Children in Myanmar, and 139 in World Vision (Alice, 2007). Recently, facilities for early childhood education are increasing. However, it is not known exactly because the statistical survey is not done properly. Mostly uninhabited. It is difficult to get accredited as an educational institution in Myanmar. It is mainly about getting permission from the community leader.

According to UNICEF's 2013 announcement, 10.4% of children benefit from educational institutions. On the contrary, 90% of children do not benefit from education. Recently, the number of early childhood education institutions is increasing. On the other hand, there is no standard for the qualities of early childhood education institutions and teachers, and there is no governing body.

III. Conclusion

Myanmar is a ODA representative country. The standard is less than \$ 750 per capita GNI. The production of crops belonging to the economic index, goods, service export stability, manufacturing and service sectors' importance to the economy etc. National poverty is a serious problem for young children.

It poses problem of absence of education and educational institutions, children who are exposed to the workplace, and wandering etc. Myanmar has a shortage of

ODA support compared to other countries in Southeast Asia. Japan has the biggest impact on ODA in Myanmar. Myanmar guerrillas supported Japan's invasion as a means to drive out British colonial rulers. Japan has provided various free supports. This is in contrast to the economic sanctions imposed by other Western countries for the democratization of Myanmar. Thailand has also taken various measures. China has also maintained close ties with Myanmar.

The International Fund has provided \$ 36 million for the purpose of fighting three Myanmar diseases. KOICA, the International Starvation Center, Good Neighbors and World Vision are supporting Myanmar.

Since 2002 when Myanmar joined ASEAN, the ODA scale of cooperation has gradually expanded. The invitation of trainees, development research, infrastructure construction, dispatch of specialists such as medical personnel and Taekwondo instructors, material support, and emergency aid etc.

Myanmar's academic system is 4-4-2. One year kindergarten is K-year (5 years old). It is two years shorter than Korea. The kindergarten is included in the school. Universities have two-year colleges and four-year universities. K-grade is the same elementary school education. The quality of education is low. Then, can not have individual attention. In addition, infusion and memorization education is done.

Elementary schools are operated in the morning and in the afternoon. Education in Myanmar is handled by the Ministry of Education. It is divided into the Department of Higher Education and the Department of Basic Education depending on the age. The Basic Education Department is responsible for elementary and secondary education. The higher education department is responsible for high school and college education.

There is a difficulty in the administration because the Ministry of Education is dualized and the early childhood education is in charge separately. Myanmar has an automatic upgrade system. Many children abandoned school due to economic difficulties in purchasing textbooks etc. The cost of education of parent for one child is about three times of the government one. Elementary school attendance rate is more than 90%. Secondary school enrollment rate is only about 40%. The enrollment rate for early childhood education is less than 10%. There is a lot of public complaints about public education. The 10th grade is enough to get a job. The budget of the Ministry of Education is low. So it is difficult to establish a school in the province.

The teachers do not work in teaching jobs, but often get paid while doing other things. A Buddhist temple scattered in Myanmar serves as a school.

Myanmar is not very popular with teachers. The difference in living between cities and provinces is large. Young people hope for housing in the city. New entrants must go to the provinces unconditionally. There is the Basic Education Department under the Ministry of Education. It operates teacher training universities nationwide.

The training period is one year and start working in elementary school. Recently,

there has been a month-long communication process. It is a system that concerns the downgrading of the quality of teachers. The Myanmar government has been actively interested in early childhood education since 1998.

There is a Basic Education Department within MOE. There are about 1,300 preschools in Myanmar. Most are run by individuals, communities, NGOs, and religious organizations. The Ministry of Social Welfare does not have enough budget. Organizations related to early childhood education have created the MMCWA.

Recently, facilities for early childhood education are increasing. It is difficult to get accredited as an educational institution in Myanmar. It is mainly about getting permission from the community leader. 90% of children do not benefit from education. The number of early childhood education institutions is increasing. There is no standard for the qualities of early childhood education institutions and teachers.

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The Elementary School Student's Attachment to Parents, Communication with Parents and Self-esteem

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ABSTRACT : The purpose of this study is to examine the attachment to parents and communication with parents and self-esteem of upper grades elementary school students. In addition to this, the effect of attachment and communication on self-esteem is to be explored to improve self-esteem which is an important factor to encourage children to have confidence, solve problems for themselves and adapt to the rapidly changing society.

Key words : Self-esteem, Elementary School, Communication, Confidence,

I. Introduction

The upper grades students of elementary school arrive at puberty which is the transitional period from childhood to adult. During this adolescent time, most children develop individualization from parents. But according to 2012 National Statistical Office data, 80% of elementary school students are suffered from not only academic but also psychological and mental stresses.

In order to make children properly to develop self-esteem, the supports from parents through attachment or communication are still demanded (Papini, & Roggman, 1992). Lots of researchers have emphasized that the attachment and communication with parents are important factors in the formation of self-esteem. Especially Ainsworth etc.(1978) classified children's attachment with mother and researched the influence of it on children's character.

From this perspective, this study will investigate the condition of attachment and communication with parents of elementary school students from 4th grade to 6th

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This paper was presented as a poster in 5th international conference of YUE & KOMYRA.

grade. And the influence of attachment and communication with parents on self-esteem will be explored to develop the family friendly policy.

II. Theoretical background

1. Life of the middle and elderly women in Korea

Geunhwa(2003) reported that middle school students felt more attachment to father than to mother. The reason of this result was inferred from the change of sex role. Because mothers have assumed the burdensome role as a joint bread-winner, children have increased the positive interaction with father and their relationship with mother has decreased.

Yeongheon & Ji-yeon (2013) found that the attachment to parents have some significant correlations with communication, and self-esteems. The attachment to parents had more significant correlations with self-esteem than do the communication with parents. And the communication with mother had no significant relation with the attachments.

Haesu and Taewan(2005) exhibited that the self-esteems of children were the strongest when communication with parents were open and it was the weakest when it was problematic. This research showed that it is important to make communication with parents open to develop self-esteem.

III. Research Methods.

The data of 240 students were collected by purposeful sampling method from elementary school students in upper grades, in Jeollanamdo during 2014 September. Participants were asked to check the questionnaire about attachment to parents, communication with parents and self-esteem. The questions about attachment and self-esteem were composed of 5 items with 5 likert scale for each. Communication time were asked 5 categories. The data were analyzed using t-Test, ANOVA, Regression of SPSS program.

IV. Results

1. Attachment to parents

The elementary school students in upper grades had more positive attachment to father than mother like the result of Geunhwa(2003)'s research. The result that the positive attachment to father was significantly higher than that to mother means that the elementary school students demands the social skill learning of father than care or breeding of mother.

Table 1. Degree of attachment to parents

	N	M(M/item)	S.D	t
attachment to father	240	74.13(3.09)	7.36	4.79***
attachment to mother	240	72.35(3.01)	5.26	

*** p<.001

The demographic characteristics related with the attachment to father were school achievement (F=11.64***), relation with friends (F=6.01**), father's education(t=-17.86***), and household income level(t=6.97***) <Table 2>. Tabel 3 represents that the demographic characteristics related with the attachment to mother were school achievement (F=6.71***), relation with friends (F=5.71**), mother's age(t=3.40***), and mother's education(t=-6.91***).

Table 2. The demographic characteristics related with attachment to father

variable	Categories	N	M	S.D	t/F	Duncan
sex	Male	128	73.61	7.46	-1.16	
	Female	112	74.71	7.23	-1.16	
grade	4 th	56	72.25	6.52	2.76	
	5 th	84	75.19	7.49	2.76	
	6 th	100	74.28	7.56	2.76	
School achievement	High	106	76.39	7.15	11.64***	a
	Middle	112	72.84	7.53	11.64***	b
	Low	22	69.73	2.47	11.64***	c
Relation with friends	Good	128	75.63	7.89	6.01**	a
	Average	88	72.55	6.71	6.01**	a
	Bad	24	71.92	4.65	6.01**	b

Age of father	Under 40	102	73.65	7.31	-0.87	
	Over 40	138	74.48	7.40	-0.87	
Father's education	Under high school	96	67.52	3.95	-17.86 ***	
	Over college	144	78.53	5.60	-17.86 ***	
Household income level	High	86	77.95	5.78	6.97***	
	low	154	71.99	7.09	6.97***	

* p<0.05, **p<0.01, ***p<0.001

Table 3. The demographic characteristics related with attachment to mother

Variable	categories	N	평균(M)	S.D	t/F	Duncan
Sex	male	128	71.88	5.48	-1.50	
	Female	112	72.89	4.96	-1.50	
Grade	4 th	56	71.68	4.72	1.65	
	5 th	84	73.17	5.46	1.65	
	6 th	100	72.04	5.34	1.65	
School achievement	High	106	73.55	5.67	6.71***	a
	Middle	112	71.75	5.05	6.71***	b
	Low	22	69.63	1.53	6.71***	c
Relation with friends	Good	128	73.03	5.45	5.71**	a
	Average	88	72.23	5.29	5.71**	a
	Bad	24	69.17	2.16	5.71**	b
Age of father	under 40	128	73.41	5.54	3.40***	
	Over 40	112	71.14	4.66	3.40***	
Father's education	Under high school	118	70.17	4.34	-6.91***	
	Over college	122	74.46	5.22	-6.91***	
Household income level	High	86	73.07	5.53	1.59	
	low	154	71.95	5.08	1.59	

* p<0.05, **p<0.01, ***p<0.001

2. Communication with parents

Table 4 represents that 54.2% students had conversation time with father for 30 minutes under one hour. 28.8% talked with father for less than 30 minutes. Although children were more attached to father than mother, it seems that communication with father was not sufficient. The communication time with mother was longer than that

with father. The students reporting that the conversation time was more than two hours were only 8.3%. While students in higher grades had more conversation with mother, the attachment with mother was lower than father. It shows that education to improve the quality of conversation between mother and children is demanded. Family-friendly policy especially for father is required to be extended because conversation time with father was very insufficient.

