

Supporting renewable energy development through financing in Mongolia

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Abstract

With the growing world population and economic development, a demand for energy is constantly increasing. Therefore, countries around the world require more energy resources to meet this demand. Recognizing the importance of sustainable development – a balanced way of development with consideration of economic, social and environmental aspects – renewable energy as a way to promote green development has been advocated globally. This paper studies the renewable energy development in Mongolia along with potentials of public and private finances in promoting such green development.

Introduction

As the Millennium Development Goals complete this year, the UN and RIO-20 decided to introduce Sustainable Development Goals (SDGs) after 2015. Then, the global and national challenge is how to make the SDGs able to address sustainability in all development areas. Considered as a way to green the existing energy sector, international organizations and governments of both developed and developing countries pay a special attention on advancing the renewable energy development.

With various global and national initiatives, investments and technological advances, the evolution of renewable energy over the last decade has exceeded all expectations. Global installed capacity and production from all renewable technologies have increased substantially; costs for most technologies have decreased significantly; and supporting policies have continued to spread throughout the world (FS-UNEP, 2015). Renewable energy is not only seen as a way to increase energy production and meet the growing demand for energy, but also considered as a way to reduce greenhouse gas emissions and to provide direct and indirect social benefits (REN21, 2014). This can be advocated by the speech of UN Secretary-General Ban Ki-moon stating that “renewables can end energy poverty and renewable energy has the ability to lift the poorest nations to new levels of prosperity” (Leone, 2011). All these successes are inseparable from investment in renewables. Many studies show that global investment in this sector has substantially increased over the last decade. If the growth speed will be kept for the next years, then the expectations and objectives of renewables can be reached by 2030.

The Mongolian government also follows this global trend in the energy sector and declared to increase the share of renewables in total energy production up to 20 percent by 2020. Despite having vast renewable energy sources in the country, the energy generated from renewables accounts for only 2-3 percent today. Thus, it will be a challenging task to achieve the government goal. To accelerate the development of renewable energy, it is important to examine the status quo of renewable energy development and capacity of foreign and domestic financing in Mongolia as renewable energy projects need large investments to proceed.

This paper aims to evaluate the development of renewables along with brief examination of the capacity of the financial sector and public finance in financing these green projects. Thus, the paper is organized as follows: Firstly, global renewable energy development and investment in this sector is briefly reviewed with focus on challenges of developing countries in supporting renewables. Then, Section 2 examines the development of renewable energy and potentials of the financial sector in providing long-term financing with low interest rates. Lastly, the study recommends some possible financing mechanisms that can be used urgently within the existing capacity of financial sector and institutional arrangements. The study used the extensive desk review on the renewable energy and financial sector of Mongolia.

1. Global renewable energy financing

With the growing world population and economic development, a demand for energy is constantly increasing. Therefore, countries around the world require more energy resources to meet this demand. Recognizing the importance of sustainable development – a balanced way of development with consideration of economic, social and environmental aspects – renewable energy as a way to promote green development has been advocated globally. *World Energy Outlook 2014* report states that the world primary energy demand will be 37% higher in 2040, putting more pressure on the global energy system. The report sees a positive outlook for renewables, as they are expected to account for nearly half of the global increase in power generation by 2040, and overtake coal as the leading source of electricity (IEA, 2014).

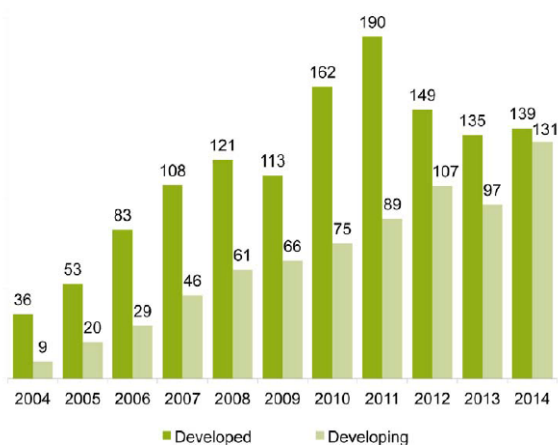
Renewable energy refers to both traditional biomass (fuelwood, animal wastes, and crop residues burned in stoves etc.) and modern technologies based on solar, wind, biomass, hydropower and geothermal. Today, renewables contribute 19% to the world energy consumption and its share in total cumulative power capacity accounts for 15.2% (REN21, 2014). In 2014, renewables' share of overall global generation increased to 9.1% from 8.5% in 2013 (FS-UNEP, 2015). It is expected that the growth of renewables with this speed will enable them to reach 20% of global generation by 2030.

