Between the Local Governments and Producers:

Why Rare Earth Smuggling Persists in China*

Sun Ryung Park** · Joo-Youn Jung***

Keywords: Rare Earth Elements (REEs), Chinese Rare Earth Industry, Smuggling, Export Quotas, Consolidation

| ABSTRACT |

This paper analyzes the reason why the Chinese central government has not been able to eradicate the smuggling problem that is prevalent in its rare earth industry and hinders its attempts to protect its scarce resources, which is of great strategic importance and economic value. Since 2006 when the Chinese government officially recognized the gravity of the smuggling problem, export restriction policies and consolidation measures have been implemented to root out smuggling; however, illegal practices seem to have been little affected. This paper focuses not on the Chinese rare earth policies per se but on the incentives of two key actors: the local governments

---

✣ 『국제관계연구』(*Journal of International Politics*), Vol. 20, No. 2 (Winter 2015). http://dx.doi.org/10.18031/jip.2015.12.20.2.101

* This paper was supported by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2013S1A5A8026304). Part of this paper was presented at the Autumn Conference of the Korean Association for Contemporary China Studies (Oct. 2015).

** First Author, MA Candidate at the Department of Political Science & International Relations, Korea University.

*** Corresponding Author, Associate Professor at Department of the Political Science & International Relations, Korea University.

and the local small-scale producers of rare earth elements (REEs). The local governments of the rare earth abundant inland regions with few other resource advantages have an incentive to maximize tax revenues by protecting small-scale REEs producers in their jurisdictions. Given the connivance or acquiescence of the local governments and the domestic and international price gap, small-scale producers with overcapacity continue illegal mining and smuggling. This finding suggests that, despite the Chinese central government's recent attempts to restructure the REEs industry based on central state-owned conglomerates, it would be difficult for it to eradicate rare earth smuggling within the near future, possibly hindering China's resource strategy to utilize rare earths as a strategic leverage.

I. Introduction

Rare earths are critical strategic resources. Although often used in small amounts, rare earth elements (REEs)[1] are key components of military, aerospace, medical, nuclear, and high-tech devices, and supply problems in REEs can cause serious damages to the producers of such devices. China is rich in such important resources. According to some estimates, China possesses half of the world's total rare earth reserves.[2] China has been the largest producer of REEs since the mid-2000s, producing more than 95 percent of global demands between 2005 and 2008.[3] The Chinese share of global rare earth output has fallen to around 86 percent since 2010 when Beijing cut its export quotas and other

1) Rare earth elements include 15 elements that are part of the family of lanthanides plus scandium and yttrium. Cindy Hurst, *China's Rare Earth Elements Industry: What Can the West Learn?* (Kansas: Institute for the Analysis of Global Security, 2010), pp. 3-4 and Marc Humphries, "Rare Earth Elements: The Global Supply Chain," *CRS Report for Congress*, 7-5700, R41347 (2013), pp. 1-3.

2) Estimates of Chinese rare earth reserves as a percent of global total vary. The United States Geological Survey (USGS) estimates the level at 50 percent in 2012, while China's own estimate from the *People's Daily* puts it at 36 percent.

3) Pui-Kwan Tse, *2011 Minerals Yearbook* (Virginia: USGS, 2011); Pui-Kwan Tse, *2012 Minerals Yearbook* (Virginia: USGS, 2012); and Pui-Kwan Tse, *China's Rare Earth Industry* (Virginia: United States Geological Survey, 2011).

producer countries began to increase their supply, yet experts anticipate that it would take several years for the late movers to take up a significant portion in the global REEs supply.[4] In short, China's dominant role in the global REE market and global reliance on China for REEs are expected to continue.

Given China's virtual monopoly in important resources like the REEs, the Chinese government's efforts to control REE production and export during the last decade or so have led to international concerns and suspicions. The Chinese government has considerably raised the level of control over the REE industry[5] since the 2000s. As for price control measures, export tariffs equivalent to 10 to 25 percent of REE prices were imposed in 2006. Several products, such as rare earth metals and alloys, were placed into the list of prohibited trade commodities in the same year. Export license system was introduced in 2000, allowing only those who meet the financial requirements or the environmental standards to export REEs. In terms of quantitative restrictions, the Chinese government had first imposed export quotas on REEs in 2000, followed by production quotas in 2005.[6] A new export restriction policy, which halved export quotas, was implemented in 2010. This reduction in quotas received worldwide attention and heightened concerns among major REEs consumers such as the United States, Japan, and the European Union, who have complained that Chinese export restrictions on REEs are

---

4) As of 2013, the aggregate output of the non-Chinese REEs producers was only about 10 percent of the Chinese producers' output. United Nations Conference on Trade and Development (UNCTAD), *Commodities at a Glance: Special Issue on Rare Earths* (Geneva: UNCTAD, 2014).

5) In this paper, the term "rare earth industry" includes not only rare earth elements (REEs) mining but also comprehensive processing operations. The processing of REEs can be divided into three successive stages: to produce "concentrates" by separating them from the rare earth ores, to produce "rare earth oxides (REO)" by extracting them from the concentrates, and to make "rare earth metals (REMs)" by refining REO. The processed REEs products such as REO or REMs are traded at higher prices than REEs. For more details, see United Nations Conference on Trade and Development (UNCTAD), (2014), pp. 1-7.

6) Yujia He, "Reregulation of China's Rare Earth Production and Export," *International Journal of Emerging Markets*, Vol. 9, Issue. 2 (2014), pp. 236-240.

violating World Trade Organization (WTO) rules. Since 2009, the Chinese government has switched its focus from export to production sector and pursued the consolidation of the fragmented REEs industry.[7)]

The Chinese government's REEs production and exports policies can be interpreted as signs of China's tightening grip on rare earth resources that have great strategic importance to the nation.[8)] And the intensified resource control is often taken as a shrewd move to pursue national interest by using rare earths as strategic leverage; economically, it is to strengthen China's price-setting power in the global REEs market using her dominant status,[9)] and security-wise it is a calculated step to utilize strategic resources as an effective weapon against consumer countries in the case of international crisis.[10)] While international anxiety

---

7) China recently abolished its REEs export quotas in January 2015 and then export duties in May 2015. There are debates regarding the background of these policy changes. Some see that the Chinese government has finally reduced its control over the REEs industry and China has been further integrated with the global economy in accordance with the WTO rules. Although it is premature to determine the backgrounds and implications of the recent policy changes, the authors have a different interpretation—they might simply show that export restriction policies were proven ineffective in terms of rare earth control and the Chinese government has shifted its strategy for rare earth management. This interpretation is consistent with this paper's analysis on the consolidation policy, which suggests a policy switch from REEs export control to production control.