Table 4. Communication time with parents

	Time	N	%
Communication time with father	No time	2	0.8
	Under 30min	48	20.0
	Under 30min~1 hour	130	54.2
	Under 1hour~2hour	52	21.7
	Under 2hour~3hour	8	3.3
Communication time with mother	No time	0	0
	Under 30min	12	5.0
	Under 30min~1 hour	104	43.3
	Under 1hour~2hour	104	43.3
	Under 2hour~3hour	20	8.3

3. Self-esteem of students

The average score of self-esteem was 3.24 which means the moderate level<Table5>. The demographic variables related with self-esteem were the relation with friend, education level of father and mother, and household income level<Table 6>. Since the self-esteem of children seems to be influenced by parents' education level and household income, the program considering these demographic variables should be provided to enhance self-esteems of children.

Table 5. The condition of student's self-esteem

	M (M/item)	S.D
Self-esteem	45.39 (3.24)	3.91

Table 6. The demographic characteristics related with self-esteem

variable	Categories	N	M	S.D	t/F	Duncan
sex	Male	128	45.39	3.86	-0.01	
	Female	112	45.39	3.98	-0.01	
grade	4 th	56	44.96	3.60	0.62	
	5 th	84	45.71	3.90	0.62	
	6 th	100	45.36	4.08	0.62	
School achievement	High	106	45.94	4.06	2.32	
	Middle	112	45.09	3.30	2.32	
	Low	22	44.27	3.38	2.32	
Relation with friends	Good	128	45.84	3.62	6.27**	b
	Average	88	44.32	4.25	6.27**	a
	Bad	24	46.92	3.16	6.27**	b
Age of father	Under 40	102	45.43	3.77	0.14	
	Over 40	138	45.36	4.02	0.14	
Age of mother	Under 40	128	45.41	3.88	0.62	
	Over 40	112	45.38	3.96	0.62	
Father's education	Under high school	96	43.00	2.77	-9.47***	
	Over college	144	46.99	2.75	-9.47***	
Mother's education	Under high school	118	43.80	3.59	-6.78***	
	Over college	112	46.93	3.58	-6.78***	
Household income level	High	86	46.70	3.80	3.99***	
	low	15	44.60	3.79	3.99***	

* p<0.05, **p<0.01, ***p<0.001

4. Correlation between variables

The correlation analysis of table 7 shows that the self-esteem had some significantly positive correlation with attachments to father and mother. The attachment to parents had significant correlations with self-esteem. Although the attachment to fathers had correlation to communication with them, the attachment to mothers did not show the significant correlation to communication with them..

Table 7. Correlation between variables

	attachment to father	attachment to mother	Communication with father	Communication with mother	Self-esteem
attachment to father	1.00				
attachment to mother	0.63**	1.00			
Communication with father	0.43**	0.53**	1.00		
Communication with mother	-0.04	0.09	0.30**	1.00	
Self-esteem	0.52**	0.33**	0.15	-0,04	1.00

* p<0.05, **p<0.01, ***p<0.001

5. The variables influencing on self-esteem

Table 8 shows that attachment to father and the education level of father influenced significantly on self-esteem. The attachment to mother and the communication with parents did not influence on student's self-esteem. This result means that the role of father than mother is important to elementary school students of upper grades. Although attachment to fathers had significant correlation with communication with them, it appeared that the communication with father was not influential on self esteem but attachment to father was effective.

Table8. The variables influencing on self-esteem

	Model1		Model2		Model 3	
	B	β	B	β	B	β
sex(male=1)	0.78	0.10	0.76	0.09	0.80	0.10
grade	-0.49	-0.10	-0.39	-0.08	-0.41	-0.08
School achievement	-0.56	-0.09	-0.59	-0.10	-0.66	-0.11
Relation with friend	0.19	0.03	0.00	0.00	0.00	0.00
Father's age	0.81	0.15	0.17	0.03	0.18	0.03
Mother's age	-0.00	-0.01	0.28	0.05	0.33	0.06
Father's education	2.80	0.40***	1.74	0.25**	1.80	0.26**
Mother's education	1.03	0.20 **	0.62	0.12	0.66	0.13

Household income	0.85	0.15*	0.69	0.17	0.71	0.12
Attachment to father	-	-	0.13	0.25*	0.14	0.26*
Attachment to mother	-	-	0.00	0.07	0.00	0.08
Communication with father	-	-	-	-	-0.00	-0.06
Communication with mother	-	-	-	-	0.12	0.08
F	11.03 ***		10.66***		9.18***	
R ²	0.302		0.340		0.346	
R ² 변화량	-		0.038**		0.006	

V. Conclusion and discussion

The childhood in higher grades of elementary school is an important period because during this time, most children experience individualization from parents as adolescent. They need still parents' attachment and communication for healthy development.

Lots of researchers have contended that self-esteem in childhood is important developmental factor because it has intimate relation to recognizing of their values and having confidences. So this study explored the effects of attachment and communication with parents on children's self-esteem by sampling 240 students.

The findings are as in the following. First, the attachment to father was appeared more significantly larger than that to mother in upper grades of elementary school period. Second, the communication time with father was smaller than that with mother. Third, the level of self-esteem which encourages children to recognize their value and confidence was not so high. Forth, it was appeared that the attachment to father influenced significantly on self-esteem. The attachment to mother or communication with her did not influence on student's self-esteem.

This result represents that the role of father than mother is important to upper grades students of elementary school. The policy supporting married men to increase the time with children should be enlarged by extending the family friendly policy to the students of upper grades in elementary school. In addition to this, the programs to have more attachment to fathers and to increase communication with them should be developed diversely reflecting demographic characteristics .in school or workplace.

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A Study on the Economic Feasibility of Thermal Power Plant Considering Environmental Cost - Focused on Carbon Capture Facilities -

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ABSTRACT : Coal-fired power generation is producing a large amount of CO₂ but is expected to continue to be used in the future. Therefore, it is necessary to improve the energy efficiency of thermal power generation, to replace it with fuel with low carbon intensity, or to reduce CO₂ by CO₂ capture storage (CCS). In this trend, Carbon Capture & Storage (CCS) technology has been evaluated as a technology suitable for large-scale mid-to-short-term carbon dioxide treatment due to its high degree of technical completeness, economical efficiency and compatibility with existing power generation facilities. When applying CCS technology to existing thermal power plants, it is important not only technical problems but also economic feasibility due to additional costs. Therefore, here we analyzed the CO₂ capture facility cost and economic feasibility of the thermal power plant. In order to investigate the change of economical efficiency in the installation of CCS in a thermal power plant, CO₂ cost estimation model was developed. In addition, the existing economic analysis method, ie, NPV, BC analysis, and IRR were further reviewed. In addition, sensitivity analysis was performed on scenarios based on various situations. In addition, we analyzed the economic feasibility considering the emission trading system considering the policy change of the government 's CO₂ policy and the carbon tax levy. As a result, it is estimated that economic efficiency will deteriorate due to installation / operation of CCS. However, economic prospects are expected to improve if the capture technology develops, the sorbent prices decline, the power efficiency used continues to increase, and fuel prices continue to stabilize or decline. In addition, if the government's environmental regulations are strengthened (the cost of CO₂ emissions increases) and the CO₂ emissions trading system is established, the economic efficiency is expected to improve further.

Key Words : Coal-fired power generation, CO₂, CCS, Economic Feasibility, NPV, BC,

* This paper is a revised paper from the 9th YUE, KOMYRA & KHU international conference.

I. Introduction

Korea aims to reduce greenhouse gas emissions by 30% compared to BAU (business as usual) by 2020 and to secure various countermeasures against climate change.

On the other hand, coal-fired power generation is producing a large amount of CO₂ but is expected to continue to be used in the future. Therefore, it is necessary to improve the energy efficiency of thermal power generation, to replace it with fuel with low carbon intensity, or to reduce CO₂ by CO₂ capture storage (CCS).

In this trend, Carbon Capture & Storage (CCS) technology has been evaluated as a technology suitable for large-scale mid-to-short-term carbon dioxide treatment due to its high degree of technical completeness, economical efficiency and compatibility with existing power generation facilities.

When applying CCS technology to existing thermal power plants, it is important not only technical problems but also economic feasibility due to additional costs.

Therefore, here we analyzed the CO₂ capture facility cost and economic feasibility of the thermal power plant.

In order to investigate the change of economical efficiency in the installation of CCS in a thermal power plant, CO₂ cost estimation model was developed. In addition, the existing economic analysis method, ie, NPV, BC analysis, and IRR were further reviewed.

In addition, sensitivity analysis was performed on scenarios based on various situations. In addition, we analyzed the economic feasibility considering the emission trading system considering the policy change of the government 's CO₂ policy and the carbon tax levy.

II. Literature Review

There are not many domestic and overseas cases of CO₂ capture facilities. The following is a summary of the method of economic analysis for CO₂ capture facilities conducted at home and abroad. In previous studies, most of the analyzes have shown that economic estimates of CO₂ capture are analyzed using estimates rather than actual values.