Although renewables hold a relatively small share of total energy generation, benefits of renewable energy are increasingly advocated and a number of studies show the growing interests in renewables. Renewable energy has/will have an important role to bring global greenhouse gas emission under control (Arent, Wise, & Gelman, 2011; Bloomberg New Energy Finance, Multilateral Investment Fund, UKAid, & Power Africa, 2014). It produces less negative impacts or no harm to the natural environment and thus it has more social and environmental benefits compared

to coal and nuclear energy. In this respect, institutional funds started to look renewables as stable green investment with relatively low-risks (FS-UNEP, 2015).

Technological advance and penetration of renewable to many countries requires a vast amount of investment in this sector. The global investment in renewable power and fuels (excluding large hydro-electric projects) was \$270.2 billion in 2014. Investment in developing countries reached at \$131.3 billion which was 36% higher than 2013. The amount is becoming close to the renewable investment of developed economies accounting for \$138.9 billion (FS-UNEP, 2015). Thus, developing countries, in particular China is paying special attention to renewable energy deployment.

Figure 1. Global renewable energy investment by developed & developing countries, by bill USD



This figure shows the rapid increase in renewable investment since 2004 in both developed and developing countries. While investment in developed countries increased by 3.8 times in last decade, developing countries accelerated their investment in renewables by 14.6 times. Developing countries have increased their investment extensively with stable growth.

Source: UNEP & FS (2015) Global trends in Renewable Energy Development (pp. 16)

However, the development is still unsatisfactory in many developing countries due to various reasons. Main barriers holding back the increase of renewables in developing countries are a lack of awareness on the importance and benefits of renewables, a relatively high cost of renewables, a difficulty in accessing project finance at affordable interest rates with longer-term maturity, the absence of subsidised electricity prices at the local market and ineffective use of power purchase agreements (IEA, 2014; Painuly, 2001). Moreover, jurisdictions of developing countries need to be improved in order to support renewable energy development. The Climatescope study of the suitability of 55 important developing countries for renewable energy development found that about 50% of jurisdictions did not offer power purchasing agreements and tariffs with sufficient duration to promote energy investment; 52% did not have clear rules on interconnection, and 76% did not have a dedicated team looking at renewables within the local utility (Bloomberg New Energy Finance, et al., 2014). This result shows that many governments struggle to take effective policy measures to advance their energy sectors by introducing more renewables and investing more to this sector.

2. Renewable energy development and potentials of financing in

Mongolia

2.1 Overview of Mongolia

Mongolia is home to population of 3 million and a landlocked country with diverse landscape and vast natural resources. The economy grew at an average rate of around 9% and the GDP per capita increased from 904 USD to 4,579 USD between 2005 and 2013, transitioning from a low-income country to a lower middle-income country. In terms of human capital, 47.2% of total population is young people aged between 15-40 years old with high literacy rate and gender equality. It is a democratic country and has a political commitment to sustainable development.

Despite its high economic growth, Mongolia has a number of challenges, such as poverty, overdependence on natural resource-based economic structure, inefficient use of energy technical and technological obsolescence and vulnerability to climate change. Therefore, the government has initiated numerous strategies, programs and policies to address these issues and diversify economy with the consideration of sustainable development notions.

In accordance with recommendations of the UN conference on Sustainable Development in 2012, the parliament passed the Green Development Policy of Mongolia in 2014. The policy defined “Green development” as a development model with efficient and effective use of natural resources, ecosystem services, lower greenhouse gas emission, less waste and reduced poverty through inclusive growth (State Great Khural, 2014). As one of the key areas on promotion of sustainable development, the policy prioritizes the renewable energy development as the future of the energy sector.

2.2 Renewable energy development in Mongolia

The Government of Mongolia (GoM) supports the global call for renewable energy development by declaring to accelerate the transition from “brown” to “green” economy and initiating a number of programs to support this development.

- In 2005, the Mongolian Parliament approved the National Renewable Energy Program (NREP) setting the goals for broad-based renewable energy development to increase the share of renewable energy technologies in total energy supply from 0.9% in 2005 to 3-5% by 2010 and to 20-25% by 2020.
- In 2007, the Law on Renewable Energy came into force and the Mongolian Integrated Power System Program was adopted. The law regulates the generation and supply of energy from renewable energy sources, whereas the program aims to create a unified power grid by connecting existing power systems in order to improve reliability and cost effectiveness.
- The Government’s action plan (2012-2016) has the policy to increase renewable energy generation and usage, and declares to adopt “Green civilization” policy in the future.
- In 2014, the Green Development Policy of Mongolia was approved by the parliament. In Strategic objective One, it sets an ambitious objective of increasing the share of renewable energy in total energy production to 20 and 30 percent by 2020 and 2030.

In terms of resources, Mongolia has vast renewable energy resources with favourable climatic and weather conditions. According to the Mongolian National Renewable Energy Center, Mongolia has a potential renewable energy capacity of 2.6 million MW which is seven times more than that of all the world's operational nuclear reactors (Energy Charter Secretariat, 2013). There are following sources of renewables.

