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Harmonising International Development Efforts with Resource Diplomacy: Potential for the strategic use of ODA to Secure Lithium in South America

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Abstract

Korea's current Green Growth strategy seeks to lessen the country's dependence on fossil fuel resources and promote significant investment into the development of alternative, environmentally-friendly energy sources. As part of this strategy Korea has been investing heavily in the development of various green energy industries in particular it has become one of the world's largest manufacturers of lithium based rechargeable-ion batteries to power electric or hybrid motor vehicles. The continued growth of this industry requires a secure and stable supply of lithium and to this end the Korean government has developed its so-called "resource diplomacy" strategy which is designed promote relations with countries with significant lithium deposits such as Chile, Argentina and Bolivia. However, to date, resource diplomacy has been somewhat narrowly targeted at domestic policies that support Korean firms to invest directly in acquiring and developing lithium mines or to increasing the number of embassies in these countries. More recently the Korean government is considering broader diplomatic measures. The paper argues that resource diplomacy has the potential to be an effective means of achieving Korea's green growth objectives but that the success of this strategy must go beyond facilitating Korean direct foreign investment to become a more fully fledged cultural and foreign aid and development diplomacy strategy that promotes longer term, broader and deeper levels of engagement. This 'soft-power' approach is more likely to serve as an effective but subtle means to exert influence not only to promote specific Korean interests but to achieve longer term, mutually beneficial outcomes for both Korea and these South American nations.

Introduction

China's move to block exports of rare earth metals to Japan following a territorial argument over the Senkaku Islands in September 2010 sent shockwaves throughout the region and, in particular, its resource poor neighbour South Korea (hereafter referred to as Korea). Committed to the so-called "Green Growth Strategy" that seeks to develop a range of greener industries, the precariousness of the supply of key inputs into these industries such as rare earths metals has the potential to derail some of the Green Growth Strategy's ambitious targets. More generally it underscored how disruptions in supply of a range of metals can threaten the viability of Korea's emerging industries for example how disruption in the supply of lithium could affect the development of Korea's growing lithium-based rechargeable battery industry. In this context, Korea has made the diversification of resources supply a priority. To this end the Korean government has developed its so-called "resource diplomacy" strategy which is designed promote relations with countries with significant lithium deposits in particular Chile, Argentina and Bolivia.

This paper analyses why the sales of eco-friendly vehicles and lithium-ion rechargeable batteries are significant for the realisation of Korea's low carbon and green growth targets. Secondly, it examines the state of development of lithium-ion rechargeable battery technologies and the implications for the Korean battery industry. Finally, it examines how the Korea's resource diplomacy has been applied to securing lithium in South America's "Lithium Triangle" that falls within the borders of Chile, Argentina and Bolivia. The paper finds that, to date, resource diplomacy has been somewhat narrowly targeted at domestic policies that provide Korean firms with funds and special loans to support their acquisition and development of South American lithium mines. The other most significant initiative is the increase in the number of Korean embassies in these countries. The paper argues that securing a stable supply of key mineral inputs such as lithium will require more than facilitating Direct Foreign Investment and must expand Korean investment in areas such as the arts, education but in particular targeting Korea's official development assistance (ODA) to investment in economic reconstruction and development projects such as those that develop local infrastructure and communications. The paper argues that while coordinating resource diplomacy with international development efforts is an approach adopted by others countries competing for resources, in particular Japan and China, given its history, Korea is well placed to share its experience and expertise with developing countries and has greater

capacity to being perceived as a "benign middle power" by recipient countries holding relevant mineral resources, and can further leverage that position to avoid accusations of neo-colonialism. This approach has the potential to be successful and valuable with regard to relations with Bolivia. Like Korea Bolivia has a troubled colonial past. It is also South America's poorest country and thus requires greatest international development assistance. Bolivia also possesses the world's largest untapped lithium reserves.

Korea's Green Growth Strategy

Korea is heavily dependent on imported fuel to meet its energy needs in particular relying on imported fossil-fuel based energy resources. In 2007 Korea was the 10th largest energy consuming country in the world (EIA, 2007; Lee et al., 2008: 284) with 97 percent of its total energy consumption being sourced from overseas (EIA, 2007; Lee et al., 2008: 284). It is estimated that 84 percent of this energy supply is in the form of fossil-based energy resources (Presidential Commission on Green Growth, ROK, 2010: 13). In 2009, the country was the fifth largest importer of crude oil and the second largest importer of both coal and liquefied natural gas (LNG) in the world (EIA, 2010).