8) For example, see Yujia He (2014), pp. 236-256; Ming Hwa Ting and John Seaman, "Rare Earths: Future Elements of Conflict in Asia?" *Asian Studies Review*, Vol. 37, No. 2 (2013), pp. 234-253; Jost Wubbeke, "Rare Earth Elements in China: Policies and Narratives of Reinventing and Industry," *Resource Policy 38* (2013), pp. 384-394; Humphries (2013); Wayne M. Morrison and Rachel Tang, "China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States," *CRS Report for Congress*, 7-5700, R42510 (2012); and Hurst (2010). Examples of Korean materials include Hwa-seop Kim, "Chunggukui Huitoryu Kwallyon Chengchaek Chenmang Kwa Sisachom [Perspectives on the Chinese Rare Earth Policies and Their Implications]," *Sanop Kyongje Bunsok*, No. 6 (2012), pp. 57-66; Dong-hwan Kim, *Huitoryu Chawon Chenjaeng* [Wars on Rare Earths] (Seoul: Miraeui Chang, 2011); and Furong Jin and Jong-hyuk Oh, "Chunggukui Huitoryu Sanop Gyuje Kanghwae Ttarun Yonghyang Kwa Sisachom [Analysis on the Strategic Protection of China's Rare Earth Resources and its Implications]," *KIEP Jiyok Kyongje Focus*, Policy References 11-23 (2011).

9) Morrison and Tang (2012); He (2014), pp. 236-256; Wubbeke (2013), p. 391; and Rare Earth Information, "From Consuming Power to Pricing Power Center: China Needs to Adopt an International Strategy for Important Products," *Rare Earth Information*, No. 7 (2010), p. 40.

10) Hwa-seop Kim (2012), pp. 57-66; Dong-hwan Kim (2011); and Daniel Moran and James

about Beijing's export restrictions on REEs is rising, the Chinese government has denied such strategic intentions. The Chinese government sources often emphasize that export-restriction policies were necessary to alleviate serious environmental damages caused in the process of REEs production (i.e. mining, smelting and separating, and manufacturing), which is a main excuse against WTO complaints.[11] Many scholars also concur with the Chinese government's assertion that China needs to conserve REEs in her territory by slowing down the pace of export so that she can secure stable domestic supply for sustainable economic development in the future.[12]

The foci of many existing studies and analyses on the Chinese rare earth policies are on China's intentions and calculations behind them. No matter what they see as the real policy intention, they tend to share

---

A. Russell, *Energy Security and Global Politics: The Militarization of Resource Management* (London and New York: Routledge, 2008), pp. 1-18, 188-210.

11) For example, see China Rare Earth Information (CREI), "Review on 2014 China Rare Earth Policies," *China Rare Earth Information*, Vol. 21, No. 5 (May 2015); Ministry of Environment Protection (MEP), *Opinion on Strengthening the Ecological Protection and Restoration of Rare Earth Mines* (Beijing: MEP, 2013); MEP, *Pollutant Discharge Standards for the Rare Earth Industry* (Beijing: MEP, 2011); National Development and Reform Commission (NDRC), "China Rare Earth 2009," Rare Earth Information 3, 4-8 (2010); NDRC, "China Rare Earth 2010," *Rare Earth Information 3*, 4-8 (2011); NDRC, "China Rare Earth 2011," *Rare Earth Information* 4, 4-8 (2012); and Reinhard Peter Biedermann, "China's Rare Earth Sector—between Domestic Consolidation and Global Hegemony," *International Journal of Emerging Markets*, Vol. 9, No. 2 (2014), pp. 276-293.

12) Jian-zhong Cheng and Li-ping Che, "Current Mining Situation and Potential Development of Rare Earth in China," *Journal of Chinese Rare Earths*, Vol. 31, No. 2 (2010), pp. 65-69; China Rare Earth Information (CREI), "Chinese RE Performance Materials on the Fast Developing Way," *China Rare Earth Information*, Vol. 12, No. 5 (May 2006), pp. 1-3; Hurst (2010); Humphries (2013); Marc Humphries, "China's Mineral Industry and U.S Access to Strategic and Critical Minerals: Issues for Congress," *CRS Report for Congress*, 7-5700, R43864 (2015); Leslie Hayes-Labruto, Simon J.D. Schillebeeckx, Mark Workman and Nilay Shah, "Contrasting Perspectives on China's Rare Earth Policies: Reframing the Debate through a Stakeholder Lens," *Energy Policy* 63 (2013), pp. 55-68; Ting and Seaman (2013), pp. 234-253; Lukas Ruttinger and Moira Feil, "Sustainable Prevention of Resource Conflicts: New Risks from Raw Materials for the Future? Case Study and Scenarios for China and Rare Earths," *Adelphi*, Section report 3.4, Research Project FKZ 370819 102 (2010); Tse, *China's Rare Earth Industry* (2011); Biedermann (2014), pp. 276-293; and World Trade Organization (WTO), *China—Measures Related to the Exportation of Rare Earths, Tungsten, and Molybdenum: Reports of the Panel* (Geneva: World Trade Organization, 2014).

an implicit premise that the Chinese government, which is socialist and authoritarian, is in full control of the nation's rare earths and rare earth industry and is ready to exercise its power to achieve whatever policy goal it has in mind. They tend to overlook the fact that policies do not always generate intended effects, and to equate more restrictions on REEs with stronger and more effective control of the Chinese government over the domestic rare earth industry (and less restriction with less control). They rarely pay close attention to the implementation process or outcomes of the Chinese rare earth policies. An intriguing point is that, whether the Chinese rare earth policies have been based on resource nationalism or resource conservation, they have been far less effective in keeping the strategic resources within the Chinese territory than usually assumed. The key problem is smuggling.[13)]

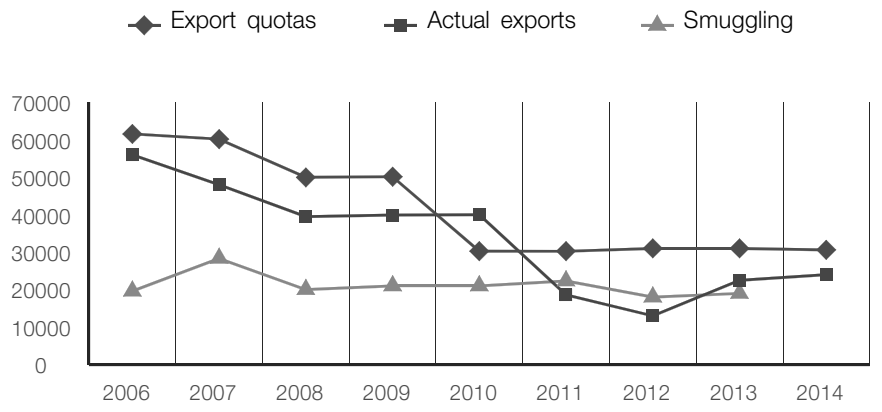
The smuggling problem allegedly existed in the Chinese rare earth industry during the 1990s and the early 2000s as well, but it was in the mid-2000s when it officially came to the surface and received Chinese policymakers' serious attention. Although the Chinese government has expressed its will to aggressively crack down on smuggling since the mid-2000s, the amount of smuggled REEs has not reduced much over time, as shown in Figure 1 below. Between 2006 and 2008, more than one-third of China's official REEs export quotas was estimated to have been illegally leaked to overseas, and in average about 20,000 tons were smuggled annually.[14)]

What causes the prevalent and persistent smuggling problem in the Chinese rare earth industry? Why has the Chinese government not been able to eradicate the problem that hinders its attempts to protect scarce

13) According to the Chinese government, smugglers are those who use "false declarations, concealed reports of commodity names, exports from different port in batches, and exports without proof of the legality of production or extractions." World Trade Organization (WTO) (2014), p. 128.

14) Information Office of the State Council, *Situation and Policies of China's Rare Earth Industry* (Beijing: Information Office of the State Council, 2012) and Morrison and Tang (2012), p.11.