Hydro sources: There are exists 3800 small and big streams and rivers in our country, which could support 6417.7 megawatts of power and deliver 56.2 billion kilowatt/hours of electric energy in a year.

Solar: From 270 to 300 days in average year on entire territory of the country are estimated as sunny and yearly average daylight time is estimated as 2250-3300 hours. The yearly radiation is estimated as 1200-1600 kilowatts per square meter and its intensity is estimated as more than 4.3-4.7 kilowatt per hour.

Based on the solar energy capacity in the Gobi region, power corridors – Asia Super Grid – connecting Russia, Mongolia, China, South Korea and Japan is planned to be built to transmit the bulk power more than a hundred of GW from the generating sources (solar, wind farms and power plant using clean coal technology).

Wind: As it pointed out in wind energy atlas of Mongolia, the 10 percent of the total territory or 160 thousand square kilometer area is estimated as suitable for wind energy application. It is estimated that 13 aimags have more than 20,000 megawatts of wind potential, and 9 aimags have more than 50,000 megawatts of wind potential, and Omnogobi aimag alone has wind energy potential of over 300,000 megawatts.

Geothermal sources: There are over 40 indications of geothermal manifestations on the territory of Mongolia and from these sites Tsenkher, Khujirt and Shargaljuut, located in the Khangai region, may be used for energy production purposes (Tserenpurev & Osgonbaatar, 2012).

Despite its resource abundance, the power generated from renewable energy is still very low. In supply side, only 2% of total electricity was generated by renewable power plants although these plants account for 9% of total installed capacity (Table 1). Coal is still used as the dominant mineral source for power and heat production.

Table 1. Installed and generated electricity by 2013

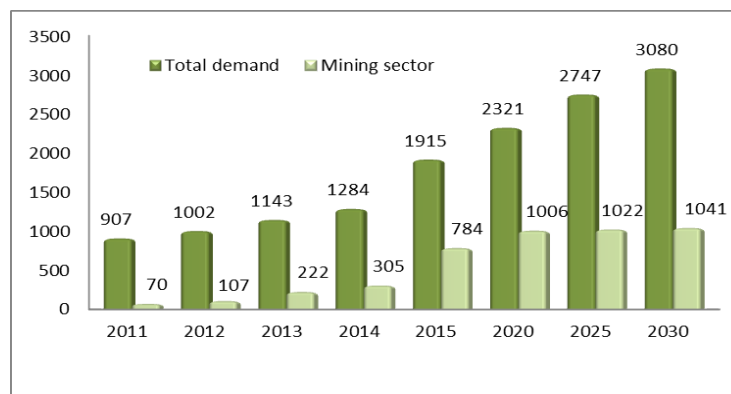
Power Plant	Installed capacity		Electricity generation	
	Capacity (MW)	Share	Electricity (GW*h)	Share
CHPs	827,3	87%	4738,8	90%
Renewable power	81,7	9%	117,1	2%
Diesel stations	46	5%	28,7	1%
Imported			393,2	7%
Total	955	100%	5277,8	100%

Source: Ministry of Energy

In terms of the demand side, a demand for energy is constantly increasing as the economy expands. Between 2011 and 2014, total energy demand increased by 42% contributed by 3.4 times growth in the mining-generated demand. By 2030, the energy demand is expected to reach 3080MW

or 1.4 times higher than 2014 whereas the energy demand of the mining sector will increase by 2.4 times (Figure 3).

Figure 2. Mongolian energy demand (MW)



Source: Ministry of Energy

As the energy demand will grow rapidly in future, there is a need for building more energy plants including renewable energy plants. The existing capacity of total electricity plants satisfies only 83% of the total demand. Considering the demand and the government strategy of increasing the share of renewable energy in the total energy generation, the country needs to establish more renewable energy plants with capacity of 9-11 times more than the current plants. If the country aims to increase the share of the renewables up to 30% of the total energy, then installed capacity shall reach at least 924MW which is 11.3 times higher than the current capacity.

Although innovations in technology and engineering are crucial in developing the renewable energy sector, financing is equally important to implement renewable energy objectives into reality. Therefore, the financing aspect of renewable energy should be carefully considered along with technological advances, building renewable energy generators and human capacity building. Otherwise, the absence of prior-set proper financing scheme can lead to the failure of even well-designed and successfully built renewable energy generators. Recently established Salkhit wind farm¹, first in its kind, is struggling with its financial viability to continue its operation due to the absence of a well-established government policy and comprehensive financing mechanisms. Therefore, it is worth looking at the potential of the financial sector in providing long-term green financing for forthcoming renewable energy projects which requires some years to cover their investment costs.

2.3 Capacity of the Mongolian financial sector

Main sources of long-term financing can be classified as foreign and domestic financing. Foreign financing includes official development assistances from bilateral and multilateral financial institutions and foreign direct investment; whereas domestic financing consists of public finance, lending from the banking sector and equity and bond issuance at the capital market. Each financing is briefly reviewed in this section to explore the potential of financial institutions in promoting the renewable energy development.