Table 1. CCS Economic Analysis: Domestic Literature Review

	Lee Ji Hyun et al (2012)	Shin Byeong-cheol et al. (2012)	Lee Ji Hyun et al (2011)
Power Plant	Supercritical coal-fired power plant	500 MW coal-fired power plant	500 MW coal-fired power plant
Capture technology	Wet capture (amine)	Dry capture	Wet capture (MEA)
Capture Cost	Power generation cost, CO ₂ avoidance cost calculation	Calculation of collection cost by scale (100, 200, 500MW)	Sensitivity analysis based on absorbent renewable energy & CO ₂ reduction cost
Economic analysis methodology	<ul style="list-style-type: none"> - LCOE(levelized cost of energy) - LCCA(life cycle cost analysis) 	<ul style="list-style-type: none"> - Use initial investment cost, annual operating cost, CO₂ sales revenue variable - NPV, IRR, sensitivity analysis for CO₂ selling price, power cost, absorbent price, investment cost 	<ul style="list-style-type: none"> - Using the data provided by the IEA Greenhouse Gas R & D Program
Results	<ul style="list-style-type: none"> - Decrease in power generation efficiency (41 → 31.6%) - Power generation cost, about 62% ↑ (45.5 → 73.9 per \$ / MWh) - avoidance cost (\$ / tCO₂): \$ 41.3 	<ul style="list-style-type: none"> - Economical with IRR 15% and NPV \$ 6.631M, assuming emission rights (\$ 50). - CO₂ / tCO₂: 100MW (36.55), 200 (32.66) and 500 (28.15) for CO₂ sales price rise for economic efficiency. - regeneration E (3.31 GJ / tCO₂) required in regeneration tower 	<ul style="list-style-type: none"> - Decrease in power generation efficiency (41 → 31.6%) - As a result of the sensitivity analysis, the cost of avoiding CO₂ (\$ / tCO₂) is lowered to 43.3→ 36.7 when the regeneration E reduction (2.0 GJ / tCO₂)

Table 2. CCS Economic Analysis: Overseas Literature (1)

	NETL/DOE (2010)	Gang Xu, et al (2012)	Charles Kolstad & Daniel Young (2010)
Target power plant	IGCC, PC, NGCC	600MW Chinese coal-fired power plant	Australian coal-fired power plant
Capture technology	Wet capture (amine)	Wet capture (MEA)	Each capture technique
Capture Cost	Power generation unit price, Calculate CO2 avoidance cost		Comparison of Costs and Costs by Capture Technology
Economic Analysis Methodology	- Cost and performance analysis of Reference Power Plant (w / o) and CCS collection facility (w /)	- Energy efficiency analysis of CO2 capture equipment through process simulation - Energy loss due to CO2 capture in case of retrofit -> 4% higher energy loss than redesigned new-build	- Cost evaluation for different capture technologies
Results	- Collecting cost (\$ / tCO2) ↑ Cost calculation with IGCC (GEE-43; CoP-54; Shell-61), PC (SPC-68, SCPC-69)	- Possibility of increased energy efficiency through improvement of detailed collection facilities: 26.4 -> 30.42% (steam turbine exchange, thermal energy integration, LP cylinder exchange, etc.)	- For retrofit power plants: MEA (143.18 \$ / MWh) Pure oxygen (154.65 \$ / MWh) Advanced Amine (\$ 124.68 / MWh, including transportation and storage)

Table 3. CCS Economic Analysis: Overseas Literature (2)

	IEA(2011)	ZEP(2011)	John Davison(2007)
Target power plant	Recent 5 year Capture facilities	Coal-fired power plant	Coal-fired power plant
Capture technology	Wet capture (amine)		Each capture technique
Capture cost	Cost from capture facility to power generation	Comparison of capture, transport and storage costs	Analysis of cost and cost avoidance
Economic Analysis Methodology	<ul style="list-style-type: none"> - Calculation of reduction cost based on whether or not CO₂ capture equipment - Overnight cost, levelized cost of electricity (LCOE), Cost of CO₂ Avoided 	<ul style="list-style-type: none"> - Cost comparison of CCS due to hard coal, lignite, and NG fuel according to fuel of EU power plant 	<ul style="list-style-type: none"> - Cost evaluation for different capture technologies
Results	<ul style="list-style-type: none"> - Average reduction cost (\$ / tCO₂) (Including collection ~ compression costs) -> For coal fuels: After combustion 58, before combustion (IGCC, 43), before combustion (PC, 55, pure oxygen 52) 	<ul style="list-style-type: none"> - For the economics of CCS: coal (€ 30 / tCO₂ or less), lignite (below € 30 / tCO₂), NG (€ 80 / tCO₂ or less) - Cost Required - Increase in power generation cost: hard coal (50 ~ € 70 / MWh ↑) NG raw material (up to € 95 / MWh ↑) 	<ul style="list-style-type: none"> - CO₂ avoidance cost ((\$ / tCO₂) -> Coal-fired power plants (27 ~ 39), IGCC (48 ~ 102) - CO₂ storage - transportation cost is 10 \$ / tCO₂ - CO₂ avoidance cost increased by 12 ~ 13 \$ / t CO₂

III. Cost Estimation Model

In this analysis, we conducted an economic analysis on the installation and operation / maintenance of CO₂ capture equipment for Korea coal plants 00-8.

We have reviewed many previous studies to estimate the appropriate cost model for CO₂ capture to be used in this analysis. As we can see in the previous study, the following assumptions are made in advance. In this analysis, the cost analysis model is set up based on the following assumptions.

(1) Assume the existing thermal power plant and estimate the electricity production cost at this time. In addition, when the CCS is installed and operated in a thermal power plant, the cost of generating electricity is estimated. Next, we estimate the CO₂ emissions of existing thermal power plants. It also estimates the CO₂ emissions of the installed CCS plant.

(2) Calculate the additional cost due to CCS by subtracting the power production cost of the uninstalled power plant from the power generation cost of CCS installed power plant. Calculate the amount of CO₂ captured by subtracting the amount of CO₂ emitted by the existing plant from the CO₂ emission amount of the existing thermal power plant.

(3) Finally, estimate the CO₂ capture cost by dividing the additional cost due to CCS by the amount of captured CO₂. On the other hand, CCS CO₂ capture equipment efficiency is estimated using 90%.

In this economic analysis, the economic aspect of the financial aspect was evaluated in that the evaluation viewpoint is not the social view but the individual business entity that promotes the investment business.

In order to analyze the economical efficiency of CCS, analysis was conducted on Korea 00-8 power plants. In other words, the economic feasibility was analyzed assuming that there is no CCS facility in the power plant. This analysis assumes that the analysis period is basically 30 years after completion. The basic assumptions are as follows. To estimate the cost of CO₂ capture, the cost model was developed as follows.

Table 4. CO2 capture cost estimation model¹⁾

$$= \frac{EGC_{with\ CCS} - EGC_{without\ CCS}}{TPP\ CO_2\ emissions_{without\ CCS} - TPP\ CO_2\ emissions_{with\ CCS}}$$

where EGC = Electricity generation cost, TPP = Thermal Power Plant,

Table 5. CCS Economic Analysis Basic assumption

Item	Contents
Base price	Current price
Electricity price per kWh (won)	67.52 won (including CP 8.81 won)
Capacity (MW)	Power generation facility 500MW CCS 150MW
Annual power generation (MWh) (Based on Korea 008)	4,303,097 MWh (Excluding power consumption 4.44%)
Net Electricity Efficiency (%)	46.44 (Before considering a 5% point of power efficiency loss for CCS operation)
discount rate(%)	7
interest rate(%)	5
inflation(%)	3
Exchange rate (USD, won)	1,050
Evaluation period (operating period)	30 years after completion
Total annual benefits (100 million won)	2,905(without CCS) 2,593(with CCS)
Total business expenses (100 million won)	7,215 (power generation) and 2,263 (CCS) (Converted to current value in 2014 for power generation)
Annual fuel cost (100 million won))	1,545
Annual absorbent cost (KRW in 100 million won)	16.54
Annual maintenance cost (KRW in 100 million won)	2,230.9 (Power generation: 2110.7, CCS: 120.2)

1) Here, the cost of generating electricity is the "power production cost with CCS" if there is a CCS facility, and the power production cost of the plant is "power production cost without CCS" if CCS is not installed. CO2 emissions without a CCS facility are defined as "CO2 emissions without CCS", and CO2 emissions from a power plant with a CCS facility are defined as "CO2 emissions with CCS".

IV. Conclusion

Cost estimation based on CO₂ capture cost estimation model The cost of power generation per kWh is estimated to increase by 18.45% from 49 won before CCS to 58 won after CCS. CO₂ capture cost was estimated at 32,881 won (\$ 31.3, \$ 1/1050 won) per ton of CO₂.

The break-even point assuming a discount rate of 7% is KRW 56 per kWh, which is estimated at KRW 28,132 (\$ 26.8, \$ 1 / KRW 1050) based on CO₂ capture cost per ton. On the other hand, assuming a discount rate of 7%, the break-even point is KRW 56 per kWh, which is estimated at KRW 28,132 (\$ 26.8, \$ 1 / KRW 1050) based on CO₂ capture cost per ton. In other economics analysis, it is analyzed that 00-8 development before CCS installation is profitable by considering basic benefits based on basic assumption.

However, after the introduction of CCS, the economical efficiency was deteriorated. In other words, NPV was estimated to decrease by -145%, BC by -19%, and IRR by -70%, which accounted for 17% of total annual cost and 12% of total revenue.

Sensitivity analysis showed that the price change of the absorbent had little effect on economics (about 1%). Investment and discount rate (about 20% each). The change in economic efficiency due to the change in power efficiency (about 30%) was high, and the operating period (about 70%) and the fuel cost (about 100%) had a great impact on economic efficiency. On the other hand, if the price of carbon credits increases, it will have a very positive effect on improving the economic efficiency. However, the carbon tax will be burdened with additional costs.

As a result, it is estimated that economic efficiency will deteriorate due to installation / operation of CCS. However, economic prospects are expected to improve if the capture technology develops, the sorbent prices decline, the power efficiency used continues to increase, and fuel prices continue to stabilize or decline. In addition, if the government's environmental regulations are strengthened (the cost of CO₂ emissions increases) and the CO₂ emissions trading system is established, the economic efficiency is expected to improve further

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Cultural Dimensions of Indo- Korean Relations in Colonial and Post-Colonial Periods

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ABSTRACT : Indo-Korean cultural relations commence with ancient Buddhist contacts. Although, several myths stated in Samguk Yusa associates the marriage between King Kim Su-Ro of Korea and Princess Ho Hwang-Ok, the Buddhist historiography presents a substantial ground to understand the ancient cultural roots between the two countries. The direct interaction between these two independent ancient civilizations started with the pilgrimage of Buddhist scholars. However, because of the dominance of Confucianism during the Joseon period resulted in weakening of the cultural connection forged through Buddhism. In modern times, cultural relations of India and Korea again revived in colonial period due to the role of Indian freedom fighters like Mohandas Karamchand Gandhi, Rabindra Nath Tagore, Jawaharlal Nehru, Rahul Sankritayan and Shiv Prasad Gupta. In the Post-Colonial era, India and Korea achieved cultural agreement and displayed their commitment to strengthen the cultural relations. The cultural relations have continuously evolved with vibrant exchanges in Indo-Korean relations. This paper aims to survey the cultural dimensions of Indo-Korean relations in colonial and post-colonial periods.