Fossil fuel dependence has increased Green House Gas (GHG) emissions at a constant rate with Korea far above the world average in both absolute GHG emissions and emissions per capita. From 1990 to 2009, Korea's GHG emissions rose 118 percent and in 2009 the country was ranked 8th in the world in terms of GHG emissions (Kang, 2011: 120-21). The world average emission per capita in 2009 was 4.5 tons, while in Korea the amount was 2.5 times that at 10.9 tons.

To maintain sustainable economic growth while mitigating GHG emissions, on 15 August 2008, at a national address on the 60th anniversary of the Republic, President Lee Myung-Bak, announced a new national policy called the "low carbon and green growth strategy". Six months later, in January 2009, the government responded to the Global Financial Crisis induced recession in Korea with an economic stimulus package equivalent to US$38.1 billion 80 percent of which was allocated to the development of more efficient usage of resources such as freshwater, waste, energy-efficient buildings, renewable energies, low-carbon vehicles, and the development of an energy efficient high speed rail network (United Nations

Environment Programme, 2010).[1] This investment in green growth was the highest ratio among comparable stimulus packages from other G20 governments.

Part of the Green Growth strategy is to implement measures that have the potential to lessen the country's dependence on fossil fuel resources and thereby reduce current emission levels. Korea ratified the Kyoto Protocol of the United Nations Framework Convention on Climate Change in 2002 as a non-Annex I country, meaning that it had no obligation to set a specific GHG emission reduction targets during the period 2008 to 2012 (Jones and Yoo, 2010: 9). Nevertheless, in 2009, the Korean government announced a mid-term mitigation target for GHG emission reduction of 30 percent (Woo, 2010: 19). The Korean government also announced that it aims to increase the portion of domestic renewable energy consumption to 5 percent by 2011 and 9 percent by 2030. This target is ambitious given that in 2006, Korea's renewable energy accounted for only 2.26 percent of primary energy consumption (Kang, 2008: 7).

World Lithium-ion Battery and Vehicle Markets and Korea's Green Growth Strategy

Another key aspect of the Green Growth Strategy is to mitigate emissions through the development of alternative energy sources. In this context, the development of the battery industry to power more environmentally friendly vehicles is seen as particularly important. Widespread uptake of electric or hybrid vehicle technology is seen not only as a means of lowing carbon emissions domestically but, through export and significant uptake in overseas markets, reducing emissions globally. The development of this export industry is also seen as a means of driving future domestic economic growth.

Currently nickel metal hydride batteries power most hybrid electric vehicles (HEVs). The main limitations of currently nickel metal hydride batteries are high cost (about the same as a small car in 2009) and the relatively short driving distance achievable on a single charge

[1] It should be noted that the genuine "greenness" of some of these initiatives has been questioned. For example environmental groups have criticised the government spending of USD20 billion on a plan to develop Korea's four major river systems — the Han, Nakdong, Geum, and Youngsan — with the stated goals of preventing water shortages, improving water quality, bolstering flood control, and creating "eco-friendly culture spaces" for tourism. However, these groups argue that the project is not a genuine green initiative but a rebranding of an earlier Lee Myung-bak Pan Korean Waterway policy which sought to stimulate the local construction industry as it involves extensive dredging of waterways and the building of up to 16 new dams. Critics claim that this will further erode dwindling habitat and put added stress on the country's remaining wildlife (O'Donnell, 2010: 3; Card 2009).

(Lim, 2009: 2). The development of the electric vehicle industry thus requires new generations of electric vehicles (EVs) and HEVs with smaller and lighter weight batteries that can store more energy (Bruce, 2008: 752). The continued development of rechargeable technologies will however increasingly rely on the supply of various metals including lithium, chrome, manganese, molybdenum, cobalt, tungsten, indium, rare-earth elements, magnesium and titanium (Kim, H., 2010: 13). However lithium, the lightest metal with half the density of water, is the core raw material required for the production of latest generation of rechargeable batteries. Compared to nickel metal hydride batteries, lithium-ion batteries are lighter, 20 percent smaller and much more energy efficient (Gruber and Medina, 2010: 1). As a result, the market for lithium-ion batteries has increased dramatically driven by continuing improvement in electric-car and battery storage technologies as well as a drop in the price of these batteries and the vehicles in recent years (Kim, Y., 11/11/2010; Bok, 2011).