2.3.1 Foreign financing

Official development assistances (ODA) and low-interest rate loans from donor countries and multilateral financial institutions constitute one of the key sources of long-term financing for the government. As ODAs are directly pooled and allocated through the general budget, ODAs can be considered as a financial instrument of the government used to invest priority public projects. Between 1991 and 2012, the Government of Mongolia received and spent foreign aids and ODAs equalled to USD 4.5 billion.

After the democratic revolution of 1990, ODAs, accounting for 165 percent of GDP, largely contributed to economic and social structural changes, institutional capacity building and monetary and budgetary stabilities in 1990s. Although the size of ODAs remained similar to the 1990s, their portion to GDP decreased to 2.3 percent because of the dramatic increase in GDP (USD 8.2 billion USD in 2011 compared to USD 2 billion in 1990). By the end of 2012, a remainder of the ODA debt was USD 2.1 billion.

Almost 45 percent of ODAs had 40-50 years of maturity with 0.5-1.5 percent of interest rates and first 10-years remission of principal payments. In recent years, loan conditions have been tightened because of the improved country ranking from a low income to a medium income country in 2012. Thus, the role and size of ODAs is diminished and it cannot be the main source of long-term foreign financing in future.

Foreign direct investment (FDI) to the private sector makes a significant contribution to the Mongolian long-term financing. However, about 80% of FDI goes to mining and petroleum due to the booming mining sector. Only 2 percent of FDI has been used as long-term financing to banks and financial institutions. Therefore, the FDI cannot perform as the main foreign financing to non-mining sectors including renewable energy.

Between 2008 and 2012, the size of FDI has increased 5.3 times and reached 43.9 percent of GDP in 2012 compared with 15.7 percent of GDP in 2008. The highest increase occurred in 2011 reaching USD 4.6 billion (accounted for 57.3 percent of GDP). However, FDI has decreased since 2012 and reached to the same level of 2008 in 2014. The slowdown of the FDI inflows is becoming a significant downside risk to the economy. The sharp deterioration of the FDI inflows reflects the expected unwinding of capital expenditure by the Oyu Tolgoi project, but also signals the growing wariness of foreign investors over the investment climate in Mongolia. With less foreign currency inflows, the country faces a big challenge in improving the domestic currency exchange and promoting the economic sectors' development.

As foreign financing sources are declining, it is important to examine the capacity of domestic financing in promoting the green development.

2.3.2 Domestic financing

a. Public finance

The Mongolian public finance is heavily dependent on mineral revenues, thus very much exposed to external shocks. Revenues from copper, coal and gold make up almost a third of total revenues. The fiscal position has been deteriorating since 2008 with constant budget deficits ranging from -2% to -11.8%² of GDP (2010 was exception as the country had a budget surplus of 0.5 percent of GDP). However, the government has not reduced capital spending of the central budget. The

budget spending on capital projects increased substantially in nominal terms during the last decade, from MNT 92.9 billion during 1990-2000 to MNT 4.1 trillion over 2001-2013 in order to develop infrastructure and domestic industries to promote economic diversification and sustained economic development. Between 2008 and 2013, the capital expenditure of the budget increased from 9.5% of GDP in 2008 to 14.1% of GDP in 2013 (Bank of Mongolia, Ministry of Finance, & Financial Regulatory Committee, 2014).

With a surge in mineral revenues, the budget was able to scale up its investment. However, the amount and extent of the public investment is still not sufficient to further expand the capacity of the economy, in particular the energy sector. Moreover, the budget has no capacity to provide long-term financing in near future due to the long lasting deficit and repayment of government bond payments expected to be paid from 2017.

One of the main government financing is bond financing. The government has issued bonds at both domestic and international capital markets. These bonds have had differing purposes and maturities. Key features of domestic government bonds are mostly with short term: T-bills with special purpose to fill budgetary shortfall maturing up to 52 week, whereas bonds financing government programs are with maturity up to 5 years. Bonds are mostly sold to the Bank of Mongolia and commercial banks. There is no secondary bond market yet which results in inactive bond market for most investors other than banks.

In 2012, the Parliament approved the Government bond issuance at the international financial markets and the Government raised USD 1.5 billion by issuing Chinggis Bond. Two types of Chinggis Bond were successfully sold: USD 500 million through a 5-year bond at coupon rate of 4.125, and USD 1 billion through a 10-year bond at the rate of 5.125. As the Government is entitled to repay principal and interest payments, the main concern of the government bond issuance is the effective management of bond money in promoting economic diversification to get higher returns and economic benefits rather than investing public social welfare programs.