Key words : India, Korea, Colonial, Post-colonial, Cultural relations

I. Introduction

Culture is one of the important tools of interaction between two countries. History has always proved that culture has broken all the geographical barriers and bridged the gap between different societies. The cultural interaction between India and Korea is a shining example.

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From a relative point of view, Indian and Korean culture portrays dissimilar aspects in terms of the presence of diverse cultural elements and sociological intellect. Cultural medium in the two countries have encompassed variances in their degrees of social order but they share identical orders of social hierarchy that existed in their early societies. Several norms of similar nature can be traced in the cultural sphere of India and Korea such as the case of secondary sons who had to undergo merciless discrimination.¹⁾ It was also closely visible during the Joseon dynasty(1392–1910) that the yangban (兩班) never married off his daughters as concubines, with the consequence that concubines were usually supplied from non-elite strata of commoners and slaves.²⁾ Similar customs were practiced in India when marriages were performed among the same castes and same regions. It is important to note that Korea came out of those orthodox practices but in comparison; India still needs to overcome such forms of endogamy. The bone rank system(骨品制度) rank which was prevalent in the ancient Silla's kingdom of Korea represents a previous form of social hierarchy based on heredity³⁾ which can be observed as counterparts in the social identity of India and Korea with its distinctive forms of implementation. Furthermore, many of the core Confucian teachings, specifically the ethical and moral values of practiced in the Joseon dynasty commonly known as the "Three Bonds and Five Relationships"(Samgang Oryun)⁴⁾ depicts analogous and concealed lifestyles when it is compared to the Caste System of India and could also be seen prevalent in the forms of traditional practices based on classified principles and the legacy of beliefs. The ancestral rites and the concept of filial piety (Hyo孝) practiced⁵⁾ in the countryside of both the countries also share common beliefs.

India underwent colonization under Britain for about two hundred years after the British imperialist authority succeeded in occupying the eastern Indian areas to their pleat. On the easternmost sphere of the world, Korea also faced the Japanese colonial annexation for about thirty six years (1910-45). Apart from this official history of Japanese annexation in Korea, there had been a number of attacks from Japan on Korea including the Imjin war (1592-1598). Japan ventured to undertake Korean Peninsula with an unequal treaty of Ganghwa (1876) underestimating the western powers.⁶⁾ India and Korea persistently fought for freedom from their colonial masters.

1) Deuchler, Martina, *The Confucian Transformation of Korea: A Study of Society and Ideology*, (USA: Harvard University Asia Center, 1995), p.154.

2) Seung B. Kye, *International Journal of Korean History* (Vol.12, Aug. 2008).

3) Connor, Mary E. Connor, *The Koreas: Asia in focus*, (California: ABC-CLIO, 2009), p179.

4) Choi, Sang Hun, *Interior Space and Furniture of Joseon Upper-class Houses*, (Korea:Ewha Womans University Press, 2007),p16; Shin, Yu Chai, *Korean Thought and Culture: A New Introduction*,(USA: Trafford Publishing, 2010),p.57.

5) Pak,Su Yon, Lee, Unzu, Kim, Jung Ha, Cho,Myung Ji , *Singing the Lord's Song in a New Land: Korean American Practices of Faith*,(USA: Westminster John Knox Press,2005),p.48

Evidences lay claims to the idea that India and Korea suffered from severe hardships but never lost their hope to attain freedom. It is noteworthy that both countries sympathized with one another during colonial periods and recognized their cultural identity in the Asian continent. The cultural discourse strengthened when India extended humanitarian assistance to the two Koreas during the Korean War and continued to progress with substantial diplomatic agreements. The last two decades which attests the remarkable growth and development of trade between India and Korea has also witnessed active cooperation on cultural front. This essay surveys the cultural dimensions of Indo-Korean relation and traces the cultural dimensions through various primary and secondary sources.

It is coincidence that after breaking the colonial chains, India and Korea suffered partition. Korea was not well-known among the common masses of India in the Colonial period but Indian Intellectuals and leaders of Independence perceived Korea as a separate racial, geographical and cultural identity. The torch bearers of Indian Independence movement such as Gandhi, Nehru, Tagore, Shiv Prasad Gupta and Rahul Sankritayan penned their thoughts on the brutal colonial atrocities of Japan in Korea and sympathized with the people of Korea.

This essay surveys the cultural dimensions of Indo-Korean relations in colonial and post-colonial periods relying on the secondary sources and confined to its background of contacts and recent interactions.

II. Cultural Interactions in Colonial India and Korea

India regarded annexation of Korea to Japan as a sad chapter in the history of the world. During the early years of twentieth century, there was a general perception among the Indian masses that the policy of expansionism was entirely an establishment of the west. Japanese writer Okakura Kakuzo (Tenshin), influenced Indians and Japan was depicted as an Asian power from Pan-Asian perspective⁷⁾ Okakura's influential book entitled 'The Ideals of the East' and its famous opening sentence: "Asia is one" portrayed him as one of Japan's leading Pan-Asianists.⁸⁾ However, Korea was not very well-known to many countries in the world that time and there was a perception among the western writers too that Japanese intervention

6) Cumings, Bruce (2005) ,Korea's Place in the Sun: A modern History, New York London: W.W. Norton & Company, p.86.

7) Mathur, Arpita, India-Japan Relations: Drivers,Trends and Prospects, RSIS Monograph No. 23, Singapore, 2012, p.8.

8) Masako, N.Racel , Asian Review of World Histories2:1(January 2014),p.18.

in Korea is a political scheme to develop Korea and demonstrate its presence.⁹⁾ Nevertheless, Indian understanding of Japan changed after they came to know about the intention of Japanese expansionist policy.

The national struggle for freedom attained impetus in the first half of twentieth century in India. Many leaders of the freedom movement acknowledged the struggle corresponding to other Asian countries. This correspondence encompassed the fortitudes to recuperate age-old links with the East Asian countries. Colonialism served as a major reference point between India and Korea and the contribution of leaders like the Mahatma Gandhi and Rabindranath Tagore's acted as a catalyst in reviving the bilateral relationship of India and Korea during the early decades of the twentieth century. They viewed colonialism as a root cause of the suffering in Asian countries and proposed pan-Asian nationalism which included China, Korea and Southeast Asia.

Lee Ok Soon's study reviews and discussions based on the news articles and editorials in Korean language reported during the colonial period reveal that Gandhi had been a central figure concerned to India and the incidents related to Gandhi and his ways of fighting against the British Imperial power were frequently reported in Korean Media. The events related to Gandhi were reported to Korean readers provided affinity to India and they empathized with the continuing freedom movement.¹⁰⁾ Gandhi came in to contact with some Chinese people and became aware about the Colonial expansions of Japan in East Asia including the Korean crisis. Many of his short notes and speeches reflect his understanding of Korea.¹¹⁾ While commenting on the assassination of Ito Hirobumi, Gandhi called the Japanese way of Colonialism as imitation of the West and held Ito Hirobumi responsible for imposing the Protectorate treaty of 1905 which ruined the national identity of Korea.¹²⁾ In a speech at a public meeting in Nagpur on Dec.18, 1920, Gandhi emphasized that there is no involvement

9) Abramson, Gunnar(2005) "Comparative Colonialisms: Variations in Japanese Colonial Policy in Taiwan and Korea, (1895~1945)"in PSU Mc Nair Online Journal,Vol.1,ISS.1,Art.5, p.11.

10) Lee, Ock soon , "Locating Indian women in Colonial Korea", Korea: Asian Centre for Women's Studies; Seoul: Ewha Womans University press, Vol 17 No.3, p.35;Lee , Ocksoon,2011: p.36.

11) In a short note written in Gujrati on 25 April 1908, Gandhi mentions "the Chinese want to use the weapon of boycott against the Japanese. It appears that Japanese officials tyrannize over the Chinese in Korea. The Chinese feel that they are not strong enough for an armed encounter, but they know that Japan cannot stay on in Korea or anywhere in China except with their help." Also, see *Gandhi, CWMG, Vol. 08, p.287. Also see Mohan, Pankaj (2008),India- Korea , Korea: Shanti Press, p.62.*

12) "Korea is situated near Japan. The Japanese hold power in Korea as the British do in Egypt and India, enjoying the same rights and privileges. Of course, Japan is not in Korea to oblige her. But the Koreans are known to be a weak people. Were the country to pass under the rule of the Russians or the Chinese, that would pose a threat to Japan, and so Japan herself grabbed it. The Korean people were in no way pleased with this. They have always regarded Japan with hatred. Ito had been attacked twice before this. But Japan, having once tasted Russian blood, was certainly not likely to pull out of Korea so easily. Such is always the intoxication of power." See Gandhi, CWMG, Vol.10, p106-107and *Mohan, 2008: 63.*

of sacrifice in Swadeshi observing Korea and Egypt.¹³⁾ In another speech delivered on 5 July 1921 at Nagpur, Gandhi compared the execution of Korean Students by the Japanese with British style of brutality. He termed British and Japanese Government as cousins and their acts devilish.¹⁴⁾ Gandhi also wrote in his autobiography that Korea hoped to gain Japanese support and helped Japan in the Russo-Japanese war but due to Ito Hirobumi's Machiavellian role, Korea was pushed to the edge of disaster and annihilation.¹⁵⁾

In a reply to a letter written by Sungsoo Kim, then president of the Donga-A-Ildo, Gandhi sent his autographed portrait with an encouraging message. He wrote, "The message I can send is to hope that Korea will come to her own through ways absolutely truthful and Nonviolent."¹⁶⁾ This letter was later published in Dong-A-Ildo on 5th January 1927. Jawaharlal Nehru acknowledged the patriotic spirit of the Korean youth and their role in the March First uprising against the Japanese. In a letter written to his daughter Indira, dated December 30, 1932, Nehru described the suppression of Korea by the Japanese as a very sad and dark chapter in history.¹⁷⁾ It is interesting to note that even after the passage of many centuries; the Indo-Korean cultural ties continued in colonial period as well. Rabindranath Tagore is regarded as a symbol of cultural nationalism in India. His writings led to a deeper understanding of India's cultural tradition. In this regard, Tagore's influence in Korea is related to Korea's nationalism in 1920's. A renowned poetess Kim Yang Shik finds the essence of Tagore's Korea in the following lines contributed by Tagore on the requests of some Korean students to commemorate the tenth anniversary of the March First Movement:

In the golden age of Asia
Korea was one of its lamp-bearers
That lamp waits to be lighted once again

13) Mahatma Gandhi, *The Collected works of Mahatma Gandhi (CWMG)*, Vol. 22:23, November, 1920 -5 April, 1921, p.121

14) Mahatma Gandhi, *The Collected works of Mahatma Gandhi (CWMG)*, Vol.024 July 5,p.154.<http://www.gandhiserve.org/cwmg/vol024.pdf>.