Demand for lithium has only increased significantly in recent years. The consumption of lithium in the world increased less than 100 tons per annum in the early 1990s to just over 70,000 tons per annum in 2000 (Ebensperger et al., 2005: 218). At this time the main uses for lithium were – batteries: 25 percent; ceramic and glass: 18 percent; lubricating greases: 12 percent; pharmaceuticals and polymers: 7 percent; air conditioning: 6 percent; primary aluminium production: 4 percent; continuous casting: 3 percent: chemical processing, 3 percent and others: 22 percent (Jaskula, 2008: 44.2). However in 2007, batteries became the leading end use for lithium for the first time and by 2011 lithium-ion batteries accounted for 76 percent of the global rechargeable batteries market, which was worth an estimated USD18.3 billion (Jaskula, 2008: 44.2). By 2020 this market is expected to increase to USD95.4 billion. The growth the industry has driven increased prices and with the price of lithium carbonate rising from USD1.49 per kg in 2001 to USD6.00 per kg in 2009 (Shultz, 2010: 14). Demand is being driven by the significant increase in the quantities of lithium required for rechargeable ion batteries to power EVs and HEVs. Unlike lithium batteries used in mobile information technology (IT) devices, EVs and HEVs batteries require much larger storage capacity and one EVs or HEV battery is equivalent in size to approximately 4,000 to 5,000 mobile phone batteries (Lim, 2009: 1).

With the continued tightening of environmental regulations, the green car market is expected to grow rapidly (Lim 2009: 1). Sales of lithium batteries for HEVs and EVs only began in

2009 and current demand for HEVs and EVs batteries remains relatively weak (Lowe et al., 2010: 21). However, this is likely to change and some analysts estimate that the share of HEVs and EVs in the global auto market will grow to between 18-50 percent of total sales by 2020 (Bok 2011:6). The Boston Consulting Group (2010: 7) forecasts that 26 percent of the new cars sold in the world market in 2020 – or approximately 14 million cars – will have electric or hybrid power engines and that the global market for lithium-ion rechargeable batteries that power them is expected to reach USD60 billion (Boston Consulting Group, 2010: 8). A summary of some of the predictions for the "green cars" market is shown in Table 1.

Table 1: Outlook on Sales of Eco-Friendly Vehicles in 2020

Forecasters (year)	**Sales of Eco-Friendly Vehicles**	**Note**
Deutsche Bank (2009)	19.6%	US: 23%, EU: 37%, Japan: 34%, China 20%, Others: 5.2%
Ministry of Economy, Trade and Industry of Japan (2010)	20~50%	50~70% in 2030
Huji Economic Research Institute (2010)	18%	EVs: 9.4%, plug-in hybrids : 11.5%
Federation of Korean Industries (2009)	50%	

Source: Bok (2011: 7)

The Development of Lithium Rechargeable Battery Technologies and the EV and HEV Industry in Korea

Japanese manufacturers have had a solid lead in the global lithium battery market for the last 20 years. The first lithium battery was produced in Japan in 1973 (Ogawa, 1985). In 1991 the Japanese company Sony further developed lithium-ion rechargeable battery technology and introduced the first batteries to the world market (Nishi, 2001; Bruce, 2008). As a pioneer of this technology Japan became the world leader in the development of four key lithium cell materials: anodes, cathodes, electrolytes and separators and dominated the lithium-ion battery world market (Takehara and Kanamura, 1993; Tanaka et al., 2001; Lowe et al., 2010). However in the last decade many other countries have entered the battery manufacturing markets and currently the market share for the batteries industry is as follows: Japan, 56 percent, Korea, 23.9 percent, China, 12.3 percent and others, 7.7 percent (Lowe et al., 2010: 19).

Of these countries Korea has made the most significant advances in lithium-ion rechargeable battery manufacturing technology and replaced Japan as the world leader in the production of mid to small sized lithium-ion batteries. In 2010, 11 years since Korea began making the batteries, Samsung SDI overtook Panasonic's subsidiary Sanyo Electric, to become the world's top manufacturer with LG Chem climbing to the third place. This market trend is expected to continue with Korean companies estimated to account for 38.5 percent of the global markets compared to 38.4 percent for Japan by the end of 2011 (Brown, 06/04/2011).