One of the main institutions supporting major infrastructure projects is Development bank of Mongolia³ (DBM). Primary functions of the DBM are to cooperate with commercial banks in financing large industries, infrastructure projects through loan syndication, to assist in raising funds from international financial markets and to provide new financial services, such as guarantees to the private sector. The DBM decided to fund 138 projects with amount of 1.7 trillion MNT by utilizing its own sources and Chinggis Bond.

The main criticism levied to the DBM is that it has become the major financier of off-budget spending since 2012. Despite the large fiscal burden and likely macroeconomic impact of the off-budget spending, there are no official reports released on the disbursement of the Chinggis bond proceeds and operations of the DBM. This in turn raises questions on the transparency and efficiency of the off-budget projects and the DBM operations (World Bank, 2012).

Due to its relatively short history and high level of political influences, the DBM has not yet become fully functional in providing long-term financing and the efficiency of DBM operations is under the question. However, it has potentials to raise funds from international capital markets and provide guarantees and investment to the large infrastructure projects including renewable energy projects as there is high expectation of economic growth mainly generated from

mining development in the next twenty years and revenue portion of which will be allocated into the DBM and sovereign wealth funds⁴.

b. Private financing

➤ *Financial market*

The growing economy needs money which is mostly generated by the financial sectors comprised from monetary and capital markets. Although the capital market provides the majority of long-term financing for economic development in developed countries, this situation is different in Mongolia. The Mongolian capital market is underdeveloped and it does not play a leading role in long-term financing. Only less than 0.7 percent of all registered entities are publicly listed at the stock exchange and the corporate bond financing is almost absent. Therefore, the monetary market consisting of commercial banks performs the predominant role in the economy by disbursing necessary financing for businesses.

Table 2. Mongolian Financial System Structure

	2009			2010			2011			2012			2013			2014		
	No	Assets (bln MNT)	% of total asset	No	Assets (bln MNT)	% of total asset	No	Assets (bln MNT)	% of total asset	No	Assets (bln MNT)	% of total asset	No	Assets (bln MNT)	% of total asset	No	Assets (bln MNT)	% of total asset
Banks	15	4421,8	95,8	14	6245,6	95,9	14	9371,6	95,7	14	11992,2	95,9	13	20883,7	97,0	13	22562,6	96,6
NBFIs	455	195,5	4,2	430	265,6	4,1	472	416,1	4,3	452	507,8	4,1	502	648,5	3,0	557	783,1	3,4
Insurance companies	18	41,1	0,9	17	55,4	0,9	17	81,2	0,8	18	108,0	0,9	17	113,2	0,5	17	136,7	0,6
SCC	212	45	1,0	179	49	0,8	162	61,9	0,6	151	67,7	0,5	143	71,2	0,3	139	76,8	0,3
Finance companies	177	96,5	2,1	182	128,6	2,0	195	205,4	2,1	212	252,1	2,0	245	344,1	1,6	326	444	1,9
Securities companies	48	13	0,3	52	32,6	0,5	98	67,6	0,7	95	96,1	0,8	97	120	0,6	75	125,6	0,5
Total financial system	470	4617,3	100	444	6511,2	100	486	9787,7	100	466	12500	100,0	515	21532,2	100,0	570	23345,7	100,0

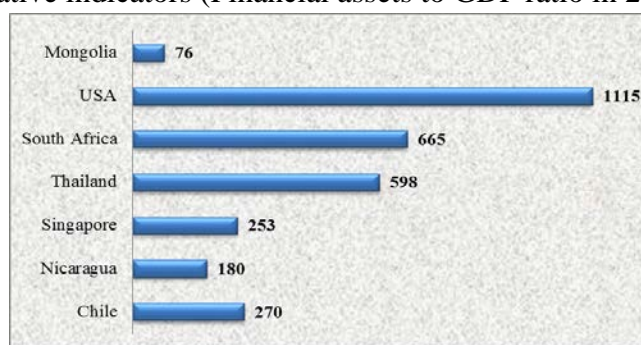
Source: BOM, MOF and Financial Regulatory Commission (2014) “Financial stability report”

The banking sector constantly holds about 96 percent of total financial market asset. Although numbers of non-banking financial companies are the highest, they possess only 1.9 percent of the total asset. Both insurance and brokerage companies account for less than 1.5 percent of the total asset with relatively stable numbers of organizations. Being the key player in the financial market, the banking sector needs to be examined in more detail.

➤ *Banking Sector*

The banking sector consists of 13 commercial banks, but with high concentration of three largest banks holding 70 percent of total banking assets. There are no subsidiaries or branches of foreign banks. Despite its 5.4 times increase in banks assets since 2008, the role of the Mongolian financial system, dominated by the banking sector, remains far below compared with other countries (Figure 5).