15) Pankaj Mohan, *Korea and India*, Shanti Press, p.63.

16) Dong- A -Ilbo, 5 January 1927, p.2.

17) Pankaj Mohan, *Korea and India*, Shanti Press, p.65; Nehru esteemed the struggle of Korean people. In *Glimpses of World History*, Nehru addresses her daughter about Korea and wrote "Korea was given its old name again-Chosen, the land of morning calm. The Japanese brought some modern reforms with then, but they ruthlessly crushed the spirit of the Korean people. For many years the struggle for independence continued and there were many outbreaks, the most important one being in 1919. The people of Korea, and especially young men and women, struggled gallantly against the tremendous odds. On one occasion, when a Korean organization fighting for freedom formally declared independence, and thus defied the Japanese, the story goes that the y immediately telephoned to the police and informed them of what they had done Thus deliberately they sacrificed themselves for their deal. The suppression of the Koreans by Japanese is a very sad and dark chapter in history. You will be interested to know that young Korean girls, many of them fresh from college, played a prominent part in the struggle.

For the illumination of the East¹⁸⁾

Tagore's praise of Korea as "Lamp of the East" authenticated the notion of Korean identity and Korean nationalism. It is said that Tagore gave a poem to Korean student in Japan named Chin Hakmun entitled "The Song of the Defeated" and wished to underscore the common destiny of India and Korea as well as boosting the sinking morale of the Korean people. Tagore through this poem on Korea predicted that there would be a reemergence of Korea and Korea would become a lamp bearer of the east lightening the development of cultural interaction which had been tarnished by the Japanese colonialism. Tagore's poem corroborated the concept of Korean distinctiveness and patriotism. The adoration of Tagore with Nobel Prize in 1913 provided encouragement to Koreans, who shared with India cultural background during colonial hardships.¹⁹⁾

It is generally believed in the academia of Indo-Korea Studies that there is a scarcity of research materials which attests direct interactions of Indians with Koreans in the Colonial era. However, some travelogues of colonial period written in Hindi and English language delivers tangible ground highlighting the socio cultural aspects of India and Korea under the colonial rule of Britain and Japan. The travelogue is an introduction of colonial Korea to the Indians. The aspects of common colonial labor policies are also highlighted and reveal India and Korea's cultural themes and significance during colonial period.²⁰⁾

III. Cultural Exchanges in Post-Colonial Indo-Korea Relations

In a literal sense, "Post-Colonial" refers to the time after Colonization. The second college edition of the American Heritage Dictionary defines it as "of, relating to, or being the time following the establishment of independence in a colony". It deals with the cultural identity matters of colonized societies and the dilemmas of developing a national identity after colonial rule.

The mid of the 20th century witnessed the independence of many Asian, African and Latin American countries from Europeans. The approach of studying the different

18) Donga Ilbo 2nd April 1929.

19) Hyun, Theresa (2009), "Translating Indian poetry in the Colonial period in Korea, in Kothari, Rita and Wakabayashi, Judy (eds.), *Decentering Translation Studies: India and beyond*, Amsterdam: John Benjamins Publishing Company, p.146.

20) For Indian traveler's perception of Colonial Korea see Sanjay Kumar, "A Study on Indian Perceptions of Korean Culture: Focused on Indian Intellectuals' perception of Korea" (M.A. Thesis, Kangwon National University, 2013), pp.35-42 also see Santosh Kumar Ranjan, "Nationalist Linkage between India and Korea during Colonial Period" (M.A. Thesis, The Academy of Korean Studies, 2012) pp.106-11.

aspects of the society and intercultural relations of third world countries originated a new debate known as post-colonialism. This context precisely refers to the era of Post-independence as an intellectual discourse, a discourse which is pivotal in the study of cultural theories and anthropological aspects. Even though, there is no any commonly agreed specific definition of post-colonialism because the Post-Colonial direction was created when colonial countries became independent. Nowadays, aspects of Post-Colonialism can be found not only in history, literature and politics, but also in aspects of culture and identity - of many countries that were colonized and the former colonial powers. The discourse on the cultural identity of India and Korea and its interactions also lie in this direction.

Hofstede defines 'culture' as the collective programming of the mind that distinguishes the members of one group of people (i.e. social group) or category of people from others.²¹⁾ He further applies the same definition of culture to professional cultures, such as the diplomatic one. The place of culture in the contours of Indo-Korean diplomatic relation is inevitable and it serves as principle for collective interface. However, culture is confined to social context on which it is centered and expressed through cooperation and integration of people. The establishment of consular relationship between India and Korea in 1962 played a pivotal role in reenergizing the bilateral relationship of two countries. After eleven years of consular relations, it was upgraded to full diplomatic relationship in 1973 and shortly after this establishment, Agreement on Cultural Cooperation in 1974 was signed which filled the lacuna of apathy and unfriendly perceptions²²⁾ and helped to congregate impetus in the formal relations.

Despite of the cultural exchanges, in due course, 1970s and 1980s witnessed lack of information on current Indian and Korean society and culture. It can be said that cultural exchanges faced oblivion. During the post-cold war era, South Korea's pursuit for democracy introduced in 1987,²³⁾ provided a regular affinity and in due course of time, Korea's open market policies found significance in India's "Look East Policy". India's stand to support peaceful reunion of the two Koreas had been acknowledged in Korea. International Sports events like 1982 Asian Games hosted by India and 24th Seoul Olympics Games in 1988 brought human exchanges and played a pivotal role accelerating the people to people contact and awareness of each other. In early 1990s, When India announced its New Economic Policy, preferred market economy and started Look East Policy, the era of globalization and recognition of regionalism in international arena fetched new vistas in Indo-Korean Relations.²⁴⁾

21) P. Neck, Christopher (edited), *Journal of Managerial Psychology*, (Vol.21,2006).

22) Skand R. Tayal, *Indian and the Republic of Korea: Engaged Democracies*, (Routledge India :2014), p.61.

23) Tracy Williams, *Stanford Journal of East Asian Affairs*(Vol.4,Number 1,Winter 2004).

24) Press Information Bureau, Government of India, September 17, 2007, and also see

The visit of the then President Park Geun-hye in 2014 to India also added another feather in the relationship between two countries. It was for the first time that any Korean president visited India during the first year of its government. On the other front, the visit of Park Geun-hye and her emphasis on culture elevated the possibility of cultural interaction between the two countries. During her State visit of President Park, Geun-hye to India in January 2014, India gave the sapling of the sacred Bodhi Tree, as a symbol of India's friendship and goodwill, for the people of Korea and its reception with gratification further strengthens on diplomatic front.²⁵⁾

Congregation with people from a different background is no lesser than exploring a different culture and the recent decades have witnessed tremendous growth of Korean population in India and Indian Population in Korea. As cultural developments between India and Korea are concerned, both the countries have opened respective cultural centers in each other's capital city.

An Indian Cultural Centre was opened in Korea in April 2011 with the support of Indian Council for Cultural Relations (ICCR). Hindi language courses are offered in the center. ICCR has deputed Indian Yoga and Kathak instructors, hold classes at regular basis. Exhibitions and performances are arranged periodically by ICC, which are acknowledged very well across ROK. A Festival of India in Korea was held from June 2011 to March 2012. It was inaugurated by Dr. Karan Singh, President of ICCR on 30 June 2011. Tagore's 150th Birth Anniversary was celebrated in 2011-12 in collaboration with the Tagore Society of Korea and Korea Foundation. A bust of Tagore was unveiled in Seoul in May 2011 by Speaker of the Lok Sabha Smt. Meira Kumar. 2011 was celebrated in both the countries as the Year of India in Korea and Korea in India.²⁶⁾ On the other side, Korean Cultural Center was opened in India and regular Korean language and Culture classes are being offered.²⁷⁾ Hindi is most widely learned by Korean students studying in India and it is taught in some of the Korean Universities. Likewise, Delhi University and the Jawaharlal Nehru in New Delhi offer classes on Korean language and culture. The 19th annual Seoul

International Book Fair (SIBF) held on 17th June 2013 and India was named as "Guest of Honor Country" for the year's event to commemorate the 40th anniversary of diplomatic and cultural ties between the two nations.²⁸⁾ With the growing no. of

<http://www.pib.nic.in/newsite/erelease.aspx?relid=31296>

25) http://www.indembassy.or.kr/press_detail.php?nid=228

<http://www.bulkyo21.com/news/articleView.html?idxno=24036>;

<http://www.metroseoul.co.kr/news/newsview?newsCd=2014031900213>;

http://www.business-standard.com/article/news-ians/india-formally-hands-over-bodhi-tree-sapling-to-south-korea-114032000756_1.html.

26) http://koreatimes.co.kr/www/news/nation/2011/05/113_87223.html

also see <http://www.deccanherald.com/content/179106/tagore-fired-korean-imagination-81.html>

27) www.korea.net/NewsFocus/Culture/view?articleId=104306

Korean Companies in India, Korean Corporate culture is flourishing day by day in India and nowadays Korea and its people have active participation in various events. India and Korea have progressively developed their cultural exchanges in the past few years. Both the countries formed the Cultural Exchange Program (2009 - 2012) in September 2009, and assured to entitle "Visit India Year" in Korea and "Visit Korea Year" in India in 2011. The establishment of Indian Research in Korea (first of its kind in Korea) in recently can also be a milestone in a range of field of researching India-Korea serving as genuine gateway of information about the fields like Indian Society, Culture, trade and commerce.