Korea's largest chemical company, LG Chem, has been a particularly aggressive investor in the battery industry and announced that it plans to be the world's number one vehicle battery maker by 2015 (Kim, Y., 06/04/2011). In 2011 it officially opened the world's largest electric vehicle battery plant in the Korean city of Ochang, the first of three plants LG Chem plans to build over the next few years. The company predicts that the Ochang plant will have sufficient production capacity to supply batteries to 100,000 electric vehicles per annum. One of LG Chem main competitors, Samsung SDI, has also decided to establish production facilities which it predicts will be able to produce 33.6 million units of batteries for electric vehicles by 2015 (Hwang, et al., 11/04/2011). However, despite their status in the world lithium-ion battery market as number one and three, LG Chem and Samsung SDI continue to rely on importing a significant portion of inputs from Japan which accounts for nearly 80 percent of their manufacturing costs. There are several steps involved in manufacture of lithium batteries. The first step is to procure lithium and to refine it into a white powder called "lithium carbonate" a process that generally occurs at the mine site. The lithium carbonate is then sent to Tier 2 or 3 manufacturers, which convert lithium carbonate into lithium metal which can then be used in battery cells and to make other components for lithium batteries. Finally, Tier 1 manufacturers assemble the individual cells and components from Tier 2 and Tier 3 suppliers into battery packs ready for placement in motor vehicles (Canis, 2011: 14). To date Korean participation in the battery market has been generally limited to that of Tier 3. To increase Korea's net profits in the world lithium-ion battery market, Korea's manufacturers of cell materials are gearing up their efforts to overtake Japanese rivals by focussing their efforts on narrowing the technological gap with Japanese manufacturers by developing their capacity to produce three of the four key materials: cathodes, separators and electrolytes (Kang et al., 17/05/2011).

Korea's capacity to manufacture EVs and HEVs also continues to grow significantly. The Korean government estimates that within two years Korea will produce 1.4 million electric vehicles per annum of which 1 million will be made for export (Ministry of Knowledge Economy, 2010; Yi, 19/01/2010). As shown in Table 2, LG Chem has already secured 10 carmakers as battery clients including General Motors (GM), Ford Motor, Renault, Hyundai Motors and Kia Motors. Also the company has signed a memorandum of understanding (MOU) with Changan New Energy Automobile Co., a subsidiary of the major Chinese automaker Changan Automotive Group, to cooperate in the development of the electric vehicle battery sector (Moon and Kim, 05/02/2010). Samsung aims to be the main car battery supplier to 15 to 20 global car companies by 2015 and BMW, Chrysler, Delphi and S&T Motors are on Samsung's current client list as shown in Table 2 (Hwang, et al., 11/04/2011).

Table 2: Major Battery Clients of LG Chem and Samsung in April, 2011

Battery Maker	LG Chem	Samsung
Clients (Car Makers)	Ford Motor Renault GM Hyundai Motor Kia Motors	BMW Chrysler Delphi S&T Motors

Source: News Reports

Korean companies and the resources race

South Korea is engaged in a sustained drive to buy up foreign natural resources, ranging from rare earths to oil fields, to supplement its meagre domestic fuel reserves, secure supplies of key input for industry and lessen exposure to the shocks of price volatility common in commodities cycle. To do this South Korean companies have found themselves in a competitive race against its neighbours to secure these natural resources in particular vis-a-vis China as Chinese interests have dramatically increased their investment in overseas energy acquisitions. In recent years Korean companies have been scouring the world to secure energy assets and according to Bloomberg, in 2009 South Korean companies made 30 bids for foreign natural resources assets (Kang 2010). According to the *Australian Financial Review*'s Deallogic database in 2010, Korean companies have announced a record $7.6 billion worth of mergers and acquisitions involving natural resources targets, two-thirds of which have been cross-border deals (AFR, 2010). Some analysts argue that this aggressive

Korean investment in energy sources has driven up the price of these assets as Korean players have overpaid for big overseas acquisitions in their rush to clinch the deals amid heated competition with richer neighbours. Some of the recent major deals include SK Networks purchase of a stake of between 11 per cent and 14 per cent of the Brazilian mining company MMX for about USD700 million. POSCO and Korea National Oil Corp have also beefed up their efforts to secure a stable supply of raw materials and both plan to nearly double their spending on overseas energy projects and acquisitions to USD12 billion in 2011 (Song 2010). It should be noted that this was small in comparison to China as it is estimated that in 2010 China's oil and gas acquisitions alone totalled USD24.3 billion in deals, up from USD17.1 billion in 2009 (Dealogic AFR 2011).

Securing lithium through resources diplomacy

Chile, Australia, China and Argentina account for more than 95 percent of current global lithium output. Chile has been the world's number one producer of lithium carbonate since 1997 (Jaskula, 2008; 2010; 2011). In 2009, the country contributes to 89 percent and 80 percent of total lithium imports to Korea and Japan respectively. However, a significant amount of the world's lithium deposits are found in Bolivia, Argentina, Brazil, and Australia (Jaskula, 2011). Indeed more than 50 percent of the world's accessible lithium or 19 million tons of lithium is buried in an area known as "the Lithium Triangle", bordered by three South American salt flats, Salar de Atacama in Chile, Salar del Hombre Muerto in Argentina and Salar de Uyuni in Bolivia (Gruber and Medina, 2010: 12; Jaskula, 2010; 2011). In 2008, this Triangle produced 55 percent of global production, even though Bolivia has yet to become a producer. Nevertheless with its significant deposits, Bolivia has potential to produce a massive amount of lithium carbonate in the future (Shultz, 2010: 16).