Figure 3. Comparative indicators (Financial assets to GDP ratio in 2009)



Source: IMF (2011) “Mongolia: Financial System Stability Assessment”

Being the major player of the financial market, the banking sector attracts special attention in both its deposits generated and loans provided into the economy. Total asset of the banking system grew from 54.8 percent of GDP in 2009 to 103 percent of GDP in 2014. Bank credit increased on average by 35 percent since 2008, although banks virtually stopped lending in 2009 due to the Lehman shock. Credit growth resumed in late 2009 as the economy rebounded strongly, and in 2011 credit grew substantially reaching 73.4 percent (y/y). Deposits have also grown rapidly after the crisis, by average of 33.4 percent annually during 2009-2014. Strong deposit growth has been supported by robust economic growth and capital inflows.

The growth of both deposits and credits slowed markedly in 2012. Tight monetary policy pursued by the BOM has contributed to this slowdown. By the end of 2012, there was moderate credit (24%) and deposit (21.6%) growths (Table 3). In 2014, the deposit growth reached to 14.2 percent – the lowest in last 6 years, whereas credit growth also lowered to 16 percent. Deposits, accounting for more than half of total liabilities and mostly matured less than one year, still remain as the main source of funding for most commercial banks.

Table 3. Banking Sector Development, 2008-2014 (in MNT bln)

	2008	2009	2010	2011	2012	2013	2014
GDP (current prices)	6130,3	6590,6	8414,5	13174	16688	19118	21844
Growth (%)	34,5	7,5	27,7	56,6	26,7	14,6	14%
Real GDP growth (%)		-1,3	6,4	17,5	12,3	11,6	7,8
Bank assets	3356,7	4089,9	5873,5	8652,7	11992,2	20883,7	22562,6
Growth (%)	17,4	21,8	43,6	47,3	38,6	74,1	8,0%
Bank assets/GDP (%)	54,8	62,1	69,8	65,7	71,9	109,2	103,3
Bank loans (gross)	2635,6	2655	3228,2	5597,7	6941,1	10715,6	12440,9
Growth (%)	28,2	0,7	21,6	73,4	24,0	54,4	16,1
Bank loans/GDP (%)	43,0	40,3	38,4	42,5	41,6	56,0	57,0
Bank deposits	1869,7	2521	4205,1	5738,9	6976,5	8840,4	10091,7
Growth (%)	3,3	34,8	66,8	36,5	21,6	26,7	14,2
Bank deposits/GDP (%)	30,5	38,3	50,0	43,6	41,8	46,2	46,2

Source: Bank of Mongolia

With the banking sector domination in the financial sector, loans provided by 13 banks are the most important source of business financing. Although the share of loans to the private sector have decreased by 5 percent in total loan, these loans has increased by 3.5 times (or 251 percent) in their amount since 2008.

Table 4. Statistics of outstanding loan to the private sector

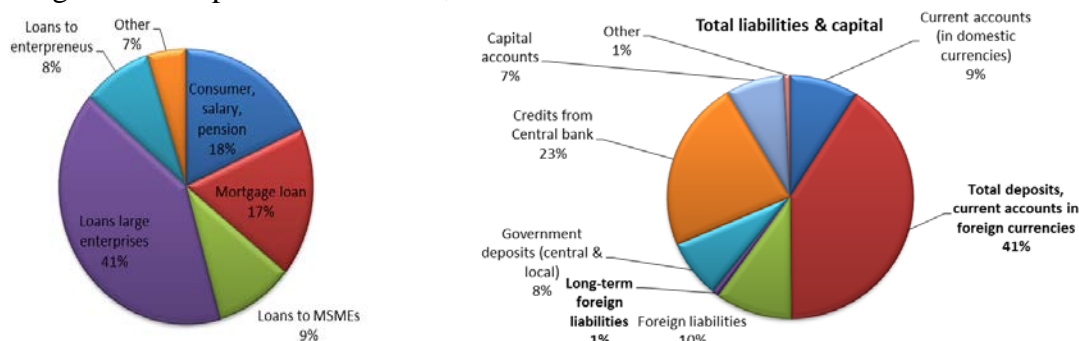
	2008		2009		2010		2011		2012		2013		2014	
	Amount in	(%)	Amount in	(%)	Amount in	(%)	Amount in	(%)	Amount in	(%)	Amount in	(%)	Amount in	(%)
Loan outstanding to private sector	1556	59	1699.1	64	1854,6	57,5	3072,4	54,9	3819,2	55,0	5968,1	55,7	6618,8	53,2
Normal	1336,1	50,7	1225,6	46,2	1472,6	45,6	2752,8	49,2	3494,8	50,3	5388,8	50,3	5867,9	47,2
up to 1 year	584,6	22,2	439,8	16,6	414,2	12,8	604,5	10,8	965,4	13,9	1362,8	12,7	977,5	7,9
1-5 years	703,7	26,7	662,4	24,9	975,3	30,2	1967,9	35,2	2259,9	32,6	3643,3	34,0	4410,4	35,5
5 years and more	47,9	1,8	123,4	4,6	83,1	2,6	180,5	3,2	269,5	3,9	382,6	3,6	480	3,9
Total loan outstanding	2635,1	100,0	2655,0	100,0	3228,2	100,0	5597,7	100,0	6941,1	100,0	10715,6	100,0	12440,9	100,0