〈Figure 1〉 Chinese REEs Export Quotas, Actual Exports and Smuggling (tons)[15]



Source: Data collected and calculated by authors, based on Pui-Kwan Tse, *2006 Minerals Yearbook* (Virginia: USGS, 2006); Pui-Kwan Tse, *2007 Minerals Yearbook* (Virginia: USGS, 2007); Pui-Kwan Tse, *2008 Minerals Yearbook* (Virginia: USGS, 2008); Pui-Kwan Tse, *2009 Minerals Yearbook* (Virginia: USGS, 2009); Pui- Kwan Tse, *2010 Minerals Yearbook* (Virginia: USGS, 2010); Pui-Kwan Tse, *2011 Minerals Yearbook* (Virginia: USGS, 2011); Pui-Kwan Tse, *2012 Minerals Yearbook* (Virginia: USGS, 2012); Pui-Kwan Tse, *China's Rare Earth Industry* (Virginia: United States Geological Survey, 2011); and State Council, *Situation and Policies of China's Rare Earth Industry* (Beijing: Information Office of the State Council, 2012)

resources within its territory, which is also of great strategic importance and economic value? What explains the "strong" Chinese government's failure in realizing its policy aims, which is revealed in China's rare earth sector? This paper disaggregates the Chinese government, and illuminates the local governments' incentives to overlook smuggling in their jurisdictions against the endeavors of the central government that lacks an effective monitoring system. Under this situation, small-scale producers with overcapacity have a strong incentive to continue illegal

15) Figure 1 does not include the estimated amount of smuggling for 2014. Although some Chinese sources, such as the *China Daily* and monthly reports from the China Rare Earth Information, recently estimated that the REEs smuggling in 2014 amounted to about 40,000 tons, this paper leaves the data blank since the Chinese government records on REEs exports and production as well as the estimated amount of smuggling are often modified after they are released.

mining and smuggling.

To support the argument, this paper utilizes data collected from diverse resources. They include Chinese government official statistics, regulations and white papers regarding REEs, a series of Minerals Yearbook published by the United States Geological Survey (USGS), policy reports from the United States Congressional Research Service, news reports from the Xinhua News Agency and the *China Daily*, and interviews in the academic literatures and newspapers with high-ranking bureaucrats who were in charge of the Chinese REEs export policies.

This paper consists of four sections. Section 2 reviews the history of Chinese rare earth regulation policies and shows that they have been largely ineffective. Section 3 will explain why the central government's attempt to rein in REEs smuggling has been ineffective, based on the incentives of the local governments and local REEs producers. The last section concludes with a discussion on the implications of persistent smuggling in understanding the Chinese rare earth strategies in the future.

II. History of the Failure: Chinese Rare Earth Policies and the Persistence of Smuggling

1. The Period of Export Promotion

Rare earths are critical strategic resources. Although often used in small amounts, REEs are key components not only of military, aero-space, medical and nuclear devices but also of many high-tech consumer products. In addition to being used as automobile catalysts and petroleum refining catalysts, REEs are essential elements to flat panel displays for computer devices, LEDs, cell-phones, permanent magnets, and re-chargeable batteries for hybrid and electric vehicles. They are also used

in important defense applications such as jet fighter engines missile guidance systems, antimissile defense, and satellite systems.[16]

China is rich in such important strategic resources. China's rare earth era began when the country's biggest mine at Bayan Obo in the Autonomous Region of Inner Mongolia started production in 1959.[17] Then the production cost was high and the quality long lagged behind then the leading producer, the United States. Several promotion measures had been implemented, including the establishment the National Conference for the Promotion of Rare Earth Application in 1975 and the initiation of the National High Technology Research and Development Program in 1986. Furthermore, in the 1980s the Chinese government adopted Chemist Xu Guangxian's new solvent extraction techniques for a cheaper separation of a single REE, which provided small-scale companies with easier access to enter the rare earth mining industry and exponentially increased the number of REEs producers.[18] By 1988, the REEs production accounted for 29,640 tons, tripled the amount from a decade before.[19]

The Chinese REEs policies between 1985 and the early 2000s can be characterized as "export promotion." Since the economic reform and opening began in 1978, China's most urgent goal was to earn foreign currency and introduce high technologies from the advanced countries. Rare earth exports became a way to acquire foreign currency and cement China's strategic ties with the advanced countries.[20] To encourage REEs export, the government started providing full tax rebates on REEs exports in 1985, which resulted in the exponential increase in the number of small-scale REEs mines and the amount of Chinese REEs exports during

16) For more details on the importance of REEs, see Ruttinger and Feil (2010), p. 3; Humphries (2013); Humphries (2015); and James B. Hedrick, "Rare-Earth Metal Prices in the USA ca. 1960 to 1994," *Journal of Alloys and Compounds*, Vol. 250, No. 1 (1997), pp. 471-481.

17) Wubbeke (2013), p. 385.

18) Hurst (2010); Wang (2011), pp. 3-5; and Wubbeke (2013), pp. 386-387.

19) Jin and Oh, *KIEP Jiyok Kyongje Focus*, Policy References 11-23 (2011).

20) Parks (1981), p. E1 and He (2014), p. 240.

the 1990s, which in turn led to the expansion of the industry itself. By the mid-1990s, China surpassed the U.S. and became the world's largest producer of REEs.[21] The number of small-scale rare earth producers mushroomed and the consequential overcapacity kept the export prices of Chinese REEs at a low level. Until the mid-2000s, international price for REEs was equivalent to USD 7/kg, which was only 60 percent of the price in the 1990s.[22] Other countries, such as the U.S., Canada, and France, stopped mining despite having REEs reserves in their territories, because they could not compete with China, the lower-cost supplier. China gained a virtual monopoly in the global rare earth markets.

2. The Period of Export Restriction

From the early 2000s, the Chinese rare earth policies made a dramatic turn from export encouragement to "export restriction." The Ministry of Commerce allocated annual export quotas, and export tariffs, which were equivalent of 10 to 20 percent of export prices, as well as export duties were imposed. In 2005, the tax rebate policy on REEs was abolished. The background of these policy changes was soaring domestic demands for rare earth products that accompanied China's rapid economic development.

Since the mid-2000s, China's annual domestic consumption for REEs has so dramatically increased that China's political leaders started to consider the contingency that China might need to import REEs to meet its domestic demands in the future.[23] By 2005, Chinese domestic REEs consumption amounted to 52,000 tons, which had been more than doubled from 20,000 tons in 2000. With a big jump in domestic demands, the

---

21) Pui-Kwan Tse, *2002 Minerals Yearbook* (Virginia: United States Geological Survey, 2002).

22) Biedermann (2014), pp. 276-293.

23) Morrison and Tang (2012); and Pui-Kwan Tse, *2006 Minerals Yearbook: China* (Virginia: USGS, 2006).

ratio of China's domestic demands to domestic production has also skyrocketed from 26 percent in 2000 to about 44 percent in 2005.[24] With a further increase in domestic demand between 2005 and 2007, China's consumption grew near the total demands from the rest of the world. In 2007, the global demands were approximately equivalent to Chinese domestic demands, which amounted to 73,000 tons, and in 2009 China's REEs consumption exceeded the demands from the rest of the world. Since then, China has been the largest REEs consumer, followed by the U.S., Japan, and the European Union. With this increase in domestic consumption for REEs since the mid-2000s, the country's political leaders started to consider the contingency that China might have to import REEs to meet its domestic demands in the future. Given that the ratio of China's domestic demand to domestic production has skyrocketed to about 80 percent in 2012, the gloomy conjecture was not ungrounded.[25] Setting security calculations and economic interests aside, China's domestic needs to preserve REEs for future economic development alone provided a good enough reason for it to start restricting exports.