In order to diversify supply and reduce vulnerability to resource price fluctuations the world's major lithium importers including Korea, China and Japan have been exploring ways to develop and exploit the Lithium Triangle's production capacity. In the case of Korea, since the beginning of his presidency in 2007 President Lee Myun Bak, a former CEO of a major resource importer, Hyundai Engineering and Construction, has emphasized the importance of natural resources and vigorously pursued a strategy known as "resource diplomacy". Part of this approach has involved senior officials touring resource-rich countries to strengthen ties and facilitate bilateral cooperation for the natural resource industry. Many senior politicians and government officials have been vocal in their support of the policy. President Lee's older

brother of Lee Sang-deuk, a Grand National Party lawmaker and Park Geun-hye, the former leader of the Grand National Party, have voiced their support of the policy, and former Prime Minister Han Seung-soo has even dubbed the "resource minister" by the Korean Press (Koo and Shin 2009). Park Young-jun, the deputy head of state affairs, has also been a strong supporter of the president's initiatives, and several South Korean diplomats have been involved in the effort. In May 2008 21 South Korean diplomats were reassigned posts moving from embassies in Western countries, including France and Germany, to energy-rich countries in Africa, the Middle East and South America in order to establish permanent bases from which they could strengthen existing diplomatic missions. "Diplomats in those areas are now able to provide prompt updates on the current status of natural resources development in those countries," said diplomat Cho Hyun (Koo and Shin 2009). In another effort to bolster cooperation with Latin America in renewable energy, agricultural development and infrastructure, in September 2010, the Foreign Ministry dispatched the so-called "Latin America Economic Cooperation Caravan" to Argentina, Brazil and Paraguay on to discuss ways to "lay the foundation for Korean firms' entry into their markets and to work more closely together" (Korean Ministry of Foreign Affairs and Trade, 2010). The Caravan delegation comprised 35 foreign ministry officials, businessmen and traditional Korean music performers and visited cities and/or provinces in each of the countries and met with high-ranking officials. The delegation also held a conference on agricultural expertise with agriculture experts and gathered information on the host countries' agriculture and renewable energy sectors to look into the possibility of Korean firms' entry into the markets of the countries (Korean Ministry of Foreign Affairs and Trade, 2010).

Domestically a key approach in this strategy is through promotion of Korean Direct Foreign Investment in resource rich areas, a strategy outlined in the Ministry of Knowledge Economy's (MKE) 4th Overseas Resource Development Plan (2010-2019). This Plan set a target that by 2019 Korea will achieve to secure the 26 percent of lithium consumption through the Korean companies' owned overseas lithium mines. To this end the MKE has allocated funding to Korean companies to purchase and develop mines and in 2010 assisted with an overall investment of USD12 billion in overseas resource development projects around world (Ministry of Knowledge Economy, 2010; Yi, 19/01/2010).

Korea' Resources Diplomacy and Chile's Lithium Market

Chile has large deposits of lithium and highly developed mining and transport infrastructure and supplies more than 40 percent of lithium in the world market (Valda, 8/03/2011). Korea is particularly dependent on Chilean supply and imported 89 percent of total lithium from Chile in 2009 (Park et al., 16/08/2010). Japan has also imported more than 80 percent of its lithium imports from Chile (Kogure and Kamiya, 10/12/2010).

Diplomatic relations between Korea and Chile were established in 1962 and for many years focused primarily on political issues such as the promotion of democratic values in the world. A significant milestone in the relations between the two countries was the finalisation of a free trade agreement (FTA), which became operative on April 1, 2004. Korea has since utilised this agreement to secure energy resources including lithium (Chacon, 2008: 11). The FTA has also facilitated Korean firm involvement in exploration and development of lithium deposits in Chile.