Source: BOM (2014a) Loans outstanding reports 2008-2014

The table above shows that loans to the private sector declined to 53 percent in 2014 compared to 64 percent of 2009. Less than half of outstanding loan is classified as normal which indicates there is danger of high non-performing loans. In terms of maturity, there are slightly reducing trends in all terms. The mid-term loans account for one third of normal loans. Longer term loans to private sector still remains very low at the level of 4 percent. However, these loans are often with short-terms and high interest rates as a result of various factors, such as maturity mismatch of deposits and loans, regulatory barriers of the banking sector and a lack of long-term financing sources for banks.

In terms of financing sources, banks are allowed to take deposits, borrow term loans from other financial institutions and issue stocks and bonds on capital market. However, the statistics of the BOM shows that commercial banks mostly rely on deposits as a key source of funding (Figure 6).

Figure 4. Composition of banking sector total assets and liabilities



Source: Bank of Mongolia (2014b) “Statistical Bulletin of Bank of Mongolia: December 2014”

Currently, the composition of banking sector liabilities is mainly generated from deposits (41%), credits from the BOM (23%), mid- & short-term foreign liabilities (10%), current accounts in MNT (9%), government deposits (8%), ownership capital (7%), and only 1% of total liabilities are constituted from long-term foreign liabilities. Most liabilities (54.5%), including current accounts, demand deposits, credit from the BOM, are short-term liabilities up to 1 year. Mid-term liabilities (18%) consist of government deposits and foreign liabilities with 1-3 years maturity. However, the share of long-term liabilities, which are the main source for long-term loans, constitutes only 1% of total liabilities and capital.

Basically, there are four types of deposits: corporate deposits, individual deposits, state funds and others. Individual deposits constituted 54 percent of total deposits, while corporate

deposits composed 25 percent. These two deposits generated 80 percent (MNT 5,400 billion) of total deposits. From the structure of deposits, 76 percent of total corporate deposits and 43 percent of total individual deposits are not able to be used for longer-term lending as they are demand deposits and current accounts. Thus, 57 percent of individual deposits and 67 percent of other deposits are eligible funds for longer-term lending. But, shares of these sources account for 40 percent. In sum, 47 percent of total deposits can be a source for longer-term lending depending on their maturities. However, most banks have time deposits with maturity up to 18 months.

In terms of interest rates, the Mongolian banking sector rates are relatively high. By the end of 2014, the average time deposit rate was 12.5 percent. This leads to high loan rates averaging 15.4-19.5 percent (Bank of Mongolia, 2014b). In order to match with funding sources, banks are only able to provide short-term loan with high interest rates because of their deposits with high interest rates and short-term maturity. Therefore, using short-term deposits with high interest rates, banks are incapable of providing long-term loans to businesses to grow.

Despite its domination in the financial sector and high growth in bank assets, loans provided by banks cannot fully satisfy the growing needs of the economy, in particular private sector expansion. Growth of loans is not able to satisfy businesses to grow and develop renewable energy projects as loans have high interest rates with short maturity. Therefore, main constraints of the banking sector relate to its maturity mismatch between deposits and loans; a lack of large long-term financing sources with low interest rate that would meet businesses' needs for low interest rate long-term financing; un-lowered banking sector risks due to high inflation; and poor credit guarantee and collateral registry systems.

➤ *Capital market*

Equity and bond markets are parts of the capital market where companies and governments raise long-term financing. These markets, or simply the capital market, comprise about 28 percent of total domestic long-term financing in developed and developing countries (Group of Thirty, 2013). Unfortunately, the share of the Mongolian capital market constitutes only 3 percent of domestic financial markets and the bond market is dominated by government bonds. There are no high-yield bonds in Mongolia yet.

With the rapid economic growth in the last few years, the capital market capitalization has dramatically increased from 1.8 percent of GDP in 2005 to 6.6 percent of GDP in 2014 (the highest percentage was 16.5 percent in 2011). The trading value also soared from MNT 2.5 billion in 2005 to MNT 144.7 billion in 2012, but reduced to MNT 12.9 billion (Bank of Mongolia, et al., 2014). This 58 times increase in trading value indicates that there are growing interests of domestic companies to raise capital, in particularly common stocks from the domestic market in order to meet their growing investment needs for business expansion. However, increases in market capitalization and trading value are volatile and still remain minimal compared to the banking sector growth and growing business demands for capital investment.