However, the Chinese domestic rare earth industry by then was plagued by illegal mining and the consequential smuggling, which posed an impediment to the task of controlling the REEs outflow and securing them for domestic needs.[26] A central reason for illegal mining was the overcapacity of REEs producers. The export promotion policies during the previous period left the REEs industry with many small-scale mines. At an interview with the *China Daily* in 2009, an official of the China National Nonferrous Metals Industry Corporation mentioned that the number of small-scale, private REEs producers accounted for as much

24) Morrison and Tang (2012) and United Nations Conference on Trade and Development (UNCTAD) (2014).

25) Morrison and Tang (2012); Wubbeke (2013), pp. 387-391 and United Nations Conference on Trade and Development (UNCTAD) (2014).

26) Hayes-Labruto, Schillebeeckx, Workman and Shah (2013), pp. 55-68 and Hurst (2010).

as 20,000.[27] Illegal mining was particularly rampant in the dispersed deposits of South China where small-scale producers were working in opencast mines.[28]

Statistics collected by foreign customs show that the volume of rare earth products imported from China between 2006 and 2008 were 35 percent, 59 percent, and 36 percent per annum, respectively.[29] These were higher than the volumes officially exported from China under the export quota system. This indicates that about 30 to 40 percent of Chinese official rare earth exports quotas were leaked abroad through illegal channels (see Figure 1).[30] It is alleged that many overseas buyers, such as the U.S., Japan, South Korea and Vietnam, are annually resorting to the rare earths smuggled out of China. According to the remarks from Chen Jianxin, deputy director of the administration's anti-smuggling bureau, rare earths were mainly smuggled to neighboring countries, such as Japan and the Republic of Korea.[31] In 2009, when the amount of the smuggling was up to one-third of the official export quotas, Japan and South Korea allegedly consumed about 80 percent of the smuggled REEs.[32] What is probably worse than the high volume of smuggling is that the amount of smuggling does not seem to be affected much by the amount of export quotas. Actual REEs exports between 2006 and 2014 had remained below quotas, except in 2010 when the government almost halved the quota from the previous year. During this period,

---

27) *China Daily*, December 3, 1989.

28) Wubbeke (2013), pp. 384-394; Jin and Oh, *KIEP Jiyok Kyongje Focus*, Policy References 11-23 (2011); and Jong-hyuk Oh and Furong Jin, "Chungguk Nae Huitoryu Sanop Kwalli Kanghwa Wa Hyanghu Chonmag [China's Intensified Controls on its Rare Earth Industry and the Outlook]," *KIEP Jiyok Kyongje Focus*, Policy References 11-10 (2011).

29) Hurst (2010).

30) State Council, *Situation and Policies of China's Rare Earth Industry* (Beijing: Information Office of the State Council, 2012); Hurst (2010); Biedermann (2014), pp. 278-283; and Morrison and Tang (2012).

31) Ting and Seaman (2013), pp. 245-247.

32) Jin and Oh, *KIEP Jiyok Kyongje Focus*, Policy References 11-23 (2011), p. 40 and Oh and Jin, *KIEP Jiyok Kyongje Focus*, Policy References 11-10 (2011), p. 9.

the smuggling has been relatively constant amounting to about 20,000 tons (see Figure 1). In other words, export restraint policies have been largely ineffective in the conservation of REEs and barely affected smuggling.[33]

3. The Period of Consolidation

Failing to effectively alleviate the smuggling problem, Beijing began to switch its focus from export control to production control, and to target a fundamental problem in the production sector, i.e. the fragmented industrial structure. The essence of this policy shift since 2009 can be summarized as a "consolidation" strategy. Key government documents regarding the transition include "Rare Earth Industry Development Plan (2009-2015)" issued by the Ministry of Industry and Information Technology (MIIT) in 2009, "Several Opinions of the State Council on Promoting the Sustained and Healthy Development of the Rare Earth Industry" released by the State Council in 2011, and "Situation and Policies of China's Rare Earth Industry" issued by the State Council in 2012. These documents contain the basic components of the new Chinese REEs policies: first, the reorganization and restructuring of the REEs industry; second, the imposition of export and production quotas; third, strengthened entry barriers for foreign companies; and fourth, strengthened environmental standards along with the imposition of resource taxes. These components suggest that the government's policy target has switched from the REEs exporters to producers. Most notable feature is that the Chinese central government eventually made an attempt

33) This analysis is based on authors' calculation using data collected from the following sources. Tse (2006); Pui-Kwan Tse, *2007 Minerals Yearbook* (Virginia: USGS, 2007); Pui-Kwan Tse, *2008 Minerals Yearbook* (Virginia: USGS, 2008); Pui-Kwan Tse, *2009 Minerals Yearbook* (Virginia: USGS, 2009); Pui-Kwan Tse, *2010 Minerals Yearbook* (Virginia: USGS, 2010); Tse, *2011 Minerals Yearbook* (2011); Tse (2012); Tse, *China's Rare Earth Industry* (2011); and State Council (2012).

to centralize control over rare earths by reorganization and restructuring of the highly fragmented rare earth industry, especially through "consolidation."

The goal of the Chinese central government's consolidation effort was to reorganize numerous small-scale companies into conglomerates owned by the central government. The consolidation projects have been carried out in two ways. One is to directly restructure the fragmented industry into a conglomerate-dominant system by merger and acquisition, and the other is to increase production costs through stricter environmental standards or resource taxes, which would be burdensome for small-scale REEs producers and eventually make them to wither or be merged into state-owned conglomerates.[34] In 2010, two large business groups were established based on the regional distribution of REEs; one is the Northern Group of Rare Earth Production in Inner Mongolia under the leadership of the Baotou Steel Rare Earth High-Tech Co., and the other is the Southern Group of Rare Earth Production, which consists of producers in Jiangxi, Hunan, Fujian, Guangdong, and Guangxi.[35] The plan was to establish six state-owned conglomerates under the two business groups by the end of 2015,[36] which seems to be almost complete. The government has allocated exclusive production quotas for the mining and operations of REEs to these six conglomerates, and they control 95 percent of

34) State Council (2012).

35) Ministry of Industry and Information Technology (MIIT), *Rare Earth Industrial Development Plan 2009-2015* (Beijing: MIIT, 2009); He (2014), pp. 236-256; China Rare Earth Information (CREI) (May 2015); and Jin and Oh, *KIEP Jiyok Kyongje Focus*, Policy References 11-23 (2011).