IV. Conclusion

Cultural interactions have served as bedrock in the cultural ties in the long span of India and Korea. This deep cultural association has potential to find an extraordinary expression in the 21st century and it is expected to act as a facilitator in evolving understanding between the two countries which is an advantageous privilege for Indo-Korean relations.

Korea and India always had a humanistic approach in education, focusing on culture, history, philosophy, and poetry from centuries. In a rapidly changing regional and international environment, marked by globalization and Asian resurgence, Korea and India are natural partners and culture can act as binding force to make these countries come closer. The synergies and the legacy of harmony in the society and culture of India and Korea, offer huge potential for enhanced cultural cooperation. Entering 21st century-the era of Globalization i.e. where managing economic and business centric co-operations are keys to successful diplomacy, cultural understanding between India and Korea has much greater role to play. Many engagements are shaping the cultural dimensions and communication through various channels such as corporate, hallyu and the possibility of llyu(Indian Wave) in the upcoming years of Indo-Korean relations.

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Turkey and Changing Dynamics of ISIS Problem

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ABSTRACT: ISIS, which originated in Iraq, was strengthened due to the power vacuum and violence that Syrian civil war sparked. The Islamic State of Iraq and al-Sham (ISIS, also known as the Islamic State) group diverted this strength to Syria and spread its control area from Syria to Turkey and other West Asian region in a short time. In that process, one of the main reasons for ISIS's consolidation of power is the foreign fighters from all over the world including from Turkey who went to Syria to fight alongside the ISIS group. Some years ago, Syrian president Bashar al-Assad was one of Turkey's closest regional partners. That changed with the civil war that broke out in 2011. In post-2011 Syrian crisis, Turkey's President Recep Tayyip Erdoğan pivoted to become one of the loudest voices calling for the ouster of Syrian president Bashar al-Assad and demanding international aid to attain that goal. Since then, the Justice and Development Party government had advanced the position terrorist groups within the Syrian opposition, at the expense of the more inclusive global coalitions such as the Free Syrian Army supported by the United States and other Western countries. The JDP government had provided material support to anti Asad groups as well as allowing them unfettered access to the Turkey-Syrian border. But situation has changed gradually in West Asian region, the Islamic State is becoming stronger, it become a direct and immediate threat to US, Europe and particularly for Turkey. Now ISIS is fighting against almost all of Turkey's allies in Syria. It clashes with the Free Syrian Army, the Islamic Front and YPG, the Kurdish militia in Syria. One of the major consequences of the instability and fighting caused by ISIS is that the people in Iraq and Syria are forced to migrate on a mass scale into Turkey which creates further social, security and economic problems for Turkey. In this regard, Turkey has experienced several attacks from ISIS group including Istanbul nightclub attack in January, 2017. In this study, it will be argued that ISIS is a threat firstly for Turkey owing to several reasons. This paper will explain that there is need for comprehensive approach to counter the ISIS.

Key words : Arab Spring, Political Vacuum, Syrian Crisis, ISIS problem, Free Syrian Army, JDP Government,

I. Introduction

After the Arab spring, West Asia has seen extreme violence particularly in Syria and Iraq. The Arab spring has created the political vacuum in many West Asian countries. This political vacuum has provided positive environment for the emergence of various terrorist groups such as the Islamic State of Iraq and al-Sham (ISIS, also known as Islamic State). Presently, the strengthening of Islamic fundamentalist and extremist groups, particularly the ascendancy of the al-Qaeda and Islamic State has led to the mass exodus of the other ethnic and religious community from Iraq and Syria. Ever since the establishment of the Islamic State in West Asia, it has stepped up its attacks against the Kurdish, Shiite, Christian and Yazidi communities. ISIS had captured one of the ancient Christian city Mosul in Iraq which became the stronghold of ISIS because it was used as a base centre for ISIS's operational activity.

Since the beginning of 2014, ISIS fighters have torched hundreds of Kurdish towns, Shia tombs, Yazidi towns and Christian churches including the ancient monuments. Since then hundreds of Kurdish, Christians, Yazidi and Shiites have been killed and women raped by ISIS fighters; Christian missionaries and nuns have been kidnapped from monasteries. In initial phase ISIS had get support from other extremist groups and even from other West Asian countries because ISIS had declared war on Bashar Al-Asad government in Syria. Through this strategy ISIS had strengthen capability and expand its influence among unemployed young Sunni population. In this environment ISIS has established parallel authority in many countries of West Asia. But after then, ISIS has changed strategy and goal and started attack on other ethnic and religious communities in West Asia.

In 2015, the ISIS has declared that three choices will be provided to other ethnic and religious communities-Islam, jizya and the sword. In this regard, Christian houses, shops and churches have been marked with the Arabic letter "N" for distinct identification of Christian community. Further, Shiite, Yazidi and Kurdish homes and shops have been marked with the letter Arabic "R" which means rejecters. This declaration has led to the mass exodus of the Christian, Yazidi and shiite population to the Kurdish cities of Dohuk and Irbil, which has invariably ended the centuries-old peaceful coexistence among communities and the fraying of the secular fabric of Iraqi society. In the extreme point ISIS has reiterated that there is no space for Christians, Kurdish, Yazidi and shiite in the Islamic State. The violent activity of ISIS has affected mostly to Christian and Kurdish communities in Iraq. Mosul, which had a sizeable Christian population of 60,000, has now in 2018 been reduced to a few families. Iraq was one of the peaceful havens of Christian communities and has sent numerous bishops and patriarchs to various orthodox sects. Presently the situation is not as

different in Syria, as ISIS first experimented with its fatwa to “convert, pay tax or die” in the Syrian city of Raqqa. Like Iraq, Syria is another West Asian country where ISIS is active in violent form. ISIS has controlled areas in Syria and Iraq near Turkey’s border. Therefore, along with these areas Turkey’s southern parts are giving logistical support to ISIS. Turkey’s motivation was to enable the Syrian opposition to defeat Asad and the Syrian Kurds, who declared thinly disguised PKK proto-state on the southern Turkish borders (Gunter, 2015, p. 103). In a large number Iraqi and Syrian refugees are entering into Turkey’s southern Province which has created social, economic and political problem.

II. Rise and Ideology of Islamic State of Iraq and al-Sham (ISIS)

The rapid and violent rise of the Islamic State of Iraq and al-Sham (ISIS, also known as the Islamic State) has surprised the world community. ISIS was unknown till 2013, then after suddenly started making headlines with its brutal tactics and solid military victories in Iraq and Syria. In 2014 within a few months of announcing its formation, it captured huge swathes of territories in both countries, effectively erasing the border between them. There is no suspicion that many West Asian countries had helped ISIS against the Asad regime. In early stages, the ISIS was fighting against Syrian president Asad for control the Syria. Therefore, ISIS get arms and financial support from Turkey, Saudi Arabia and other Gulf countries to continue fight against Asad regime in Syria. The Turkish government, as well as Saudi Arabia and the GCC, began supporting the opposition to the Asad regime, not only politically but also with arms, funding and a safe haven in Turkey (Hinnebusch, 2015, p. 15). The 2011 revolt in Syria, and that country’s rapid disintegration into civil war, provided a new opportunity for rise of ISIS. Working with al-Qaida central, the ISIS set up a new militant group in the neighbouring country (Cockburn, 2014, p. 12).

The rapid change of environment in West Asia has formed conflict and political instability cycle after Arab spring and in this situation militant groups found their geographic and ideological space. Presently, al-Qaida and Islamic State are involved in violence in many West Asian countries. There are various sunni organizations which are affiliated and royal to Islamic State. The ISIS is successful to the extent that the Sunni of Iraq and Syria see ISIS as their only effective defence against domination and humiliation by Shia (McCauley, 2016, p. 65). The al-Qaeda sponsored anti Bashar al-Asad regime rebels have provided background to emergence and development of ISIS in the West Asian region. After getting support from young sunni youth in Iraq and Syria, ISIS has attacked the Christian, Yazidis, shiite and Kurdish community mercilessly in many parts of Syria and Iraq; hundreds of these communities’ properties,

houses and churches have been razed to the ground. In Syria, Christians have been accused of being the supporters of Syrian President Bashar al-Assad by ISIS militant groups who have kidnapped many bishops belonging to the Syrian Orthodox Church and the Greek Orthodox Church.

Furthermore, in 2015-16 most Syrian cities like Aleppo, Homs and Ma'loula fell into rebel hands which further intensified the persecution of these communities. The Syrian civil war, in which different countries in the region are involved through their proxies, has destabilised the country leaving territories for jihadists to capture and turn into havens. Apart from Syrian conflict, political instability in Iraq has allowed the Islamic State to emerge as militant fighters to control state authority. Since sustained opposition to the regime of Bashar al-Assad first took root in Syria four years ago, Turkey has been heavily involved in Syrian affairs. More recently, as the Syrian conflict spread across borders, the ISIS took an interest in Iraq (Sarikaya, 2015, p. 35).

The strategy and goal of the Islamic State is different from al-Qaida. The military strategy and sectarian ideology of the organisation has helped in expansion of ISIS in many Asian countries. The IS's actions may look barbaric, but the group had a plan. It used the spectacle of violence to stir up religious fervour among disaffected youth worldwide and drew them to its core, tied up with the former Baathists in Iraq, and moved ahead with a clear blueprint to establish the 'Caliphate'. ISIS is a group of militant fighters who believes in a Caliphate principle. In a couple of years, the ISIS has evolved into one of the most potent terrorist organizations. The State of terror covers the different arms of the group-its foreign fighters, social jihad, electronic brigades, and so on. The key to ISIS's spectacular military success lay in the fact that the group was by now the best to survive the 'state of nature' in which Iraq and Syria found themselves (Cheterian, 2015, p. 113).