Until recently Korean firms had only won the rights to explore certain sites. To increase Korea' reliability of supply of lithium, in 2010 a consortium led by the state-run resource company, Korea Resources Corporation (KORES) acquired a 30 percent stake in Chile's Atacama lithium project which is currently the largest lithium mine in the world (Park and Song, 15/11/2010). The Korean group's paid USD190 million for its stake with the state-run company owning 12 percent and Samsung 18 percent, respectively. The deal marks the first time that Korean companies have secured a share of an actual productive lithium mine. Under the plan the Korean companies plan to establish a purification facility in the western part of the salt lake and a lithium-manufacturing plant near the city of Antofagasta by 2014 (Cho, 16/11/2010). Also, POSCO, the world's third-biggest Korean steel producer, has focused on developing technology for extracting lithium and securing lithium reserves. It aims to become a comprehensive resource company, signing a MOU with Li3, a Peruvian firm owning a lithium-rich salt lake in Chile. The agreement allows POSCO's Research Institute of Industrial Science and Technology (RIIST) to build a plant for lithium extraction and for POSCO to acquire a share of Li3 Energy, the Peruvian partner (Kim, D., 08/05/2011).

The Korean companies are also seeking to secure lithium from Argentina and Bolivia by extending economic cooperation and sharing advanced technologies with these countries. LG

International Corp, Samsung C&T Corp and Daewoo International Corp have extended their efforts to operate in the two lithium rich countries of Argentina and Bolivia (Moon, et al., 27/08/2010).

Korea's resource diplomacy and Argentina

Although Korea established formal diplomatic relations with Argentina in 1962, a focus on resource diplomatic relations did not occur until the President Kim Young Sam's visit to Argentina in 1996. His visit resulted in various agreements between Korea and Argentina such as protection of investments. The idea of promoting the expansion of exchanges and cooperation between Korea and South America were developed. Consequently, the Korean-South American Cooperation Centre in Energy and natural resources was created, with its offices in Buenos Aires in Argentina. In 2004, President Roh Moo-hyun visited Argentina to support to create a MOU between the Import and Export Korea Bank and Babco de la Nacion Argentina. The Bank announced a Korean loan of USD30 million to Argentinean companies that wished to import Korea products (Chacon, 2008: 8).

Most recently, as part of Korea's 2010 Latin America Economic Cooperation Caravan's visit to Argentina, the delegation met with the Deputy Secretary of Agriculture, Livestock and Fisheries and the Governor of Santa Fe, and held a conference on agricultural expertise to confirm the possibility of putting to work the country's rich agricultural resources and Korea's technology and capital in a mutually complementary manner. Diplomatic missions have on the whole however concentrated on enhancing Korean companies' capacity to import natural resources from Argentina including lithium. In September in 2010, the government owned KORES and private companies, GS Caltex and LG international have made final agreements regarding a joint project on lithium development at the salt lake of Muerto in Argentina. This 338 square km mine is still in the initial stages of exploration; however its lithium reserve is estimated at 425,000 tons – which enable annual production of 12,000 tons. The three Korean companies own 30 percent stakes in the mine, USD15 million worth and exploration is underway (Chung, 06/09/2010).

Korea' Resource Diplomacy and Bolivia

Korea and Bolivia established diplomatic relations in 1965, however Korea did not show significant interest in Bolivia and in 1997 closed it embassy as a cost cutting measure during

the Asian financial crisis. As part of the Lee Myun Bak government efforts to increase the number of embassies to various resource-rich countries the Korean embassy in Bolivia was reopened in 2008, one of five embassies reopened in 2008. After reopening the embassy, the Korean ambassador in Bolivia has developed close ties with the Bolivian president, Evo Morales (Yum, 05/03/2011). The Bolivian president's visit to Korea in August 2010 further solidified the relationship between in the two countries (JoongAng Daily, 27/08/2010).

The Korean government has utilised various diplomatic initiatives with a view of securing lithium in Bolivia. Korean business negotiators have made several visits as well as held open briefings and discussion sessions in an attempt to showcase Korea's specialised technology that can be used to extract and process lithium. These briefings emphasised how the combination of the Korea' specialised technology and investment, and Bolivia's lithium can provide mutual benefits for the two countries based on developing partnership (Kang, H., 17/08/2010). The Korean government dispatched a president's special envoy, President Lee Myung-bak's elder brother, Lee Sang-deuk, a member of the National Assembly, to Bolivia three times to negotiate for Korean companies' right to develop the country's lithium mines, visits that received plenty of media attention in Korea (Lee, T., 20/08/2010; Lee, E., 27/08/2010; Kang, C., 10/09/2010; Shultz, 2010: 5). Cultural programs such as exhibitions of Korean music and taekwon-do were included (Kim, S., 24/06/2010). In addition, Korea promised up to USD250 million in development loans to Bolivia by 2014 (Lee, T., 26/08/2010).