36) These enterprises are the Inner Mongolia Baotou Iron and Steel Group (the Northern Group of Rare Earth Production), the China Minmetals Corporation, the Aluminum Corporation of China, the Guangdong Rare Earth Group, the Xiamen Tungsten and the Ganzhou Rare Earth Group. See, Hongpo Shen, "China's Six Major Rare Earth Companies Prepare for Reorganization," http://investorintel.com/technology-metals-intel/chinese-authorities-approve-plan-for-reorganization-of-six-rare-earth-companies/ (date of access: October 17, 2015) and Ministry of Land Resources, "MLR Office Letter," No. 263 (2015) available at http://www.mlr.gov.cn/zwgk/zytz/201505/t20150514_1350621.htm (date of access: September 30, 2015).

the allocated quotas in the entire industry.[37]

Through the consolidation, Beijing expects to centrally control the production channel in which the production and allocation of REEs are conducted via a handful of central state-owned conglomerates, and eventually aims to make the actual production quantity meet the planned production quantity, thereby leaving no room for smuggling. This recent policy change shows that the Chinese government recognizes that a key reason for smuggling lies in the production sector, and it attempts to solve the problem by directly regulating REEs producers through consolidation.

This consolidation project seems somewhat effective, given that the number of companies involved in mining and operations has been reduced from 169 in 2010 to 20 as of 2015.[38] However, its effects on smuggling are questionable. The amount of smuggling does not seem to have changed much and is estimated to remain around 20,000 tons per year between 2010 and 2013. An even more shocking estimate from the Association of China Rare Earth Industry is that REEs smuggling accounted for about 40,000 tons in 2014. Estimates, including government official opinions as well as reports from the Xinhuashe and the *Reuters*, echo the figure released from the Association of China Rare Earth Industry.[39] Despite the renewed efforts by the Chinese government, the amount of the smuggling seems to be little affected by the efforts.

37) China Rare Earth Information (CREI) (May 2015).

38) Ruttinger and Feil (2010) and China Rare Earth Information (CREI), "2014 Top Ten Rare Earth Events in China," *China Rare Earth Information*, Vol. 21, No. 3 (March 2015).

39) For the statistics on the amount of smuggling in 2014, see China Rare Earth Information (CREI) (March 2015); Reuters, January 9, 2014; and Xinhua News Agency, August 8, 2015.

III. Explaining the Failure: Overproduction with the Acquiescence of the Local Governments

1. The Limitations of the Existing Literature

The existing literature does not pay enough attention to the puzzling phenomenon, i.e. a decade of less than effective attempts by the Chinese government to root out or at least considerably reduce REEs smuggling, when it potentially impairs China's national interest by depleting strategic resources and undermining China's price-setting power in the global REEs market.

To begin with, only a limited number of academic works pays attention to this puzzle. Scholars tend to focus on analyzing the Chinese government's strategic intentions behind the imposition of rare earth policies and their impacts on the global rare earth market. There are some studies that discuss the existence of illegal practices and Beijing's efforts to crack them down or the cases of local governments' resistance against the central government's consolidation measures,[40] but few scholars have delved into the smuggling problem and analyzed the causes of smuggling and the reasons why the Chinese government has not efficaciously resolved the smuggling problem that is undercutting its strategic resource management.

The majority of the existing literature tends to assume that smuggling is a side effect of the Chinese government's resource management policies, especially export quotas. In other words, since there is a limit to REEs exportation, whatever overproduction that could not be domestically consumed finds its way in smuggling. Likewise, the reduction

40) Tse, *China's Rare Earth Industry* (2011); Morrison and Tang (2012); He (2014), pp. 236-256; Huifang Liu, Lei Lei and Changxie Ye, "Study on Rare Earth Management Game between Central and Local Governments in China," *Cross-Cultural Communication*, Vol. 9, No. 1 (2013), pp. 31-35; and Wubbeke (2013), pp. 389-391.

or abolition of export quotas will reduce or resolve the smuggling problem. However, as Figure 1 shows, there is little relationship between the quantity of export quotas and the quantity of smuggling. Since 2003 when the export quotas were first imposed, the actual REEs exports have not exceeded the official export quota, with the exceptions of 2003 and 2010. The actual amount of exports was generally below the official quotas. If the smuggling is a function of the export quotas, it makes more sense that the Chinese REEs producers first meet their quotas and then try to find other ways to sell REEs abroad. Furthermore, Figure 1 also demonstrates that the implementation of the consolidation strategy since 2010 did not bring about a major change in the amount of smuggling. Even when the Chinese government almost halved REEs export quotas in 2010, the impact of such reduction on the smuggling amount seemed insignificant. If the smuggling is at least in part caused by the imposition of export quotas, then a reduction of export quotas should have led to an increase in smuggling. However, that did not happen.[41]

2. The Overproduction with the Acquiescence of the Local Governments

1) The Local Governments' Incentives for Acquiescence

China's fiscal centralization, accomplished by the fiscal reform in 1994, made a significant impact on the local governments. While increasing the central government's share of tax revenue, it reduced the local governments' revenue income and made them rely more on the central government's revenue transfers. The central government has a complete

41) The 2014 WTO Panel Report also implies that the price difference between the international and the Chinese domestic markets, rather than export quotas and export duties, creates the incentives for smuggling. World Trade Organization (WTO) (2014), pp. 127-132.

claim on the consumption tax, customs duties, and most direct and indirect taxes on sectors that are controlled by the central government, whereas the local governments control direct taxes on local enterprises and real estate and property taxes. As no local government has the right to levy new taxes or change the rates on existing taxes, the local governments have been obsessed with protecting their existing revenue-income sources.[42] Since the local governments' expenditure is tightly linked with local revenue, local officials tend to ignore central government policies if they do not provide direct benefits to local economy.[43]

Such local behaviors are even more evident rare earth-abundant inland regions, with few other resource advantages.[44] Major source of income for these underdeveloped localities are land development, mining, and resource exportation,[45] thus their economic affairs are heavily dependent on the local rare earth industry. In addition, whereas the annual REE export quotas are set and allocated by the central government, the implementation of quotas is in the hands of the local governments. Despite the central government's campaign against smuggling, it would be a lot more beneficial for the poor inland local governments that pursue revenue maximization to encourage small-scale REEs producers in their jurisdictions to export REEs whether through illegal channels or not. In addition, as local governments hold the rights to license mining and processing projects and their main source of income is the revenue from land development, they also have an incentive to license land development by local small-scale rare earth miners.[46] A manufacturing company is supposed to pay its income taxes to the government of the region

42) Barry Naughton, *The Chinese Economy: Transition and Growth* (Cambridge, Massachusetts: The MIT Press, 2007). pp. 430-446.

43) Elizabeth C. Economy, "The Great Leap Backward?" *Foreign Affairs*, Vol. 86, No. 5 (2007), pp. 38-60; Chen Gang, *Politics of China's Environmental Protection: Problems and Progress* (New Jersey: Hackensack World Scientific, 2009); and Ruttinger and Feil (2010).

44) He (2014), pp. 238-242 and Wubbeke (2013), pp. 384-389.

45) Wubbeke (2013), pp. 387-389.

46) Liu, Lei, and Ye (2013), pp. 31-35.

in which the company's headquarter is located, whereas its transaction taxes are paid to the local government where the company actually operates.[47] Therefore, local governments want to foster its indigenous small-scale REEs producers, thereby resisting the central government's consolidation projects that would mean sharing or losing tax revenues from the local REEs producers.