The IS is now losing territories to Kurdish rebels in Syria and the Iraqi Army in Iraq, both backed by the US. But its ideology, like that of al-Qaeda and other jihadist organisations, is unlikely to fade away in the near future given the geopolitical and sectarian fault lines of West Asia. After every fresh outrage claimed by the Islamic State-like the suicide bombing attack on Brussels and on a football stadium near Baghdad, which killed dozens and injured hundreds. With its extreme violence and nihilistic mindset, the IS seems a death cult bent on senseless destruction. But the group justifies its violence, especially against civilians, with selective interpretations of Islamic texts that are rejected by a majority of the world's Muslims. In its slick propaganda, the IS emphasises two major themes: a righteous and idyllic life for "true Muslims" in its self-declared state in parts of Syria and Iraq, and an ideology that sanctifies violence as the only means for Sunni Muslims to achieve power and glory. ISIS has presented a strong image through a combination of ideology, ruthless violence, military force, financial astuteness and an innovative social media campaign,

designed to spread message and to appeal to disenfranchised, marginalised Sunnis across the world (Mabon and Royal, 2017, p. 112).

The group is highly sophisticated in its use of social media and other propaganda to sow fear among its enemies; and to entice alienated Muslims living in the West to “emigrate” to its territory. The IS has been particularly active and successful in recruiting foreign fighters, notably from Europe and America, using Twitter, You Tube, Diaspora, and other online social networks (Aly and Macdonald, 2017, p. 2). Spreading intolerance like other militant movements, especially al-Qaeda and its offshoots, the IS is inspired by a group of religious scholars across Islam’s history who advocated the idea of declaring other Muslims as infidels or apostates, and justifying their killing. This notion of ‘takfir’ is central to the ideology of most of today’s Islamist militant groups, who have killed far more Muslims than non Muslims. Since 2011 militant movements and some Islamic groups have imposed austere interpretations of the Koran and of Islamic law, the Sharia. Contrary to popular perceptions in the West, Sharia is not a monolithic system of medieval codes, set in stone and based on cruelty and punishment. Since Islam was founded in the seventh century, the body of law has co-evolved with different strains of Islamic thought: tolerance versus intolerance, forgiveness versus punishment, innovative versus literalist.

Today’s Islamist militants and repressive regimes-especially Saudi Arabia, which has used its oil wealth to export its Wahhabi doctrine by building mosques and dispatching preachers throughout the Muslim world-are obsessed with literalist interpretations of Sharia and punitive aspects of the Koran, as opposed to strands that emphasise forgiveness. The weight of Islamic history skews toward moderate understandings, but in recent decades these militants have used their influence to breed intolerance. Historically, Islamic law is based on four sources: the Koran; the sayings and traditions of the Prophet Muhammad (the Sunnah); analogical reasoning; and the consensus of religious scholars. Most Islamist militant groups favour a literalist reading of only two sources: the Koran and the Sunnah, disregarding most legal reasoning and interpretation developed over fourteen hundred years. Modern day militants like those of the IS are particularly keen to show that they are following the path set by a group of medieval Islamic authorities respected by most Salafis. The ISIS often quotes Ibn Taymiyya in its Arabic tracts, and occasionally in its English language propaganda, as it did in its magazine, *Dabiq*, in September 2014.

Ibn Taymiyya also inspired the father of the Wahhabi strain of Islam that is dominant in Saudi Arabia today, the 18th century cleric Muhammad ibn Abd al-Wahhab, who decreed that many Muslims had abandoned the practices of their ancestors. Wahhab believed Islamic theology had been corrupted by philosophy and mysticism. He argued that Islamic law should be based on only two sources: the Koran and the Sunnah. He dismissed analogical reasoning and the consensus of

scholars, two sources that had helped Islamic law evolve and adapt to new realities over time. Today, Saudi Arabia is built on an alliance between two powers: the ruling House of Saud and clerics who espouse Wahhabi doctrine. Wahhabis seek to return the religion to what they believe was its “pure” form, as practiced in seventh century Arabia. Rise of extremist movements of course, radicalism needs more to breed than just rhetorical and religious inspiration. As Arab nationalist leaders and military rulers rose to power in the 1950s and 1960s, they violently suppressed Islamic movements, including peaceful ones. In Egypt, the regime of Gamal Abdel Nasser clamped down on the populist Muslim Brotherhood, and that helped lay the ideological foundations for the emergence of violent Islamic movements in the following decades.

The most militant thinker who emerged from that period was Sayyid Qutb, a Brotherhood leader, and swept up in Nasser’s crackdown. After enduring nine years of prison and torture, Qutb published a manifesto in the 1960s, *Milestones Along the Road*, in which he argued that the secular Arab nationalism of Nasser and others had led to authoritarianism and a new period of *jahiliyya*, a term that has particular resonance for Islamists because it refers to the pre-Islamic “dark ages.” Qutb declared that a new Muslim vanguard was needed to restore Islam to its role as “the leader of mankind”, and that all Arab rulers of his time had failed to apply Islamic law and should be removed from power. Qutb argued that it was not only legitimate, but a religious duty for “true” believers, to forcibly remove a leader who had allegedly strayed from Islam. The IS’s ideologues do not quote Qutb as frequently as al-Qaeda’s leaders have, he clearly inspired the group’s rejection of contemporary Arab regimes and its effort to create a transnational state. Like its predecessors, the IS reads Islam’s history and its foundational texts selectively, choosing the thinkers and parts that fit into its vision of brutality, Sunni dominance, and constant war with pretty much everyone else. It is important to remember that, for a long time, there have been other paths.

III. Changing Dynamics of ISIS Problem

The capture of Raqqa, the Islamic State’s de facto capital in Syria, by U.S.-backed Kurdish and Arab troops in 2017 is a crushing blow to the group. The Islamic State, which once controlled territories as large as the U.K., is now concentrated in some pockets in Iraq and Syria. It lost Mosul, Iraq’s second largest city, to government troops earlier this year. With the loss of Raqqa to the Syria Democratic Forces (SDF), its self-proclaimed “Caliphate” is now practically over. The last major population centre the group has control over is eastern Syria’s Deir ez-Zor, which is also increasingly

under attack by Russia-backed Syrian government troops. In both Iraq and Syria, though different actors battled the IS, the strategy to counter the group was almost similar. In Iraq, government troops were joined by Kurdish Peshmerga and Shia militias in ground battles while the U.S. provided air cover. In Syria, the SDF, with cover by U.S. aircraft cover, and Syrian government forces aided by the Russian Air Force opened multiple fronts against the IS.

The Iraqi Prime Minister Haider al-Abadi declared the end of the 'Caliphate' after his troops captured the Grand al-Nuri Mosque in Mosul from where Abu Bakr al-Baghdadi proclaimed himself the 'Caliph' of the world's Muslims three years ago. The 12th century mosque, whose famed leaning minaret had been adorned with the black flag of the Islamic State (IS) since June 2014, was a symbol of power for the jihadists, so much so that they blew it away and retreated as the Iraqi troops closed in. Within weeks, Iraqi Prime Minister Abadi was in Mosul to formally announce the liberation of Iraq's second largest city. It is no small achievement for an army which fled Mosul in droves when IS fighters marched in three years ago. The IS ruled the city with an iron fist ever since and expanded its influence beyond the city limits.

The Iraqi army took months to recover from the humiliation it suffered and launched a counter-terror campaign with help from Iran-trained militias and the U.S. Air Force. They liberated small cities first, such as Ramadi and Fallujah, before finally moving towards Mosul in October last year. The Kurdish Peshmerga also joined in, while the U.S. carried out a massive air campaign. In nine months the IS lost Mosul, the jewel of its Caliphate. This is in line with the military setbacks the group has suffered in recent months. It has lost more than half of the territories it once held. Its propaganda blitzkrieg has taken a hit and even its ability to recruit new jihadists is under strain in the wake of battlefield losses. Its leader Baghdadi is either dead or on the run. The ground realities and a historical analysis of the evolution of the IS suggest different.

Under pressure from all sides, the group finally crumbled. Its high-tech propaganda, which telecast beheadings and mass shootings, is now absent. Its organisational network is in shambles. Its top leaders are either dead or on the run but the war is not over yet. The IS was originally an insurgent group that transformed itself into a proto-state with a global appeal. That state is militarily destroyed, but IS, the movement, is far from over. The leadership of IS has studied the tactics and structure of other armed groups and has applied these lessons in a new context (Napoleoni, 2015, p. 15). As al-Qaeda in Iraq, the IS's predecessor, retreated to the deserts and regrouped during 2008-2011, the IS could also retreat to the lawless parts of Iraq and Syria and wait for the right moment to strike back. With terror attacks in faraway locations such as Paris and Brussels and lone wolf attacks by individuals inspired by its world view, the IS has already proved it could continue its lethal

campaign even while under military pressure. The increased use of social media, often paired with applications that offer the option of encrypted messaging, has enabled members of groups like the Islamic State to make direct and lasting contact with radicalized Turkish youth. The groups' principal tool for expanding its influence has been brute force, but as it has attempted to build credibility and legitimacy, it has shown deftness for propaganda, using social media and cyber technology to recruit foreign fighters and intimidate enemies (Farwell, 2014, p. 49).

In some cases, these individuals direct terror plots, and in others, they provide encouragement and motivation for attacks. In Turkey, there are ten known cases of terrorist-related activity involving fifteen Turkey based individuals where the involvement of an Islamic State virtual entrepreneur has been documented. This outsourcing of terrorism has been a game changer in Islamic State efforts to attack the West Asian Countries. The geopolitics of West Asia suggests that the troubled, chaotic countries from where the IS emerged are likely to continue being troubled in the near future. Till now a common enemy had brought them together. With the IS challenge fading, cracks are visible in the coalition. Iraqi government troops and the Kurdish Peshmerga-which fought together against the IS in Mosul- are now fighting each other in Kirkuk. Even in Syria, once the IS is defeated the regime could turn its focus on the Kurdish autonomous region. Turkey too has raised strong opposition to Washington arming the Kurds. Such voices will only grow in strength with the Kurds gaining increasing prominence in the battlefield.