Equity investment is not a common long-term financial instrument given declining number of listed companies at the MSE. At the beginning of the MSE in 1990s, there were 475 listed companies which have been reduced to 313 listed companies in 2014. These listed companies account for only 0.5 percent of 70,000 total registered business entities. Among them, 23

companies were state-owned listed companies accounting for 65.6 percent of total stocks outstanding. Many listed companies are not traded, or traded only sporadically. Of the companies that are actively traded, 80 percent of the shares are held by a small number of shareholders⁵.

Total trade value of bonds in 2011 amounted to MNT 241.1 billion, of which government bonds accounted for 98 percent. Corporate bond⁶ has not been used as a financing instrument for most corporations. Until now, there are only 5 companies issued their bonds accounting for only 3 percent or MNT 17 billion to finance their major projects.

The Mongolian capital market is still underdeveloped in terms of its role in the financial market and a number of listed companies. The main reasons are liquidity of equity at the stock exchange is weak; stock concentration of listed companies is high; there is no institutional investors, such as mutual funds, insurance companies and pension funds; the capital market has a lack of high-skilled specialists; and there is a lack of financial knowledge of the public and companies regarding benefits of the capital market and opportunities to raise capital from the stock exchange.

Concluding remarks

Being a way of sustainable development in the energy sector, renewable energy is advocated by numerous multilateral development organizations, international initiatives and governments around the world. Investment in this sector has increased rapidly, particularly in developing countries. The Mongolian government has also initiated National Green Development Policy and others declaring to transit from “brown” to “green” economy which includes an objective to increase the share of renewables up to 30% by 2030. In order to implement this objective and meet the growing energy demands in Mongolia, the capacity of renewables needs to be increased by 11.3 times higher than the existing capacity. This means that there are huge financing demands to accelerate the renewable energy development. Then, the question will be whether the current financial sector and public finance has potentials to finance renewables which requires long-term financing with low interest rates.

In general, the Mongolian economy is lacking with long-term financing due to lack of sustainable and well managed foreign funding, deposit and loan mismatch of commercial banks, availability of funding resources for banks and non-banking financial institutions, underdevelopment of equity and bond markets and the absence of adequate financial instruments.

Echoing the green development, the Mongolian Banking Association took an initiative in developing “Green financing”. In February 2015, the association prepared a guideline of sustainable financing principles and recommendations on implementation of the guideline particularly for 4 sectors: mining, agriculture, construction and manufacturing sector. Adoption of the green financing principles will enable banks to evaluate loan applications not only from financial and economic aspects, but also to consider environmental soundness and social benefits of the proposed projects. In this respect, renewable energy projects will have competitive advantages compared to coal power plants.

However, banks alone are not able to provide long-term financing for renewable projects given their short-term matured deposits with high interest rates as the main financing source. Therefore, there is a need for more innovative and tailored financial instruments that combine foreign and domestic; public and private financing. In this respect, renewable energy project financing and co-financing will be the most suitable and easiest financial ways that can be used within the existing financial capacity and institutional arrangements.

Project finance is a widely used way to implement priority projects in countries. As the future cash inflows of the project are considered as collateral, it is much more flexible than traditional bank loans. Foreign financial institutions and companies together with Mongolian partners can engage in this process by utilizing another financial mechanism called co-financing. This mechanism works with syndication of financial institutions to share risks and responsibilities as this kind of loan is often non-recourse with low interest rate and long-term maturity. The DBM is a suitable candidate for this process as its functions are to provide risk sharing mechanisms and to support co-financing and syndicated loans focused on development projects and programs for renewable energy production and engineering facilities.

For small and medium energy projects, the Credit Guarantee Fund can provide guarantees for a bank and thus the project implementing company does not need to have large collateral in first place. The DBM may facilitate financing of medium and big renewable energy projects either by financing the projects by itself with issuance of debt instruments at domestic and international financial markets or organize co-financing with international financial organizations. Additionally, the proposed sovereign wealth fund can be another potential source of financing the renewable energy projects by offering long-term loans with competitive interest rates.

Notes

¹ Salkhit wind farm, about 70 km away from Ulaanbaatar, is made up of 31 wind turbines, which together create a total generation capacity of 50MW, about five percent of Mongolia's total electricity demand, enough to power roughly 100,000 homes. This project is achieving wind capacity rates several percentage points higher than average farms around the world.

² including financing of the Development Bank of Mongolia

³ Based on the *Law on the Development Bank* (2011), the DBM was established to finance large scale priority projects to accelerate economic growth.

⁴ The Parliament is planning to establish sovereign wealth funds (SWFs) to effectively utilize mining generated excess revenue into economic diversification and saving for future. Currently, public discussions and proposals on potential types of SWFs are in the progress.

⁵ According to the Financial Stability Report (2014), only 30 companies hold 85.9 percent of total market capitalization.

⁶ Theoretically, corporate bonds are similar to bank loans as they have low cost of capital compared with issuing equity, and have longer-term maturity than bank loans.

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