In August 2010 at the Korean - Bolivian summit Korean President Lee Myung-bak and Bolivian President Evo Morales signed an agreement which paved the way for Korean companies to take part in the extraction of lithium reserves under the Lake Uyuni in Bolivia which likely has the world's largest reserves (Kim, S., 26/08/2010). Following the summit, the two state-run mineral resources corporations, KORES and La and Corporación Minera de Bolivia (COMIBOL) signed a MOU on research and development of technology to facilitate mining of the salt flats. The two countries will also set up a joint committee to oversee a lithium development project to produce lithium carbonate to be suitable for use in rechargeable batteries (Choi, 26/08/2010; Kawamoto and Tamaki, 2011: 58).

However competition between Korea, Japan, China and France to secure the right to develop the salt lake Lake Uyuni in Bolivia is intensifying. A state-backed Japanese firm, Japan Oil, Gas and Metals National Corp (JOGMEC) has also signed on a MOU with the COMIBOL to develop the technology needed to produce lithium carbonate in the Lake Uyuni (Achtenberg, 12/04/2010). Under the MOU Japan will provide technology to Bolivia's pilot programme to help produce lithium carbonate (Reuters, 10/11/2011). The MOUs do not guarantee that Korea and Japan will be entitled to extract lithium from the lake however they are important progress for the two countries to secure to lithium in Bolivia to diversify supply. Korea and Japan are the first countries to finalise MOU and secure participation in the development of Bolivian mines, beating France and China with these two lithium deals (Lee, T., 26/08/2010).

Korea's trading companies are highly encouraged by new business opportunities that have emerged since Bolivian President Morales's Korean visit and the MOU. LG International Corp has set a primary goal of securing a stable supply of lithium as it has begun the lithium-ion battery business (Moon, et al., 28/08/2010; Chung, 06/09/2010). The new battery business is the reason why the company has its eye on Bolivia's lithium, following the Sal de Vida Lithium Brine Project, which is a joint venture to develop a lithium mine in Argentina. Also Japanese activities for securing lithium are encouraged by the MOU between the JOGMEC and the COMIBOL. A the beginning of 2011, the consortium between the Ministry of Economy, Trade and Industry (METI), JOGMEC and Kitakyushu University and Mitsubishi Corporation took the lead over other countries by acquiring the rights to participate in lithium extraction experiments in Bolivia. The consortium plans to begin extract experiments at a centre near the Uyuni Lake and to continue experiment for about one and a half years (Kawamoto and Tamaki, 2011: 58).

However a stable supply of lithium from Bolivia is not guaranteed. Due to the increased competition between many companies from Korea and Japan it is likely that Bolivia's negotiating position will be strengthened. A more significant obstacle is Bolivia's state of development. Compared to Chile's lithium mines, the Uyuni in Bolivia is remote and inaccessible, while Chile's salt flats are served by modern roads, leading to nearby seaports. Moreover Bolivia is South America's poorest country and has very poor infrastructure across the country (Achtenberg, 2010). The President of Battery Research Centre of LG Chem, currently the leading lithium-ion battery manufacturer in Korea, has warned that the

conditions to develop lithium resources in Bolivia remain difficult and are likely to reduce the economic value of developing lithium near the Lake Uyuni in Bolivia for lithium manufacturers in the near future (Kim, M., interview 21/02/2011). The Bolivian government has recognised this is an issue and committed to invest USD500 million to develop roads, electricity and water, gas pipelines, communications, and other basic systems.

Harmonising International Development Efforts with Resource Diplomacy: Potential for the strategic use of ODA

Coordinating resource diplomacy with international development efforts is an approach adopted, to various degrees, by others countries competing for resources, including Japan and China. In particular the emergence of China as a powerful player in access to, and extraction of, energy and resources is a key factor in reinforcing the use of aid for commercial interest not only in Korea but also across the donor community (Lum et al., 2008; Woods, 2008). However given its history, Korea is well placed to share its experience and expertise with developing countries and has greater capacity to being perceived as a "benign middle power" by recipient countries holding relevant mineral resources, and can further leverage that position to avoid accusations of neo-colonialism. In this case of Bolivia sensitivity to imperialism is an important issue. Korea and Bolivia share a colonial past and the present government has embraced a narrative of anti-colonial rebellion. Despite over 200 years since the start of its independence struggle from Spain the sense of injustice among Bolivia's majority indigenous people remains deep. When Evo Morales, Bolivia's first president of Indian origin, was appointed in 2006 he initiated a "decolonising revolution" (Burman 2009).

Korea is one of the few countries which have successfully transitioned from a recipient to a donor in the last two decades. It is expected that Korea will become a member of DAC (development assistance committee), OECD (Chun and Lee, 2009). However, one of the challenges Korea faces in becoming an effective contributor to development efforts in the region is its relatively low ODA budget. In 2009, Korea's ODA/ GNI ratio increased to 0.10%, still significantly lower than the OECD/DAC2 members' average of 0.25% (OECD, 2010). Other problems are a regional bias and a relatively large number of recipients. Although the share of assistance to Asia has gradually declined from 72.6% in 2001, to 61.2% in 2007, Korea still allocated disproportionately large amount of its ODA to Asian countries.