Now the question is whether the stakeholders have a larger vision for a post-IS West Asia in which the fundamental issues that helped the rise of groups like the IS can be addressed. Mere military victories do not usher in long-term changes. First, the IS's proto-state is not completely destroyed yet and it will not be in the immediate future. Though it lost Mosul, the IS still controls swathes of strategic territories in Iraq. Hawijah, a city adjoining Kirkuk that has been with the IS since 2013, continues to pose challenges to the Iraqi troops. The city's mountainous terrain makes it difficult for the counter-terror forces to move in. Besides Hawijah, the group controls Tal Afar, Salahuddin province and pockets in Anbar and Diyala. In Syria, it still controls Raqqa, its de facto capital which has been with the group since 2013, and Deir Ezzor, the largest city in the east. The battle to recapture Raqqa has just begun by the Kurdish-led Syrian Democratic Forces (SDF) and will take time like other anti-IS battles.

Second, there's no guarantee that the IS won't come back to the cities it lost. It had done so earlier. The geopolitical fault lines of West Asia, especially in Iraq and Syria, which helped the IS rise in the first place, remain unchanged. In Iraq, a greater challenge before the government is to win over the people in the north and west, mostly Sunnis, who distrust the Shia-dominated government. In Syria, the battle against the IS is more complicated than that in Iraq. In Iraq at least there is a

consensus about what the legitimate force is against the IS. All players, from America and the Kurds to Iran and Shia militias, rallied behind the Iraqi government in the war. But in Syria, there's no such consensus. Raqqa is being attacked by both the SDF and the government troops. The U.S. is supporting the SDF, while Russia is backing the regime. Turkey, another country that's involved through its proxies in the civil war, is wary of the SDF because it is led by the Kurdish rebels. Therefore, even if Raqqa is liberated, it is difficult to reach a consensus on who will eventually run the city.

Third, the IS is fundamentally an insurgency that transformed itself into a proto-state. Now the proto-state is under attack, but the group can retreat to insurgency for its survival. The history of insurgent groups suggests that it is difficult to defeat them outright. Take the more recent examples of jihadist insurgencies. The Taliban regime was toppled and its fighters were driven out of Kabul in 2001 following the American invasion. Their leader, Mullah Omar, died while he was hiding but it does not mean that the Taliban were defeated. Al-Qaeda is another example. After the Taliban were toppled, al-Qaeda was also forced to flee to the mountains. Its leader, Osama bin Laden, was also killed when he was hiding in Pakistan. Still al-Qaeda made a comeback by mobilising jihadists in Africa, Syria and Yemen. A more specific example would be al-Qaeda in Iraq, which was almost defeated once, only to be morphed into today's IS as a more vigorous, deadly force. The Islamic State has already given enough indications that it will move back into insurgency if its proto-state was destroyed. In May 2016, Abu Mohammad al-Adnani, who was the second-most powerful leader in the IS till his death in an air strike in August that year, said in a long audio message released on the Web.

In fact, the IS has changed its strategy after the 'Caliphate' came under attack. Instead of expanding its territories, the group became defensive at its core and unleashed a wave of terror attacks elsewhere in the world, from Paris to Brussels and Berlin to Dhaka. It has also established franchises in other countries. Boko Haram, Africa's most dreaded terror outfit, has declared loyalty to the IS. In eastern Afghanistan, the IS has a branch-the Islamic State of Khorasan- which is directing the group's operations in South Asia. The recent outbreak of a war in the Philippines, where armed jihadist groups that have declared loyalty to the IS have been fighting government forces, suggests that the IS is expanding its asymmetric reach when its core is under attack. All this suggests that the threat is far from over. The IS has already transformed itself into a globalised idea and outsourced its terror mission to groups and individuals who subscribe to its world view. So even if the IS core is destroyed, the IS insurgency, or an 'al-Qaedafied' Islamic State, will continue to pose security challenges.

IV. Turkey's Threat Perception from ISIS and Its Counter Measure

A large numbers of foreign fighters are still crossing Turkish border to join ISIS in Syria. In 2017 Turkey has faced several track from ISIS. The geographical location of Turkey is good harbour for ISIS fighters. The Islamic State controlled areas in Syria and Iraq is close to Turkish borders. Therefore, these ISIS areas has posed serious threat to Turkey. Turkey is highly vulnerable to the threats posed terrorist organisations such as ISIS and other groups in Syria and Iraq (Yalcinkaya, 2018, p. 4). There are mainly two threat perceptions in Turkey among policy makers. First, due to close location to Turkish borders, ISIS is capable to get logistics support from Turkish areas and ISIS areas in Syria and Iraq. Second, Kurdish is also fighting against Turkish authority in southern Turkey. Therefore, there is instability and conflict in southern Turkey.

This situation has provided background to ISIS to expand control in other areas. Apart from these geographical favourable conditions to ISIS, there is another problem regarding Turkish threat perception. In Syria, ISIS is fighting against all the Turkey's allies along with fighting against Bashar al-Asad regime. Turkey's close allies Free Syrian Army and the Islamic front are fighting against ISIS. on the other side, ISIS had destroyed the oil pipeline in energy rich areas Arbil. Turkish goods have been moving into the KRG or towards other regions of Iraq through the KRG. Such gains of Turkey have been adversely affected by the ISIS attacks (Oytun, 2014, p. 4).

On the foreign policy matter, ISIS's expansion in Syria has posed direct threat to Turkey's Syria policy. On the one hand, ISIS has weakened Turkey's allies in Syria and ended the any benefits to Turkey in Syria. One the other hand, through violent activity ISIS has pushed the Druze, Christians and Alawites toward Bahar al-Asad regime for peace and stability. Presently, ISIS has become global threat rather than Asad regime. This notion has affected Turkey's national interests in Syria. Syrian and Iraqi refugees are also serious problem for Turkey because it has created social, economic and security problems. A direct consequence of the ISIS offensive in Iraq for Turkey was the occupation of its Consulate General in Mosul and the taking of forty nine hostages (diplomats, family members, security guards and others), as well as the detention of thirty first Turkish truck drivers (Strachota, 2014, p. 2). Turkey has failed to take the security measures regarding border crossings from Iraq and Syria. The peshmerga militia in Kurdistan has done its best to defend Kurdistan but it has not been able to stand against the armored vehicles and artillery that ISIS captured from the Iraqi Army (Sekulow, 2015, p. 11). In this situation, Turkey has adopted many security measures such as security and intelligent cooperation with regional and global powers. Turkey-Syria border has been closed and Turkish military is doing search

operation and border patrolling.

V. Conclusion

There are many signs that ISIS is increasingly weak on the ground where it was once the most powerful group across Iraq and Syria. It has become unpopular and is resented by local and regional forces because of its extreme implementation of the Sharia law, expansionist attitude that disrespects local cultures, intra-group fighting for authority and territory, and ambiguity and suspicions about its sponsors. To survive, it will likely use tactics and opportunities, such as a temporary truce with other groups or even with some local authorities, until it regains strength. The ISIS group will continue to operate underground in the areas of eastern Syria, southern Turkey and western Iraq for the foreseeable future, relying upon classic guerrilla tactics such as sniping, ambushes, hit and run attacks, car bombs, and assassinations. ISIS fighters have regrouped in smaller clandestine cells throughout Turkey.

The country placed in the most delicate situation by the rise of ISIS is Turkey. The Turkish government feels threatened by ISIS to the south-east of its borders, and by Kurdish fighter to the south; and ISIS enjoys some support among the Turkish population. The Turkish government fears for its internal stability under the ISIS threat, it considers the group to have advanced Turkish foreign-policy objectives, by breaking the geographic continuity of Syria, from Tehran through Baghdad to Damascus and Beirut. Turkey has been hesitant to join the military coalition against ISIS, forcing the US to move its aircraft to Erbil in Kurdish Iraq. Turkey has good reason to be worried: the free logistical support jihadi groups have received since the start of the Syrian conflict has led to the formation of numerous pro-ISIS cells throughout Turkey, and any Turkish participation in the US-led coalition could trigger attacks on Turkish soil. The Turkish government sees foreign-policy considerations in its position towards ISIS. Erdogan and his party are themselves the fruits of political Islam, and Turkey has reportedly given significant support to Ahrar al-Sham, both military and humanitarian, and possibly to other jihadi groups as well. Turkey fears that an attack on ISIS will further weaken its already shaky West Asian policy; Turkey is sympathetic to the Sunni cause in Syria, and has invested both material and political resources to support the Syrian political and armed opposition. It finds that hardline jihadis are the most motivated and organised, and, therefore, the most efficient in the ongoing conflict. After its opposition to the 2003 Iraq invasion, Ankara is now objecting to US military plans in the Middle East for a second time.

However, the ideology and agenda of ISIS, as well as its collaborators, have seen several ebbs and flows. The changing mood against ISIS in the region may well prove

to be temporary unless there is reconciliation of the sectarian and political factions, along with fairness in the distribution of wealth and power. The sustained extirpation of ISIS from the region can probably only be achieved in tandem with competent local security forces, including police and militaries capable of operating among the predominantly Sunni enclaves in Iraq and Syria. These types of units are completely absent in Syria, Iraq and Turkey; where they exist in Iraq they are too often sectarian in nature, and therefore barely effective in the short term and counterproductive in the long term. ISIS is not the only devil among dozens of extremist groups in Iraq and Syria, although it is the one that has caused the most turbulence and instability. The annihilation of ISIS alone will not lead to security and stability, unless the reasons that have created chaos in the region providing an opportunity to groups like ISIS to exploit the situation are themselves addressed.

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The Myanmar JOURNAL

– Volume 5 Number 1 February 2018

28 February 2018

Yangon University of Economics (Myanmar)
Korea Myanmar Research Association (Korea)
2014~, Semiannual
ISSN : 2383-6563(Online)

Co-published with **Yangon University of Economics (YUEco)** and
Korea Myanmar Research Association (KOMYRA)
<http://www.komyra.com/doc/submission.php>