In addition to the direct financial incentives, local officials have career incentives tied to the development of the local rare earth industry as well. Considering that the evaluation and promotion of local officials are based on local economic performance, such as GDP, fiscal revenues, and investment growth, local officials are in fierce competition to bring as much investment to their own regions as possible.[48] For impoverished regions with abundant rare earth deposits, local officials have a strong incentive to promote local REEs production and trade for their own career benefits.[49]

The illegal mining in southern China is allegedly tantamount to a "heroin addiction" because its enormous profits and relatively little costs make it a practice difficult to root out, reported the *China Economic Weekly*, a magazine affiliated with the *People's Daily*. According to the article, the profits from the REEs industry, where REEs prices range from 20,000 to 30,000 yuan (USD 3,170-USD 4,760) per metric tons to up to 400,000 yuan (USD 63,500), render it difficult for local officials to resist the financial temptations.[50] With the connivance of the local officials, unlawful mining and smuggling have never really stopped. Even the legitimate operators can always find ways to produce surplus

47) Oh and Jin, *KIEP Jiyok Kyongje Focus*, Policy References 11-10 (2011), p. 9.

48) He (2014), pp. 238-243; Lui, Lei, and Ye (2013), pp. 33-34; Susan Whiting, *Power and Wealth in Rural China: The Political Economy of Institutional Change* (Cambridge: Cambridge University Press, 2001), pp.78-106; and Olivier Blanchard and Andrei Shleifer, "Federalism with and without Political Centralization: China vs. Russia in Transitional Economies: How Much Progress?" IMF Staff Papers, No. 48 (2001), pp. 171-179.

49) He (2014), p. 245.

50) *Want China Times*, April 19, 2012.

REEs exceeding the quotas allocated by the central government.

Given the contribution of local REEs producers and exporters to the local economy, the local authorities tend to turn a blind eye to the illegal mining and overproduction that eventually lead to smuggling.[51] According to Su Bo, vice minister of Industry and Information Technology, the local governments have been protecting many illegal operations and smuggling, which have made the central government's crackdown ineffective.[52] Allegedly lured by temporary high profits of the rare earth businesses, local officials in some places formed a "cooperative umbrella" for local businesses, buying company shares while suppressing complaints about environmental degradations through arresting protestors or covering up raids against protestors by REEs businesses.[53]

Under this situation, local governments are not willing to hand over their control over REE producers in their jurisdictions to the central government, and have little incentive to actively implement the central authority's consolidation policy that attempts to reduce the number of local small-scale mines and merge local-based REEs producers into the central government-owned conglomerates.[54] Local governments have strong incentive to resist the central government's consolidation and attempt to protect local deposits that are expected to become more profitable as REEs prices are increasing. For example, the Ganzhou Rare Earth Mining Limited Company was found in 2004 by the Ganzhou municipal government in Jiangxi province, which was in charge of mining, manufacturing, and selling REEs products. Several central government-controlled REEs producers, such as the China Minmetals Corporation and the Aluminum Corporation of China, have begun to enter Jiangxi province with the hope of integrating the REEs industry in that region. However, they encountered the Ganzhou government's obstinate resis-

51) The Xinhua News Agency, December 8, 2015.

52) Reuters, January 9, 2014.

53) He (2014), pp. 244-248 and Lui, Lei, and Ye (2013), pp. 31-35.

54) Lui, Lei and Ye (2013), p. 33.

tance against the distribution of its rights for the mining and operations of REEs products to them. Hence, the attempted integration became deadlocked.[55] Similarly, in 2010 when the centrally administered state-owned companies, including the China Minmetals Corporation, were making a push into the Jiangxi province market, its foray was hindered by regional enterprises supported by the local government.[56]

Considering the local government's protectionism, it is not surprising that the central government has experienced difficulties and delays in implementing its consolidation plan. The Chinese central government once pushed forward the restructuring of the REEs industry as early as 2002 and attempted to establish two centrally controlled state-owned business groups, the China Northern Rare Earth Group and the China Southern Rare Earth Group. Facing opposition from local authorities and producers, however, the plan ended in fail.[57] The central government has finally turned the REEs industry into a large-SOEs dominant structure since 2010 (see section 2 for more details). However, as Figure 1 shows, the consolidation has not proved effective in reducing the amount of smuggling until recently.

2) Small-scale Producers' Incentives for Overproduction

On the flip side of the local governments who protect local REEs industry is the local REEs producers who pursue profit maximization by producing more than their production quotas and export the surplus through illegal channels. The REEs producers' overcapacity has been a direct obstacle to the central government's REEs management.

A major reason for the chronic overproduction is the overcapacity of the REEs miners and producers. Small-scale REEs miners have mushroomed during the export promotion period during the 1990s, and

55) Lui, Lei, and Ye (2013), p. 34.

56) *New York Times*, December 29, 2010.

57) *Wall Street Journal*, December 5, 2013.

as a result China's annual REEs mining capacity is estimated to be 120,000 to 150,000 tons, which is higher than the entire global demands of 100,000 tons.[58] China's REEs production capacity, which includes mining and operations (smelting and separation), is up to 200,000 tons per year, which is also above the international REEs demands.[59] For the small-scale REEs producers, especially in the dispersed deposits of South China where they can work in open-cast mines, most of the mining and manufacturing costs seem to be fixed costs, such as development and equipment. Hence, once they have already made the initial investment, it is reasonable for them to engage in overproduction in expectation of foreign demands for the smuggled REEs. Chen Jianxin, deputy director of the anti-smuggling bureau, commented in 2009 that, as long as the issue of overcapacity persists, the smuggling would not be eliminated.[60]

Another important reason behind the overproduction that leads to smuggling is the gap between international and domestic REEs prices.[61] Although price information is not readily available because REE contracts are generally negotiated among traders rather than traded on the spot or futures markets, it is reported that Chinese domestic rare earth prices have been below the international prices since the country started to export REEs. Hayes-Labruto et al characterizes the price gap as China's two-tiered REEs pricing structure, and asserts that Chinese domestic REE prices, which are below international prices, is a major reason why China attracts foreign manufacturers.[62] In other words, one of the reasons why China kept domestic REEs prices below international prices was to attract foreign companies and their investment and to learn advanced technology from them. The domestic prices set lower than

58) *China Daily*, September 3, 2009.

59) Tse, *China's Rare Earth Industry* (2011).

60) Ting and Seaman (2013), pp. 245-247.

61) The 2014 WTO Panel Report also implies that the price difference between the international and the Chinese domestic markets, rather than export quotas and export duties, creates the incentives for smuggling. World Trade Organization (WTO) (2014), pp. 127-132.

62) Hayes-Labruto, Schillebeeckx, Workman and Shah (2013), pp. 55-68.

the international prices, however, have created the unintended consequence of encouraging overproduction of REEs for the purpose of being sold overseas through smuggling. Given the ineffective central monitoring system and the local governments' acquiescence, small-scale producers who have not received production or export quotas from the central government have a strong incentive to pursue an a lot more profitable way, i.e., to continue production illegally than to stop production all together.

IV. Conclusion

Why is smuggling prevalent and persistent in the Chinese rare earth industry? Why has the Chinese government heretofore failed to eradicate the smuggling problem that seriously hinders its attempts to protect scarce resources within its territory, which have great strategic importance and economic value? In the process of addressing these puzzles, this paper illuminated the "weakness" or "incapacity" of the Chinese central government in rooting out a major obstacle to rare earth management.