With regards to Latin America the amount has only increased incrementally to just over 11% in 2007 as shown in Table 3.

Table 3: Regional Distribution of Korea's ODA (2001-2007)

(% of total net ODA)

	2001	2002	2003	2004	2005	2006	2007
Asia	72.6	78.3	78.5	78.2	80.9	60.5	61.2
Africa	2.6	2.7	7.7	8.5	8.4	12.7	14.3
Latin America	8.1	4.3	4.6	4.5	4.3	6.9	11.2
Eastern Europe	8.0	9.2	1.2	2.1	0.7	8.3	3.4
Oceania	2.4	0.6	2.0	0.1	0.1	0.3	0.8
Unspecified	6.4	5.0	6.0	6.5	5.5	11.3	9.2
TOTAL	100	100	100	100	100	100	100

Source: OECD DAC Statistics

To compensate for relatively low ODA funding, the entities implementing Korea's international development projects can target narrow areas in which Korea enjoys a comparative advantage, and maximum returns can be acquired within limited budgets. Strategic use of ODA is important not only for mineral extraction but infrastructure projects can also involve numerous "soft" components, and Korean firms engaged in international development consulting could complement the actual construction work with projects that identify ways to mitigate the social, cultural, environmental impacts – thereby aligning and give international breadth to its Green Growth Strategy. To do this however investment must be translated into an effective ODA agenda. It can also build on its "middle power" status to gain further legitimacy as a provider of international development, Korea can also focus on efficient application of its resource diplomacy.

Conclusion

Korea's Green Growth Strategy recognises that the expansion of HEVs and EVs vehicles, and rechargeable-ion battery industries have the potential to realise a low carbon and green growth future. In this context the Korean government's and firms' resource diplomacy has explored ways to secure the materials critical to the strategy's success.

Benefiting from the FTA between Korea and Chile, a consortium led by the state-run resource company, KORES, has been established and a MOU between POSCO and Li3 to lithium develop extraction and refining technologies have been finalised. In the case of Argentina, the two Korean presidents' visits to Argentina in 1996 and 2004, respectively, helped to facilitate Korean companies to import natural resources and develop lithium. These diplomatic expansions also facilitated to increase the state owned KORES' role to lead an agreement with Korean private companies to develop lithium at the salt lake of Muerto in Argentina.

The Bolivian president's visit to Korea in August, 2010 marked a turning point in the two countries' diplomatic relations to assist Korea to secure lithium in the Lake Uyuni. Bolivian government has an ambition to help its people out of poverty by developing lithium. Korean has implemented much kind of resource diplomacy methods to secure lithium by satisfying Bolivia's ambition. The Korean government held an open briefing and discussion session explaining Korea's specialised technologies for maximising benefits from the lithium development. Korea also shared historical pains and emphasised on enhancing partnership. These diplomatic efforts led to the two sides signing on a MOU to research and develop lithium technologies to mine the salt flats in the Lake Uyuni in Bolivia. The MOU will not guarantee that Korea will be entitled to extract lithium from the Lake however it is important progress for Korea to secure lithium in Bolivia.

Nevertheless the competition between companies from Korea, Japan and other countries for securing the lithium is likely to intensify and barriers to the development of the Bolivian lithium market, in particular inadequate infrastructure, remain. If Korea is to successfully diversify its supplies of natural resources Korea must consider its role in these countries economic development.

To build on these efforts resource diplomacy can be bolstered by a broader set of initiatives that contribute to economic construction. Korea stands as a successful model of economic development for developing countries and is well placed to play a role in the development of other countries. As such Korea can be a meaningful actor all along the hierarchy of "soft" development projects, from the strategic (project implementation) level to the tactical (behaviour change campaigns) and structural (cultural) levels. Thus it is essential to cultivate

a broad view of international development. To do this the government must resource agencies that can identify opportunities for investment such as in infrastructure and market development areas as well as develop programs in education, the arts, business and community awareness. In short to realise resource security Korea must consider reinforcing resource diplomacy with other deeper and more meaningful means of engagement, engagement that builds long-term and sustainable relationships, relationship that reject imperialist past, that are of mutual benefit to both Korea's and recipient countries' national interest.

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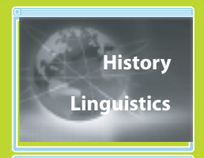

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