Behind the incapacity is the local governments' incentives to overlook illegal mining and smuggling in their jurisdictions. The local governments of the rare earth abundant inland regions with few other resource advantages have a strong incentive to maximize tax revenue by protecting their local small-scale REEs producers. They also have little incentive to actively implement the central authority's consolidation policy, which attempts to reduce the number of local small-scale mines and merge local-based REEs producers into central government-owned conglomerates on the ground of cracking down smuggling, but will only reduce their tax revenue. Given the local governments' acquiescence and the gap between the domestic and international prices, small-scale producers

with overcapacity have strong incentive to continue illegal mining and engage in smuggling.

Recent policy change from export restrictions to consolidation measures suggests that the central government sees that the smuggling problem can be mitigated not by export control but by production control. It also suggests that the central government recognizes that the fundamental source of the smuggling problem is not in a particular policy per se but in the accordance of interests between local governments and REEs producers. Through consolidation of the REEs industry, the central government attempts to detour local governments and directly control and monitor REEs producers. By strengthening its control over the production sector though a centralized industrial structure dominated by large central government-owned conglomerates, the central government intends to establish a more rational price system in its domestic REEs market. The central authority seems to expect that once it establishes a rational price system and narrow the price gap between the domestic and the international markets, it would be much easier to eradicate the smuggling problem.

So far, the new consolidation measures have been largely ineffective in reducing smuggling. Questions remain open when it comes to the effects of the Chinese government's recent decision in 2015 to abolish REEs export quotas and duties on REEs smuggling. Considering that smuggling has not been affected by the level of export restrictions, however, it is doubtful whether the abolition will reduce smuggling. As long as there exist incentives for local governments and local producers to oppose or shirk the central directions that go against their interests, it would be difficult to root out the smuggling problem despite the central government's endeavors. This, in turn, might impair China's long-term strategies for resource security and make its possible plans to utilize rare earths as strategic leverage less effective than expected by many international observers.

[References]

Biedermann, Reinhard Peter. "China's Rare Earth Sector—between Domestic Consolidation and Global Hegemony." *International Journal of Emerging Markets*, Vol. 9, No. 2 (2014).

Blanchard, Olivier, and Andrei Shleifer. "Federalism with and without Political Centralization: China vs. Russia in Transitional Economies: How Much Progress?" *IMF Staff Papers*, No. 48 (2001).

Cheng, Jian-Zhong, and Li-Ping Che. "Current Mining Situation and Potential Development of Rare Earth in China." *Journal of Chinese Rare Earths*, Vol. 31, No. 2 (2010).

China Rare Earth Information (CREI). "Chinese RE Performance Materials on the Fast Developing Way." *China Rare Earth Information*, Vol. 12, No. 5 (May 2006).

_____. "2011 Review and Outlook of China Rare Earth Market." *China Rare Earth Information*, Vol. 18, No. 4 (April 2012).

_____. "Situation of Global Rare Earth Consumption." *China Rare Earth Information*, Vol. 20, No. 2 (February 2014).

_____. "Current Situation and Future Trend of China Rare Earth Luminescent Material Industry." *China Rare Earth Information*, Vol. 20, No. 9 (September 2014).

_____. "China Rare Earth Industry Consolidation Settled." *China Rare Earth Information*, Vol. 21, No. 1 (January 2015).

_____. "2014 Top Ten Rare Earth Events in China." *China Rare Earth Information*, Vol. 21, No. 3 (March 2015).

_____. "Review on 2014 China Rare Earth Policies." *China Rare Earth Information*, Vol. 21, No. 5 (May 2015).

Economy, Elizabeth C. "The Great Leap Backward?" *Foreign Affairs*, Vol. 86, No. 5 (2007).

Gambogi, Joseph. "Rare Earths." *Mineral Commodity Summaries 2013* (Virginia: United States Geological Survey (USGS), 2013).

_____. "Rare Earths." *Mineral Commodity Summaries 2014* (Virginia: United States Geological Survey (USGS), 2014).

_____. "Rare Earths." *Mineral Commodity Summaries 2015* (Virginia: United States Geological Survey (USGS), 2015).

_____. *2012 Minerals Yearbook: Rare Earths* (Virginia: United States Geological Survey (USGS), 2015).

Gang, Chen. *Politics of China's Environmental Protection: Problems and Progress* (New Jersey: Hackensack World Scientific, 2009).

Hayes-Labruto, Leslie, Simon J.D. Schillebeeckx, Mark Workman, and Nilay Shah. "Contrasting Perspectives on China's Rare Earth Policies: Reframing the Debate through a Stakeholder Lens." *Energy Policy* 63 (2013).

He, Yujia. "Reregulation of China's Rare Earth Production and Export." *International Journal of Emerging Markets*, Vol. 9, Issue. 2 (2014).

Hedrick, James B. "Rare-Earth Metal Prices in the USA ca. 1960 to 1994." *Journal of Alloys and Compounds*, Vol. 250, No. 1 (1997).

Humphries, Marc. "Rare Earth Elements: The Global Supply Chain." *CRS Report for Congress*, 7-5700, R41347 (2013).

_____. "China's Mineral Industry and U.S Access to Strategic and Critical Minerals: Issues for Congress." *CRS Report for Congress*, 7-5700, R43864 (2015).

Hurst, Cindy. *China's Rare Earth Elements Industry: What Can the West Learn?* (Kansas: Institute for the Analysis of Global Security, 2010).

Jin, Furong, and Jong-hyuk Oh. "Chunggukui Huitoryu Sanop Gyuje Kanghwae Ttarun Yonghyang Kwa Sisachom [Analysis on the Strategic Protection of China's Rare Earth Resources and its Implications]." *KIEP Jiyok Kyongje Focus*, Policy References 11-23 (2011).

Kim, Dong-hwan. *Huitoryu Chawon Chenjaeng* [Wars on Rare Earths] (Seoul: Miraeui Chang, 2011).

Kim, Hwa-seop. "Chunggukui Huitoryu Kwallyon Chengchaek Chenmang Kwa Sisachom [Perspectives on the Chinese Rare Earth Policies and Their Implications]." *Sanop Kyongje Bunsok*, No. 6 (2012).

Li, Hongbin, and Li-An Zhou. "Political Turnover and Economic Performance: the Incentive Role of Personnel Control in China." *Journal of Public Economics*, Vol. 89, Issues. 9-10 (2005).

Liu, Huifang, Lei Lei, and Changxie Ye. "Study on Rare Earth Management Game between Central and Local Governments in China." *Cross-Cultural Communication*, Vol. 9, No. 1 (2013).

Ministry of Environment Protection (MEP). *Pollutant Discharge Standards for the Rare Earth Industry* (Beijing: MEP, 2011).

_____. *Opinion on Strengthening the Ecological Protection and Restoration of Rare Earth Mines* (Beijing: MEP, 2013).

Ministry of Industry and Information Technology (MIIT). *Rare Earth Industrial Develop-*

ment Plan 2009-2015 (Beijing: MIIT, 2009).

_____. *Clean Production Technology Promotion Plan for Rare Earth Industry* (Beijing: MIIT, 2014).

Moran, Daniel, and James A. Russell. *Energy Security and Global Politics: The Militarization of Resource Management* (London and New York: Routledge, 2008).

Morrison, Wayne M., and Rachel Tang. "China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States." *CRS Report for Congress*, 7-5700, R42510 (2012).

National Development and Reform Commission (NDRC). "China Rare Earth 2009." *Rare Earth Information 3*, 4-8 (2010).

_____. "China Rare Earth 2010." *Rare Earth Information* 3, 4-8 (2011).

_____. "China Rare Earth 2011." *Rare Earth Information* 4, 4-8 (2012).

Naughton, Barry. *The Chinese Economy: Transition and Growth* (Cambridge, Massachusetts: The MIT Press, 2007).

Oh, Jong-hyuk, and Furong Jin. "Chungguk Nae Huitoryu Sanop Kwalli Kanghwa Wa Hyanghu Chonmag [China's Intensified Controls on its Rare Earth Industry and the Outlook]." *KIEP Jiyok Kyongje Focus*, Policy References 11-10 (2011).

Rare Earth Information. "From Consuming Power to Pricing Power Center: China Needs to Adopt an International Strategy for Important Products." *Rare Earth Information*, No. 7 (2010).

Ruttinger, Lukas, and Moira Feil. "Sustainable Prevention of Resource Conflicts: New Risks from Raw Materials for the Future? Case Study and Scenarios for China and Rare Earths." *Adelphi*, Section Report 3.4, Research Project FKZ 370819 102 (2010).

State Council. *China's Policy on Mineral Resources* (Beijing: Information Office of the State Council, 2003).

_____. S*everal Opinions of the State Council on Promoting the Sustained and Healthy Development of the Rare Earth Industry* (Beijing: Information Office of the State Council, 2011).

_____. *Situation and Policies of China's Rare Earth Industry* (Beijing: Information Office of the State Council, 2012).

Ting, Ming Hwa, and John Seaman. "Rare Earths: Future Elements of Conflict in Asia?" *Asian Studies Review*, Vol. 37, No. 2 (2013).

Tse, Pui-Kwan. *2000 Minerals Yearbook: China* (Virginia: USGS, 2000).

_____. *2001 Minerals Yearbook: China* (Virginia: USGS, 2001).
_____. *2002 Minerals Yearbook: China* (Virginia: USGS, 2002).
_____. *2003 Minerals Yearbook: China* (Virginia: USGS, 2003).
_____. *2004 Minerals Yearbook: China* (Virginia: USGS, 2004).
_____. *2005 Minerals Yearbook: China* (Virginia: USGS, 2005).
_____. *2006 Minerals Yearbook: China* (Virginia: USGS, 2006).
_____. *2007 Minerals Yearbook: China* (Virginia: USGS, 2007).
_____. *2008 Minerals Yearbook: China* (Virginia: USGS, 2008).
_____. *2009 Minerals Yearbook: China* (Virginia: USGS, 2009).
_____. *2010 Minerals Yearbook: China* (Virginia: USGS, 2010).
_____. *2011 Minerals Yearbook: China* (Virginia: USGS, 2011).
_____. *2012 Minerals Yearbook: China* (Virginia: USGS, 2012).
_____. *China's Rare Earth Industry* (Virginia: United States Geological Survey, 2011).
United Nations Conference on Trade and Development (UNCTAD). *Commodities at a Glance: Special Issue on Rare Earths* (Geneva: UNCTAD, 2014).
Whiting, Susan. *Power and Wealth in Rural China: The Political Economy of Institutional Change* (Cambridge: Cambridge University Press, 2001).
World Trade Organization (WTO). *China — Measures Related to the Exportation of Rare Earths, Tungsten, and Molybdenum: Reports of the Panel* (Geneva: World Trade Organization; 2014).
Wubbeke, Jost. "Rare Earth Elements in China: Policies and Narratives of Reinventing an Industry." *Resource Policy* 38 (2013).

〈News〉

China Daily. "Companies Look to Gain Access to Rare-Earth Resources." April 8, 2011. http://www.chinadaily.com.cn/cndy/2011-04/08/content_12289765.htm (date of access: June 25, 2015).
_____. "Rare Earth, Common Problem." September 3, 2009. http://www.chinadaily.com.cn/cndy/2009-09/03/content_8648846.htm (date of access: September 25, 2015).
New York Times. "In China, Illegal Rare Earth Mines Faces Crackdown." December 29, 2010. http://www.nytimes.com/2010/12/30/business/global/30smuggle.html?_r=0 (date of access: September 29, 2015).
Reuters. "China Says Illegal Rare Earth Production Still Rife." January 9, 2014. http://in.reuters.com/article/2014/01/09/china-rareearth-idINL3N0KJ1YA20140109 (date of access: October 7, 2015).

Wall Street Journal. "China Still Dominates Rare-Earth Processing." December 5, 2013. http://www.wsj.com/articles/SB10001424052702303661404579177602839587772 (date of access: June 4, 2015).

Want China Times. "Jiangxi's Illegal Rare Earth Mining Too Profitable to Quit." April 19, 2012. http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20120419000013&cid=1503 (date of access: October 16, 2015).

Xinhua News Agency. "China Vows Continued Crackdown on Illegal Rare Earth Mining." August 8, 2015. http://news.xinhuanet.com/english/2015-08/08/c_134495154.htm (date of access: October 2, 2015).

〈Internet Sources〉

http://investorintel.com/technology-metals-intel/chinese-authorities-approve-plan-for-reorganization-of-six-rare-earth-companies/ (date of access: October 17, 2015).

http://www.mlr.gov.cn/zwgk/zytz/201505/t20150514_1350621.htm (date of access: September 30, 2015).

www.cre.net/english/news/news137.htm (date of access: August 3, 2015).

[초 록]

왜 중국에서 희토류 밀수가 계속되는가

박선령 · 정주연 | 고려대학교

본 논문은 중국 희토류 산업 내에 만연한 밀수출 문제를 중국 중앙정부가 근절하지 못하는 원인을 분석한다. 중국의 희토류 밀수출 문제는 전략적 · 경제적 가치가 높은 희토류 자원을 보호하려는 중국 정부의 조치를 심각하게 저해한다는 문제점을 내포한다. 중국 정부가 밀수출 문제의 심각성을 공식적으로 제기한 2006년 이래로 이를 근절하기 위해 수출통제 및 산업통합정책이 시행되었으나 밀수출 근절에는 큰 효과를 발휘하지 못한 것으로 나타났다.

본 논문은 수출통제 및 산업통합정책 그 자체에 집중하는 기존의 연구들과 달리, 지방정부와 지방 소규모 희토류 생산기업들의 인센티브에 초점을 두고 있다. 희토류 외의 자원이 미비한 지역의 지방정부들은 관할 지역의 소규모 희토류 생산 기업들을 보호함으로써 세금수입을 극대화하고자 한다. 이러한 지방정부의 묵인 또는 방조하에, 생산능력 과잉상태인 소규모 희토류 생산기업들은 불법채굴과 밀수출을 지속하는 양상을 보인다.

본 논문은 중앙정부 소유의 대규모 국유기업 위주로 희토류 산업을 통합, 재편하려는 노력에도 불구하고 밀수출 문제가 쉽게 근절되기는 어려울 것이며, 중국이 전략적 레버리지로 희토류를 활용하는 전략을 저해할 수 있음을 시사한다.

주제어: 희토류, 중국 희토류 산업, 밀수, 수출쿼터, 산업통합정책

투고일: 2015년 10월 26일, 심사일: 2015년 11월 3일, 게재확정일: 2015년 12월 7일